4 ENVIRONMENTAL ANALYSIS

4.1 ORGANIZATION AND PRESENTATION OF ENVIRONMENTAL IMPACT ANALYSIS

The preparation of this environmental impact report (EIR) is in conformance with the California Environmental Quality Act (CEQA) of 1970 and the State CEQA Guidelines. Sections 4.1 through 4.16 contain discussions of the environmental setting, thresholds of significance, environmental impacts, mitigation measures, and levels of significance after mitigation. Only chapters being recirculated are provided in this document. Please refer to the February 2008 General Plan DEIR for sections related to other environmental topics. The issues evaluated in these sections consist of the significant and potentially significant environmental issue areas. These sections are organized into the following major components.

4.1.1 ENVIRONMENTAL SETTING

The "Environmental Setting" subsection presents the existing regional and local environmental conditions, in accordance with State CEQA Guidelines Section 15125. The subsection describes the baseline conditions against which the environmental impacts associated with the proposed General Plan update are measured. In accordance with CEQA Guidelines Section 15125(a), the environmental baseline, as analyzed in this EIR, is the environmental setting as it existed at the time the Notice of Preparation (NOP) was published: September 8, 2006.

4.1.2 REGULATORY SETTING

This subsection provides information on existing regulations, laws, policies, plans, and other information that may pertain to certain aspects of General Plan implementation. This section references not only the regulatory scheme of the City of Riverbank, but many potential trustee and responsible agencies.

4.1.3 SIGNIFICANCE THRESHOLDS

Significance thresholds are the evaluation criteria against which potential impacts are measured and determined to be significant or less than significant. Impact evaluation criteria include local, State, and federal standards, where appropriate, and criteria contained in Appendix "G" of the CEQA Guidelines.

4.1.4 ENVIRONMENTAL IMPACTS

This subsection discusses effects associated with the General Plan update on the existing environmental conditions, in accordance with State CEQA Guidelines Sections 15126(a) and 15143. The discussion includes the substantial evidence upon which a conclusion is made as to whether the impact would be significant or less than significant.

4.1.5 MITIGATION MEASURES

Following the individual impact discussions, mitigation measures are identified to reduce potentially significant effects associated with the General Plan update to the extent feasible, in accordance with State CEQA Guidelines Sections 15002(a)(3), 15021(a)(2), and 15091(a)(1). Following the individual mitigation measures, a conclusion is provided regarding whether mitigation measures would or would not reduce an impact to a less-than-significant level.

4.2 AESTHETICS

4.2.1 ENVIRONMENTAL SETTING

SITE SETTING

Riverbank is located along the banks of the Stanislaus River in a mostly agricultural area. The City has a range of residential, commercial, industrial, civic, and other land uses. Most non-residential land is downtown or along State Highway 108, which traverses the northern portion of the City. Industrial land uses are focused on the north-south corridor through the center of the City formed by the Burlington Northern Sante Fe railroad line. The City is surrounded by orchards and other agricultural related land uses and open space to the west, the Stanislaus River and farmland in San Joaquin County to the north, rural residential and grazing land to the east and southeast, and the City of Modesto to the south.

The majority of land in the City (47%) is occupied by single-family homes.[1] Public/quasi-public land uses are the next most prevalent. These land uses include places of worship, City property, County property, property owned by other public agencies, and related land uses. Industrial land uses occupy approximately 325 acres in the City, or 14 percent of land in assessor parcels. Commercial land, which includes retail, wholesale, and services, is another important land use in the City. After these first four most common uses of land, acreage figures drop off substantially.

RESIDENTIAL DEVELOPMENT

Residential land uses are located throughout the existing developed portion of the Planning Area. Homes in the more historic areas of the City represent a variety of styles, including bungalows and ranch-style, and are generally built on a grid pattern with tree lined streets. Contemporary residential subdivisions are spread along arterials to the south and west of the downtown. Outlying areas of the City to the east and west have some rural density residential development.

Residential neighborhoods just across the railroad from downtown to the west and residential neighborhoods just south of downtown are within proximity of schools, parks, and commercial opportunities. These generally are the more historic developed areas of the City. More recently developed portions of the City are exclusively or almost exclusively single-family residential development. The Crossroads land development project, for example, is a residential Specific Plan area in the southwestern portion of the City. The residential component of Crossroads is single-family, detached structures, with a very small amount of duplexes and senior housing units. Other areas of the City where single-family homes are concentrated include areas along the northern portion of the City limits along the river and west of the railroad, the large area of the City that is west of the railroad and south of Patterson, and the extreme southeastern portion of the City.

INDUSTRIAL, COMMERCIAL, AND OFFICE DEVELOPMENT

Industrial development, as in many communities with railroad main lines, is focused along and near the railroad line that bisects the City. Industrial development also occurs, to a lesser degree, along the State Highway 108 corridor. The decommissioned Army Ammunition Plant is located in the southeast portion of the Planning Area.

Commercial development occurs along the Highway 108 corridor and in downtown Riverbank. A limited amount of small-scale, neighborhood-serving commercial development also occurs in some of the residential neighborhoods just south of downtown. Regional, automobile-oriented, large-scale retail commercial development occurs in the southwestern corner of the Riverbank Planning Area. In general, smaller-scale

[1] The total shown on the table of 1,956 is the total of land within current City limits in parcels tracked by the County Assessor. Other land area in rights-of-way, roads, and used for other purposes may not be tracked by the Assessor (such as public rights-of-way).

commercial development occurs downtown and on the eastern side of the City, while larger-scale, more automobile-oriented commercial development occurs in the western and southwestern portions of the City in areas developed more recently.[2] The southeastern portion of the City is comparatively less well-served by commercial development.

Additional commercial development is planned for the Highway 108 corridor on the western side of the City (as of the writing of this document).

Only a very small portion of land in the City (nine acres, 0.4%) is in office development. Working offices may be attached to other primary land uses and undercounted using the methodology of this study. Additionally, lands classified as public/quasi-public with administrative space for City or County government workers are functionally in office use, though they are not included in the office category in this study.

RURAL AGRICULTURAL AREA

Farmland surrounding Riverbank is generally used for orchards (fruit and nut) to the west and pastureland to the south and east. Stanislaus County has almost 700,000 acres protected by the Williamson Act, by a Farmland Security Zone, by an agricultural conservation easement, or by some other restriction on development or conversion of agricultural use (California Department of Conservation). This ranks seventh among California counties. Much of the land surrounding Riverbank is in a Williamson Act contract.

ENTRY CORRIDORS AND SCENIC ROUTES

Roadways leading to and through Riverbank are aesthetically important since they expose both travelers and residents to the visual character of the City and the surrounding area as they travel through the area, or commute back and forth to work beyond the City limits.

Entrances to the city from major roadways are called “entry corridors” or “gateways.” They are important for providing both visitors and residents with their initial impression of Riverbank and a transition from a rural to urban environment. Highway 108 is the major entry corridor to Riverbank. This roadway passes through orchards west of the City, transitioning to recently developed residential and large-scale commercial retail development on the western fringe. After passing through more historic parts of the City and alongside the northern reaches of downtown Riverbank, Highway 108 bends north along the Stanislaus River and eventually northeast into the neighboring city of Oakdale.

The cities of Oakdale and Riverbank have jointly agreed on the preservation of a scenic corridor separator between the two cities along the Route 108 corridor. The Oakdale General Plan establishes the concept of a physical separator within the scenic corridor to preserve both cities identities and to promote conservation of agricultural resources in the Highway 108 corridor, east of the city and including the outer eastern region of the city.

The Highway 99 Task Force involves many partnering public interest groups in a cohesive future vision for the Highway 99 corridor in the San Joaquin Valley. Importantly, this involves addressing scenic resources along the highway corridor. For more information, please refer to: http://www.greatvalley.org/99/index.aspx.

[2] Commercial properties west of the railroad tracks have larger parcel sizes, more parking on site, and are located along wider, higher-volume roadways compared to those east of the railroad tracks.

4.2.2 REGULATORY SETTING

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

There are no federal plans, policies, regulations, or laws related to land uses that are applicable to the proposed project.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

California Scenic Highways Program

State scenic highways are designated by the Department of Transportation (DOT) to promote the protection and enhancement of the beauty, amenities and quality of life in California. In order to acquire an "officially designated scenic highway" label, the State and DOT require local jurisdictions to adopt a scenic corridor protection program to protect and enhance the adjacent scenic resources.

Interstate 5, as it passes through Stanislaus County, is a designated scenic highway (DOT 2007).

LOCAL PLANS, POLICIES, REGULATIONS, AND LAWS

Stanislaus County General Plan

Stanislaus County is responsible for enforcing the protection of its State-designated scenic areas within its borders. The current County General Plan does not designate specific areas for scenic protection; however, the City of Oakdale completed a Highway 108 Scenic Corridor Preservation Master Plan in 2002, for the preservation of a scenic corridor separator and Class 1 multi-use path between the cities of Oakdale and Riverbank.

The existing Stanislaus County General Plan does not include specific policies aimed at the protection of visual resources, but does include goals and policies aimed at the general preservation of open space areas, including scenic, historic, and cultural areas. These goals and policies, although, not aimed directly at protecting visual resources, would assist in the preservation of visual resources, including agricultural land and open space areas. These goals and policies are discussed below.

Chapter 3: Conservation/Open Space Element

(4) preserves open space lands for outdoor recreation including scenic, historic and cultural areas;

Goal One: Encourage the protection and preservation of natural and scenic areas throughout the County.

- Policy Two: Assure compatibility between natural areas and development.
- Policy Three: Areas of sensitive wildlife habitat and plant life (e.g., vernal pools, riparian habitats, flyways and other waterfowl habitats, etc.) including those habitats and plant species listed in the General Plan Support Document or by state or federal agencies shall be protected from development.
- Policy Four: Protect and enhance oak woodlands and other native hardwood habitat.

Goal Three: Provide for the long-term conservation and use of agricultural lands.

- Policy Ten: Discourage the division of land which forces the premature cessation of agricultural uses.
- Policy Eleven: In areas designated "Agriculture" on the Land Use Element, discourage land uses which are incompatible with agriculture.

Goal Eight: Preserve areas of national, state, regional and local historical importance.

- Policy Twenty-Four: The County will support the preservation of Stanislaus County's cultural legacy of historical and archeological resources for future generations.

- Policy Twenty-Five: "Qualified Historical Buildings" as defined by the State Building Code shall be preserved.

4.2.3 SIGNIFICANCE THRESHOLDS

METHOD OF ANALYSIS

This analysis is based on review of existing land use data in the Riverbank area, and an assessment of land use change anticipated under the General Plan update with a focus on elements of this land use change that would affect the aesthetic environment in the Planning Area.

THRESHOLDS OF SIGNIFICANCE

An impact is considered significant, as defined by the State CEQA Guidelines (Appendix G), if the proposed project or alternatives would:

- Have a substantial adverse effect on a scenic vista; or

- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway; or

- 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.

4.2.4 IMPACTS AND MITIGATION MEASURES

IMPACT ANALYSIS

IMPACT 4.2-1 **Have a Substantial Adverse Effect on a Scenic Vista, or Substantially Degrade the Visual Character or Quality of the Site and Its Surroundings.** *The General Plan update contains goals and policies designed to protect areas of scenic interest; however, development permitted under the proposed General Plan will result in a* ***significant*** *impact to the existing visual identity and character of Riverbank, including areas potentially considered scenic vistas.*

The City of Riverbank does not contain any areas officially designated as a scenic vista. However, new development anticipated under the General Plan would affect open views along Highway 108 and the Stanislaus River, in the northeastern and northwestern regions of the Planning Area. These views, because of the change in topography between river bluffs and the river waterway area, can be expansive. Views of the river are considered to be very important by members of the Riverbank community, as discovered during extensive public outreach to support the General Plan update.

Agricultural properties and rural residential lands are located west and east of the existing developed portions of Riverbank. The northeastern area has views of the Stanislaus River from overlooking bluffs. The northwestern portion of the Planning Area has some views of open land and parts of the river corridor and riparian areas along the river from atop bluffs, also, although the bluffs in this area are set back more from the river in general.

The updated General Plan designates areas in the western and northeastern extremities of the Planning Area as agricultural resource conservation areas. This designation would allow ongoing agriculture use and agricultural-related uses that would not substantially change the visual environment. In the northwestern portion of the Planning Area, the General Plan anticipates lower-density residential, buffer greenway open space (along the Stanislaus River), multi-use recreational, medium-density residential, school-civic, park, and higher-density residential land uses. This mix of urban and open space land use designations could substantially and adversely affect the visual character of this area, including views that many in the community would consider scenic. The General Plan cannot anticipate building elevations, design elements, precise roadway alignments, placement of buildings on properties, or other elements that are important for determining the full extent of visual impacts.

The General Plan includes an open space buffer area along the river in the northwestern portion of the Planning Area. The preservation of open space along the river corridor will preserve certain visual qualities of the area, and increased public access to currently unavailable scenic views arguably would provide some public benefit for scenic resources.

The northeastern portion of the Planning Area contains similar resources as in the northwest with agricultural properties and views of the Stanislaus River. The land use designations anticipated under the General Plan update are similar to those in the western expansion area, including, in order of most abundant, agricultural resource conservation areas, clustered rural residential, low density residential, medium density residential, park (along Stanislaus River), multi-use recreational (along Stanislaus River), buffer greenway open space, and school-civic.

General Plan policy addresses the protection of scenic resources in this area, as well as providing additional public access to views of the river.

Goal CONS-7: Maintain and Increase Public Access to Riverbank's Scenic Resources

- Policy CONS-7.1: The City will improve public access to areas along the Stanislaus River where scenic views are available.
- Policy CONS-7.2: The City will integrate riverside greenways with the City's overall open space system.
- Policy CONS-7.3: Approved projects, plans, and subdivision requests along the Stanislaus River shall provide public access to Stanislaus River views, wherever feasible.
- Policy CONS-7.4: Any development in the Clustered Rural Residential area, as described in the Land Use Element and Land Use Diagram, shall make use of clustering to preserve expansive views and other rural aesthetic qualities.
- Policy CONS-7.5: The City will coordinate with the City of Oakdale to implement policies to preserve open space for scenic and other benefits in the Scenic Highway 108 corridor.

Some areas with potentially important visual characteristics northwest and east of the existing developed City are subject to proposed City policy (included as a part of the General Plan update) regarding clustered rural residential development, policy which is designed, among other things, to protect important aesthetic resources:

Clustered Rural Residential

This category provides an opportunity to preserve usable open space, including ongoing agricultural operations, or to protect natural resource areas. Residential development in this area must be clustered to preserve large and unbroken pieces of property for agriculture or open space, including both cultivation and grazing activities.

Open space may be owned and maintained privately by a homeowner's association or similar mechanism, or by a public entity with ongoing funding for maintenance provided by the project applicant.

The density range of residential development in this area is 0.2 to 1 dwelling unit per acre (one to five acres per dwelling unit). One unit per acre is the maximum development yield on any given parcel proposed for subdivision. Any residential development in the Clustered Rural Residential land use designation requires clustering of proposed development areas such that at least 80 percent of the parent parcel in unimproved open space use, and is not to be included in any property with a residence or any other urban use.

Within areas designated Clustered Rural Residential, this General Plan provides for a total of 250 dwelling units to be developed. The City may allow density to be transferred between parcels designated for Clustered Rural Residential where the City's open space preservation objectives are furthered. The City will implement the Clustered Rural Residential land use designation through an ordinance to be drafted following this General Plan update (see Implementation Measures at end of this Element).

The City recognizes the value of not only open space preservation, but also open space-oriented improvements such as habitat restoration, groundwater recharge areas, and open-space oriented recreational facilities. The City also recognizes that the habitat, agricultural, buffering, topographic, aesthetic/viewshed, and other open space considerations of different properties may require different strategies for clustered development. With this recognition, the City, at its sole discretion, may allow some flexibility in the density and open space standards in extraordinary situations where high-quality, publicly accessible, open space-oriented uses can be provided consistent with General Plan policy.

Residential lots in a clustered development shall:

- Minimize impacts to agriculture by avoiding development of Prime Farmland (as shown on Department of Conservation maps) or permanently protect other Prime Farmland via an approved irrevocable easement;
- Provide buffers, as necessary, between residential uses and adjacent ongoing agricultural uses;
- Avoid trees, wetlands, and other biological resources;
- Zero net urban storm run-off leaving the site from previous conditions;
- Orient all dwelling units for maximum passive and active solar energy efficiency;
- Locate developed portion of the site as close as possible to existing and planned roadways; and,
- Locate developed portion of the site to optimize the efficiency of, and minimize extension of any necessary infrastructure.

The proposed General Plan also includes policy to address visual impacts of urban development for people traveling to or through the City. Soundwalls are also discouraged within the City, since the construction of soundwalls has an adverse aesthetic impact, and since well-designed, street-facing buildings add rather than detract from the area's visual character. Diversity in architecture is encouraged. Landscaping and site planning is required to avoid monolithic, out-of-scale urban development. Several other policies from the City's Community Character and Design Element ensure that new development and redevelopment within the existing City is designed to avoid negative aesthetic impacts:

Goal DESIGN-2: Amenities and Features along Neighborhood Residential and Commercial Streets That Accommodate All Travel Modes

- Policy DESIGN-2.5: The City will require visually attractive streetscapes with street trees and sidewalks on both sides of streets, planting strips, attractive transit shelters, benches, and pedestrian-scale streetlights in appropriate locations.

Goal DESIGN-3: Neighborhoods Are Oriented to the Pedestrian and Foster a Sense of Community

- Policy DESIGN-3.2: Approved plans, projects, and subdivision requests shall provide residential site and building design that contributes to an attractive, pedestrian-friendly environment along neighborhood streets. Approved plans, projects, and subdivision requests will minimize the visual prominence of garages and instead incorporating porches, stoops, active rooms, and functionally opening windows that face the street.

- Policy DESIGN-3.3: The City will not allow the use of sound walls within neighborhoods. Traffic dispersal on a finely connected network of smaller roadways and other planning and site design solutions shall be used instead of sound walls to address any noise issues. Since gated residential areas discourage connectivity, the City only allows such developments if connectivity with surrounding areas will not be significantly impaired and other specified conditions are met. The City maintains the sole authority to approve a project that includes gates exclusively in cases where a property is located where through connections would not be possible to other existing developed or planned future developed areas. The City will not allow gates in unless fire access can be guaranteed according to Stanislaus Consolidated Fire Protection District. This exception to the general preference for connectivity and access can be made where a project consists solely of unique and locally desired land uses, such senior housing. See also Policy DESIGN-3.6.

- Policy DESIGN-3.4: The City will not allow residential development that backs up to parks and other open space without public access.

- Policy DESIGN-3.5: The City will ensure that smaller residential lots, including those with widths of less than approximately 50 feet, shall minimize driveway widths, set garages back substantially from the home structure, and minimize garage widths. The City will encourage the use of alleyway access, in particular for smaller residential lots, in coordination with Fire District and Fire Code requirements.

Goal DESIGN-4: High Quality Residential Site Design and Architecture

- Policy DESIGN-4.1: The City will establish design standards for cottage, cluster, and attached single-family housing to ensure that the development of such housing is in scale with the neighborhood context.

- Policy DESIGN-4.2: Approved projects, plans, and subdivisions shall provide diversity among dwelling units in the use of color, building materials, floor plan layouts, square footages, and roof-lines. Approved projects, plans, and subdivision requests shall maintain continuity of a few overall urban design features to provide context between individual units and the neighborhood.

- Policy DESIGN-4.4: The City will allow for small front-yard setbacks in single-family residential districts to permit greater design flexibility and ensure an inviting human scale.

- Policy DESIGN-4.7: The City design and parking for accessory dwelling shall maintain the neighborhood character.

- Policy DESIGN-4.8: The architectural style, exterior materials, roof form, and other design features of accessory dwelling units shall be compatible with the primary structure.

Goal DESIGN-6: Multi-Family Architecture and Site Design Reflects Positive Features Consistent With Single-Family Homes

- Policy DESIGN-6.1: The City will prohibit monolithic expanses of uniform multi-family structures surrounded by parking that breaks up the neighborhood.

- Policy DESIGN-6.2: The City will encourage multi-family housing to incorporate building forms and architectural features common to adjoining adjacent single-family houses.

- Policy DESIGN-6.4: Approved plans, projects, and subdivision requests will incorporate new multi-family development with the surrounding neighborhood through site design, pedestrian connectivity, and landscaping.

- Policy DESIGN-6.5: Multi-family housing projects shall provide open spaces that accommodate a wide variety of activities, both semi-public and private. Multi-family housing can also be placed directly adjacent to parkland to meet the open space requirement in master plan or specific planning efforts. On larger properties, include plazas, courtyards, small parks, and other open spaces in which residents can interact with one another or the community at large.

Goal DESIGN-7: Downtown Is a Vital, People-Oriented Place

- Policy DESIGN-7.1: The City will encourage new buildings to reflect a scale, treatment, and character in harmony with the traditional urban buildings that give the Downtown its character.

- Policy DESIGN-7.2: The City will maintain and enhance a strong pedestrian orientation Downtown through the design of buildings, streets, and sidewalks. Establish continuous building facades with attractive window treatments and minimal or no setback distance from sidewalks.

- Policy DESIGN-7.3: The City will not allow drive-thru features in new development, redevelopment, or remodels Downtown.

- Policy DESIGN-7.4: The City will encourage buildings that are more vertical than horizontal in relationship to the width of adjacent streets. The City will use a guideline of a minimum building height of 30 feet to provide a better scale relationship to the street and a greater potential for a vital urban environment.

- Policy DESIGN-7.5: The City will require ground floor building façade treatments and activities that generate pedestrian interest and comfort. Large windows, canopies, arcades, plazas and outdoor seating are examples of such amenities.

- Policy DESIGN-7.6: The City will support efforts to reduce the perceived scale of Downtown streets in relationship to building height and bulk, while allowing for automobile movements. The City will encourage wider sidewalks, additional landscaping, and accommodating a large portion of future parking demand with street, rather than surface parking.

- Policy DESIGN-7.9: The City will support efforts to reduce the visual impact of surface parking lots.

Goal DESIGN-8: Urban Design in the Downtown Defines and Enhances the Character of the City

- Policy DESIGN-8.1: The City will support urban design programs that incorporate public improvements to enhance the identity of the Downtown.

- Policy DESIGN-8.2: The City will support urban design programs that incorporate public and semi-public improvements to enhance the connections among special activity areas. Improvements may include, but should not be limited to, public spaces, parks and plazas, pedestrian walkways, and crosswalk definition.

- Policy DESIGN-8.3: The City will require the use of durable, high quality building materials to lower maintenance and replacement needs and ensure the aesthetic appeal of new development and rehabilitation in the Downtown.

Goal DESIGN-9: Historic Features Continue to Add to the Character of Downtown Riverbank

- Policy DESIGN-9.1: The City will retain as many historic features as possible in the restoration or renovation of historical buildings. Wherever possible, maintain or restore original proportions, dimensions, and elements. Where applicable, follow historic preservation techniques appropriate to maintain historic registry status of subject buildings.

- Policy DESIGN-9.2: New buildings in the Downtown shall be compatible with the scale, proportions, massing, general architectural elements, and materials of neighboring buildings of historical quality or significance.

- Policy DESIGN-9.3: The City will encourage preservation and upgrades of the physical appearance and usability of buildings and sites with special historic and/or architectural interest, insofar as these actions do not jeopardize the historical registry status of subject buildings and sites.

Goal DESIGN-10: New and Existing Commercial Areas, Mixed-Use Areas, and Neighborhood Centers Accommodate Pedestrians, Bicyclists, Transit Users, and Motor Vehicles

- Policy DESIGN-10.4: The City will require new development to incorporate innovative site design, trees and landscaping, pedestrian paths, and treatment of surface parking areas to avoid a "sea of asphalt."

- Policy DESIGN-10.6: The City will require the appropriate use of balconies, bay windows, pitched roofs, arcades, upper story setbacks, and other architectural features to reduce the perceived building scale.

- Policy DESIGN-10.7: The City will require a strong pedestrian orientation through the design of buildings, streets, and sidewalks in commercial and mixed-use projects. Establish continuous building facades with attractive window treatments and minimal, or no, setback distance from sidewalks.

- Policy DESIGN-10.11: The City will require incorporation of architectural and landscape features that allow for secure locking of bicycles in locations easily observed from indoors. These features must be located to minimize interference with pedestrian areas, evacuation routes, cargo loading areas, and utilities accesses.

Goal DESIGN-11: Urban Design of Commercial Projects and Neighborhood Centers Enhance the Character of the City

- Policy DESIGN-11.2: The City will require the use of durable, high quality building materials to lower maintenance and replacement needs and ensure the aesthetic appeal of new development.

- Policy DESIGN-11.3: Approved projects, plans, and subdivision requests will screen utilities, air conditioning units (HVAC), and waste collection service areas from street frontage using appropriate design and building materials consistent with the development being served.

- Policy DESIGN-11.4: Signage shall be designed to provide visibility for pedestrians, bicyclists, and motorists, while remaining consistent with the design theme and scale of the community and any design guidelines of the City.

Goal DESIGN-12: The Patterson Road Corridor and Existing Commercial Areas Are Vital and Attractive Focal Points of Community Activity

- Policy DESIGN-12.1: The City will work with the business community and residents to make aesthetic and functional improvements to create a "Patterson Village."

- Policy DESIGN-12.2: The City will provide flexible setback requirements to promote sidewalk activity and site retail uses facing and opening up onto sidewalks and plazas. When this is not possible, the City will

require building walls along sidewalks to contain windows or decorative wall treatments in order to maintain the pedestrian's interest.

Goal DESIGN-13: New Industrial and Bulk Retail Developments Consider Human Scale

- Policy DESIGN-13.1: Approved plans, projects, and subdivision requests shall mitigate the overall size and scale of large projects through such means as sensitive massing, articulation, and organization of buildings; the use of color and materials; and the use of landscaped screening.

- Policy DESIGN-13.2: The City will encourage the use of public art, in particular murals, to add visual interest and to break up the monotony of unarticulated walls of large industrial buildings.

- Policy DESIGN-13.4: New industrial projects shall incorporate innovative site design and treatment of surface parking areas in order to avoid the appearance of a sea of asphalt and reduce storm water runoff.

Goal DESIGN-14: Site and Building Design of Industrial and Bulk Retail Projects, Consider the Context and Potential Linkages to Surrounding Areas

- Policy DESIGN-14.2: Where appropriate, the City will require alternative arrangement or design of buildings to respect the scale of neighboring non-industrial buildings.

- Policy DESIGN-14.3: When new development, re-development, or maintenance of industrial and bulk retail complexes occurs, the City will require aesthetic and landscaping improvements of facades and entry features oriented to the street that will strengthen the identity of Riverbank.

- Policy DESIGN-14.4: When new development, re-development, or maintenance of industrial and bulk retail complexes occurs adjacent to environmentally-sensitive areas, the City will require landscaping improvements that will maintain or strengthen existing aesthetic qualities and environmental functions.

Goal DESIGN-15: Adequate, Safe, Well-Located Public Open Spaces, Parks Facilities, and Access to Features of the Natural Environment

- Policy DESIGN-15.1: The City will identify land to create an open space system that links, parks, greenbelts, wildlife habitats, the Stanislaus River corridor, channels, and other critical areas. Impacts on the environmental functions of critical areas shall be considered in the development of open space system links.

- Policy DESIGN-15.4: The City will require and pursue the preservation and enhancement of public access to riverfront recreation / natural areas while protecting sensitive habitats.

Goal DESIGN-16: Riverbank Protects Its Natural Features

- Policy DESIGN-16.1: Approved plans, projects, and subdivision requests shall retain and enhance scenic views of Stanislaus River.

- Policy DESIGN-16.2: The City will encourage the preservation of healthy, attractive native vegetation during land development. Where this is not possible, the City will require site landscaping that uses appropriate native plant materials.

Several other elements of the proposed General Plan update contain goals and policies that would provide visual resource protection as a secondary benefit. Please refer to the Land Use Element, Community Character and Design Element, and the Conservation and Open Space Element.

However, the General Plan update anticipates that large, open spaces at the fringe of the City would be converted to urban development. Despite policies and land designations that will help to preserve open spaces and important views, urban development anticipated under the proposed General Plan will result in a **significant** impact to the existing visual identity and character of Riverbank, including potentially scenic views. This is a **significant and unavoidable impact**.

Mitigation Measures: No additional mitigation is available.

IMPACT 4.2-2 Substantially Damage Scenic Resources, Including, but Not Limited to, Trees, Rock Outcroppings, and Historic Buildings Within a State Scenic Highway. *There are no state scenic highways in the Riverbank Planning Area. There is no impact.*

There are no state scenic highways within the Project Planning Area.

The cities of Oakdale and Riverbank have a joint municipality agreement for the preservation of a scenic corridor to act as a "separator" between the two cities along the Route 108 corridor. The City of Oakdale has developed a "Scenic Corridor Preservation Master Plan," which outlines the impacts and goals of this agreement. In summary, the Oakdale General Plan establishes the concept of a physical separator within this designated scenic corridor to preserve both communities' identities, and to promote conservation of agricultural resources in the Highway 108 corridor, east of Riverbank and including the outer eastern region of the City (within the Project Planning Area) (City of Oakdale 2002). The overall goals of the Highway 108 Scenic Corridor Preservation are to 1) provide residents and visitors with a connected and balanced bikeway/multi-use path system that can accommodate both commute and recreational trips between the City of Oakdale and the City of Riverbank; and 2) the desire for each city to maintain its own identity and sphere of influence. However, this plan is a municipal agreement between the two cities and Highway 108 is not considered a state scenic resource. Nonetheless, Riverbank has designated this corridor along Highway 108 in the northeast region of the Project Planning Area as an agricultural resource conservation area.

Since there are no scenic highways in the Planning Area, there is **no impact**.

Mitigation Measures: No mitigation measures required.

IMPACT 4.2-3 Create a New Source of Substantial Light or Glare Which Would Adversely Affect Day or Nighttime Views in the Area. *New development allowed under the proposed General Plan would increase the number of light sources and amount of glare in Riverbank. However, compliance with City policies would ensure that the project would have a less-than-significant impact in terms of light or glare.*

New development accommodated under the proposed General Plan would increase the number of light sources and amount of glare in Riverbank.

Redevelopment of the existing developed City could involve additional or altered sources of light and glare. If not properly designed, this could adversely affect residents and visitors to these areas. The following General Plan update policy addresses this impact:

- Policy CONS-7.6: Lighting shall be designed to avoid glare, prevent light spillage onto adjacent properties, and avoid light pollution that would contribute light to the nighttime sky.

Development permitted under the proposed General Plan could increase levels of light and glare to a level significant enough to result in adverse impacts to the visual quality in Riverbank. However, compliance with City policy would ensure that General Plan implementation would have a **less-than-significant** impact.

Mitigation Measures: No mitigation measures required.

4.3 AGRICULTURAL RESOURCES

4.3.1 INTRODUCTION

This section assesses the extent to which implementation of the Riverbank General Plan would adversely affect important agricultural resources, conflict with adopted agricultural preservation policies, or conflict with agricultural zoning designations. Where impacts are identified, every feasible mitigation measure is recommended.

4.3.2 ENVIRONMENTAL SETTING

California has one of the most important and diverse agricultural economies in the world, producing more than 250 crop and livestock commodities. The Central Valley, which accounts for approximately 10% of the value of agricultural crops in the United States, is the primary farming area of California (U.S. Bureau of Reclamation 2008). The San Joaquin River valley (which includes Stanislaus County) accounts for approximately 64% of farmland in the entire Central Valley (CALFED 1998). Almost half of the cropland and more than half of the irrigated cropland in California is in the San Joaquin Valley.

In the San Joaquin River watershed area as a whole, fruit and nuts, and vegetables account for the majority of the total value of crop production (CALFED 1998). Stanislaus County's main agricultural products are milk, almonds, chickens, chicken eggs, cattle and calves, turkeys, walnuts, tomatoes, alfalfa, and peaches (California Research Bureau 1997). The predominant use of land in Stanislaus County is for agriculture. Of the 869,338 acres mapped in Stanislaus County, 44.5% is farmland, 43% is used for grazing, 6% is urbanized, and 5.4% is classified as "other" land (California Department of Conservation [CDC] 2005a). Other land includes wetlands, low-density residential development, and brush or timberlands unsuitable for grazing.

Farmland surrounding Riverbank is generally used for orchards (fruit and nut) to the west and pastureland to the south and east.

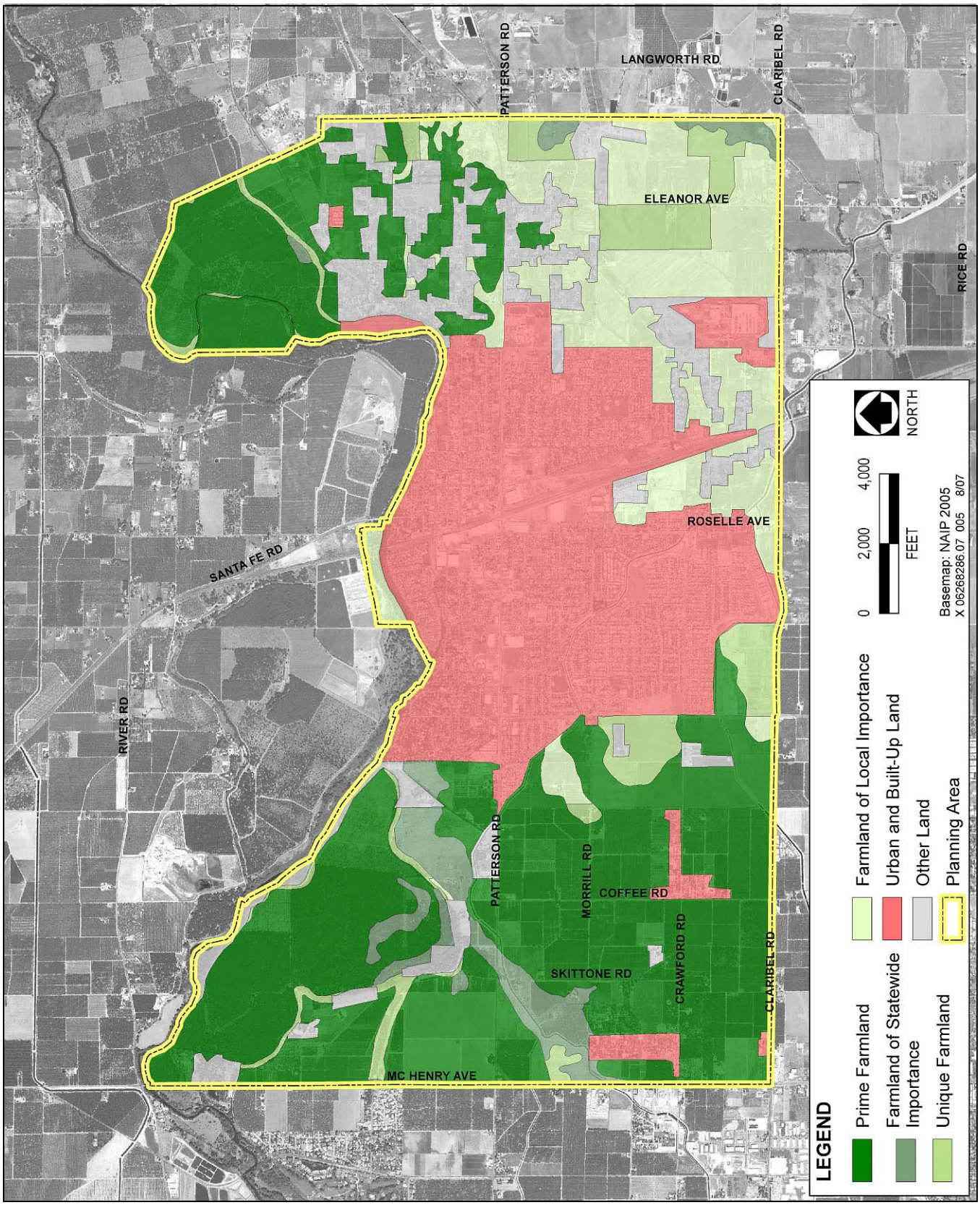
The U.S. Department of Agriculture and California Department of Conservation (DOC) monitor conversion of farmland using methods of categorizing farmland according to the overall agricultural capacity. Important Farmland includes Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance (see Regulatory Setting):

Approximately 5,000 acres of Important Farmland in Stanislaus County were converted to some type of urban land use between 2000 and 2002.[1] Between 1984 and 2000, an average per year of approximately 600 acres of Important Farmland was converted to some other use.[2] Grazing lands were converted at approximately the same rate during this time. Most land to the west of Riverbank is Prime Farmland. Land to the east and southeast is mostly Farmland of Local Significance or Unique Farmland (see Exhibit 4.3-1).

Stanislaus County has almost 700,000 acres protected by the Williamson Act, by a Farmland Security Zone, by an agricultural conservation easement, or by some other restriction on development or conversion of agricultural use (CDC 2005c). This ranks seventh among California counties. Much of the land surrounding Riverbank is in a Williamson Act contract, with concentrations of property northwest and northeast of the current City limits (Exhibit 4.3-2).

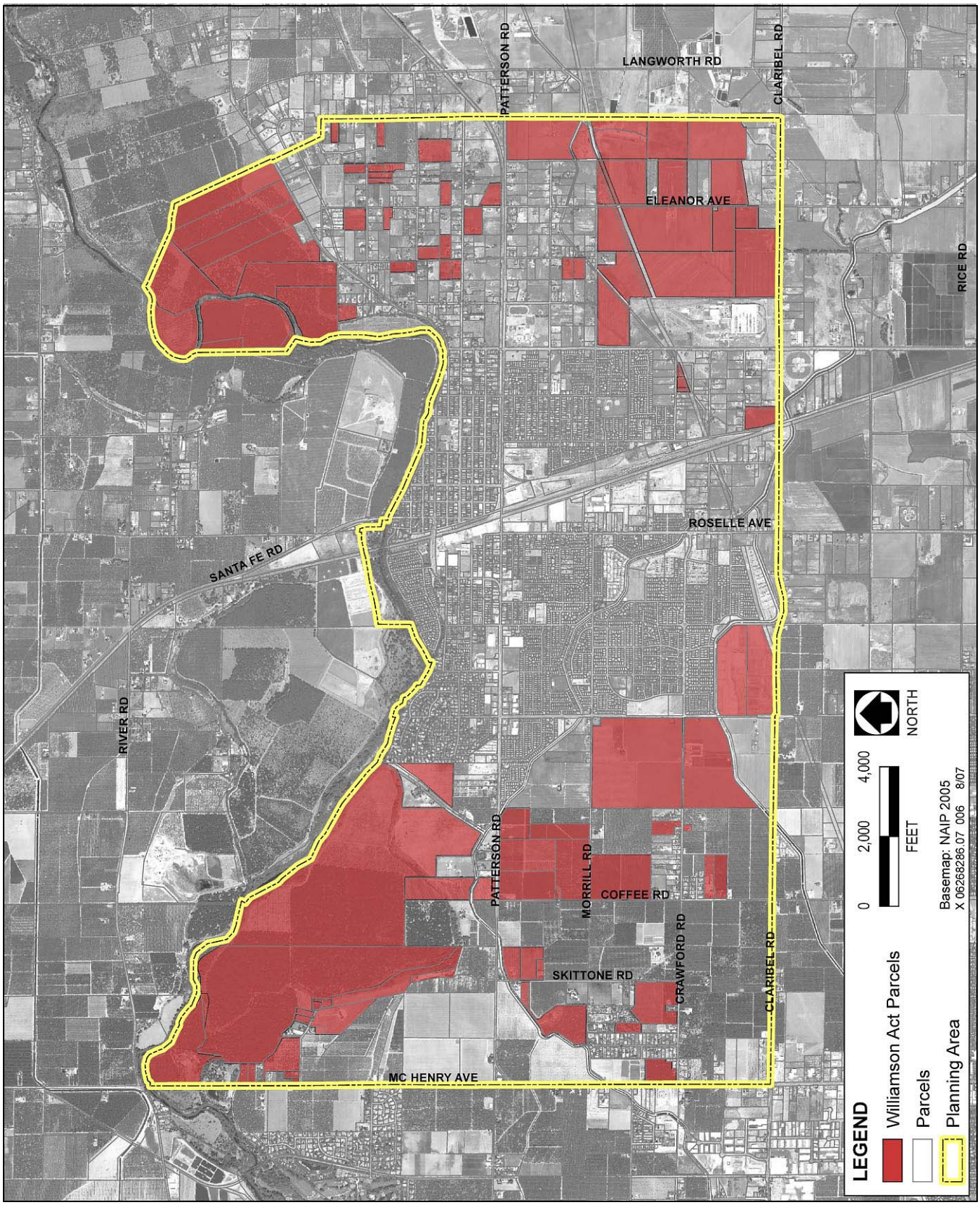
1 Farmland monitoring maps were updated in 2000 using a new National Resource Conservation Service soil survey.

2 For more details on Important Farmland and Prime Farmland, please consult: http://www.consrv.ca.gov/DLRP/fmmp/overview/prime_farmland_fmmp.htm



Source: EDAW 2007

Important Farmland **Exhibit 4.3-1**



Source: EDAW 2007

Williamson Act Lands **Exhibit 4.3-2**

4.3.3 REGULATORY SETTING

The U.S. Department of Agriculture and DOC monitor conversion of farmland and develop methods of categorizing farmland according to its overall agricultural capacity. The State of California has developed farmland preservation programs, such as the Williamson Act, and legislation to protect ongoing operations from nuisance complaints. Stanislaus County and the City of Riverbank have recognized the important value of agriculture, and have established policies to preserve farmland and encourage the viability of agricultural operations. Key aspects of the regulatory setting are described below.

FEDERAL

Important Farmland and Farmland Conversion

DOC develops programs to protect agricultural resources of the state and track conversion of agricultural land. Concern about the loss of important farmland led DOC to develop the Farmland Mapping and Monitoring Program, which classifies different agricultural soil types relating to their ability to sustain agricultural crops. The following categories are used:

- ***Prime Farmland*** is land with the best combination of physical and chemical features for the long-term production of agricultural crops. This land can economically produce sustained high yields when treated and managed according to modern farming methods.

  According to NRCS, "prime farmland" is of major importance in meeting the nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our nation's prime farmland.

- ***Farmland of Statewide Importance*** is land with a good combination of physical and chemical features, but with minor shortcomings, such as greater slopes or less ability to hold and store moisture.

- ***Unique Farmland*** is land of lesser quality soils used for the production of the state's leading agricultural cash crops. Unique farmland is not based on national criteria. It is commonly found in areas where there is a special microclimate, such as the wine country in California.

- ***Farmland of Local Importance*** is pasture land and other agricultural land identified by the local jurisdiction as being important.

As shown in Exhibit 4.3-1, a majority of the project area consists of Prime Farmland. A large section of the western half of the Planning Area consists of Farmland of Statewide Importance, while smaller sections on the western and northern ends of the site consist of Unique Farmland. Table 4.1-2 in the Impact discussion below shows the acreage and percentage of farmland located in the Planning Area according to the Farmland Mapping and Monitoring Program.

NUISANCE ISSUES

Urban encroachment on agricultural areas introduces issues such as land use conflicts, vandalism, increased land values and taxes, and other issues. The state recognized potential land use conflicts, and through Assembly Bill 1190 (Chapter 97, Statutes of 1992) attempted to avoid impacts on agricultural operations associated with urban uses "coming to a nuisance." By amending provisions of the California Civil Code, under Assembly Bill 1190, existing agricultural processing facilities do not constitute a nuisance, provided they operate in a manner consistent with historic operations.

WILLIAMSON ACT PROGRAM

The Williamson Act establishes a mechanism for contracts between local governments and private landowners, restricting parcels of land to agricultural or related open space use. Landowners are taxed on the capitalization of the income from the land rather than the fair market value, and local governments receive an annual subvention of forgone property tax revenues from the state via the Open Space Subvention Act of 1971. In return, the landowner retains their land in open space or agricultural use for at least 10 years. Land can be withdrawn from a Williamson Act contract through a 9-year process beginning with a nonrenewal filing, during which taxes gradually increase to full levies. In extraordinary, unforeseen situations, immediate termination is sometimes granted.

According to the Department of Conservation, generally, land can be withdrawn from Williamson Act contract only through the nine-year non-renewal process, with immediate termination via cancellation being reserved for "extraordinary," unforeseen situations (Department of Conservation, 2008). DOC further notes that:

> "If cancellation is proposed, notification must be submitted to the [DOC] when the City accepts the application as complete (Government Code §51284.1). The [City Council] must consider [DOC] comments prior to approving a tentative cancellation. Required findings must be made by the [City Council in order to approve tentative cancellation…Notification must be submitted separately from the CEQA process and CEQA documentation." (Department of Conservation, 2008)

Please refer to Appendix E, which contains all the comments submitted on the February 2008 Public Review Draft EIR, including the DOC comment letter addressed above.

STANISLAUS COUNTY GENERAL PLAN LAND USE AND ZONING DESIGNATIONS

Stanislaus County, as with the rest of California's Central Valley, is concerned with the rapid increase in urban development that threatens the viability of its agricultural economy and community character. Much of Riverbank's Planning Area is currently under the jurisdiction of Stanislaus County, and is designated by the County General Plan as Agriculture. Almost all Important Farmland in the Riverbank Planning Area is currently located in unincorporated Stanislaus County. Although any urban development of the Planning Area anticipated under Riverbank's General Plan update would occur with annexation to the City, this information is nonetheless provided below for the reader's information.

The southeastern region of the City's existing area consists of lands designated by the County General Plan for Industrial and Urban Transition, as well as in the eastern region within the City's existing boundaries. The lands within the existing city limits are not addressed by the County, with a few parcels in the southern portion of the City zoned Industrial Business Park. Several large parcels in this general vicinity zoned Agriculture (2-20). The proposed new areas to be annexed into the city limits include primarily Agriculture, with a few scattered Residential parcels.

STANISLAUS COUNTY AGRICULTURAL POLICIES

Despite the extensive growth of the city of Riverbank and other cities in the county in the last several decades, Stanislaus County still has thousands of acres of agricultural land. Many parcels within the revised Planning Area are currently in agricultural use, and many in fact are currently under the Williamson Act Contract. The Stanislaus County General Plan Conservation and Open Space Element provides extensive background on the character and importance of agriculture as an economic activity and agricultural lands as a resource, as well as a strong policy base for protecting agriculture and agricultural resources.

The County's Right-to-Farm Ordinance prevents against conflicts between urban and agricultural uses that may adversely affect ongoing agricultural operations. The idea of right-to-farm ordinances is to protect farmers from

nuisance suits that may arise when new development (particularly residential development) encroaches into existing and ongoing agricultural areas. The County's ordinance requires disclosure to home buyers in farming areas that they are subject to noise, dust, odors, and other impacts of commercial agricultural operations. The ordinance also provides a voluntary agricultural grievance procedure as an alternative to court proceedings.

Relevant goals, objectives, and policies of the County's Agricultural Element are provided below for reference:

GOAL ONE: Strengthen the agricultural sector of our economy.

- **Objective Number 1.1:** Enhance the marketing and promotion of agriculture in Stanislaus County
  - Policy 1.1: Efforts to promote the location of new agriculture-related business and industry in Stanislaus County shall be supported.
  - Policy 1.2: The marketing and promotion of local agricultural products shall be encouraged.
  - Policy 1.3: Efforts to expand markets for the export of local agricultural products shall be encouraged.
- **Objective Number 1.2:** Support the development of agriculture-related uses
  - Policy 1.4: Limited visitor-serving commercial uses shall be permissible in agricultural areas if they promote agriculture and are secondary and incidental to the area's agricultural production.
  - Policy 1.5: Agricultural service establishments shall be permissible in agricultural areas if they are designed to serve production agriculture in the immediately surrounding area as opposed to having a widespread service area, and if they will not be detrimental to agricultural use of other property in the vicinity.
  - Policy 1.6: Processing facilities and storage facilities for agricultural products either grown or processed on the site shall be permissible in agricultural areas.
  - Policy 1.7: Concentrations of commercial and industrial uses, even if related to surrounding agricultural activities, are detrimental to the primary use of the land for agriculture and shall not be allowed.
  - Policy 1.8: To encourage vertical integration of agriculture, the County shall allow research, production, processing, distribution, marketing, and wholesale and limited retail sales of agricultural products in agricultural areas, provided such uses do not interfere with surrounding agricultural operations.
- **Objective Number 1.3**: Minimizing Agricultural Conflicts
  - Policy 1.9: The County shall continue to protect agricultural resources by limiting the circumstances under which agricultural operations may be deemed to constitute a nuisance.
  - Policy 1.10: The County shall protect agricultural operations from conflicts with non-agricultural uses by requiring buffers between proposed non-agricultural uses and adjacent agricultural operations.
  - Policy 1.11: The County shall support state regulations requiring landowners to manage noxious weeds and pests on fallow or abandoned lands.

- **Objective Number 1.5:** Support Education and Technical Assistance

  - Policy 1.16: Public education institutions shall be encouraged to provide more technical assistance related to agricultural economic development in Stanislaus County.

  - Policy 1.17: The County shall continue to encourage vocational agriculture programs in local high schools and at Modesto Junior College.

  - Policy 1.18: Public agencies providing agricultural services shall be encouraged to continue agricultural research and education.

  - Policy 1.19: The County shall continue to encourage 4-H and FFA programs for local youth.

  - Policy 1.20: The County shall continue to support the Agricultural Center where offices of public agencies providing agricultural services are centrally located.

- **Objective Number 1.6:** Protect Food Safety

  - Policy 1.21: The County shall continue to work with local, state and federal agencies to ensure the safety of food produced in Stanislaus County and to maintain a local regulatory framework promoting environmental safety while ensuring the economic viability of agriculture.

  - Policy 1.22: The County shall encourage regional coordination of planning and development activities for the entire Central Valley.

GOAL TWO: Conserve our agricultural lands for agricultural uses.

- **Objective Number 2.1:** Continued Participation in the Williamson Act

  - Policy 2.1: The County shall continue to provide property tax relief to agricultural landowners by participating in the Williamson Act.

  - Policy 2.2: The County shall support reasonable measures to strengthen the Williamson Act, making it a more effective tool for the protection of agricultural land.

  - Policy 2.3: The County shall ensure all lands enrolled in the Williamson Act are devoted to agricultural and compatible uses supportive of the long-term conservation of agricultural land.

- **Objective Number 2.2:** Discourage urbanization and the conversion of agricultural land in unincorporated areas of the County

  - Policy 2.4: To reduce development pressures on agricultural lands, higher density development and in-filling shall be encouraged.

  - Policy 2.5: To the greatest extent possible, development shall be directed away from the County's most productive agricultural areas.

  - Policy 2.6: Agricultural lands restricted to agricultural use shall not be assessed to pay for infrastructure needed to accommodate urban development.

  - Policy 2.7: Proposed amendments to the General Plan Diagram (map) that would allow the conversion of agricultural land to non-agricultural uses shall be approved only if they are consistent with the County's conversion criteria.

- Policy 2.8: In order to further the conservation of agricultural land, the subdivision of agricultural lands shall not result in the creation of parcels for 'residential purposes'. Any residential development on agriculturally zoned land shall be incidental and accessory to the agricultural use of the land.

- Policy 2.9: Lot-line adjustments involving agricultural land shall be primarily created and properly designed for agricultural purposes without materially decreasing the agricultural use of the project site.

- Policy 2.10: Minimum parcel sizes allowed for lands designated Agriculture shall not promote the expansion of existing, or creation of new, ranchette areas.

► **Objective Number 2.3:** Expansion of Cities and Unincorporated Communities

- Policy 2.11: The County recognizes the desire of cities and unincorporated communities to grow and prosper and shall not oppose reasonable requests consistent with city and county agreements to expand, provided the resulting growth minimizes impacts to adjacent agricultural land.

- Policy 2.12: In order to minimize impacts to adjacent agricultural land, the County shall encourage LAFCO to use physical features such as roads and irrigation laterals as the boundaries for sphere of influence expansions.

- Policy 2.13: In recognition that unincorporated land within spheres of influence of cities or community services districts and sanitary districts serving unincorporated communities ultimately will be urbanized, the County shall cooperate with cities and unincorporated communities in managing development in sphere of influence areas.

► **Objective Number 2.4:** Assessing and mitigating Impacts of farmland conversion

- Policy 2.14: When the County determines that the proposed conversion of agricultural land to non-agricultural uses could have a significant effect on the environment, the County shall fully evaluate on a project specific basis the direct and indirect effects, as well as the cumulative effects of the conversion.

- Policy 2.15: In order to mitigate the conversion of agricultural land resulting from a discretionary project requiring a General Plan or Community Plan amendment from 'Agriculture' to a residential land use designation, the County shall require the replacement of agricultural land at a 1:1 ratio with agricultural land of equal quality located in Stanislaus County.

- Policy 2.16: The County shall participate in local efforts to identify strategic locations for the purchase of agricultural conservation easements by land trusts and shall promote the long-term viability of farmland in areas surrounding existing farmland held under conservation easements.

- Policy 2.17: The County shall work cooperatively with the nine cities within the County and to encourage them to adopt agricultural conservation policies or ordinances which are consistent with County policies or ordinances in order to undertake an integrated, comprehensive Countywide approach to farmland conservation. It is the ultimate goal of the County to have all nine cities participate in or adopt an agricultural mitigation ordinance that is the same as or substantially similar.

- **Objective Number 2.5:** Limit the Impact of Antiquated Subdivisions

    - Policy 2.18: Construction of a dwelling on an antiquated subdivision parcel shall only be allowed when such development does not create a concentration of residential uses or conflict with agricultural uses of other property in the vicinity.

GOAL THREE: Protect the natural resources that sustain our agricultural industry.

- **Objective Number 3.2:** Water Resources

    - Policy 3.4: The County shall encourage the conservation of water for both agricultural and urban uses.

    - Policy 3.5: The County will continue to protect the quality of water necessary for crop production and marketing.

- **Objective Number 3.3:** Soil Resources

    - Policy 3.6: The County shall encourage the conservation of soil resources.

CITY AGRICULTURAL POLICIES

The Planning Area includes many parcels currently in agricultural use, many of which are currently under Williamson Act Contract. The existing City General Plan (previous to the current proposed General Plan update) has goals and policies that prevent against the premature conversion of agricultural land associated with urban development and expansion. Policies include:

- Policy A 4: The City should prevent premature curtailment of agricultural activities in the General Plan Boundary by requiring specific plans and annexation prior to development for such lands and by opposing development in areas which are not proposed for annexation.

- Policy B-2: Annexations shall be designed to minimize the conflict between urban development and agricultural land, (Goals 1 and 2).

- Policy B3: The City should prevent premature curtailment of agricultural activities in the General Plan boundary by requiring specific plans and annexation prior to development for such lands and by opposing development in areas which are not proposed for annexation. (Goals 1 and 2).

- Policy Bb: The City shall protest Williamson Act Contracts within its General Plan Boundary but shall support continued agricultural use of these lands until annexation. (Goal 3).

4.3.4 SIGNIFICANCE THRESHOLDS

METHOD OF ANALYSIS

This analysis is based on review of existing land use data in the Riverbank area from information provided by the Farmland Mapping and Monitoring Program of the California Resource Agency, as well as relevant city and county land use planning documentation.

THRESHOLDS OF SIGNIFICANCE

An impact is considered significant, as defined by the State CEQA Guidelines (Appendix G), if the proposed project or alternatives would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?
- Conflict with existing zoning for agricultural use, or a Williamson Act contract?; 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.

4.3.5 IMPACTS AND MITIGATION MEASURES

IMPACT ANALYSIS

IMPACT 4.3-1 **Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) to Non-Agricultural Use.** *Approximately 5,351 acres (62%) of the Riverbank Planning Area consists of important farmland, of which approximately 3,431 acres (40%) is Prime Farmland. Build-out of the proposed General Plan would result in conversion of important farmland resources. This impact would be* ***significant and unavoidable****.*

Conversion of Prime soils to nonagricultural production uses is considered a significant adverse impact under CEQA. The proposed General Plan allows for the development of urban uses on undeveloped land within the Planning Area, large areas of which are classified by the California Department of Conservation as Prime Farmland, Farmland of Statewide Importance and Unique Farmland. Implementation of the land uses proposed within the Planning Area would result in the conversion of Prime Farmland, Farmland of Statewide Importance, and Unique Farmland to nonagricultural use.

Approximately 5,351 acres (62%) of the Riverbank Planning Area consists of important farmland (Prime Farmland, Unique Farmland, and Farmland of Statewide Importance), of which 3,431 acres (40%) consists of Prime Farmland soils. (see Table 4.3-1 below, and Exhibit 4.3-1.)

Table 4.3-1
Important Farmland in Planning Area

Type	Acres	Percent
Urban and Built-Up Land	2,491.31	28.69
Farmland of Local Importance	1,095.87	12.62
Prime Farmland	3,431.48	39.52
Farmland of Statewide Importance	344.88	3.97
Unique Farmland	479.04	5.52
Other Land	841.24	9.69
Total	**8,683.81**	**100**

Source: FMMP 2004

The current Sphere of Influence for the City of Riverbank does not contain large areas of undeveloped land that could accommodate urban expansion of the City. The Planning Area included in the current proposed General Plan update includes land with ongoing agricultural operations, fallow agricultural land, grazing land, and rural density residential development. Large areas of land that may be suitable for agriculture are designated as a part of the General Plan update for urban development.

Proposed General Plan goals, policies, and implementation programs seek to balance goals for urban growth and development with goals for resource conservation, including agricultural resource conservation. The General Plan update describes anticipated population and employment increases, much of which would occur through growth of the City outward. Riverbank, like most central valley communities, is surrounded by high-quality farmland. Outward urban development of the City in any direction would involve some loss of farmland. Overall, the City's General Plan goals and policies are designed to promote orderly and compact development, that overall reduces the level of unnecessary conversion of agricultural land. The General Plan includes goals and policies that prevent leap-frog development, require clustered development in certain locations, prevent urban sprawl, encourage compact and mixed-use development, promote infill development and revitalization, and protect ongoing agricultural operations from nuisance complaints. Relevant policies are found in the Conservation and Open Space Element and the Land Use Element of the City's General Plan Update. For example:

- Policy CONS-3.2: Ongoing agricultural practices on fertile lands in the western portion of the Riverbank Planning Area shall be protected from encroachment of urban use through the use of buffers. The buffers should also protect residential development from the effects of existing agricultural operations. The buffer shall be designed to protect the feasibility of ongoing agricultural activities on nearby lands and reduce the effects of noise, dust and the application of agricultural chemicals on residential development. The width of the buffer shall be 300 feet, except that the width of the buffer may be reduced where a project applicant demonstrates that a narrower buffer would protect the feasibility of ongoing agricultural activities on nearby lands and reduce the effects of noise, dust and the application of agricultural chemicals on residential development. Buffer areas may remain as open space or may be used for stormwater management; renewable energy production; community recreation amenities; or any other allowed use consistent with this policy.

- Policy LAND-1.1: The City will only allow annexation of land that is: 1) adjacent to existing, developed portions of the City or 2) adjacent to lands with available urban services and located within an area designated in the General Plan for urban development.

- Policy LAND-1.2: The City supports LAFCO policy to develop vacant and underutilized land within the City prior to entertaining any annexation if such land can meet the same need as the land proposed for annexation.

- Policy LAND-1.3: Annexation will be preceded by a City evaluation to determine the level of urban services necessary and financing of infrastructure and services by annexation proponents.

- Policy LAND-1.4: Existing infrastructure in areas seeking annexation will be evaluated to determine the costs necessary to bring such infrastructure up to City standards.

Policy LAND-1.5: The City will pre-zone land within the Sphere of Influence consistent with the General Plan prior to annexation.

Goal Land-5: Full Range of Public Services and Facilities for All Areas of the Community

- Policy LAND-5.2: Infill development will be given priority to remaining capacity for water supply and delivery, wastewater treatment and conveyance, stormwater collection and conveyance, and other services and infrastructure currently in place. Development impact fees shall reflect the existing capacity to serve

infill development areas. Any urban development of new growth areas shall plan and finance necessary infrastructure and service expansion to serve those areas.

- Policy LAND-1.2: The City supports LAFCO policy to develop vacant and underutilized land within the City prior to entertaining any annexation if such land can meet the same need as the land proposed for annexation.

- Policy LAND-2.3: The City will encourage re-use of vacant or underutilized land in the Infill Opportunity Area through policies that seek to encourage more intense infill development.

- Policy LAND-3.3: The City will encourage "compact development," which places origination and destination points closer together (residence, stores, schools, places of work, etc.), allowing for alternatives to vehicular travel.

The Land Use Element contains the following designations to assist in protecting agricultural land:

- Agricultural Resource Conservation Area (AG) - This designation provides for ongoing agricultural operations and land uses compatible with ongoing agricultural operations. Generally, this designation occurs in areas with large properties, where agricultural practices are more feasible. This designation also tends to occur in areas with high-quality soils (for cultivation purposes). Examples of land uses compatible with ongoing agricultural operations include equestrian uses, groundwater recharge areas, public infrastructure, farmer's market stands and other on-site sales of local produce, and farmworker housing.

  The primary purpose of the Agricultural Resource Conservation Area is for agricultural production, related processing, services in support of agriculture, and preservation of other natural resources. Residential uses, such as the farmer's home, in these categories are secondary uses and are permitted on a limited basis to assist and support agriculture.

- Clustered Rural Residential (RR) - This category provides an opportunity to preserve usable open space, including ongoing agricultural operations, or to protect natural resource areas. Residential development in this area must be clustered to preserve large and unbroken pieces of property for agriculture or open space, including both cultivation and grazing activities.

  Open space may be owned and maintained privately by a homeowner's association or similar mechanism, or by a public entity with ongoing funding for maintenance provided by the project applicant.

  The density range of residential development in this area is 0.2 to 1 dwelling unit per acre (one to five acres per dwelling unit). One unit per acre is the maximum development yield on any given parcel proposed for subdivision. Any residential development in the Clustered Rural Residential land use designation requires clustering of proposed development areas such that at least 80 percent of the parent parcel in unimproved open space use, and is not to be included in any property with a residence or any other urban use.

  Within areas designated Clustered Rural Residential, this General Plan provides for a total of 250 dwelling units to be developed. The City may allow density to be transferred between parcels designated for Clustered Rural Residential where the City's open space preservation objectives are furthered. The City will implement the Clustered Rural Residential land use designation through an ordinance to be drafted following this General Plan update (see Implementation Measures at end of this Element).

  The City recognizes the value of not only open space preservation, but also open space-oriented improvements such as habitat restoration, groundwater recharge areas, and open-space oriented recreational facilities. The City also recognizes that the habitat, agricultural, buffering, topographic,

aesthetic/viewshed, and other open space considerations of different properties may require different strategies for clustered development. With this recognition, the City, at its sole discretion, may allow some flexibility in the density and open space standards in extraordinary situations where high-quality, publicly accessible, open space-oriented uses can be provided consistent with General Plan policy.

Residential lots in a clustered development shall:

- Minimize impacts to agriculture by avoiding development of Prime Farmland (as shown on Department of Conservation maps) or permanently protect other Prime Farmland via an approved irrevocable easement;
- Provide buffers, as necessary, between residential uses and adjacent ongoing agricultural uses;
- Avoid trees, wetlands, and other biological resources;
- Zero net urban storm run-off leaving the site from previous conditions;
- Orient all dwelling units for maximum passive and active solar energy efficiency;
- Locate developed portion of the site as close as possible to existing and planned roadways; and,
- Locate developed portion of the site to optimize the efficiency of, and minimize extension of any necessary infrastructure.

The General Plan also acknowledges the loss of farmland and provides important policy for mitigating this loss:

- Policy CONS-3.1: The City will prepare a comprehensive Sustainable Agricultural Strategy intended to conserve agricultural production in the Stanislaus River Watershed, herein defined as the area within Stanislaus County and San Joaquin County between the Tuolumne and Calaveras Rivers, attributable to implementation of the 2025 General Plan. This strategy should provide flexibility so that it can be tied to land-use and regional agricultural preservation policies, and is intended to be funded on a fair-share basis by those projects that have a significant impact on the conversion of Important Farmlands, a non-renewable resource, to urban use. In determining a level of significance, it is the intent of the City to use quantifiable, measurable inputs and if a project has a significant impact on Farmland resources, then the project will mitigate for this impact.

The City has also developed two action plans for addressing direct and indirect agricultural impacts.

- Implementation Strategy CONS-1: Development projects and subdivisions will be consistent with, and implement land use planning and greenhouse gas emission reduction measures developed pursuant to the regional Sustainable Community Strategy (per SB 375 of 2008), and consistent with Countywide and regional agricultural preservation planning, to the maximum extent feasible. In determining feasibility, there is a recognized need to balance the importance of agricultural resource conservation with other needs of Riverbank, such as State defined affordable housing, air quality, noise, water usage, and other public resources and services.

  It is the City's intent to gather and consider the best practically available scientific information regarding resource areas and farmland in the region and develop conservation measures that will ensure the viability of agriculture within the Stanislaus River Watershed. Riverbank's planning effort will include provisions for the conservation of Important Farmland (as defined by the State Department of Conservation). It is a goal of the City to promote advances in crop yields, marketability of locally produced agricultural products, and advances in labor productivity through education.

The information gathered will be used as inputs within Land Evaluation and Site Assessment (LESA) system. LESA is a point-based approach that is generally used for rating the relative value of agricultural land resources. In basic terms, a given LESA model is created by defining and measuring two separate sets of factors. The first set, Land Evaluation, includes factors that measure the inherent soil based qualities of land as they relate to agricultural suitability. The second set, Site Assessment, includes factors that are intended to measure social, economic, and geographic attributes that also contribute to the overall value of agricultural land. While this dual rating approach is common to all LESA models, the individual land evaluation and site assessment factors that are ultimately utilized and measured can vary considerably, and can be selected to meet the needs and conditions of the Stanislaus River Watershed. In short, the LESA methodology lends itself well to adaptation and customization by the City in determining the level of significance of a project within the Stanislaus River Watershed.

It is the City's intent to use and potentially modify the Land Evaluation and Site Assessment (LESA), as amended, developed by the State Department of Conservation, when considering if a project will have a significant impact upon farmland resources. The LESA Model is used to assess the relative quality of agricultural land based upon specific measurable features. The formulation of the LESA Model is the result of Senate Bill 850 (Chapter 812/1993), which charges the Resources Agency, in consultation with the Governor's Office of Planning and Research, with developing an amendment to Appendix G of the California Environmental Quality Act (CEQA) Guidelines concerning agricultural lands. Such an amendment is intended "to provide lead agencies with an optional methodology to ensure that significant effects on the environment of agricultural land conversions are quantitatively and consistently considered in the environmental review process" (Public Resources Code Section 21095).

The California Agricultural LESA Model is composed of six different factors. Two Land Evaluation factors are based upon measures of soil resource quality. Four Site Assessment factors provide measures of a given project's size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands. For a given project, each of these factors is separately rated on a 100 point scale. The factors are then weighted relative to one another and combined, resulting in a single numeric score for a given project, with a maximum attainable score of 100 points. It is this project score that becomes the basis for making a determination of a project's potential significance, based upon a range of established scoring thresholds. If a project is deemed to have significant impact, then a project shall be responsible for mitigating this impact via applicable components of the Sustainable Agricultural Strategy.

It is the intent of the City that projects that will lead to the conversion of agricultural land to urban uses, to the extent that it is considered a significant impact, will fund either a single component or a combination of the following described components on a reasonable fair-share basis. The goal and structure of this program will be to minimize the net loss of agricultural production within the Stanislaus River Watershed, to the maximum extent feasible.

The City shall develop a Sustainable Agricultural Strategy, with the intent to minimize the agricultural production lost to urban development through annexation to Riverbank so that, on a regional level, there is no significant net loss of agricultural production within the Stanislaus River Watershed, to the maximum extent feasible. In determining feasibility, the strategy is not intended to be a sole reason why a project that is otherwise desired by the community is not achieved, but rather a reasonable strategy that balances economic, social, and environmental benefits of a project with the need to conserve the agricultural production of the Stanislaus Watershed.

The preparation and update of the Sustainable Agricultural Strategy shall be overseen by a City Council selected committee. The City's Sustainable Agriculture Committee will cooperate with nearby cities, the County, and UC Extension, the Farm Bureau, and other experts and stakeholders. The Riverbank Sustainable Agricultural Strategy should be adaptable with the region's Sustainable Community Strategy, pursuant to SB

375, to the maximum extent feasible. The City's Sustainable Agriculture Committee shall be charged with developing the following components of the Sustainable Agricultural Strategy:

1) Priority Agricultural Land Inventory Component. This component is intended to be an inventory of the productivity of land within the Stanislaus River Watershed, conferring with experts in the field. This inventory should use as a reference Department of Conservation (DOC) or other updatable spatially referenced information (such as DOC Important Farmlands GIS). It is intended that the committee will give direction on the type of information to gather based on any potential local modifications to the LESA model deemed appropriate. The Priority Agricultural Land Inventory Component is targeted for completion by April 2009.

2) Agricultural Land Conversion Component. This component is intended to identify the pattern and trends of agricultural lands converted to urban use and lands put into agricultural production within the Stanislaus River Watershed and the acreage and type of agricultural land conversion, as well as the value of this production. The Agricultural Land Conversion Component is targeted for completion by July 2009.

3) Agricultural Resource Conservation Component. This component is intended to tie the findings of the Priority Agricultural Land Inventory and Agricultural Land Conversion components with the intent to avoid urban/rural land use conflicts to the maximum extent feasible. The component is expected to include for Planning Commission and City Council consideration such conservation policies as right-to-farm and other ordinances, resolutions, and policies – such as Measure "E" – that minimize urban/rural land use conflicts. Development of this component shall be coordinated with Stanislaus County, as the County controls land use change outside City limits. The Agricultural Resource Conservation Component is targeted for completion by November 2009.

4) Agricultural Loss Mitigation Component. This component is intended to establish a systematic approach for mitigating impacts from the loss of farmland, in accordance with the California Environmental Quality Act. The component is also intended to use or modify the Land Evaluation and Site Assessment (LESA) model, to determine if the loss of farmland is significant. Potential modifications to the LESA model could include minimizing the "stair step" effect of the rating system; deemphasizing the significance of site size; emphasizing the importance of existing agricultural operations in the area and/or other modifications seen fit by the committee. In cases when the loss of farmland is considered significant, this strategy will investigate methodology for sustained mitigation measures, including potential funding mechanisms that could correlate to land use efficiency benchmarks.

It is envisioned that a matrix utilizing both the LESA score and other development benchmarks could be set for all development types utilizing quantifiable measurements such as dwelling units per acre, floor-to-area ratios, and jobs-to-area ratios. The purpose of such a matrix will be to set appropriate standards for graduated land use efficiency measures coupled with the productivity of converted farmland that will result a fair and reasonable methodology for mitigating the loss of farmland and crop yield, while balancing the corresponding benefits of affordable housing, improved air quality, proximity to transportation infrastructure and transit, community services, workforce development and job creation.

It is the City's intent to avoid unnecessary loss of agricultural lands, in part, by encouraging more compact, efficient developments that accommodate population and employment growth through logical and efficient use of land. The matrix for this Agricultural Loss Mitigation Component should be tied to the City's land use planning policies, rewarding projects developing on the least productive soils at the upper end of the City's density and development intensity standards. Any resulting farmland conversion impact fees (subject to AB 1600 nexus and approval process) applied as a part of this study are intended to be used as a funding mechanism to fund the Agricultural Easement Implementation, Agricultural Preservation, and Educational Outreach components. The Agricultural Loss Mitigation Component is targeted for completion by January 2010.

5) Agricultural Easement Implementation Component. This component is intended to result in the consideration of an ordinance for adoption by the City Council. The ordinance for consideration will make the necessary findings and set standards and methodology to determine appropriate acreage, location, and administration of agricultural easements put in place to mitigate for loss of agricultural land annexed to the City of Riverbank, if the impact created is considered significant and the securing of agricultural easements is deemed appropriate by the City Council. The agricultural easement implementation ordinance is intended to be consistent and adaptable to regional efforts, such as the Valley Blueprint and the regional Sustainable Communities Plan (required under 2008 Session SB 375), to the maximum extent feasible.

Where, pursuant to the ordinance, the City requires that agricultural easements be put in place to mitigate for the loss of agricultural land that is subject to a Land Conservation Contract, any agricultural conservation easement put in place as a condition of cancellation of that Land Conservation Contract would count towards the agricultural easement requirement imposed by the City pursuant to the ordinance, so long as it meets the standards of being with the Stanislaus River Watershed and suitability.

The agricultural easement ordinance is intended to allow the City Council to balance the impact to agricultural resources with other community needs such as affordable workforce housing in the community, reduced Vehicle Miles Traveled, mass transit opportunities, economic development potential and other needs, upon consideration by the Planning Commission and City Council. The Agricultural Easement Implementation Component is targeted to result in consideration of an ordinance by the City Council by January 2010.

6) Agricultural Marketing Component. This component is intended to set policies and recommendations for actions that preserve and enhance the long-term economic sustainability of agricultural production within the Stanislaus River Watershed. Such actions may include, but are not limited to, farmers markets, point-of-sale marketing campaigns, community subscription farming programs, and other measures that increase the competitive advantage of agriculture within the Stanislaus River Watershed. This Component should also examine opportunities within the Watershed to maximize agricultural value and sustainability by supporting expansion of value-added-income-earning activities and uses of land. This policy is targeted for completion by January 2010.

7) Educational Outreach Component. This component is intended to establish priorities for funding research and development to increase crop production within the Stanislaus Watershed, and supportive agricultural education programs. This Component should involve cooperation with agencies such as University of California and California State University Agricultural Extensions, Soil Conservation Service, and school districts. The City should also reach out to agricultural educational-oriented, private non-profit organizations, such as Future Farmers and 4-H. The Educational Outreach Component is targeted for completion by January 2010.

If the City chooses to initiate a Specific Plan pursuant to Section 65450 of the State Government Code, prior to completion of all components of the Sustainable Agricultural Strategy, then the City Council should give direction upon initiation of the Specific Plan policy direction on how to include and address the intent of each of the above Components as part of such a Specific Plan.

- Implementation Strategy CONS-2: The City will adopt a “right-to-farm” ordinance (or adopt the County’s right-to-farm ordinance, as appropriate) that informs residents of ongoing agricultural practices at the edges of Riverbank and protects farmers and other agriculture interests from dumping, nuisance complaints, and other problems typically associated with new residents on the City fringe. The City will coordinate with Stanislaus County regarding the design of the County’s Right-to-Farm Ordinance to develop consistency, where appropriate.

Enforcement of the General Plan's goals, policies, and land use designations, and the City's pursuit of implementation strategies outlined in the General Plan will assist the City in meeting the goal for reducing the City's encroachment on agricultural properties. Although the City's policies will reduce impacts by mandatory preservation of other agricultural lands through fees on new development, limiting urban expansion compared to what might occur without the City's General Plan policies and implementation measures, and through other means, the direct impacts cannot be adequately addressed through mitigation, as the loss of agricultural land to urbanization is considered permanent. Therefore, the loss of important farmland anticipated under buildout of the General Plan represents a **significant and unavoidable** impact.

While the City has incorporated all available mitigation for the loss of agricultural land in the form of General Plan policies and implementation strategies, the extent of urban development under the proposed General Plan inherently involves the conversion of high-quality agricultural land. In addition to the various policies in the General Plan that seek to protect and preserve agricultural practices in the region, the City also considers various alternative development patterns, and reports on the comparative environmental impacts of such alternatives in Chapter 5.0 of this EIR. The design of alternatives is, in part, specifically tailored to reduce agricultural impacts related to buildout of new growth areas accommodated under the General Plan update. Refer to Chapter 5.0 for more information.

Mitigation Measures: See above-referenced General Plan policies, which represent all available mitigation.

IMPACT 4.3-2 Conflict with Existing Zoning for Agricultural Use, or a Williamson Act Contract. *Approximately 2,826 acres (32%) of the land within the Planning Area is currently in a Williamson Act contract. Build-out of the Planning Area would result in a* ***significant and unavoidable*** *impact.*

The Planning Area consists of the city of Riverbank, unincorporated areas west and east of the City, and Jacob Myers Park, which is located across the Stanislaus River in San Joaquin County. Most of the unincorporated land in the Riverbank Planning Area is designated in the Stanislaus County General Plan for Agriculture and zoned for agricultural uses by the County. Urban development of large areas of land zoned for agriculture is considered a **potentially significant** impact.

Currently, 2,826 acres (32%) of the total Planning Area (8,683 acres) are currently in active Williamson Act contracts.

The City's General Plan designates much of the land within the Planning Area for future urban use. The General Plan anticipates urban development of large areas east and west of the existing developed city. However, the General Plan also designates approximately 1,300 acres of the land (the majority of which is in an active Williamson Act contract) as Agricultural Resource Conservation Areas, which will be preserved for future agricultural use and other uses compatible with ongoing agricultural use.

Development permitted under the proposed General Plan would involve lands currently held in active Williamson Act contracts in the Planning Area. Therefore, a **potentially-significant** impact as a result of a conflict with Williamson Act contracts could occur. However, Williamson Act contracts are strictly voluntary, and the proposed General Plan does not obligate any land owner within the Planning Area to file for non-renewal or early cancellation of Williamson Act contracts, although land owners may be encouraged to do so in anticipation of urban growth. There are specific requirements for non-renewal and cancellation of Williamson Act contracts.

Proposed General Plan goals, policies, and implementation programs seek to address the impact of new development and their infringement upon existing agricultural resources in the City's proposed Planning Area, as noted under Impact 4.3-1. Enforcement of the following goals, policies, and land use designations, and pursuit of Implementation Strategies will assist the City in meeting the goal for reducing the City's encroachment on agricultural properties. However, urban development of large areas of land with Williamson Act contracts and agricultural zoning, as anticipated under the General Plan, represents a **significant** impact.

Although policies can mitigate impacts by preserving other agricultural lands or limiting urban expansion compared to what might occur without the City's General Plan policies and implementation measures, the direct impacts cannot be adequately addressed through mitigation, as the loss of agricultural land to urbanization is considered permanent. The impact is **significant and unavoidable**.

Mitigation Measures: See above-referenced General Plan policies, which represent all available mitigation.

IMPACT 4.3-3 Involve Other Changes in the Existing Environment Which, Due to Their Location or Nature, Could Result in Conversion of Farmland, to Non-Agricultural Use. *The City's Planning Area includes a large amount of agricultural land, with urban land use designations. Future urban development within this area would result in the conversion adjacent farmland properties. This impact would be* ***significant and unavoidable****.*

New urban development can make farming more difficult or costly due to conflicts between urban and agricultural activities. For example, residents may complain about noise, dust, odors and low-flying aircraft used to dust or spray crops. Increased restrictions on agriculture processes and other aspects of urban encroachment on agricultural areas can lower productivity, increase costs, and otherwise impair agricultural operations.

Urban uses can create soil erosion, add vehicular traffic that makes movement of agricultural equipment more difficult, and create air pollution that can be harmful to crops,- in certain instances. Urban activities can result in vandalism and the introduction of domestic animals that may disturb certain agricultural activities. Urban uses can drive up the potential value of properties, creating pressure to convert agricultural land to urban use. One or a combination of these conflicts could limit agricultural activities or encourage farmers to take their land out of agricultural production, resulting in adverse impacts to agricultural resources in the Riverbank Planning Area.

As previously discussed, there are many policies and regulatory mechanisms at the City and County level designed to prevent against unnecessary conversion of agricultural land use urban use. The County's Right-to-Farm Ordinance prevents against conflicts between urban and agricultural uses that may adversely affect ongoing agricultural operations.

The proposed General Plan contains several policies to help minimize conflicts between agricultural and urban uses and an implementation measure to develop a similar right-to-farm program:

- Implementation Strategy CONS-2: The City will adopt a "right-to-farm" ordinance (or adopt the County's right-to-farm ordinance, as appropriate) that informs residents of ongoing agricultural practices at the edges of Riverbank and protects farmers and other agriculture interests from dumping, nuisance complaints, and other problems typically associated with new residents on the City fringe. The City will coordinate with Stanislaus County regarding the design of the County's Right-to-Farm Ordinance to develop consistency, where appropriate.

Policies are also contained in the proposed General Plan addressing transitional areas between urban uses and ongoing agricultural operations, including use of the Multi-Use Recreation/Resource Management designation in western portions of the Planning Area between planned urban development and ongoing agricultural operations and the use of clustering to buffer between these potentially incompatible land uses:

- Multi-Use Recreation/Resource Management (MUR/R): This designation would provide opportunities for stormwater management, renewable energy production, and community recreation amenities. This area would accommodate stormwater detention facilities, groundwater recharge areas, wind generators, solar collectors, wind breaks, as well as trails, benches, and other passive recreational areas. Areas designated MUR/R could also act as a buffer between ongoing agriculture and new residential areas and provide an identifiable and permanent boundary to outward expansion of the City. Areas designated MUR/R between new growth areas and ongoing agricultural operations will be identified and appropriate widths established through Specific

Plans. The width of MUR/R areas will vary depending on the intended uses taking place within a particular area. The width of the MUR/R for agricultural buffering purposes will be designed to minimize noise, dust, and any adverse impacts related to application of agricultural chemicals as experienced by encroaching residential uses.

- Clustered Rural Residential: This category provides an opportunity to preserve usable open space, including ongoing agricultural operations, or to protect natural resource areas. Residential development in this area must be clustered to preserve large and unbroken pieces of property for agriculture or open space, including both cultivation and grazing activities.

  Open space may be owned and maintained privately by a homeowner's association or similar mechanism, or by a public entity with ongoing funding for maintenance provided by the project applicant.

  The density range of residential development in this area is 0.2 to 1 dwelling unit per acre (one to five acres per dwelling unit). One unit per acre is the maximum development yield on any given parcel proposed for subdivision. Any residential development in the Clustered Rural Residential land use designation requires clustering of proposed development areas such that at least 80 percent of the parent parcel in unimproved open space use, and is not to be included in any property with a residence or any other urban use.

  Within areas designated Clustered Rural Residential, this General Plan provides for a total of 250 dwelling units to be developed. The City may allow density to be transferred between parcels designated for Clustered Rural Residential where the City's open space preservation objectives are furthered. The City will implement the Clustered Rural Residential land use designation through an ordinance to be drafted following this General Plan update (see Implementation Measures at end of this Element).

  The City recognizes the value of not only open space preservation, but also open space-oriented improvements such as habitat restoration, groundwater recharge areas, and open-space oriented recreational facilities. The City also recognizes that the habitat, agricultural, buffering, topographic, aesthetic/viewshed, and other open space considerations of different properties may require different strategies for clustered development. With this recognition, the City, at its sole discretion, may allow some flexibility in the density and open space standards in extraordinary situations where high-quality, publicly accessible, open space-oriented uses can be provided consistent with General Plan policy.

  Residential lots in a clustered development shall:

  - Minimize impacts to agriculture by avoiding development of Prime Farmland (as shown on Department of Conservation maps) or permanently protect other Prime Farmland via an approved irrevocable easement;
  - Provide buffers, as necessary, between residential uses and adjacent ongoing agricultural uses;
  - Avoid trees, wetlands, and other biological resources;
  - Zero net urban storm run-off leaving the site from previous conditions;
  - Orient all dwelling units for maximum passive and active solar energy efficiency;
  - Locate developed portion of the site as close as possible to existing and planned roadways; and,
  - Locate developed portion of the site to optimize the efficiency of, and minimize extension of any necessary infrastructure.

Please refer to the proposed Land Use Diagram for illustration of the placement of the above described land uses relative to the overall Planning Area and surrounding agricultural lands.

City policies are designed to support the continuation of working farmland and agricultural land, and to reduce to the extent feasible the potential impacts resulting from the development of urban uses adjacent to agricultural uses. However, given the amount of land in this agricultural area anticipated for urban development under this General Plan and the potential effects of urban development on adjacent agricultural land, the impact is considered **significant and unavoidable.**

Mitigation Measures: See above-referenced General Plan policies, which represent all available mitigation.

4.4 AIR QUALITY

4.4.1 INTRODUCTION

This section includes a summary of applicable regulations, existing air quality conditions, and an analysis of potential short-term and long-term air quality impacts of the proposed project and alternatives. The method of analysis for short-term construction, long-term regional (operational), local mobile source, odor, and toxic air contaminant (TAC) emissions is consistent with the recommendations of the San Joaquin Valley Unified Air Pollution Control District (SJVAPCD). In addition, mitigation measures are recommended, as necessary, to reduce significant air quality impacts.

4.4.2 ENVIRONMENTAL SETTING

Riverbank is located in Stanislaus County, which is within the San Joaquin Valley Air Basin (SJVAB). The SJVAB also comprises all of Fresno, Kings, Madera, Merced, San Joaquin, and Tulare counties, and the valley portion of Kern County. The ambient concentrations of air pollutant emissions are determined by the amount of emissions released by pollutant sources and the atmosphere's ability to transport and dilute such emissions. Natural factors which affect transport and dilution include terrain, wind, atmospheric stability, and the presence of sunlight. Therefore, existing air quality conditions in the area are determined by such natural factors as topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources, as discussed separately below.

TOPOGRAPHY, METEOROLOGY, AND CLIMATE

The SJVAB, which occupies the southern half of the Central Valley, is approximately 250 miles long and, on average, 35 miles wide. The SJVAB is a well-defined climatic region, with distinct topographic features on three sides. The Coast Ranges, which have an average elevation of 3,000 feet, are located on the western border of the SJVAB. The San Emigdio Mountains, which are part of the Coast Ranges, and the Tehachapi Mountains, which are part of the Sierra Nevada, are both located on the south side of the SJVAB. The Sierra Nevada forms the eastern border of the SJVAB. The northernmost portion of the SJVAB is San Joaquin County. There is no topographic feature delineating the northern edge of the basin. The SJVAB is basically flat with a downward gradient in terrain to the northwest. Air flows into the SJVAB through the Carquinez Strait, the only breach in the western mountain barrier, and moves across the Sacramento–San Joaquin River Delta from the San Francisco Bay area. The mountains surrounding the SJVAB create a barrier to airflow, which leads to the entrapment of air pollutants when meteorological conditions are unfavorable for transport and dilution.

The inland Mediterranean climate type of the SJVAB is characterized by hot, dry summers and cool, rainy winters. The climate is a result of the topography and the strength and location of a semi-permanent, subtropical high-pressure cell. During summer, the Pacific high-pressure cell is centered over the northeastern Pacific Ocean, resulting in stable meteorological conditions and a steady northwesterly wind flow. Upwelling of cold ocean water from below to the surface as a result of the northwesterly flow produces a band of cold water off the California coast. Daily summer high temperatures often exceed 100º F, averaging in the low 90s in the north and high 90s in the south. In the entire SJVAB, daily summer high temperatures average 95º F. Over the last 30 years, temperatures in the SJVAB averaged 90º F or higher for 106 days a year, and 100º F or higher for 40 days a year. The daily summer temperature variation can be as high as 30º F (SJVAPCD 2002). In winter, the Pacific high-pressure cell weakens and shifts southward, resulting in wind flow offshore, the absence of upwelling, and the occurrence of storms. Average high temperatures in the winter are in the 50s, but lows in the 30s and 40s can occur on days with persistent fog and low cloudiness. The average daily low winter temperature is 45º F (SJVAPCD 2002).

A majority of the precipitation in the SJVAB occurs as rainfall during winter storms. The rare occurrence of precipitation during the summer is in the form of convective rain showers. The amount of precipitation in the

SJVAB decreases from north to south, primarily due to the Pacific storm track that often passes through the northern part while the southern part remains protected by the Pacific high-pressure cell. Stockton in the north receives about 20 inches of precipitation per year, Fresno in the center receives about 10 inches per year, and Bakersfield at the southern end of the valley receives less than 6 inches per year. Average annual rainfall for the entire SJVAB is approximately 9.25 inches on the valley floor (SJVAPCD 2002).

The winds and unstable atmospheric conditions associated with the passage of winter storms result in periods of low air pollution and excellent visibility. Precipitation and fog tend to reduce or limit some pollutant concentrations. For instance, clouds and fog block sunlight, which is required to fuel photochemical reactions that form ozone. Because CO is partially water-soluble, precipitation and fog also tend to reduce concentrations in the atmosphere. In addition, PM_{10} can be washed from the atmosphere through wet deposition processes (e.g., rain). However, between winter storms, high pressure and light winds lead to the creation of low-level temperature inversions and stable atmospheric conditions resulting in the concentration of air pollutants (e.g., CO and PM_{10}).

Summer is considered the ozone season in the SJVAB. This season is characterized by poor air movement in the mornings and longer daylight hours which provides a plentiful amount of sunlight to fuel photochemical reactions between reactive organic gases (ROG) and nitrogen oxides (NO_X), which result in ozone formation. During the summer, wind speed and direction data indicate that summer wind usually originates at the north end of the San Joaquin Valley and flows in a south-southeasterly direction through the San Joaquin Valley, through Tehachapi pass, and into the Southeast Desert Air Basin (SJVAPCD 2002).

OZONE TRANSPORT

Ozone transport refers to the movement of ozone and precursors from other basins to the SJVAB, from the SJVAB to other air basins, and within the SJVAB. Transport can occur at ground level and also at higher altitudes (e.g., movement up mountain slopes during the day).

According to the SJVAB Extreme Ozone Attainment Demonstration Plan, the transport of pollutants within the SJVAB significantly contributes to concentrations that exceeded the national 1-hour ozone standard[1] (SJVAPCD 2005). As discussed above, prevailing winds blow from the northern part of the SJVAB to the south, and can transport pollutants from San Joaquin, Stanislaus, and Merced counties to the Fresno area. Pollutants transported from the San Francisco Bay area south to Fresno and Bakersfield are combined with those in the northern portion of the SJVAB due to the passage of air movement. Further south, eddy currents can transport pollutants along the east side of the SJVAB from Tulare County and northern Kern County to the Fresno area.

Ozone and precursors are transported from other basins to the SJVAB. On some days, according to an ARB assessment of ozone transport, pollutants transported from the San Francisco Bay area affect ozone air quality in the northern SJVAB, mixing with local emissions to contribute to violations of the national 1-hour ozone standard[1] (ARB 2001). On other days, violations of the standard are entirely from local emissions. The effect of San Francisco Bay area transport diminishes with distance so that ambient ozone concentrations in Fresno and Bakersfield are affected less. Overall, ARB rates the San Francisco Bay area's impact on SJVAB ozone air quality as ranging from inconsequential to overwhelming (i.e., alone can cause violations) depending on meteorological conditions occurring at the time of transport evaluation and in the receptor area. ARB also identifies the broader Sacramento area as a source of ozone and precursor transport to the SJVAB, but the effect only ranges from significant (i.e., contributes to a violation when combined with local emissions) to inconsequential. ARB's assessment of ozone transport found that pollutants transported from other air basins affect the SJVAB's ozone air quality, but the magnitude of the effect declines from north to south (ARB 2001). Local emissions are thought to be primarily responsible for the SJVAB's worst ozone air quality.

[1] The national 1-hour standard was revoked in 2005.

EXISTING AIR QUALITY—CRITERIA AIR POLLUTANTS

Concentrations of the following air pollutants: ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead are used as indicators of ambient air quality conditions. Because these are the most prevalent air pollutants known to be deleterious to human health and extensive health-effects criteria documents are available, they are commonly referred to as "criteria air pollutants."

A brief description of each criteria air pollutant including source types, health effects, and future trends is provided below along with the most current attainment area designations and monitoring data for the Planning Area.

Ozone

Ozone is a photochemical oxidant, a substance whose oxygen combines chemically with another substance in the presence of sunlight, and the primary component of smog. Ozone is not directly emitted into the air, but is formed through complex chemical reactions between precursor emissions of ROG and NO_X in the presence of sunlight. ROG are volatile organic compounds that are photochemically reactive. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NO_X are a group of gaseous compounds of nitrogen and oxygen that results from the combustion of fuels.

Ozone located in the upper atmosphere (stratosphere) acts in a beneficial manner by shielding the earth from harmful ultraviolet radiation that is emitted by the sun. However, ozone located in the lower atmosphere (troposphere) is a major health and environmental concern. Meteorology and terrain play a major role in ozone formation. Generally, low wind speeds or stagnant air coupled with warm temperatures and clear skies provide the optimum conditions for formation. As a result, summer is generally the peak ozone season. Because of the reaction time involved, peak ozone concentrations often occur far downwind of the precursor emissions. Therefore, ozone is a regional pollutant that often affects large areas. In general, ozone concentrations over or near urban and rural areas reflect an interplay of emissions of ozone precursors, transport, meteorology, and atmospheric chemistry (Godish 2004).

The adverse health effects associated with exposure to ozone pertain primarily to the respiratory system. Scientific evidence indicates that ambient levels of ozone affect not only sensitive receptors, such as asthmatics and children, but healthy adults as well. Exposure to ambient levels of ozone ranging from 0.10 to 0.40 parts per million (ppm) for 1 to 2 hours has been found to significantly alter lung functions by increasing respiratory rates and pulmonary resistance, decreasing tidal volumes, and impairing respiratory mechanics. Ambient levels of ozone above 0.12 ppm are linked to symptomatic responses that include such symptoms as throat dryness, chest tightness, headache, and nausea. In addition to the above adverse health effects, evidence also exists relating ozone exposure to an increase in the permeability of respiratory epithelia; such increased permeability leads to an increase in responsiveness of the respiratory system to challenges, and the interference or inhibition of the immune system's ability to defend against infection. Chronic exposure to ozone not only exacerbates asthma, but also appears to cause it (Godish 2004).

Emissions of ozone precursors ROG and NO_X have decreased over the past several years because of more stringent motor vehicle standards and cleaner burning fuels. The ozone problem in the San Joaquin Valley ranks among the most severe in the State. Peak levels have not declined as much as the number of days that standards are exceeded. From 1985 to 2004, the maximum peak 8-hour indicator decreased only two percent. The number of national 8-hour standard exceedance days has been quite variable over the years. This variability is due, in part, to the influence of meteorology as well as changes to the monitoring network. The monitoring network was not as extensive during the 1980s as it has been during the last 14 years. For this reason, the period of 1990 to 2005 provides a better indication of trends. During this period, there has been an eight percent decrease in the three-year average of the number of exceedance days of the national 8-hour standard (ARB 2006a).

Carbon Monoxide

CO is a colorless, odorless, and poisonous gas produced by incomplete combustion of carbon in fuels, primarily from mobile (transportation) sources. In fact, 77% of the nationwide CO emissions are from mobile sources. The other 23% consists of CO emissions from wood-burning stoves, incinerators, and industrial sources.

CO enters the bloodstream through the lungs by combining with hemoglobin, which normally supplies oxygen to the cells. However, CO combines with hemoglobin much more readily than oxygen does, resulting in a drastic reduction in the amount of oxygen available to the cells. Adverse health effects associated with exposure to CO concentrations include such symptoms as dizziness, headaches, and fatigue. CO exposure is especially harmful to individuals who suffer from cardiovascular and respiratory diseases (EPA 2007).

The highest concentrations are generally associated with cold stagnant weather conditions that occur during the winter. In contrast to ozone, which tends to be a regional pollutant, CO problems tend to be localized.

Nitrogen Dioxide

NO_2 is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2 (EPA 2007). The combined emissions of NO and NO_2 are referred to as NO_X, which are reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with photochemical smog (ozone), the NO_2 concentration in a particular geographical area may not be representative of the local NO_X emission sources.

Inhalation is the most common route of exposure to NO_2. Because NO_2 has relatively low solubility in water, the principal site of toxicity is in the lower respiratory tract. The severity of the adverse health effects depends primarily on the concentration inhaled rather than the duration of exposure. An individual may experience a variety of acute symptoms, including coughing, difficulty with breathing, vomiting, headache, and eye irritation during or shortly after exposure. After a period of approximately 4 to 12 hours, an exposed individual may experience chemical pneumonitis or pulmonary edema with breathing abnormalities, cough, cyanosis, chest pain, and rapid heartbeat. Severe, symptomatic NO_2 intoxication after acute exposure has been linked on occasion with prolonged respiratory impairment with such symptoms as chronic bronchitis and decreased lung functions.

Sulfur Dioxide

SO_2 is produced by such stationary sources as coal and oil combustion, steel mills, refineries, pulp and paper mills. The major adverse health effects associated with SO_2 exposure pertain to the upper respiratory tract. SO_2 is a respiratory irritant with constriction of the bronchioles occurring with inhalation of SO_2 at 5 ppm or more. On contact with the moist mucous membranes, SO_2 produces sulfurous acid, which is a direct irritant. Concentration rather than duration of the exposure is an important determinant of respiratory effects. Exposure to high SO_2 concentrations may result in edema of the lungs or glottis and respiratory paralysis.

Particulate Matter

Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as PM_{10}. PM_{10} consists of particulate matter emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires and natural windblown dust, and particulate matter formed in the atmosphere by condensation and/or transformation of SO_2 and ROG (EPA 2007). Fine particulate matter ($PM_{2.5}$) includes a subgroup of smaller particles that have an aerodynamic diameter of 2.5 micrometers or less (ARB 2006a).

The adverse health effects associated with PM_{10} depend on the specific composition of the particulate matter. For example, health effects may be associated with metals, polycyclic aromatic hydrocarbons (PAH), and other toxic substances adsorbed onto fine particulate matter, which is referred to as the piggybacking effect, or with fine dust particles of silica or asbestos. Generally, adverse health effects associated with PM_{10} may result from both short-term and long-term exposure to elevated concentrations and may include breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, alterations to the immune system, carcinogenesis, and premature death (EPA 2007). $PM_{2.5}$ poses an increased health risk because the particles can deposit deep in the lungs and may contain substances that are particularly harmful to human health.

Direct emissions of PM_{10} have remained relatively unchanged between 1975 and 2005 and are projected to remain unchanged through 2020. PM_{10} emissions in the SVAB are dominated by emissions from areawide sources, primarily fugitive dust from vehicle travel on unpaved and paved roads, waste burning, and residential fuel combustion. Direct emissions of $PM_{2.5}$ decreased from 1975 to 2005 and are projected to continue decreasing through 2020. $PM_{2.5}$ emissions in the SVAB are dominated by emissions from areawide sources, primarily fugitive dust from vehicle travel on unpaved and paved roads, waste burning, and residential fuel combustion (ARB 2006a).

Lead

Lead 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, as discussed in detail below, 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.

Lead is a highly toxic metal that was used for many years in products found in and around our homes. Lead may cause a range of health effects, from behavioral problems and learning disabilities, to seizures and death. Young children under six years old are the most at risk due to their stage of development. Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, 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. EPA banned the use of leaded gasoline in highway vehicles in December 1995 (EPA 2007).

As a result of EPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector have declined dramatically (95% between 1980 and 1999), and levels of lead in the air decreased by 94% between 1980 and 1999. Transportation sources, primarily airplanes, now contribute only 13% of lead emissions. A recent National Health and Nutrition Examination Survey reported a 78% decrease in the levels of lead in people's blood between 1976 and 1991. This dramatic decline can be attributed to the move from leaded to unleaded (EPA 2007).

The decrease in lead emissions and ambient lead concentrations over the past 25 years is California's most dramatic success story. The rapid decrease in lead concentrations can be attributed primarily to phasing out the lead in gasoline. This phase-out began during the 1970s, and subsequent ARB regulations have virtually eliminated all lead from gasoline now sold in California. All areas of the state are currently designated as attainment for the state lead standard (EPA does not designate areas for the national lead standard). Although the ambient lead standards are no longer violated, lead emissions from stationary sources still pose "hot spot" problems in some areas. As a result, ARB identified lead as a toxic air contaminant.

Emissions Inventory

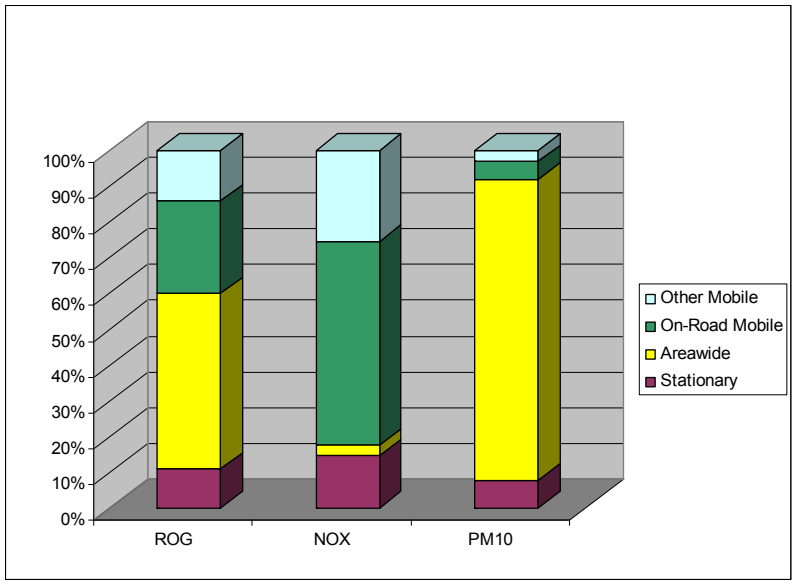
Table 4.4-1 summarizes emissions of criteria air pollutants within Stanislaus County for various source categories. According to Stanislaus County's emissions inventory, mobile sources are the largest contributor to the estimated annual average air pollutant levels of NO_X accounting for approximately 82% of the total emissions.

Mobile sources also account for approximately 40% of the total ROG emissions for the County. Areawide sources account for approximately 84% of the County's total PM_{10} emissions (see also Exhibit 4.4-1).

Table 4.4-1
Summary of 2006 Estimated Emissions Inventory for Stanislaus County

Source Type/Category	Estimated Annual Average Emissions (Tons per Day)		
	ROG	NO_X	PM_{10}
Stationary Sources			
Fuel Combustion	0.1	8.1	0.2
Waste Disposal	0.3	-	0
Cleaning and Surface Coating	2.6	-	0
Petroleum Production and Marketing	0.8	-	-
Industrial Processes	0.9	0.4	2.0
Subtotal (Stationary Sources)	4.7	8.5	2.2
Areawide Sources			
Solvent Evaporation	6.7	-	-
Miscellaneous Processes	14.8	1.7	24.2
Subtotal (Areawide Sources)	21.5	1.7	24.2
Mobile Sources			
On-Road Motor Vehicles	11.4	33.0	1.4
Other Mobile Sources	6.3	14.7	0.9
Subtotal (Mobile Sources)	17.7	47.7	2.3
Grand Total for Stanislaus County	**43.9**	**57.9**	**28.7**

Notes:
ROG = reactive organic gases; CO = carbon monoxide; NO_X = oxides of nitrogen; SO_X = oxides of sulfur; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter
"-" = less than 0.1 Ton per day.
Source: ARB 2007d



Source: ARB 2007d

Stanislaus County 2006 Emissions Inventory Data **Exhibit 4.4-1**

MONITORING STATION DATA AND ATTAINMENT AREA DESIGNATIONS

Criteria air pollutant concentrations are measured at several monitoring stations in the SJVAB. Measurements recorded at the Modesto-14th Street Station are considered representative of the Planning Area for these pollutants. Table 4.4-2 summarizes the air quality data from this monitoring station for the most recent 3 years, 2004 through 2006.

Table 4.4-2
Summary of Annual Ambient Air Quality Data (2004–2006) – Modesto-14th Street Station[1]

	2004	2005	2006
Ozone			
Maximum concentration (1-hr/8-hr, ppm)	0.104/0.084	0.115/0.094	0.120/0.097
Number of days state standard exceeded (1-hr)	2	15	14
Number of days national standard exceeded (1-hr/8-hr)	0/0	0/6	0/8
Nitrogen Dioxide (NO_2)			
Maximum concentration (1-hr, ppm)	0.065	0.072	-
Number of days state standard exceeded (1-hr)	0	0	-
Annual Average (ppm)	0.015	0.014	-
Fine Particulate Matter ($PM_{2.5}$)			
Maximum concentration ($\mu g/m^3$)	67.3	89.2	72.8
Number of days national standard exceeded	0	1	1
Respirable Particulate Matter (PM_{10})			
Maximum concentration ($\mu g/m^3$)	79.0	97.0	102.0
Number of days state standard exceeded	6	9	8
Number of days national standard exceeded	0	0	0

Where,
ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter
- There was insufficient (or no) data available to determine the value.

Sources: ARB 2007e

Both ARB and EPA use this type of monitoring data to designate areas according to attainment status for criteria air pollutants established by the agencies. The purpose of these designations is to identify those areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are nonattainment, attainment, and unclassified. Unclassified is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards. In addition, the California designations include a subcategory of the nonattainment designation, called nonattainment-transitional. The nonattainment-transitional designation is given to nonattainment areas that are progressing and nearing attainment. The most current attainment designations for the Stanislaus County portion of the SJVAB are shown in Table 4.4-3 for each criteria air pollutant. As noted, the Planning Area is in nonattainment for ozone and particulate matter (both PM_{10} and $PM_{2.5}$).

EXISTING AIR QUALITY—TOXIC AIR CONTAMINANTS

Concentrations of TACs are also used as indicators of ambient air quality conditions. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to

human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

According to the 2006 edition of the California Almanac of Emissions and Air Quality (ARB 2006a), the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being PM from diesel-fueled engines (diesel PM). Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present.

Unlike the other TACs, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. However, ARB has made preliminary concentration estimates based on a PM exposure method. This method uses ARB emissions inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of diesel PM. In addition to diesel PM, benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, *para*-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene pose the greatest existing ambient risk, for which data are available, in California.

Diesel PM poses the greatest health risk among these 10 TACs mentioned above. Based on receptor modeling techniques, ARB estimated the diesel PM health risk in 2000 to be 390 excess cancer cases per million people in the SJVAB. Since 1990, the diesel PM's health risk in the SJVAB has been reduced by 50%. Overall, levels of most TACs have gone down since 1990 except for *para*-dichlorobenzene and formaldehyde (ARB 2006a).

Existing sources in the Planning Area include mobile-source emissions from surrounding freeways, dry cleaning establishments, gasoline stations, and restaurants with charbroilers. According to ARB, there are no major existing stationary sources of TACs near Riverbank (ARB 2007f, ARB 2007g).

EXISTING AIR QUALITY – ODORS

Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell very minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor and in fact an odor that is offensive to one person may be perfectly acceptable to another (e.g., fast food restaurant). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word strong to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

Table 4.4-3
Ambient Air Quality Standards and Stanislaus County Attainment Status Designations

Pollutant	Averaging Time	California		National Standards[1]		
		Standards[2,3]	Attainment Status[4]	Primary[3,5]	Secondary[3,6]	Attainment Status[7]
Ozone	1-hour	0.09 ppm (180 µg/m^3)	N (Severe)	-[9]	-	-
	8-hour	0.07 ppm[8] (137 µg/m^3)	–	0.08 ppm (157 µg/m^3)	Same as Primary Standard	N(Serious)
Carbon Monoxide (CO)	1-hour	20 ppm (23 mg/m^3)	A	35 ppm (40 mg/m^3)	–	U/A
	8-hour	9 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)		
Nitrogen Dioxide (NO_2)[11]	Annual Arithmetic Mean	0.030 ppm (56 µg/m^3)	–	0.053 ppm (100 µg/m^3)	Same as Primary Standard	U/A
	1-hour	0.18 ppm (338 µg/m^3)	A	–		–
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	–	–	0.030 ppm (80 µg/m^3)	–	
	24-hour	0.04 ppm (105 µg/m^3)	A	0.14 ppm (365 µg/m^3)	–	U
	3-hour	–	–	–	0.5 ppm (1300 µg/m^3)	
	1-hour	0.25 ppm (655 µg/m^3)	A	–	–	–
Respirable Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	N(Serious)	-[12]	Same as Primary Standard	N(Serious)
	24-hour	50 µg/m^3		150 µg/m^3		
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 µg/m^3	N	15 µg/m^3	Same as Primary Standard	N
	24-hour	–	–	35 µg/m^3		
Lead[10]	30-day Average	1.5 µg/m^3	A	–	–	–
	Calendar Quarter	–	–	1.5 µg/m^3	Same as Primary Standard	
Sulfates	24-hour	25 µg/m^3	A	**No National Standards**		
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m^3)	U			
Vinyl Chloride[10]	24-hour	0.01 ppm (26 µg/m^3)	U/A			

Table 4.4-3
Ambient Air Quality Standards and Stanislaus County Attainment Status Designations

Pollutant	Averaging Time	California		National Standards [1]		
		Standards [2,3]	Attainment Status [4]	Primary [3,5]	Secondary [3,6]	Attainment Status [7]
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			

[1] 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 PM_{10} 24-hour standard is attained when 99% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. The $PM_{2.5}$ 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact EPA for further clarification and current federal policies.

[2] California standards for ozone, CO (except Lake Tahoe), SO_2 (1- and 24-hour), NO_2, 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.

[3] Concentration expressed first in units in which it was promulgated [i.e., parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$)]. 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 refers to ppm by volume, or micromoles of pollutant per mole of gas.

[4] 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.

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

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

[7] 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.

[8] This concentration effective May 17, 2006.

[9] The 1-hour ozone NAAQS was revoked on June 15, 2005..

[10] 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 these pollutants.

[11] The CAAQS were amended on February 22, 2007, to lower the 1-hour standard to 0.18 ppm and establish a new annual standard of 0.030 ppm. These changes become effective after regulatory changes are submitted and approved by the Office of Administrative Law, expected later this year.

[12] Because of a lack of evidence linking health problems to long-term exposure to coarse particle pollution, EPA revoked the annual PM_{10} standard on September 21, 2006.

Source: SJVAPCD 2007a; ARB 2007a, 2007b

Existing sources of odors in the Planning Area include agricultural operations and the Riverbank Waste Water Treatment Facility (WWTF). The California Fruit & Tomato Kitchen food processing plant, which may have been considered a source of odors, has closed. Minor sources of odors include restaurants, coffee shops, and other urban land uses.

EXISTING AIR QUALITY – GREENHOUSE GASES AND GLOBAL CLIMATE CHANGE

Various gases in the earth's atmosphere, classified as atmospheric GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space. A portion of the radiation is absorbed by the earth's surface, and a smaller portion of this radiation is reflected back toward space. The earth emits this radiation, which was initially absorbed, back to space, but the properties of the radiation have changed from high-frequency solar radiation to lower frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. The earth has a much lower temperature than the sun; therefore, the earth emits lower frequency radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the Greenhouse Effect, is responsible for maintaining a habitable climate. Without the Greenhouse Effect, Earth would not be able to support life as we know it.

Prominent GHGs contributing to the Greenhouse Effect are carbon dioxide (CO_2), methane (CH_4), ozone, nitrous oxide, water vapor, hydrofluorocarbons, chlorofluorocarbons, and sulfur hexafluoride. Methane, a highly potent GHG, results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) associated with agricultural practices and landfills. CO_2 sinks, or reservoirs, include sequestration by vegetation or dissolution into the ocean, among other processes.

Human-caused emissions of these GHGs (with the exception of water vapor) in excess of natural ambient concentrations are responsible for intensifying the Greenhouse Effect and have led to a trend of warming of the earth's climate, known as global climate change or global warming (Ahrens 2003). Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors (CEC 2006a).

In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (CEC 2006a). Emissions of CO_2 are byproducts of fossil fuel combustion, and are the largest portion of human-caused GHG emissions by mass.

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and TACs, which are pollutants of regional and local concern, respectively. California is the 12th to 16th largest emitter of CO_2 in the world (CEC 2006a). California produced 499 million gross metric tons of carbon dioxide equivalent in 2004 (ARB 2007i). Carbon dioxide equivalent is 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 dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, as described in Appendix C, "Calculation References," of the General Reporting Protocol of the California Climate Action Registry (2007), 1 ton of CH_4 has the same contribution to the Greenhouse Effect as approximately 21 tons of CO_2. Therefore, CH_4 is a much more potent GHG than CO_2. Expressing emissions in carbon dioxide equivalent takes the contributions of all GHG emissions to the Greenhouse Effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted.

Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2004, accounting for 40.7% of total GHG emissions in the state (CEC 2006a). This sector was followed by the electric power sector (including both in-state and out-of-state sources) (22.2%) and the industrial sector (20.5%) (CEC 2006a).

According to the Intergovernmental Panel on Climate Change (IPCC), which was established in 1988 by the World Meteorological Organization and the United Nations Environment Programme, global average temperature is expected to increase by 3–7°F by the end of the century, depending on future GHG emission scenarios (IPCC 2007).

Resource areas other than air quality and atmospheric temperature would be indirectly affected by the accumulation of GHG emissions. For example, an increase in the global average temperature is expected to result in a decreased volume of precipitation falling as snow in California and an overall reduction in snowpack in the Sierra Nevada. 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. According to the CEC (2006b), the snowpack portion of the water supply could potentially decline by 30–90% by the end of the 21st century. A study cited in a report by the California Department of Water Resources (DWR) estimates that approximately 50% of the statewide snowpack will be lost by the end of the century (Knowles and Cayan 2002). Although future estimates are uncertain, it is obvious that this phenomenon could lead to significant challenges in securing an adequate water supply for a growing population. An increase in precipitation falling as rain rather than snow could also lead to increased potential for floods because water that would normally be held in the Sierra Nevada snowpack until spring could flow into the Central Valley concurrently with winter storm events. This scenario would place more pressure on California's levee/flood control system (DWR 2006).

Another outcome of global climate change is sea level rise. Sea level rose approximately 7 inches during the last century (CEC 2006b). Sea level is predicted to rise an additional 7–22 inches by 2100, depending on the future levels of GHG emissions (IPCC 2007). If this occurs, effects could include increased coastal flooding, saltwater intrusion (especially a concern in the low-lying Sacramento–San Joaquin River Delta, where pumps delivering potable water could be threatened), and disruption of wetlands (CEC 2006b). As the climate throughout California changes over time, the ranges of various plant and wildlife species could shift or be reduced, depending on the favored temperature and moisture regimes of each species. Species could become extinct, or be extirpated from the state if suitable conditions are no longer available.

4.4.3 REGULATORY SETTING

Air quality within Stanislaus County is regulated by the U.S. Environmental Protection Agency (EPA), California Air Resources Board (ARB), and SJVAPCD. Each of these agencies develops rules, regulations, policies, and/or goals to comply with applicable legislation. Although EPA regulations may not be superseded, both state and local regulations may be more stringent.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

At the federal level, EPA has been charged with implementing national air quality programs. EPA's air quality mandates are drawn primarily from the federal Clean Air Act (CAA), which was enacted in 1970. The most recent major amendments made by Congress were in 1990.

The CAA required EPA to establish national ambient air quality standards (NAAQS). As shown in Table 4.4-3, EPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable and fine particulate matter (PM_{10} and $PM_{2.5}$), and lead. The primary standards protect the public health and the secondary standards protect public welfare. The CAA also required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The federal Clean Air Act Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA has responsibility to review all state SIPs to determine conformation to the mandates of the CAA, and the amendments thereof, and determine if implementation will achieve air quality goals. If EPA determines a SIP to be inadequate, a Federal

Implementation Plan (FIP) may be prepared for the nonattainment area that imposes additional control measures. Failure to submit an approvable SIP or to implement the plan within the mandated timeframe may result in sanctions being applied to transportation funding and stationary air pollution sources in the air basin.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

ARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, required ARB to establish California ambient air quality standards (CAAQS) (Table 4.4-3). ARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above mentioned criteria air pollutants. In most cases the CAAQS are more stringent than the NAAQS. Differences in the standards are generally explained by the health effects studies considered during the standard setting process and the interpretation of the studies. In addition, the CAAQS incorporate a margin of safety to protect sensitive individuals.

The CCAA requires that all local air districts in the state endeavor to achieve and maintain the CAAQS by the earliest practical date. The act specifies that local air districts should focus particular attention on reducing the emissions from transportation and area-wide emission sources, and provides districts with the authority to regulate indirect sources.

Other ARB responsibilities include, but are not limited to, overseeing local air district compliance with California and federal laws, approving local air quality plans, submitting SIPs to EPA, monitoring air quality, determining and updating area designations and maps, and setting emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels. There are 15 nonattainment areas for the national ozone standard and two nonattainment areas for the $PM_{2.5}$ standard. The Ozone SIP and $PM_{2.5}$ SIP must be adopted and sent to EPA by June 2007 and April 2008, respectively. The SIP must show how each area will attain the federal standards. To do this, the SIP will identify the amount of pollution emissions that must be reduced in each area to meet the standard and the emission controls needed to reduce the necessary emissions.

ARB and local air pollution control districts are currently developing plans for meeting new NAAQS for ozone and $PM_{2.5}$. The Draft Statewide Air Quality Plan was released in April 2007 (ARB 2007c).

REGIONAL AND LOCAL PLANS, POLICIES, REGULATIONS, AND LAWS

San Joaquin Valley Air Pollution Control District

The SJVAPCD seeks to improve air quality conditions in Stanislaus County 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 SJVAPCD includes the preparation of plans and programs for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations, and issuance of permits for stationary sources. The SJVAPCD also inspects stationary sources, responds to citizen complaints; monitors ambient air quality and meteorological conditions, and implements other programs and regulations required by the CAA, CAAA, and the CCAA.

In January of 2002, the SJVAPCD released a revision to the previously adopted guidelines document. This revised Guide for Assessing and Mitigating Air Quality Impact (GAMAQI) (SJVAPCD 2002) is an advisory document that provides lead agencies, consultants, and project applicants with uniform procedures for addressing air quality in environmental documents. The guide contains the following applicable components:

- Criteria and thresholds for determining whether a project may have a significant adverse air quality impact;
- Specific procedures and modeling protocols for quantifying and analyzing air quality impacts;

- Methods available to mitigate air quality impacts;
- Information for use in air quality assessments that will be updated more frequently such as air quality data, regulatory setting, climate, and topography.

Air Quality Plans

The SJVAPCD prepares and submits Air Quality Attainment Plans (AQAPs) in compliance with the requirements set forth in the CCAA. The CCAA also requires a triennial assessment of the extent of air quality improvements and emission reductions achieved through the use of control measures. As part of the assessment, the attainment plans must be reviewed and, if necessary, revised to correct for deficiencies in progress and to incorporate new data or projections. As a nonattainment area, the region is also required to submit rate-of-progress milestone evaluations in accordance with the CAAA. These milestone reports include compliance demonstrations that the requirements have been met for the nonattainment area. The air quality attainment plans and reports present comprehensive strategies to reduce ROG, NO_X, and PM_{10} emissions from stationary, area, mobile, and indirect sources. Such strategies include the adoption of rules and regulations; enhancement of CEQA participation; implementation of a new and modified indirect source review program; adoption of local air quality plans; and stationary-, mobile-, and indirect-source control measures. Table 4.4-4 summaries SJVAPCD's most current AQAPs.

Table 4.4-4
Summary of San Joaquin Valley Air Pollution Control District Air Quality Plans

Pollutant	Plan Title	Date	Status
Ozone	Extreme Ozone Attainment Demonstration Plan, San Joaquin Valley Air Basin Plan Demonstrating Attainment Of Federal 1-hour Ozone Standards	October 2004, Amended October 2005	Adopted by SJVAPCD and ARB in October 2004. Submitted to EPA in November 2004[1].
	Draft Staff Report, 8-hour Ozone Reasonably Available Control Technology – State Implementation Plan (RACT SIP) Analysis	April 2006	Adopted by SJVAPCD in August 2006.
	8-hour Ozone Attainment Demonstration Plan for the San Joaquin Valley	April 2007	Adopted by SJVAPCD in April 2007. Submitted to EPA in June 2007.
Carbon Monoxide (CO)	2004 Revision to the California State Implementation Plan for Carbon Monoxide Updated Maintenance Plan For Ten Federal Planning Areas	July 2004	Adopted by ARB July 2004.
Respirable and Fine Particulate Matter (PM_{10} and $PM_{2.5}$)	2006 PM_{10} Plan. San Joaquin Valley Strategy for Meeting Federal Air Quality Requirements for Particulate Matter 10 Microns and Smaller	February 2006	Adopted by SJVAPCD in February 2006. Submitted to EPA.
	$PM_{2.5}$ Plan	-	In progress. Due to EPA April 2008.
	Natural Events Action Plan for High Wind Events in the San Joaquin Valley	February 2006	Adopted by SJVAPCD in February 2006. Submitted to ARB.

[1] Effective June 15, 2005, EPA revoked in full the national 1-hour ozone ambient air quality standard, including associated designations and classifications.

Source: SJVAPCD 2005, 2006a, 2006b, 2007a, 2007b

Rules and Regulations

As mentioned above, the SJVAPCD adopts rules and regulations. All projects are subject to SJVAPCD rules and regulations in effect at the time of construction. Specific rules applicable to the construction of the proposed project may include, but are not limited to:

- Rule 2201 New and Modified Stationary Source Review
- Rule 2280 Portable Equipment Registration
- Rule 3135 Dust control Plan Fee
- Rule 4002 National Emission Standards for Hazardous Air Pollutants
- Rule 4101 Visible Emissions
- Rule 4102 Nuisance
- Rule 4103 Open Burning
- Rule 4601 Architectural Coatings
- Rule 4641 Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations
- Rule 4901 Wood Burning Fireplaces and Wood Burning Heaters
- Regulation VIII Fugitive PM_{10} Prohibitions includes the following rules:
  - *Rule 8021*: Construction, demolition, excavation, and extraction; and other earthmoving activities;
  - *Rule 8031*: Handling and storage of bulk materials;
  - *Rule 8041*: Trackout/Carryout of dirt and other materials onto paved public roads;
  - *Rule 8051*: Open Areas;
  - *Rule 8061*: Construction and use of paved and unpaved roads; and
  - *Rule 8071*: Use of unpaved vehicle and/or equipment traffic areas; and
  - *Rule 8081*: Agricultural Sources.

- All proposed development projects within the plan area will comply with SJVAPCD's Regulation VIII-Fugitive Dust Prohibitions and implement all applicable control measures, as required by law. Regulation VIII contains, but not limited to, the following required control measures.

  - Pre-water site sufficient to limit visible dust emissions (VDE) to 20% opacity.

  - Phase work to reduce the amount of disturbed surface area at any one time.

  - During active operations, apply water or chemical/organic stabilizers/suppressants sufficient to limit VDE to 20% opacity.

  - During active operations, construct and maintain wind barriers sufficient to limit VDE to 20% opacity.

  - During active operations, apply water or chemical/organic stabilizers/suppressants to unpaved haul/access roads and unpaved vehicle/equipment traffic areas sufficient to limit VDE to 20% opacity and meet the conditions of a stabilized unpaved road surface.

  - An owner/operator shall limit the speed of vehicles traveling on uncontrolled unpaved access/haul roads within construction sites to a maximum of 15 miles per hour.

  - An owner/operator shall post speed limit signs that meet State and Federal Department of Transportation standards at each construction site's uncontrolled unpaved access/haul road entrance. At a minimum, speed limit signs shall also be posted at least every 500 feet and shall be readable in both directions of travel along uncontrolled unpaved access/haul roads.

  - When handling bulk materials, apply water or chemical/organic stabilizers/suppressants sufficient to limit VDE to 20% opacity.

- When handling bulk material, construct and maintain wind barriers sufficient to limit VDE to 20% opacity and with less than 50% porosity.

- When storing bulk materials, comply with the conditions for a stabilized surface as listed above.

- When storing bulk materials, cover bulk materials stored outdoors with tarps, plastic, or other suitable material and anchor in such a manner that prevents the cover from being removed by wind action.

- When storing bulk materials construct and maintain wind barriers sufficient to limit VDE to 20% opacity and with less than 50% porosity. If utilizing fences or wind barriers, apply water or chemical/organic stabilizers/suppressants to limit VDE to 20% opacity or utilize a 3-sided structure with a height at least equal to the height of the storage pile and with less than 50% porosity.

- Limit vehicular speed while traveling on the work site sufficient to limit VDE to 20% opacity.

- Load all haul trucks such that the freeboard is not less than 6 inches when material is transported across any paved public access road sufficient to limit VDE to 20% opacity.

- Apply water to the top of the load sufficient to limit VDE to 20% opacity.

- Cover haul trucks with a tarp or other suitable cover.

- Clean the interior of the cargo compartment or cover the cargo compartment before the empty truck leaves the site; and prevent spillage or loss of bulk material from holes or other openings in the cargo compartment's floor, sides, and/or tailgate; and load all haul trucks such that the freeboard is not less than 6 inches when material is transported on any paved public access road, and apply water to the top of the load sufficient to limit VDE to 20% opacity; or cover haul trucks with a tarp or other suitable cover.

- Owners/operators shall remove all visible carryout and trackout at the end of each workday.

- An owner/operator of any site with 150 or more vehicle trips per day, or 20 or more vehicle trips per day by vehicles with three or more axles shall take the actions for the prevention and mitigation of carryout and trackout.

- Within urban areas, an owner/operator shall prevent carryout and trackout, or immediately remove carryout and trackout when it extends 50 feet or more from the nearest unpaved surface exit point of a site.

- Within rural areas, construction projects 10 acres or more in size, an owner/operator shall prevent carryout and trackout, or immediately remove carryout and trackout when it extends 50 feet or more from the nearest unpaved surface exit point of a site.

- For sites with paved interior roads, an owner/operator shall prevent and mitigate carryout and trackout.

- Cleanup of carryout and trackout shall be accomplished by manually sweeping and picking-up; or operating a rotary brush or broom accompanied or preceded by sufficient wetting to limit VDE to 20% opacity; or operating a PM_{10}-efficient street sweeper that has a pick-up efficiency of at least 80%; or flushing with water, if curbs or gutters are not present and where the use of water would not result as a source of trackout material or result in adverse impacts on storm water drainage systems or violate any National Pollutant Discharge Elimination System permit program.

- An owner/operator shall submit a Dust Control Plan to the Air Pollution Control Officer (APCO) prior to the start of any construction activity on any site that will include 10 acres or more of disturbed surface

area for residential developments, or 5 acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. Construction activities shall not commence until the APCO has approved or conditionally approved the Dust Control Plan. An owner/operator shall provide written notification to the APCO within 10 days prior to the commencement of earthmoving activities via fax or mail. The requirement to submit a dust control plan shall apply to all such activities conducted for residential and non-residential (e.g., commercial, industrial, or institutional) purposes or conducted by any governmental entity.

- Rule 9510 Indirect Source Review:

  - All development projects within the plan area will comply with SJVAPCD's Indirect Source Review (ISR) rule, as required by law. This rule shall apply to any applicant that seeks to gain a final discretionary approval for a development project, or any portion thereof, which upon full buildout would include 50 residential units, 2,000 square feet of commercial space, or 25,000 square feet of light industrial space, as well as similar minima (9,000 square feet) for other land use types. Thus, most, if not all projects that would be part of the plan area would be subject to requirements set forth in the ISR rule. Any applicant subject to this rule shall submit an Air Impact Assessment (AIA) application no later than applying for a final discretionary approval with the public agency. The AIA application shall be submitted on a form provided by the SJVAPCD and contain at minimum, the applicant's name and address, detailed project description, on-site emission reduction checklist, monitoring and reporting schedule, and an AIA. The AIA shall quantify construction and operational NO_X and PM_{10} emissions associated with the project. This shall include the estimated construction and operational baseline emissions, and the mitigated emissions for each applicable pollutant for the development project, or each phase thereof, and shall quantify the off-site fee, if applicable. General mitigation requirements, as contained in the ISR rule, include the following:

    - Exhaust emissions for construction equipment greater than 50 horsepower used or associated with the development project shall be reduced by 20% of the total NO_X and by 45% of the total PM_{10} emissions from the statewide average as estimated by ARB.

    - An applicant may reduce construction emissions on-site by using less polluting construction equipment, which can be achieved by utilizing add-on controls, cleaner fuels, or newer lower emitting equipment.

    - Applicants shall reduce 33.3%, of the project's operational baseline NO_X emissions over a period of ten years as quantified in the approved AIA.

    - Applicants shall reduce 50% of the project's operational baseline PM_{10} emissions over a period of ten years as quantified in the approved AIA.

    - The requirements listed above can be met through any combination of on-site emission reduction measures or off-site fees.

TOXIC AIR CONTAMINANTS

Air quality regulations also focus on TACs, or in federal parlance, hazardous air pollutants (HAPs). In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, there is no threshold level below which adverse health impacts may not be expected to occur. This contrasts with the criteria air pollutants for which acceptable levels of exposure can be determined and for which the ambient standards have been established (Table 4.4-3). Instead, EPA and ARB regulate HAPs and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available control

technology for toxics (MACT and BACT) to limit emissions. These in conjunction with additional rules set forth by the SJVAPCD establish the regulatory framework for TACs.

Federal Hazardous Air Pollutant Programs

EPA has programs for identifying and regulating HAPs. Title III of the CAAA directed EPA to promulgate national emissions standards for HAPs (NESHAP). The NESHAP may differ for major sources than for area sources of HAPs. Major sources are defined as stationary sources with potential to emit more than 10 tons per year (TPY) of any HAP or more than 25 TPY of any combination of HAPs; all other sources are considered area sources. The emissions standards are to be promulgated in two phases. In the first phase (1992–2000), EPA developed technology-based emission standards designed to produce the maximum emission reduction achievable. These standards are generally referred to as requiring MACT. For area sources, the standards may be different, based on generally available control technology. In the second phase (2001–2008), EPA is required to promulgate health risk–based emissions standards where deemed necessary to address risks remaining after implementation of the technology-based NESHAP standards.

The CAAA also required EPA to issue vehicle or fuel standards containing reasonable requirements that control toxic emissions, at a minimum to benzene and formaldehyde. Performance criteria were established to limit mobile-source emissions of toxics, including benzene, formaldehyde, and 1,3-butadiene. In addition, Section 219 required the use of reformulated gasoline in selected areas with the most severe ozone nonattainment conditions to further reduce mobile-source emissions.

State and Local Toxic Air Contaminant Programs

TACs in California are primarily regulated through the Tanner Air Toxics Act (Assembly Bill [AB] 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). AB 1807 sets forth a formal procedure for ARB to designate substances as TACs. This includes research, public participation, and scientific peer review before ARB can designate a substance as a TAC. To date, ARB has identified over 21 TACs, and adopted EPA's list of HAPs as TACs. Most recently, diesel PM was added to the ARB list of TACs.

Once a TAC is identified, ARB 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 BACT to minimize emissions.

The Hot Spots Act 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.

ARB 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, ARB adopted a new public transit bus fleet rule and emission standards for new urban buses. These new 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 with 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. Over time, the replacement of older vehicles will result in a vehicle fleet that produces substantially less TACs than under current conditions. Mobile-source emissions of TACs (e.g., benzene, 1-3-butadiene, diesel PM) have been reduced significantly over the last decade, and will be reduced further in California through a progression of regulatory measures [e.g., Low Emission Vehicle (LEV)/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies. With implementation of ARB's Risk Reduction Plan, it is expected that diesel PM concentrations will be reduced by 75% in 2010 and 85% in 2020

from the estimated year 2000 level. Adopted regulations are also expected to continue to reduce formaldehyde emissions from cars and light-duty trucks. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced.

ARB published the Air Quality and Land Use Handbook: A Community Health Perspective, which provides guidance concerning land use compatibility with TAC sources (ARB 2005). While not a law or adopted policy, the handbook offers advisory recommendations for the siting of sensitive receptors near uses associated with TACs such as freeways and high-traffic roads, commercial distribution centers, rail yards, ports, refineries dry cleaners, gasoline stations, and industrial facilities to help keep children and other sensitive populations out of harm's way. A number of comments on the Handbook were provided to ARB by air districts, other agencies, real estate representatives, and others. The comments included concern over whether ARB was playing a role in local land use planning, the validity of relying on static air quality conditions over the next several decades in light of technological improvements, and support for providing information that can be used in local decision making.

At the local level, air pollution control or management districts may adopt and enforce ARB control measures. Under SJVAPCD regulations II and VII, all sources that possess the potential to emit TACs are required to obtain permits from the district. 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 SJVAPCD limits emissions and public exposure to TACs through a number of programs. The SJVAPCD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors.

Sources that require a permit are analyzed by the SJVAPCD (e.g., health risk assessment) based on their potential to emit toxics. If it is determined that the project would emit toxics in excess of SJVAPCD's threshold of significance for TACs, as identified below, sources have to implement the best available control technology for TACs (T-BACT) in order to reduce emissions. If a source cannot reduce the risk below the threshold of significance even after T-BACT has been implemented, the SJVAPCD will deny the permit required by the source. This helps to prevent new problems and reduces emissions from existing older sources by requiring them to apply new technology when retrofitting with respect to TACs. It is important to note that SJVAPCD's air quality permitting process applies to stationary sources; and properties, which are exposed to elevated levels of non-stationary type sources of TACs, and the non-stationary type sources themselves (e.g., on-road vehicles) are not subject to air quality permits. Further, due to feasibility and practicality reasons, mobile sources (cars, trucks, etc.) are not required to implement T-BACT, even if they do have the potential to expose adjacent properties to elevated levels of TACs. Rather, emissions controls on such sources (e.g., vehicles) are subject to regulations implemented on the state and federal level.

ODORS

The SJVAPCD has determined some common types of facilities that have been known to produce odors, including wastewater treatment facilities, chemical manufacturing plants, painting/coating operations, feed lots/dairies, composting facilities, landfills, and transfer stations. Because offensive odors rarely cause any physical harm and no requirements for their control are included in state or federal air quality regulations, the SJVAPCD has no rules or standards related to odor emissions other than its nuisance rule. Any actions related to odors are based on citizen complaints to local governments and the SJVAPCD. According to the SJVAPCD, significant odor problems occur when there is more than one confirmed complaint per year averaged over a 3-year period or when there are three unconfirmed complaints per year averaged over a 3-year period (SJVAPCD 2002).

Two situations increase the potential for odor problems. The first occurs when a new odor source is located near existing sensitive receptors. The second occurs when new sensitive receptors are developed near existing sources of odor. In the first situation, the SJVAPCD recommends operational changes, add-on controls, process changes, or buffer zones where feasible to address odor complaints. In the second situation, the potential conflict is considered significant if the project site is at least as close as any other site that has already experienced

significant odor problems related to the odor source. For projects locating near a source of odors where there is no nearby development that may have filed complaints, and for odor sources locating near existing sensitive receptors, the SJVAPCD requires the determination of potential conflict to be based on the distance and frequency at which odor complaints from the public have occurred in the vicinity of a similar facility (SJVAPCD 2002).

GREENHOUSE GAS EMISSIONS

Assembly Bill 32, the California Climate Solutions Act of 2006

In September 2006, Governor Arnold Schwarzenegger signed AB 32, the California Climate Solutions Act of 2006. AB 32 requires that statewide greenhouse gas (GHG) emissions be reduced to 1990 levels by 2020. This reduction will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs ARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then ARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires that ARB adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrives at the cap; institute a schedule to meet the emissions cap; and develop tracking, reporting, and enforcement mechanisms to ensure that the state achieves the reductions in GHG emissions necessary to meet the cap. AB 32 also includes guidance to institute emissions reductions in an economically efficient manner and conditions to ensure that businesses and consumers are not unfairly affected by the reductions.

There are no federal or local laws, regulations, or policies pertaining to GHG emissions.

4.4.4 SIGNIFICANCE THRESHOLDS

ANALYSIS METHODOLOGY

Emissions of short-term construction-related and long-term operation-related (i.e., regional and local) criteria air pollutants and precursors, odors, and TACs were assessed in accordance with SJVAPCD-recommended methodologies (SJVAPCD 2002, 2007a, 2007d).

Project-generated, construction-related emissions of criteria air pollutants (e.g., PM_{10}) and ozone precursors (ROG and NO_X) were assessed in accordance with SJVAPCD-recommended methods. Where quantification was required, emissions were modeled using the URBEMIS 2007 Version 9.2 computer model (ARB 2007h). Project-specific data (e.g., construction equipment types and number requirements, and maximum daily acreage disturbed) are not available at the General Plan level for modeling purposes. Therefore, modeling was based on SJVAPCD- recommended parameters for composition of the construction equipment fleet and architectural coating emission factors (SJVAPCD 2007d). Modeled construction-related emissions were compared with applicable SJVAPCD thresholds for determination of significance.

Operation-related regional emissions of criteria air pollutants and precursors (e.g. mobile- and area-sources) were also quantified using the URBEMIS 2007 Version 9.2 computer model (ARB 2007h). Modeling was based on buildout assumptions in the Riverbank General Plan update and vehicle trip generation information from the traffic analysis prepared for this project (KdAnderson 2007). The percentages of wood burning stoves, gas stoves, and homes with no hearth were adjusted based on the restrictions of SJVAPCD Rule 4901, Wood Burning Fireplaces and Wood Burning Stoves. Long-term stationary source emissions were qualitatively assessed in accordance with SJVAPCD-recommended methodologies. Modeled operation-related emissions were compared with applicable SJVAPCD thresholds for determination of significance.

At this time, SJVAPCD has not adopted a methodology for analyzing short-term construction-related emissions of TACs and does not recommend the completion of health risk assessments (HRAs) for such emissions, with a few exceptions (e.g., where construction phase is the only phase of a project) (Reed, pers. comm., 2007). Therefore, construction-related emissions of TACs were assessed qualitatively.

SJVAPCD has also not adopted a method for evaluating impacts associated with emissions of $PM_{2.5}$. However, because construction- and operation-related emissions of $PM_{2.5}$, by definition, would be a subset of PM_{10} emissions, SJVAPCD-recommended methodologies and mitigation measures for PM_{10} would also be relevant to emissions of $PM_{2.5}$.

Other air quality impacts (i.e., emissions of local CO, odors, and operation-related TACs) were assessed in accordance with ARB and SJVAPCD-recommended methodologies (SJVAPCD 2002 and 2007a, 2007d).

There is no available adopted or recommended methodology for evaluating GHG emissions from new urban development. In the case of this General Plan update, CO_2 emissions associated construction and operation were modeled using URBEMIS 2007 version 9.2. CO_2 emissions were used as a proxy for all GHG emissions associated with the project.

CO_2 emissions associated with vehicle miles traveled are the best indicator of GHGs associated with a land development project. However, it is important to note that other GHGs have a higher Global Warming Potential (GWP) than CO_2. For example, 1 pound of methane associated with off-site waste disposal or wastewater treatment processes from the project has an equivalent GWP of 23 pounds of CO_2 (CCAR 2006). In other words, as a GHG, methane is 23 times as efficient as CO_2. Nonetheless, emissions of other GHGs would be low relative to CO_2. It is important to note that CO_2 emissions from General Plan buildout may not necessarily be considered "new" emissions, given that the General Plan itself does not create "new" emitters (people) of GHGs. In other words, the General Plan does not create people, but facilitates their movement from one location to another. Therefore, the project would need to accommodate population in a way that allows for a lower rate of GHG generation to achieve the state's goals for greenhouse gas emissions, as described in the California Climate Solutions Act of 2006. The required rates are described later in this section in the impact analysis.

THRESHOLDS OF SIGNIFICANCE

For the purpose of this analysis, the following thresholds of significance, as identified by the State CEQA Guidelines (Appendix G) and the SJVAPCD have been used to determine whether implementation of the proposed project (the General Plan update) would result in significant air quality impacts. Based on Appendix G of the State CEQA Guidelines, an air quality impact is considered significant if implementation of the proposed project (the General Plan, in this case) under consideration would do any of the following:

- conflict with, or obstruct implementation of the applicable air quality plan,
- violate any air quality standard or contribute substantially to an existing or projected air quality violation,
- expose sensitive receptors to substantial pollutant concentrations, or
- create objectionable odors affecting a substantial number or people.

As stated in Appendix G, the significance of criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determinations. Thus, as contained in the GAMAQI (SJVAPCD 2002), implementation of the proposed project would result in significant air quality impacts if:

- All control measures in compliance with the requirements of Regulation VIII-Fugitive Dust Prohibition are not incorporated,

- Short-term construction-related emissions of ROG or NO_X exceed the SJVAPCD-recommended mass emissions threshold of 10 tons per year (TPY),

- Long-term operation-related regional emissions of ROG or NO_X exceed the SJVAPCD-recommended mass emissions threshold of 10 TPY,

- Construction- or operation-related (i.e., regional and local) emissions of criteria air pollutants or precursors violate or substantially contribute to a violation of the NAAQS and/or CAAQS (e.g., 8-hour CO standard of 9 ppm),

- Exposure of sensitive receptors to a substantial incremental increase in emissions of TACs that exceed 10 in 1 million for the carcinogenic risk (i.e., the risk of contracting cancer) and/or a noncarcinogenic Hazard Index (HI) of 1 for the Maximally Exposed Individual (MEI), as recommended in SJVAPCD's Guidance for Air Dispersion Modeling (SJVAPCD 2007e),

- General Plan buildout would locate receptors near an existing odor source where one confirmed complaint per year averaged over a three-year period, or three unconfirmed complaints per year averaged over a three-year period has been experienced by existing receptors as close as the project to the odor source; or by existing receptors in the vicinity of a similar facility considering distance, frequency, and odor control(where there is currently no nearby development and for proposed odor sources near existing receptors),

- The location of a new school is within ¼ mile of any potential source of TAC emissions and the requirements of Section 39003 of the Education Code and Section 21151.4 of the Public Resources Code (PRC) are not met,

- A location of a facility is within 1,000 feet of a school and the requirements of Section 42301.6 of the California Health and Safety Code (CH&SC) are not met, or

- The location of a new school is within 500 feet of a freeway or busy traffic corridor and the requirements of Section 17213 of the Education Code and Section 21151.8 of the PRC are not met.

In addition, the following thresholds of significance have been used to determine whether implementation of the General Plan update would result in significant impact with respect to global climate change. A global climate change impact is considered significant if implementation of the proposed project under consideration would do any of the following:

- Conflict with or obstruct state or local policies or ordinances established for the purpose of reducing greenhouse gas emissions, or

- Result in a considerable net increase in greenhouse gases.

With regard to emissions of GHGs, no air district in California, including the SJVAPCD, has identified a significance threshold for analyzing project-generated emissions or a methodology for analyzing air quality impacts related to global warming as of the writing of this document. However, by adoption of AB 32, California has identified that global climate change is a serious environmental issue, and has identified GHG reduction goals.

To meet AB 32 goals, California would need to generate less GHG than current levels. It is recognized, however, that for most development projects there is no simple metric available to determine if a single project would substantially increase or decrease overall emission levels of GHGs.

While AB 32 focuses on stationary sources of emissions, the primary objective of AB 32 is to reduce California's contribution to global warming by reducing California's total annual production emissions. The impact that emissions of GHGs have on global climate change is not dependent on whether they were generated by stationary, mobile, or area sources; or, whether they were generated in one region or another.

Emissions of GHGs are dispersed throughout the atmosphere worldwide, and the effects of climate change are borne globally, unlike emissions of criteria air pollutants, which have regional and/or local impacts on air quality. The extent to which emissions of GHGs attributable to the project can be treated as "a net increase" is uncertain. For example, if a proposed dwelling unit becomes occupied by a family that relocates from the City of Modesto, and the residents' employers remain located in Modesto, it is probable that a net increase in GHGs could be attributed to this family's decision to move to the plan area. Alternatively, if a proposed dwelling unit becomes occupied by a family moving to California from Wyoming (where CO_2 emissions/capita is approximately 138 TPY/person [CEC 2006b]), it is likely that this household would experience a net decrease in emissions of GHGs.

The legislation dealing with climate change in California (as well as international treaties and agreements on the subject) identifies goals for the **rate** of emissions of GHGs, relative to specific benchmark years. In the case of California, AB 32 requires 1990 GHG emission levels to be achieved by the year 2020, or about a 25% reduction from current emissions levels (ARB 2006b). Neither State legislation nor executive order suggests that California intends to limit population growth in order to reduce the state's GHG emission levels. *Therefore, the intent is to accommodate population growth in California, but achieve a lower rate of GHGs despite this larger population.*

The current statewide average per-capita rate of GHGs would need to be reduced substantially to comply with the targets established by AB 32. Generally, the level of mass emissions of GHGs generated by any single project is nominal when compared to the global inventory, or even the state inventory of emissions of GHGs. If a project is very large and has a comparatively high magnitude of associated emissions of GHGs emissions by *mass*, but generates a low *per capita* rate, the project helps California achieve its GHG emission reduction goals. On the other hand, many small projects that exceed 1990 *per capita* GHG emission rates would collectively impede California's efforts to address climate change. To reiterate, plans and projects that substantially reduce vehicle miles traveled per population or per employment compared to current normalized levels go toward California's legislative mandates, while projects and plans that continue current GHG emission *rates* inhibit state mandates. Please refer to the impact analysis presented below for more information.

4.4.5 IMPACTS AND MITIGATION MEASURES

IMPACT ANALYSIS

IMPACT 4.4-1 Generation of Short-Term Construction-Related Emissions of Criteria Air Pollutants and Precursors. *Project-generated, construction-related emissions of ROG and NO_X would exceed SJVAPCD's significance threshold of 10 TPY. In addition, with respect to construction-related emissions of PM_{10}, SJVAPCD-recommended control measures beyond compliance with Regulation VIII-Fugitive Dust Prohibition are not incorporated. Thus, construction- related emissions of criteria air pollutants and precursors could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations, especially considering the nonattainment status of Stanislaus County. As a result, this impact would be* ***significant.***

Construction-related emissions are described as "short term" or temporary in duration and have the potential to represent a significant impact with respect to air quality. General Plan buildout is dependent upon individual household decisions, employment opportunities, provision of services for housing and supporting commercial uses, land use decisions of the City and other public agencies, regional transportation planning decisions, the decisions of financial institutions related to development projects, and many other factors that are often grouped together under moniker "the market."

Planned phasing of General Plan buildout will be reviewed in relation to residential and revenue-generating employment uses, housing affordability, provisions and financing of infrastructure and public facilities, mechanisms for funding of ongoing service needs and overall coordination of phase improvements with previous and subsequent phases. Subsequent implementation projects and plans would continue to define phasing at a

detailed level and be reviewed by the City to ensure that development occurs in a logical manner consistent with General Plan policies, and that additional environmental review is conducted under CEQA, as needed.

Construction-related activities would result in emissions of criteria air pollutants (e.g., PM_{10}) and precursors (e.g., ROG and NO_X) from site preparation (e.g., excavation, grading, and clearing); off-road equipment, material delivery, and worker commute exhaust emissions; vehicle travel on paved and unpaved roads, and other miscellaneous activities (e.g., building construction, asphalt paving, application of architectural coatings, and trenching for utility installation).

EMISSIONS OF OZONE PRECURSORS

Emissions of ozone precursors are primarily associated with off-road construction equipment exhaust. Worker commute trips and other construction-related activities also contribute to short-term increases in such emissions.

Construction-related emissions of ROG and NO_X were modeled using the ARB-approved URBEMIS 2007 Version 9.2 computer program (ARB 2007h) as recommended by the SJVAPCD (SJVAPCD 2002). URBEMIS is designed to model construction emissions for land use development projects and allows for the input of project-specific information. Detailed phasing and construction information (e.g., construction equipment type and number requirements, maximum daily acreage disturbed, number of workers, hours of operation) is not possible to determine at the General Plan level. Therefore, modeling was based on SJVAPCD-recommended parameters for composition of the construction equipment fleet (SJVAPCD 2007d).

Modeling was performed assuming a 20-year planning horizon. It is assumed that 1/20 or roughly 5% of the proposed uses would be constructed during any given year over a 20-year timeframe. Modeling was conducted for the year 2009, as this is assumed to be the earliest possible year during which construction could occur. If construction would not occur until future years, emission factors associated with off-road construction equipment would be lower. This is due to the regulation of equipment emissions by the state, and implementation of more stringent emissions standards. As older models of equipment are replaced by newer models with cleaner engines, fleet-wide emission factors decrease.

Table 4.4-5 summarizes the estimated construction-related emissions of criteria air pollutants and ozone precursors from site preparation (e.g., grading) and building construction activities for General Plan buildout. Construction-related air quality effects were determined by comparing these modeling results with applicable SJVAPCD significance thresholds. Refer to Appendix A, "Air Quality" for detailed modeling input parameters and results.

As depicted in Table 4.4-5, construction-related activities associated with the build-out of the worst-reasonable-case year (2009) would result in annual unmitigated emissions of approximately 60 TPY of ROG and 98 TPY of NO_X.

PM_{10} emissions from off-road equipment and worker commute exhaust are also shown in Table 4.4-5 because of their applicability to SJVAPCD Rule 9510, Indirect Source Review (ISR), as discussed in the above regulatory setting. Based on the modeling conducted, construction-related activities would result in emissions of ROG and NO_X that exceed SJVAPCD's significance threshold of 10 TPY. Thus, construction- related emissions of ozone precursors could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations, especially considering the nonattainment status of Stanislaus County.

Table 4.4-5
Summary of Modeled Project-Generated, Construction-Related Annual Exhaust Emissions of Criteria Air Pollutants and Precursors for 5% of General Plan Buildout under the Worst-Case Year (2009)

	Emissions - tons per year (TPY)		
	ROG	NO_X	PM_{10}[1]
Phase 1 – Site Preparation[2]			
Grading	0.9	7.5	12.2
Phase 2 – Building Construction			
Building Construction	7.4	82.3	3.7
Asphalt Paving	1.0	5.9	0.5
Architectural Coatings	50.1	-	-
Trenching	0.3	2.3	0.1
Total Unmitigated (without ISR Reduction)	**59.7**	**98.0**	**16.5**
Total Unmitigated (with ISR Reduction)[3]	No ISR requirement	78.4	8.5
SJVAPCD Significance Threshold	10	10	-[1]

[1] The SJVAPCD has not identified a mass emissions threshold for construction-related PM_{10} exhaust emissions and are shown here for informational purposes only. Fugitive PM_{10} dust emissions are discussed separately below.
[2] No emissions were modeled for demolition activities. Existing land uses to be demolished are unknown at this time.
[3] ISR requirements would reduce construction-related emissions of NO_X by approximately 20%, mobile-source PM_{10} by approximately 45%, and fugitive PM_{10} by approximately 50% PM_{10}.
Refer to Appendix A for detailed input parameters and modeling results.
Source: Modeling performed by EDAW 2007.

EMISSIONS OF FUGITIVE PM_{10} DUST

Emissions of fugitive PM dust (e.g., PM_{10} and $PM_{2.5}$) are associated primarily with ground disturbance activities during site preparation (e.g., grading) and vary as a function of such parameters as soil silt content, soil moisture, wind speed, acreage of disturbance area, and vehicle miles traveled (VMT) on- and off-site. Exhaust emissions from diesel equipment and worker commute trips also contribute to short-term increases in PM_{10} emissions, but to a much lesser extent (see Table 4.4-5).

Construction-related activities would primarily result in project-generated emissions of fugitive PM_{10} dust from site preparation (e.g., excavation, grading, and clearing). SJVAPCD's approach to CEQA analyses of construction-related fugitive PM_{10} dust emissions is to require implementation of effective and comprehensive control measures rather than a detailed quantification.

SJVAPCD-recommended control measures beyond compliance with Regulation VIII-Fugitive Dust Prohibition, which is required by law, are not incorporated and the very large size of the Planning Area could result in approximately 215 acres to be disturbed during one year. Thus, construction- related emissions of fugitive dust could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations, especially considering the nonattainment status of Stanislaus County.

Compliance with SJVAPCD Rule 9510 and Regulation VIII, as required by law and would result in a minimum 20% reduction in NO_X emissions and a 45% reduction in visible emissions from heavy-duty diesel equipment, and would reduce fugitive PM_{10} dust emissions by a minimum of 50%, according to estimates provided by SJVAPCD.

The following General Plan Policy may be relevant to implementation of the General Plan:

- Policy AIR-2.1: The City of Riverbank, in coordination with the San Joaquin Valley Air Pollution Control District, will require approved projects, plans, and subdivisions to reduce particulate emissions from construction, grading, excavation, and demolition to the maximum extent feasible.

Due to the large amount of development and potential for simultaneous construction of multiple sites, taken together with the nonattainment status of the plan area, and modeled emissions (presented in Table 4.4-5) in excess of applicable thresholds, the project could result in or substantially contribute to an air quality violation. As a result, this impact would be **significant**.

Mitigation Measures

4.4-1a: In addition to the measures required by the SJVAPCD ISR rule, each project applicant shall implement the following measures to further reduce construction-related equipment exhaust emissions:

- Provide commercial electric power to the project site in adequate capacity to avoid or minimize the use of portable electric generators and the equipment.
- Where feasible, replace/substitute fossil-fueled (e.g., diesel) equipment with electrically driven equivalents (provided they are not run via a portable generator set).
- To the extent feasible, use alternate fuels and emission controls to further reduce NO_X and PM_{10} exhaust emissions above the minimum requirements set for in the ISR rule.
- When not in use, on-site equipment shall not be left idling.
- Limit the hours of operation of heavy duty equipment and/or the amount of equipment in use at any one time.
- Curtail construction during periods of high ambient pollutant concentrations; this may include ceasing of construction activity during the peak-hour of vehicular traffic on adjacent roadways or on Spare the Air Days.
- Staging areas for heavy-duty construction equipment shall be located as far as possible from sensitive receptors.
- Before construction contracts are issued, the project applicants shall perform a review of new technology, in consultation with SJVAPCD, as it relates to heavy-duty equipment, to determine what (if any) advances in emissions reductions are available for use and are economically feasible. Construction contract and bid specifications shall require contractors to utilize the available and economically feasible technology on an established percentage of the equipment fleet. It is anticipated that in the near future, both NO_X and PM_{10} control equipment will be available.

4.4-1b: The following SJVAPCD-recommended enhanced and additional control measures shall be implemented by each project applicant to further reduce fugitive PM_{10} dust emissions.

- Install sandbags or other erosion control measures to prevent silt runoff to public roadways from adjacent project areas with a slope greater than 1%.
- Suspend excavation and grading activity when winds exceed 20 mph.
- Limit area subject to excavation, grading, and other construction activity at any one time.

Significance after Mitigation

Implementation of Mitigation Measures 4.4-1a and 4.4-1b would further reduce short-term, construction-related emissions, beyond compliance with Rule 9510 as required by law, but not to a less-than-significant level. As such, this impact would still exceed SJVAPCD's significance thresholds and because of the large size of the General Plan Planning Area, and thus, construction-related emissions of criteria air pollutants and precursors could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations, especially considering the nonattainment status of Stanislaus County. As a result, this impact is considered **significant and unavoidable**.

IMPACT 4.4-2 *Consistency with Air Quality Planning Efforts. Future development in Riverbank would generate emissions of ozone precursor pollutants and PM_{10}, both of which affect regional air quality. Development anticipated under the proposed General Plan would be greater than that allowed under the current General Plan. This increased development could lead to greater operational (mobile- and area-source) emissions. This impact is considered* ***significant.***

Future changes to air pollutant emissions in the Riverbank Planning Area were computed based on vehicle miles traveled (VMT) estimates, since most air pollutant emissions associated with land use development occur from vehicle use.

The ARB motor vehicle emissions model (EMFAC2007) emission factors, as contained in the ARB-approved URBEMIS 2007 computer model were used along with vehicle miles traveled estimates from the traffic analysis prepared for this project (KdAnderson 2007) to calculate annual emissions in units of TPY for future (2030) conditions upon buildout of the proposed General Plan. Daily air pollutant emissions are shown in Table 4.4-6.

Table 4.4-6
Summary of Modeled Project-Generated, Operation-Related Emissions of Criteria Air Pollutants and Precursors

Source	Emissions- tons per year (TPY)[1]		
	ROG	NO_X	PM_{10}
2030 – General Plan Buildout			
Area Source[2]	236.8	39.4	74.7
Mobile Source[3]	64.5	54.4	410.1
Total Unmitigated (without ISR Reduction)	301.3	93.8	484.8
Total Unmitigated (with ISR Reduction)[4]	No ISR requirement	62.5	242.4
SJVAPCD Significance Threshold:	10	10	–

[1] Emissions modeled using the Urbemis2007 (v9.2) computer model, based on trip generation rates obtained from the analysis prepared for this project and proposed land uses identified in the project description and traffic analysis.

[2] For this estimate, default model assumptions were used for the number of residences that would contain hearth features.

[3] Trip generation rates were obtained from the traffic analysis for the respective land uses (KdAnderson 2007).

[4] ISR requires operational emission reductions of 33.3% of NO_X and 50% PM_{10}.

Refer to Appendix A for detailed assumptions and modeling output files.

Source: Data modeled by EDAW 2007.

Emissions of ozone precursors (ROG and NO_X) and PM_{10} associated with new growth under the proposed General Plan are treated as new to the region. (This is a conservative, or worst-case assumption, since many "new vehicle trips" may actually be moved from one part of the region to another as a result in part of the General Plan

update). Emissions associated with operation of the proposed General Plan would be greater than those projected under the current General Plan.

Since the proposed General Plan would result in greater emissions of criteria air pollutants and precursors for which the region is in nonattainment compared to what would occur under the current General Plan, this would conflict with regional air quality planning efforts.

The proposed General Plan includes an Air Quality Element with numerous land use and circulation policies that seek to reduce air pollution and minimize the air quality impacts of new development. Similar policies, which intend to reduce per-capita VMT and accommodate more sustainable travel options, are included throughout the General Plan update. The proposed General Plan includes policies and implementation strategies that encourage pedestrian and transit-friendly development in order to reduce Riverbank's residents' dependence on automobiles. Other policies prioritize infill of existing neighborhoods, and encourage urban development to occur adjacent to existing urbanized areas. The General Plan includes policies to take advantage of existing and future transit opportunities. In addition, the General Plan focuses on mixed-use land uses that would promote alternative modes of transportation and contains policies and programs that, if adopted and implemented, would act to help reduce motor vehicle use from new development. This would in turn reduce the rate of vehicle miles traveled from trips generated in Riverbank. Please refer to the proposed General Plan update, under separate cover, for the wide range of land use, community design, transportation, conservation, and other policies that would directly or indirectly address air quality.

Mitigation Measures: None available.

While the various policies and actions outlined above would reduce air pollutant emissions that affect both Riverbank and the region, the impact from the proposed General Plan would be considered significant, simply due to the fact that it would result in higher operational emissions than the current General Plan and assumptions used by StanCOG and SJVAPCD used for relevant clean air plans. Buildout of the proposed General Plan would conflict with current air quality planning efforts, and this would constitute a **significant and unavoidable** air quality impact.

IMPACT 4.4-3 Generation of Long-Term Operation-Related (Regional) Emissions of Criteria Air Pollutants and Precursors. *Long-term operation-related activities would result in emissions of ROG and NO_X that exceed SJVAPCD's significance threshold of 10 TPY. Thus, operation-related emissions of criteria air pollutants and precursors could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations, especially considering the nonattainment status of Stanislaus County. As a result, this impact would be* ***significant****.*

AREA AND MOBILE SOURCE EMISSIONS

Regional area- and mobile-source emissions of ROG, NO_X, and PM_{10} were modeled using the URBEMIS 2007 Version 9.2 computer program, which is designed to estimate emissions for land use development projects (ARB 2007h). URBEMIS allows land use data entries that include project location specifics and trip generation rates. URBEMIS accounts for area emissions from the usage of natural gas, wood stoves, fireplaces, landscape maintenance equipment, and consumer products; and mobile sources emissions associated with vehicle trip generation. Regional area- and mobile-source emissions were modeled based on proposed land uses types and sizes, Chapter 3, "Project Description", the increase in trip generation from the traffic analysis prepared for this project (KdAnderson 2007), Section 4.9 "Transportation and Circulation", and default and SJVAPCD-recommended settings and parameters attributable to construction period and site location (SJVAPCD 2007d). The estimation of mobile-source emissions includes a pass-by trip adjustment, which accounts for trips made as intermediate stops on the way from an origin to a primary trip destination. This trip reduction was taken in order to capture interaction between land uses, which would occur in a downtown environment, as recommended by SJVAPCD (SJVAPCD 2007d). No other trip reduction options internal to URBEMIS were used.

Modeled operational emissions are summarized in Table 4.4-6 for 2030 full buildout conditions, assuming that the entire proposed General Plan were constructed over a 20-year planning horizon. As shown in Table 4.4-6, operation-related activities would result in annual unmitigated emissions of approximately 301 TPY of ROG, 94 TPY of NO_X, and 485 TPY of $PM_{10,}$ under full build-out conditions.

Based on the modeling conducted, operation-related activities would result in emissions of ROG and NO_X that exceed SJVAPCD's applicable threshold of 10 TPY. Thus, operation-related emissions of these ozone precursors and PM_{10} could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations, especially considering the nonattainment status of Stanislaus County for ozone and $PM_{10.}$ As a result, this would be a **significant** impact.

STATIONARY SOURCE EMISSIONS

The General Plan update could accommodate stationary sources of pollutants that would be required to obtain permits to operate under SJVAPCD Rule 2201-New and Modified Stationary Sources. These sources could include, but not be limited to, diesel-engine or gas turbine generators for emergency power generation; central heating boilers for commercial, industrial, or large residential buildings; process equipment for light industrial uses; kitchen equipment at restaurants and schools; service station equipment; and dry cleaning equipment. The permit process would assure that these sources would be equipped with the required emission controls, and that individually, these sources would not cause a significant environmental impact. These sources would not be subject to the ISR rule. Nonetheless, the emissions from these sources would be additive to the estimated area and mobile source emissions described above.

Operational emissions from the proposed new growth under the new General Plan would still exceed the 10 TPY significance threshold. In addition, because the Plan is not in an approved air quality plan area, the General Plan update would conflict with local air quality planning efforts. As a result, this impact is considered **significant**.

As noted previously, the Air Quality Element of the General Plan (in addition to other elements) includes several goals and policies designed to minimize adverse effects related to long-term operational emissions that will be implemented as specific development projects and plans are proposed and considered by the City. Relevant goals and policies are outlined below. Implementation measures throughout the Air Quality Element and balance of the General Plan also address air quality. Please refer to the proposed General Plan update, under a separate cover, for more information.

Overarching Air Quality Goal: Minimize Riverbank's Contribution to Existing and Potential Future Air Quality Problems, Whether Experienced Locally, Regionally, or Globally

Goal Air-1: Create and Enhance Development Patterns That Encourage People to Walk, Bicycle, or Use Public Transit for a Significant Number of Their Daily Trips

- Policy AIR-1.1: In new development areas of the City, approved projects, City investment, and approved Specific Plans shall create small-scale, pedestrian-friendly neighborhood centers (with schools, parks, shops, community centers, compact housing, etc.), within walking distance (approximately ¼ mile maximum) that allow residents to meet many needs without the use of an automobile. (See also Goal DESIGN-10 and accompanying policies and policies LAND-2.2, LAND-2.3, LAND-3.1, and CIRC-2.1).

- Policy AIR-1.2: Approved plans, subdivisions, and projects shall provide highly-connected circulation networks that accommodate safe, direct, and convenient alternatives to vehicular travel, and shorten trip lengths for vehicular travel. (See also Community Character and Design Element Policy DESIGN 1.5).

- Policy AIR-1.3: Approved plans, subdivisions, and projects shall provide neighborhood parks in proximity to activity centers such as schools, libraries, community centers, and higher-density housing (more than 16 units per acre, net).

- Policy AIR-1.4: Schools shall be located, designed, and the surrounding area planned to ensure that students can safely and conveniently walk or bicycle to school from their homes.

- Policy AIR-1.5: The City will not allow arterial-focused, automobile-oriented commercial development within new and existing neighborhoods. This includes volume discount stores, regional shopping centers, automobile dealerships, and similar vehicle-oriented land uses. Such land uses, to the extent they are allowed by the City, shall be designed and located such that neighborhood pedestrian and bicycle access is not adversely affected.

- Policy AIR-1.6: Transit improvements are required at sites deemed appropriate and necessary by the City and relevant transit provider/s and consistent with long-range transit plans.

- Policy AIR-1.7: New major activity centers, office, and commercial development shall accommodate alternatives to automobile access, including provision of secure bicycle storage and parking facilities.

- Policy AIR-1.8: The City will coordinate with transit providers and County and regional transportation agencies to plan for a multi-modal transportation system that supports and encourages alternatives to automobile travel.

- Policy AIR-1.9: The City of Riverbank will preserve and enhance existing neighborhoods and commercial districts having pedestrian-, bicycle-, and transit-oriented designs.

- Policy AIR-1.10: Projects or portions of projects that implement a fine-grained mixing of housing types and land uses, and that include other pedestrian, bicycle, and transit oriented design elements, which generate fewer vehicle trips, will have a correspondingly lower contribution toward any roadway or intersection improvement mitigation measures required in City environmental documents and conditions of approval.

- Policy AIR-1.11: The City acknowledges the following facts: carbon dioxide is the most important anthropogenic greenhouse gas from future development in Riverbank; global increases in atmospheric carbon dioxide concentration are due primarily to fossil fuel combustion and land use changes; anthropogenic increases in greenhouse gas concentrations cause climate change; and, the economic, social, and environmental consequences of climate change are catastrophic. The City will monitor and comply with relevant local, regional, statewide, and federal legislation and regulation designed to address climate change.

Goal 2: Construction Practices and Materials Used In Riverbank Minimize Direct and Indirect Air Pollutant Emissions

- Policy AIR-2.2: The City of Riverbank will require all access roads, driveways, and parking areas serving new commercial and industrial development to be constructed with materials that minimize particulate and reactive organic gas emissions and are appropriate to the scale and intensity of use.

- Policy AIR-2.3: The City of Riverbank will develop, in coordination with local energy providers and developers, voluntary, incentive-based programs to encourage the use of energy efficient designs and equipment.

- Policy AIR-2.4: The City of Riverbank will cooperate with the local building industry, utilities, and the Air District to promote enhanced energy conservation standards for new construction.

- Policy AIR-2.5: The City of Riverbank will require new residential, commercial, and industrial development to reduce air quality impacts from area sources and from energy consumption.

Goal CIRC-1: Riverbank's Circulation Network Provides Convenience And Choice Among All Modes Of Transportation

- Policy CIRC-1.1: Approved plans, projects, and subdivision requests in new growth areas shall include the construction or pro-rata funding of transportation infrastructure that includes a connected and integrated system of bicycle facilities and pedestrian facilities, designed to comply with the Americans with Disabilities Act.

- Policy CIRC-1.2: Approved plans, projects, and subdivision requests in new growth areas shall provide a fully connected network of smaller roadways that provide many alternatives between each point of origin and destination.

- Policy CIRC-1.3: Approved projects, plans, and subdivision requests in new growth areas shall arrange streets in an interconnected block pattern, so that pedestrians, bicyclists, and drivers are not forced onto arterial streets for inter- or intra-neighborhood travel. This approach will also ensure safe and efficient movement of fire emergency vehicles.

- Policy CIRC-1.4: Approved projects, plans, and subdivision requests with an internal street network shall provide an internal connectivity index of 1.4 or higher. The connectivity index is calculated by dividing the total number of road segments the number of nodes. Nodes are intersections plus cul-de-sacs. Roadway segments are between intersections. Cul-de-sacs are prohibited except where physical constraints make any other roadway solution impossible.

- Policy CIRC-1.5: Approved projects, plans, and subdivision requests shall connect with adjacent roadways and stubbed roads and shall provide frequent stubbed roadways in coordination with future planned development areas. Plans and projects shall connect to adjacent planned development areas and adjacent roadways at a minimum of 600-foot intervals. This minimum interval does not include development areas that are adjacent to existing or planned future limited-access highways, freeways, or expressways.

- Policy CIRC-1.7: The City will ensure frequent street and trail connections between new residential developments and established neighborhoods, between downtown and surrounding neighborhoods, across the railroad, across the river, and between other important origin and destination points.

- Policy CIRC-1.8: City street improvement standards and the street classification system will reflect the need to accommodate the full range of locally available travel modes.

- Policy CIRC-1.9: In new and existing developed areas, the City will invest in a convenient, well-maintained, and safe system of pedestrian and bicycle paths that connect residences with shopping centers, public buildings, parks, places of employment, and schools.

- Policy CIRC-1.10: The City will incorporate pedestrian and bicycle improvement projects into the City's Capital Improvements Program.

- Policy CIRC-1.11: The City's level of service standards will balance the need to provide convenient vehicular travelways during peak hours of demand with other community goals, such as the desire to accommodate pedestrian and bicycle access.

- Policy CIRC-1.13: City environmental documents and associated mitigation programs will explicitly consider compact development, mixing of land uses, affordable housing, and other pedestrian, bicycle, and transit oriented design elements that generate fewer vehicle trips. Such approved plans, projects, and subdivision requests will have a correspondingly lower contribution toward any roadway or intersection improvement mitigation measures required in City environmental documents.

- Policy CIRC-1.14: The City will ensure provision of signage and secure storage facilities in appropriate locations for bicycles.

- Policy CIRC-1.15: The City will ensure that the pedestrian network is safe, accessible, attractive and efficient, running largely along public spaces (including streets and open spaces) fronted by houses, and avoids uses that generate major breaks in surveillance on routes to and from public transport and other routes used at night.

Goal CIRC-2: The City's Urban Development Pattern Supports All Locally Available Modes of Transportation

- Policy CIRC-2.1: Approved plans, projects, and subdivision requests in new growth areas will provide an appropriate balance of higher-activity land uses, such as schools, parks, retail and commercial services, small offices, civic uses, apartments, in accessible neighborhood centers. Higher-activity land uses shall not be provided in a linear fashion along large roadways.

- Policy CIRC-2.2: The City will not allow large, unbroken surface parking lots, which unnecessarily inhibit travel on foot and by bicycle. Please refer also to Community Character and Design Element policies that address the location and nature of surface parking.

- Policy CIRC-2.4: The City will ensure that redevelopment and revitalization efforts in the existing City are designed to accommodate and encourage pedestrian and bicycle travel, as well as public transit options, as such options become more widely available.

- Policy CIRC-2.6: The City will pursue in the existing developed area and require in new growth areas pedestrian amenities, such as street furniture, shade trees, pedestrian lighting, water fountains, and pedestrian oriented signage.

- Policy CIRC-2.7: The City will encourage and support appropriate home-based businesses in residential areas and telecommuting centers in appropriate areas.

Goal CIRC-3: Increase the Availability and Use of Transit

- Policy CIRC-3.1: The City will work with the Riverbank Oakdale Transit Agency, the Stanislaus Area Regional Transit District (START), and any future providers serving Riverbank to enhance and expand transit services throughout the City and surrounding region.

- Policy CIRC-3.2: The City will promote the development, improvement, expansion, and increased ridership of transit within the City, including the development of new transit agencies and new forms of transit, as they become available.

- Policy CIRC-3.3: Approved plans, projects, and subdivision requests will accommodate transit facilities consistent with transit agency planning.

- Policy CIRC-3.4: When transit stops are required in existing developed portions of Riverbank or new growth areas, the City will ensure stops are safe, convenient, comfortable, well maintained, and complementary to the urban design in the surrounding vicinity.

- Policy CIRC-3.5: The City will coordinate with local and regional transit providers in developing transit plans that link important origin and destination points affecting Riverbank residents and businesses.

- Policy CIRC-3.6: The City will work with local businesses and transit providers to develop transit incentive programs.

Goal LAND-2: Balanced and Diverse Uses of Land

- Policy LAND-2.1: Approved specific plans shall include a variety of land uses, including a variety of housing types, mixed in geographic proximity, in proportions and locations illustrated by the General Plan Land Use Diagram.

- Policy LAND-2.2: Approved specific plans containing a sufficient number of dwelling units to support neighborhood-serving commercial and other non-civic, non-residential uses shall include such uses, which should be located in neighborhood centers when feasible.

- Policy LAND 2-3: Approved specific plans that include proposed parks, schools, and other civic uses should locate those uses in neighborhood centers when feasible.

- Policy LAND-2.3: The City will encourage re-use of vacant or underutilized land in the Infill Opportunity Area through policies that seek to encourage more intense infill development.

Goal LAND-3: Development Patterns That Encourage Alternatives to Vehicular Travel

- Policy LAND-3.1: Higher-activity land uses, such as places of worship, parks, civic buildings, apartments, schools, and shops should be located in "neighborhood centers" whenever possible rather than focused along major roadways. Such neighborhood centers should be small in scale, but sized according to the surrounding neighborhood. Neighborhood centers will provide 360-degree access from the surrounding neighborhood (as opposed to the 180-degree access provided by arterial-focused activity areas). Neighborhood centers should be pedestrian-friendly, including the use of shared and/or on-street parking instead of individual surface parking lots to accommodate parking demand, wherever possible.

- Policy LAND-3.2: The City will coordinate with relevant school districts to ensure that schools are located and designed as to provide safe and convenient pedestrian and bicycle options for students from areas within the surrounding neighborhood.

- Policy LAND-3.3: The City will encourage "compact development," which places origination and destination points closer together (residence, stores, schools, places of work, etc.), allowing for alternatives to vehicular travel.

- Policy LAND-3.4: Gated communities are permissible only if connectivity with surrounding areas will not be significantly impaired and other specified conditions are met.

- Policy LAND-3.5: The City will encourage development and redevelopment of downtown as a mixed-use area, high-activity area. Development and retention of retail and visitor-oriented uses, business and personal services, government and professional offices, communications facilities, civic uses, and high-density residential uses will be encouraged.

Goal LAND-5: Full Range of Public Services and Facilities for All Areas of the Community

- Policy LAND-5.3: Approved projects, plans, and subdivisions in new growth areas will set aside adequate land for parks and schools in areas convenient and safe for all travel modes, or will participate in joint funding and siting of such facilities.

- Policy LAND-5.4: New growth areas will provide usable places where people can gather for a variety of activities that are conveniently accessible by walking or bicycling. Gathering places can include parks, plazas, and other publicly accessible land uses.

Additional mitigation is required to address potentially significant impacts, as outlined below.

Mitigation Measure

4.4-3: The following SJVAPCD-recommended mitigation measure shall be applied, as appropriate, at the project level as the City considers development applications under the General Plan update:

- Area Source: Provide electric maintenance equipment, use solar, low-emissions, or central water heaters (residential and commercial), increase wall and attic insulation beyond Title 24 requirements (residential and commercial), and orient buildings to take advantage of solar heating and natural cooling and use passive solar designs (residential, commercial, and industrial), and eliminate or limit the amount of traditional fireplaces installed (e.g., natural gas fireplaces/inserts or at least EPA certified wood stoves or inserts instead of open hearth fireplaces), energy efficient windows (double pane and/or Low-E), highly reflective roofing materials, cool paving, radiant heat barrier, install photovoltaic cells, programmable thermostats for all heating and cooling systems, awnings or other shading mechanisms for windows, porch, patio, and walkway overhangs, ceiling and whole house fans, utilize passive solar cooling and heating designs, utilize day lighting systems such as skylights, light shelves, interior transom windows, and electrical outlets around the exterior of the units to encourage use of electric landscape maintenance equipment.

- Projects shall include as many clean alternative energy features as possible to promote energy self-sufficiency (e.g., photovoltaic cells, solar thermal electricity systems, small wind turbines).

- The project shall require that all diesel engines be shut off when not in use on the premises to reduce idling emissions.

Significance after Mitigation

The City's application of the above policies would reduce operation-related emissions of ROG, NO_X, and PM_{10}, beyond compliance with Rule 9510. Implementation of additional mitigation, as recommended by the SJVAPCD would further reduce impacts. But, the City cannot show that these policies, in addition to compliance with existing regulations, would reduce impacts to a less-than-significant level. This impact would remain **significant and unavoidable**.

IMPACT 4.4-4 Generation of Long-Term, Operation-Related Local Mobile-Source Emissions of CO. *Based on SJVAPCD's screening criteria, long-term operation-related local mobile-source emissions of CO would not result in or substantially contribute to emissions concentrations that exceed the 1-hour ambient air quality standard of 20 ppm or the 8-hour standard of 9 ppm, respectively. As a result, this impact would be less than significant.*

CO concentration is a direct function of motor vehicle activity, particularly during peak commute hours, and meteorological conditions. Under specific meteorological conditions, CO concentrations may reach unhealthy levels with respect to local sensitive land-uses such as residential areas, schools, and hospitals. As a result, the SJVAPCD recommends analysis of CO emissions at a local rather than a regional level. The SJVAPCD has established preliminary screening criteria to determine with fair certainty that, if not violated, project-generated long-term operational local mobile-source emissions of CO would not result in or substantially contribute to emissions concentrations that exceed the 1-hour ambient air quality standard of 20 ppm or the 8-hour standard of 9 ppm, respectively. SJVAPCD's preliminary screening criteria include the following:

- A traffic study for the project indicates that the Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity would be reduced to LOS E or F; or

- A traffic study for the project indicates that implementation would substantially worsen an already existing LOS F on one or more streets or at more or more intersections in the project vicinity (SJVAPCD 2002).

According to the traffic analysis prepared for this General Plan update, all affected intersections would either operate at LOS D or better or would not deteriorate from acceptable LOS (D or better) to unacceptable (LOS E or F) under General Plan buildout (2030) conditions for both AM and PM peak hours, with circulation element improvements and mitigation in place (KdAnderson 2007). Thus, based on the screening criteria above, long-term operation-related local mobile-source emissions of CO would not result in or substantially contribute to emissions concentrations that exceed the 1-hour ambient air quality standard of 20 ppm or the 8-hour standard of 9 ppm, respectively. Further, proposed mitigation for traffic-related impacts as a result of the project would also alleviate congestion at affected intersections. As a result, this impact would be **less than significant**.

Mitigation Measure: No mitigation is required.

IMPACT 4.4-5 Exposure of Sensitive Receptors to Emissions of Toxic Air Contaminants. *Due to potential siting of commercial trucking operations and loading dock activities near sensitive receptors, exposure of sensitive receptors to substantial concentrations of TACs from mobile-sources could occur. As a result, this impact would be potentially significant.*

The exposure of sensitive receptors to emissions of TACs from on-site sources during construction (e.g., heavy-duty diesel equipment) and operation (e.g., area-, stationary-, and mobile-source emissions both on- and off-site) of the proposed project are discussed separately below.

Construction-Related Emissions

Construction-related activities would result in short-term emissions of diesel PM from the exhaust of off-road heavy-duty diesel equipment for site preparation (e.g., excavation, grading, and clearing); paving; application of architectural coatings; and other miscellaneous activities. Diesel PM was identified as a TAC by ARB in 1998. The potential cancer risk from the inhalation of diesel PM, as discussed below, outweighs the potential for all other health impacts (ARB 2003). At this time, SJVAPCD has not adopted a methodology for analyzing such impacts and does not recommended the completion of HRAs for construction-related emissions of TACs, with a few exceptions (e.g., where construction phase is the only phase of project) (Reed, pers. comm., 2007).

It is important to note that construction equipment emissions would be reduced over the period of General Plan buildout. In January 2001, EPA promulgated a Final Rule to reduce emission standards for 2007 and subsequent model year heavy-duty diesel engines. These emission standards represent a 90% reduction in NO_X, 72% reduction of nonmethane hydrocarbon (NMHC) emissions, and 90% reduction of PM emissions in comparison to the 2004 model year emission standards. In December 2004, ARB adopted a fourth phase of emission standards (Tier 4) in the Clean Air Non-road Diesel Rule that are nearly identical to those finalized by EPA on May 11, 2004. As such, engine manufacturers are now required to meet after treatment-based exhaust standards NO_X and PM starting in 2011 that are more than 90% lower than current levels, putting emissions from off-road engines virtually on par with those from on-road heavy-duty diesel engines.

More specifically, the dose to which receptors are exposed is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the maximally exposed individual. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment, health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the proposed project (Salinas, pers. comm., 2004). Thus, because the use of off-road

heavy-duty diesel equipment would be temporary in combination with the highly dispersive properties of diesel PM (Zhu and Hinds 2002), further reductions in exhaust emissions, and that construction-related activities would be typical to similar development-type projects, construction-related emissions of TACs would not expose sensitive receptors to substantial emissions of TACs. It is also important to note that compliance with the ISR rule, as required by law, would also reduce PM exhaust emissions. As a result, this impact would be **less than significant**.

Stationary-Source Emissions

The proposed General Plan anticipates construction of commercial land uses, which may potentially include stationary sources of TACs, such as dry cleaning establishments, gasoline dispensing facilities, and diesel-fueled back-up generators. These types of stationary sources, in addition to any other stationary sources that may emit TACs, would be subject to SJVAPCD's rules and regulations, including SJVAPCD Rule 2201-New and Modified Stationary Source Review, Rule 4002-National Emission Standards of HAP emission, and Rule 2550- Federally Mandated Preconstruction for Major Sources of Air Toxics, and MACT and T-BACT requirements. Thus, as discussed above, SJVAPCD would analyze such sources (e.g., health risk assessment) based on their potential to emit TACs. If it is determined that the sources would emit TACs in excess of SJVAPCD's applicable significance threshold, MACT or T-BACT would be implemented in order to reduce emissions. If the implementation of MACT or T-BACT would not reduce the risk below the applicable threshold, the SJVAPCD would deny the required permit. As a result, given compliance with applicable rules and regulations, operation of any stationary sources would not result in the exposure of sensitive receptors to TACs at levels exceeding SJVAPCD's significance threshold and this impact would be **less than significant**.

Furthermore, no major stationary sources of TACs currently exist in the Riverbank Planning Area (ARB 2007f, 2007g). Therefore, there would be no incompatibility of proposed land uses with existing sources of TAC emissions. This impact would also be **less than significant**.

On-Site, On-Road Mobile-Source Emissions

On-site mobile sources of TACs would be primarily associated with the operation of on-road heavy-duty diesel trucks associated with proposed on-site commercial/industrial activities (e.g., unloading/loading). According to the ARB publication "Air Quality and Land Use Handbook: A Community Health Perspective," ARB recommends to avoid the siting of new commercial trucking facilities which accommodate more than 100 trucks per day, or 40 trucks equipped with transportation refrigeration units (TRUs), within 1,000 feet of sensitive receptors (e.g., residences) (ARB 2005a). The ARB guidance document is advisory, and not regulatory. Operational activities that require the use of diesel-fueled vehicles for extended periods, such as commercial trucking facilities or delivery/distribution areas, may generate diesel PM emissions that could expose sensitive receptors to diesel PM emissions. Although commercial and industrial uses that would be developed under the proposed General Plan have not been identified, some of the tenants would require large delivery and shipping trucks that use diesel fuel. The diesel exhaust PM emissions generated by these uses would be produced primarily at single locations on a regular basis (e.g., loading dock areas). Idling trucks, including TRUs, increase diesel PM levels at these locations. Occupants of nearby existing and proposed residences (within and adjacent to the proposed and existing Plan, respectively), may be exposed to diesel exhaust PM emissions on a reoccurring basis.

ARB recently adopted an idling restriction ATCM for large commercial diesel-powered vehicles, which became effective February 1, 2005. In accordance with this measure, affected vehicles are required to limit idling to no longer than 5 minutes under most circumstances. ARB is currently evaluating additional ATCMs intended to further reduce TACs associated with commercial operations, including a similar requirement to limit idling of smaller diesel-powered commercial vehicles.

It should be noted that the General Plan contains goals, policies, and implementation strategies designed to reduce exposure of sensitive receptors to concentrations of TACs.

It is unknown at this time whether the concentration of diesel PM at any sensitive receptor locations might exceed the threshold for acceptable cancer risk for the MEI. It is also unclear what effect ARB's new diesel engine emission standards and diesel PM regulations would have on the level of emissions from any one facility. Therefore, due to uncertainty with respect to determination of tenants, frequency of diesel-fueled trucks visiting the proposed land uses, and distances from trucking activities to sensitive receptors at final build out of the Plan and associated mobile emissions of diesel exhaust, this would be a **potentially significant** impact.

Off-Site, On-Road Mobile-Source Emissions

Riverbank is located along SR 108. The proposed General Plan includes a mix of land uses, including commercial, industrial and residential uses. The ARB guidance document entitled "Air Quality and Land Use Handbook: A Community Health Perspective," recommends to avoid the siting of new sensitive land uses (e.g., residences and schools) within 500 feet of major freeways (e.g., 100,000 vehicles per day). The proposed land uses include sensitive land uses adjacent to this state highway, which is not considered a major freeway (i.e., SR 108 experiences less than 100,000 vehicles per day). The location of the nearest proposed residencies would be in concurrence with ARB recommendations.

Since no receptors would be sited within 500 feet of a major freeway, risk associated with project implementation would not exceed SJVAPCD's threshold. Consequently, this impact would be **less than significant**.

Long-Term Off-site Rail Traffic Sources

The Burlington Northern Santa Fe Railroad passes through the project area. In October 2004, ARB released a study which provided a health risk characterization and assessment of the diesel PM from locomotives at the J. R. Davis Rail Yard, in Roseville, CA (ARB 2004). The Study indicated that locomotive-related activities at the rail yard would result in the exposure of sensitive receptors near the yard to cancer risk level of in excess of the applicable threshold. However, the U. P. rail line in the plan area is used specifically for freight and experiences extremely light daily rail traffic relative to that which occurs at the rail yard. In addition, the locomotives at the yard undergo engine testing, and also idle for extended periods of time, so emissions are higher and persist in one localized area for greater amounts of time. The Rail Yard Study describes conditions that are unlike those associated with the rail line through Riverbank, which would not expose sensitive receptors to diesel PM concentrations that would result in a health risk in excess of the threshold. This impact would be **less than significant**.

It should be noted that under Goal 3 of the new Air Quality Element, the proposed policies would reduce future land use incompatibilities of sources that could potentially emit TACs and exposure of sensitive uses to harmful air pollutants.

Goal 3: Avoid Land Use Incompatibility That Causes Local Exposure to Harmful and Hazardous Air Pollutants

- Policy AIR-3.1: The City will provide adequate sites for industrial development, while minimizing the health risks to people resulting from industrial toxic or hazardous air pollutant emissions.

- Policy AIR-3.2: The City of Riverbank will require residential development projects and projects categorized as sensitive receptors to be located an adequate distance from existing and potential sources toxic emissions such as freeways, major arterials, industrial sites, and hazardous material locations.

- Policy AIR-3.3: The City of Riverbank 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.

- Policy AIR-3.4: The City will discourage major arterial roadways within new or existing neighborhoods and will require new line sources of air pollution, such as a proposed major freeway or major arterial roadway, to be located an adequate distance from sensitive receptors.

- Policy AIR-3.5: The City will coordinate with the Air District to identify sources of toxic air emissions and determine the need for health risk assessments for proposed development. The City will consult with project proponents during a pre-application review process to avoid inappropriate uses at affected sites and during the environmental review process for general plan amendments and general plan updates.

Mitigation Measure 4.4-5. The only measure available to completely mitigate the impact—completely separating emission sources (diesel vehicles associated with commercial trucking activities at commercial and industrial land uses) from all sensitive receptors—is not feasible. The best available alternatives to reduce the impact are the following:

- Orient loading dock activities as far away and downwind from existing or proposed sensitive receptors as feasible.

- Incorporate idle reduction strategies that reduce the main propulsion engine idling time through alternative technologies such as, IdleAire, electrification of truck parking, and alternative energy sources for TRUs to allow diesel engines to be completely turned off.

Significance after Mitigation

This would reduce potential for exposure to TACs, but there is no feasible mitigation available for Impact 4.4-5 to reduce the impact to a less-than-significant level. Thus, buildout of the proposed General Plan could result in a **significant and unavoidable** adverse impact with respect to mobile-source TACs. The City will coordinate with the SJVAPCD as General Plan implementation occurs to assess situations in which toxic risk from diesel PM may occur and to review methodologies that may become available to estimate the risk.

IMPACT 4.4-6 Exposure of Sensitive Receptors to Emissions of Odors. *Operation of the proposed project could result in the frequent exposure of on-site receptors to substantial objectionable odor emissions. As a result, this impact would be significant.*

As discussed previously, the human response to odors is an extremely subjective, and sensitivity to odors varies greatly among the public. SJVAPCD has developed screening-level distances to potential major odor sources (e.g., waste water treatment facilities, food processing facilities, landfills, etc) (SJVAPCD 2002). Other minor sources of odors, such as exhaust from mobile-sources, and garbage collection areas and charbroilers associated with commercial uses, are not typically associated with numerous odor complaints, but are known to have some temporary, less concentrated odorous emissions. Major and minor odor sources are discussed separately below.

Major Odor Sources

According to the SJVAPCD project screening trigger levels, a food processing plant is considered a potential major odor source if sensitive receptors are proposed within one mile. The exposure of sensitive receptors to odors from the California Fruit & Tomato Kitchen within the Planning Area could have been considered objectionable by some residents. This plant has closed and the General Plan update does not include any measures that would increase any odors relative to this facility. However, an ‘offensive odor’ is highly subjective, and it is important to note that some individuals may find potential benefits of odors associated with certain food processing facilities.

In addition, the City of Riverbank Wastewater Treatment Facility (WWTF) is located north of downtown Riverbank. Proposed residential uses would be proposed to the west, south, and east of the existing WWTF. The

nearest proposed new residential receptors associated with the new General Plan would be located in the infill opportunity areas, approximately 1,000 feet from the WWTF property. A WWTF is a potential source of odors for which the SJVAPCD GAMAQI recommends a screening distance of two miles (SJVAPCD 2002). Additional residential development within two miles encompasses most of the proposed sensitive receptors (residences) within the General Plan area. No confirmed odor complaints have been filed with the SJVAPCD against the Riverbank WWTF during the last 3 years (SJVAPCD 2007c).

It is foreseeable that the development of homes within two miles of the WWTF site could result in increased frequency of odor complaints and exposure of a substantial number of people to unpleasant odors.

In addition, agricultural land uses exist in the vicinity of and within the plan area. Agricultural uses will continue to exist off-site, primarily to the west, south, and east of the plan area. Agricultural activities are exempt from SJVAPCD Nuisance Rule 205, and could present the potential for objectionable odorous emissions received at future residents of the project.

No other major sources of odors have been identified in the project area that would result in the exposure of on-site receptors to existing sources of odors. The proposed General Plan would not involve the siting of any new major odor sources. For the reasons discussed above, exposure of sensitive receptors to odorous emissions from major sources would be a **potentially significant,** direct impact.

Minor Odor Sources

Minor sources of odors associated with the proposed project would be associated with the construction of the proposed land uses. The predominant source of power for construction equipment is diesel engines. Exhaust odors from diesel engines, as well as emissions associated with asphalt paving and the application of architectural coatings may be considered offensive to some individuals. Similarly, diesel-fueled locomotives traveling along the Union Pacific Rail Line, and diesel-fueled trucks traveling on local roadways (primarily concentrated on SR 99) would produce associated diesel exhaust fumes. However, because odors associated with diesel fumes would be temporary and would disperse rapidly with distance from the source, construction-generated and mobile-source odors would not result in the frequent exposure of on-site receptors to objectionable odor emissions. As a result, short-term construction-related odors would be considered **less than significant**.

Commercial uses may include sources of odor emissions (e.g., charbroiling restaurants, dry cleaners) in close proximity to existing or proposed sensitive receptors. The operation of such sources could result in the frequent exposure of on-site receptors to substantial objectionable odor emissions. As a result, this impact would be considered **potentially significant**.

Mitigation Measure 4.4-6: The following mitigation measures shall be implemented by the applicant at the project level during General Plan buildout:

- The deeds to all properties of proposed sensitive uses located within two miles of the WWTF within the Planning Area shall include a disclosure clause (odor easement), prepared by an attorney with expertise in the field, and approved by the City of Riverbank, advising buyers and tenants of the potential adverse odor impacts from the WWTF and surrounding agricultural operations.

- Odor control devices shall be installed at the emitter to reduce the exposure of receptors to objectionable odorous emissions if an odor-emitting facility is to occupy space in a proposed commercial land use area.

- The odor-producing potential of land uses shall be considered when the exact type of facility that would occupy commercial areas is determined.

Significance after Mitigation

Implementation of the above Mitigation Measure, 4.4-5 would reduce the exposure of sensitive receptors to odorous emissions, but not to a less-than-significant level. Because the sources of the odors cannot be eliminated, the potential exposure of sensitive receptors to odorous emissions in proximity to the sources would remain. The odor easement would not result in any reduction in odor impacts, nor would it provide the odor-producing sources with any protection against potential future nuisance complaints. Full physical mitigation of potential odor impacts would require the implementation of odor control measures, and neither the City of Riverbank nor future project applicants have the direct ability to impose such controls. Whether SJVAPCD or the City, reacting to complaints, sees fit in the future to order modifications to the WWTP operation is uncertain. Any predictions regarding future enforcement actions are beyond the scope of the administrative proceedings. As a result, this impact would remain **significant and unavoidable**.

IMPACT 4.4-7 Increases in Greenhouse Gas Emissions. *It is unknown at this time whether or not implementation of the Riverbank General Plan would result in a net increase or decrease in greenhouse gas emissions. Thus, no impact conclusion can be drawn.*

Long-term operation of the new growth anticipated under the General Plan would generate emissions of greenhouse gases (GHGs) from area- and mobile-sources.

Mobile-source emissions of GHGs would include vehicle trips associated with employee commute, errand, recreation, and other trips in passenger vehicles of future residents of and visitors to the Planning Area, as well as commercial trucking activity associated with goods movement related to proposed commercial and industrial uses.

Area-source emissions would be associated with activities such as landscaping and maintenance of proposed land uses, natural gas distribution for home and water heating, waste disposal, and other sources. Increases in stationary-source emissions could occur at off-site utility providers associated with energy supply to the proposed uses within the Planning Area.

GHG emissions would predominantly be in the form of CO_2. In comparison to criteria air pollutants, such as ozone and PM_{10}, CO_2 emissions persist in the atmosphere for a much longer period of time. While emissions of other GHGs, such as methane, are important with respect to global climate change, emission levels of other GHGs are less dependent on the land use and circulation patterns associated with the proposed General Plan than are levels of CO_2.

Because the General Plan mostly addresses physical development patterns throughout the city, mobile sources (vehicle trips) would be the primary emission source of GHGs associated with the project. Transportation is also the largest source of GHG emissions in California and represents approximately 60% of annual CO_2 emissions generated in the state (CEC 2006b).

Vehicle miles traveled (VMT) is the most direct indicator of CO_2 emissions for most land use plans and development projects, and this General Plan is no exception. CO_2 emissions are the best indicator of total GHG emissions. Buildout of the new General Plan is estimated to add approximately 192,000 new vehicle trips per day to the Planning Area, and would be the primary source of GHG emissions associated with Plan implementation.

Operation of the new General Plan would generate 275,470 tons (0.3 Megatons [Mt]) of CO_2 emissions annually for the lifetime of the General Plan (Table 4.4-7). New growth anticipated under the General Plan would generate a finite quantity of approximately 378,564 tons (0.4 Mt) of CO_2 for the duration of construction activities (Table 4.4-7). Construction would contribute emissions of GHGs to a much lesser extent than operation of the General Plan.

Table 4.4-7
Summary of Modeled Project-Generated, Construction- and Operation-Related Emissions of Greenhouse Gases (Carbon Dioxide)

Source		Emissions (CO_2)[1]
Construction-Related Emissions (to occur over 20 year buildout period)		18,928 TPY
	Total Unmitigated	378,564 tons
2030 – General Plan Buildout (to occur over lifetime of the General Plan)		
Area Source[2]		50,384 TPY
Mobile Source[3]		225,086 TPY
	Total Unmitigated	275,470TPY

[1] Emissions modeled using the Urbemis2007 (v9.2) computer model, based on trip generation rates obtained from the analysis prepared for this project, proposed land uses identified in the project description and traffic analysis, recommendations from SJVAPCD for URBEMIS model inputs, and default model assumptions where detailed information was not available.

[2] For this estimate, default model assumptions were used for the number of residences that would contain hearth features.

[3] Trip generation rates were obtained from the traffic analysis for the respective land uses (KdAnderson 2007).

Refer to Appendix A for detailed assumptions and modeling output files.

Source: Data modeled by EDAW 2007.

It is important to consider the context of GHGs. Emissions of GHGs are dispersed throughout the atmosphere worldwide, and the effects of climate change are borne globally, unlike emissions of criteria air pollutants, which have regional and/or local impacts on air quality. The extent to which emissions of GHGs attributable to the General Plan can be treated as "a net increase" is uncertain. For example, if a proposed dwelling unit becomes occupied by a family that relocates from the City of Modesto, and the residents' employers remain located in Modesto, it is probable that a net increase in GHGs could be attributed to this family's decision to move to the Planning Area. Alternatively, if a proposed dwelling unit becomes occupied by a family moving to California from Wyoming (where CO_2 emissions/capita is approximately 138 TPY/person [CEC 2006b]), it is likely that this household would experience a net decrease in emissions of GHGs.

The legislation dealing with climate change in California (as well as international treaties and agreements on the subject) identifies goals for the *rate* of emissions of GHGs, relative to specific benchmark years. In the case of California, AB 32 requires 1990 GHG emission levels to be achieved by the year 2020, or about a 25% reduction from current emissions levels (ARB 2006b). Neither State legislation nor executive order suggests that California intends to limit population growth in order to reduce the state's GHG emission levels. Therefore, the intent is to accommodate population growth in California, but achieve a lower rate of GHGs despite this larger population. The statewide average *per-capita rate* of GHGs would need to be reduced substantially to comply with the targets established by AB 32. Generally, the level of mass emissions of GHGs generated by any single project is nominal when compared to the global inventory, or even the state inventory of emissions of GHGs. If a project is very large and has a comparatively high magnitude of associated emissions of GHGs emissions by *mass*, but generates a low *per capita* rate, the project helps California achieve its GHG emission reduction goals. On the other hand, many small projects that exceed 1990 *per capita* GHG emission rates would collectively impede California's efforts to address climate change.

The proposed General Plan would enable Riverbank to accommodate 31,293 new residents. If the operational CO_2 emissions were distributed evenly on a per capita basis, the proposed new population of Riverbank would generate CO_2 at an average rate of approximately 9 tons CO_2/person/year. The General Plan's land use designations and policies would accommodate a larger share of non-vehicular trips for future and existing residents of the Planning Area. Various land use, community design, air quality, and circulation policies would reduce per capita GHG contribution. The precise effect of these policies is unknown as of the writing of this document. It is unknown at this time what effect buildout of the new growth area of the General Plan would have on existing residents.

According to the CEC's "Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004", the statewide average CO_2 emissions associated with fossil fuel combustion are approximately 12 tons CO_2/person/year (CEC 2006b). In order to achieve the goal stated in AB 32 of 1990 emission levels by the year 2020 while accounting for population growth between now and 2020 , Californians would need to reduce emissions by about 25%. In other words, the per capita rate of emissions needed to be consistent with AB 32 goals is approximately 9 tons CO_2/person/year. Therefore, the average GHG emissions rate for residents of the proposed Riverbank General Plan is anticipated to be approximately in line with AB 32 goals.

Implementation of General Plan policies and Mitigation Measure 4.4-3, which require design and operational measures to reduce operational emissions of criteria air pollutants, would further reduce CO_2 emissions from the Plan's operation.

Although transportation is the most important source of GHG emissions in California, emissions from other sectors (e.g., energy, industry, agriculture) should not be entirely overlooked. Stationary- and mobile-source measures and regulations on the horizon would assist in further lowering General Plan GHG emissions. It is not known at this time what reductions are achievable from other emission sources through measures such as the AB 32 Early Action Measures (adopted in July 2007). Also not known at this time is whether additional GHG reductions for mobile sources might be available through legislation such as AB 1493, which would create more stringent vehicle emission standards for GHGs. It is not yet clear what the net GHG emissions of the General Plan would actually be under the buildout scenario, given the uncertainty of future legislative actions. Finally, market factors could affect the density of land uses actually constructed under the buildout scenario, which are unknown at this time. Therefore, actual CO_2 emission rates computed on a project-by-project basis could vary. Many factors that would be used to calculate the net change in GHG emissions attributable to individual projects within the General Plan are either unknown at this time or outside the control of the City of Riverbank.

The proposed General Plan update also includes the following implementation measure, which may place additional requirements on development projects proposed within Riverbank regarding transportation related GHG analysis and mitigation:

> Implementation Strategy AIR-2: The City will also develop a local greenhouse gas reduction program. The City will set a definitive goal for greenhouse gas reduction, on either a per-capita or mass level, with the minimum goal expected to be a 25 percent reduction by the year 2020. This program will begin with an analysis of baseline greenhouse gas emission levels and forecasting the growth in emissions that would occur if the status quo continued. The City will assemble a set of local actions, including regulatory changes, infrastructure investment strategies, incentives and disincentives, and other measures that could apply both to new and existing developed areas. The City will monitor progress toward the overall goal and periodically revise the local action plan, as appropriate. Implementation of Riverbank's greenhouse gas reduction program will require the cooperation of other agencies, private businesses, and residents, and will be implemented over a period of several years. It is likely that, during the design and monitoring period of this program, State guidance, case law, and other information will become available, making revisions to the reduction program appropriate. The City will monitor changes in the regulatory environment, as well as grant and other funding programs that could be made available to help Riverbank in implementing this program.

Section 15145 of the State CEQA Guidelines provides that, if after a thorough investigation a lead agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impacts. Due to uncertainty of future market and regulatory factors and lack of available information regarding behavioral factors of future Riverbank residents, it would be speculative to determine if a net increase or decrease in GHG emissions would occur as a result of General Plan implementation. Therefore, no impact conclusion related to GHG emissions can be made based on research of this issue.

4.5 BIOLOGICAL RESOURCES

4.5.1 INTRODUCTION

This section addresses biological resources that could be affected in the Planning Area. The evaluation presented in this section is based on field survey results and a review of existing documentation.

4.5.2 ENVIRONMENTAL SETTING

The Planning Area includes an eastern and a western area, separated by the City (Exhibit 4.5-1). Two areas of focused study, the Northwestern and Southwestern Study Area Properties are present in the western portion of the Planning Area.

SOURCES OF INFORMATION

Information regarding biological resources in the Planning Area vicinity is based primarily on results of a two-day reconnaissance-level biological inventory conducted by P&D Consultants biologists in March 2005 and a literature review of the pertinent scientific references, database queries, topographical and soil maps, and aerial photographs. Sources reviewed include:

- the Riverbank, California USGS 7.5-minute series quadrangle
- U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Maps
- *Water Quality Control Plan – Sacramento River and San Joaquin River Basins* (Regional Water Quality Control Board [RWQCB], 4th edition, 2004)
- California Natural Diversity Data Base (CNDDB) (CNDDB 2007)
- Inventory of Rare and Endangered Plants (CNPS 2007)
- *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998)
- *San Joaquin County Multi-species Habitat Conservation and Open Space Plan* (San Joaquin Council of Governments 2000)

HABITATS AND LAND USES

Habitat types, as defined by Holland (1986) when applicable, and land uses within the Planning Area include: Mixed Riparian Forest, Oak Walnut Elderberry Woodland, Walnut Woodland, Willow Scrub, Riparian Scrub, Freshwater Marsh, Wet Meadow, Disturbed Wetland, Non-native Grassland, Eucalyptus, Agricultural Land, Pasture, Orchard, Vineyard, Rural Residential, Residential, Commercial, and Industrial. The locations of these habitats are illustrated in Exhibit 4.5-1. Habitats present on the Northwestern and Southwestern Study Area Properties are illustrated in greater detail in Exhibits 4.5-2 and 4.5-3. The acreage of each vegetation type within the Planning Area and within the focused study areas are summarized in Table 4.5-1. A floral compendium of all the species noted at the site is included in Appendix B, the Biological Resources Appendix. This information is based primarily of information collected during the two-day survey conducted in March 2005.

MIXED RIPARIAN FOREST

The Great Valley Mixed Riparian Forest series is characterized by tall, dense, broad-leafed riparian forests. The tree canopy is typically fairly closed and composed of several species, including California walnut (Juglans californica), box elder (*Acer negundo*), western sycamore (*Plantanus racemosa*), Fremont's cottonwood (*Populus fremontii fremontii*) and various willow species (*Salix* sp.). The understory is typically composed of the same

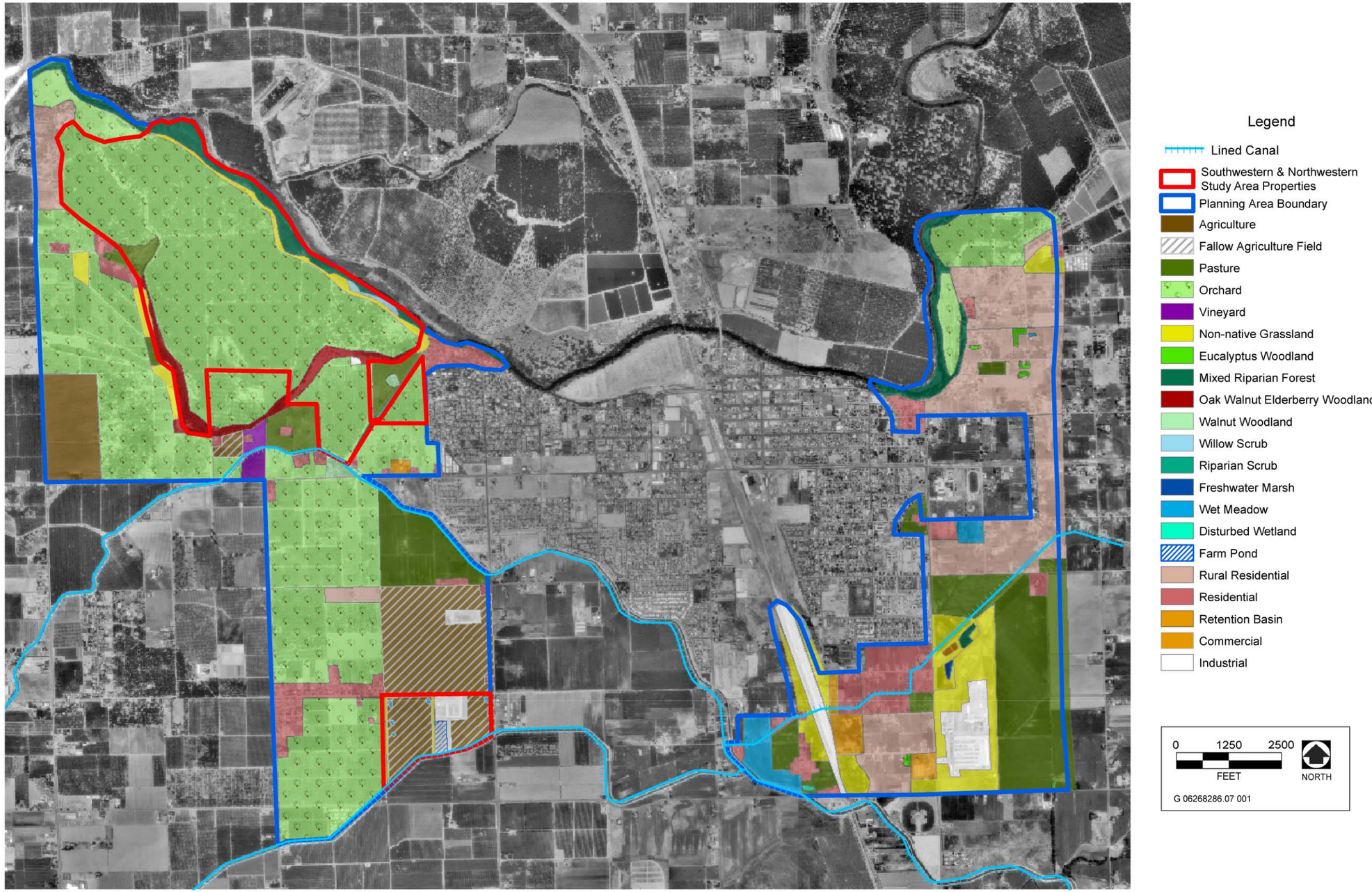
Table 4.5-1 Habitat and Land Use Acreages within the Planning Area								
Vegetation Community/Land Use	Southwestern Study Area Property		Northwestern Study Area Property		Remainder of Planning Area		Total	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Mixed Riparian Forest	0.0	0	60.5	2	53.7	7	114.2	3
Oak Walnut Elderberry Woodland	0.0	0	12.8	0	36.6	5	49.4	1
Walnut Woodland	0.0	0	9.5	0	0.2	0	9.7	0
Willow Scrub	0.0	0	2.1	0	3.6	0	5.7	0
Riparian Scrub	0.0	0	2.7	0	0.3	0	3.0	0
Freshwater Marsh	0.0	0	1.4	0	0.0	0	1.4	0
Wet Meadow	1.4	1	38.8	1	0.0	0	40.2	1
Disturbed Wetland	0.0	0	0.8	0	0.0	0	0.8	0
Non-native Grassland	8.8	10	176.8	6	23.0	3	208.6	6
Eucalyptus Woodland	0.0	0	5.3	0	0.0	0	5.3	0
Agricultural Land	63.1	68	239.9	9	0.0	0	303.0	8
Pasture	0.0	0	432.0	15	11.7	1	443.7	12
Orchard	0.0	0	1,015.1	36	667.1	84	1,682.2	45
Vineyard	0.0	0	15.6	1	0.0	0	15.6	0
Rural Residential	0.6	1	449.7	16	0.0	0	450.3	12
Residential	0.7	1	221.4	8	1.0	0	223.1	6
Commercial	0.0	0	34.4	1	0.0	0	34.4	1
Industrial	17.6	19	88.4	3	1.0	0	107.0	3
Totals	**92**	**100**	**2,807**	**100**	**798**	**100**	**3,698**	**100**

species, in shrub form. This community occurs in low-gradient floodplains and depositional streams of the Great Valley, usually below 500 feet. Formerly very extensive in the Sacramento and northern San Joaquin Valleys, this forest has largely been cleared for agriculture, flood control, and urban expansion.

Within the Planning Area, the Mixed Riparian Forest community is restricted to the Stanislaus River basin area. This community consists of a well-developed tree canopy and a persistent shrub and herbaceous layer. The dominant tree species include box elder, Oregon ash (*Fraxinus latifolia*), arroyo willow (*Salix lasiolepis*), Goodding's black willow (*Salix gooddingii*), and Fremont's Cottonwood. The dominant shrub species included various willows, California rose (*Rosa californica*), mugwort (*Artemisia douglasiana*), and California blackberry (*Rubus ursinus*). Herbaceous species included cheeseweed (*Malva neglecta*), Queen Anne's lace (*Daucus carota*), yellow sweetclover (*Medicago sativa*), milk vetch (*Astragalus* sp.), wild oats (*Avena* sp.), and various other perennial grasses and forbs and annual wildflowers.

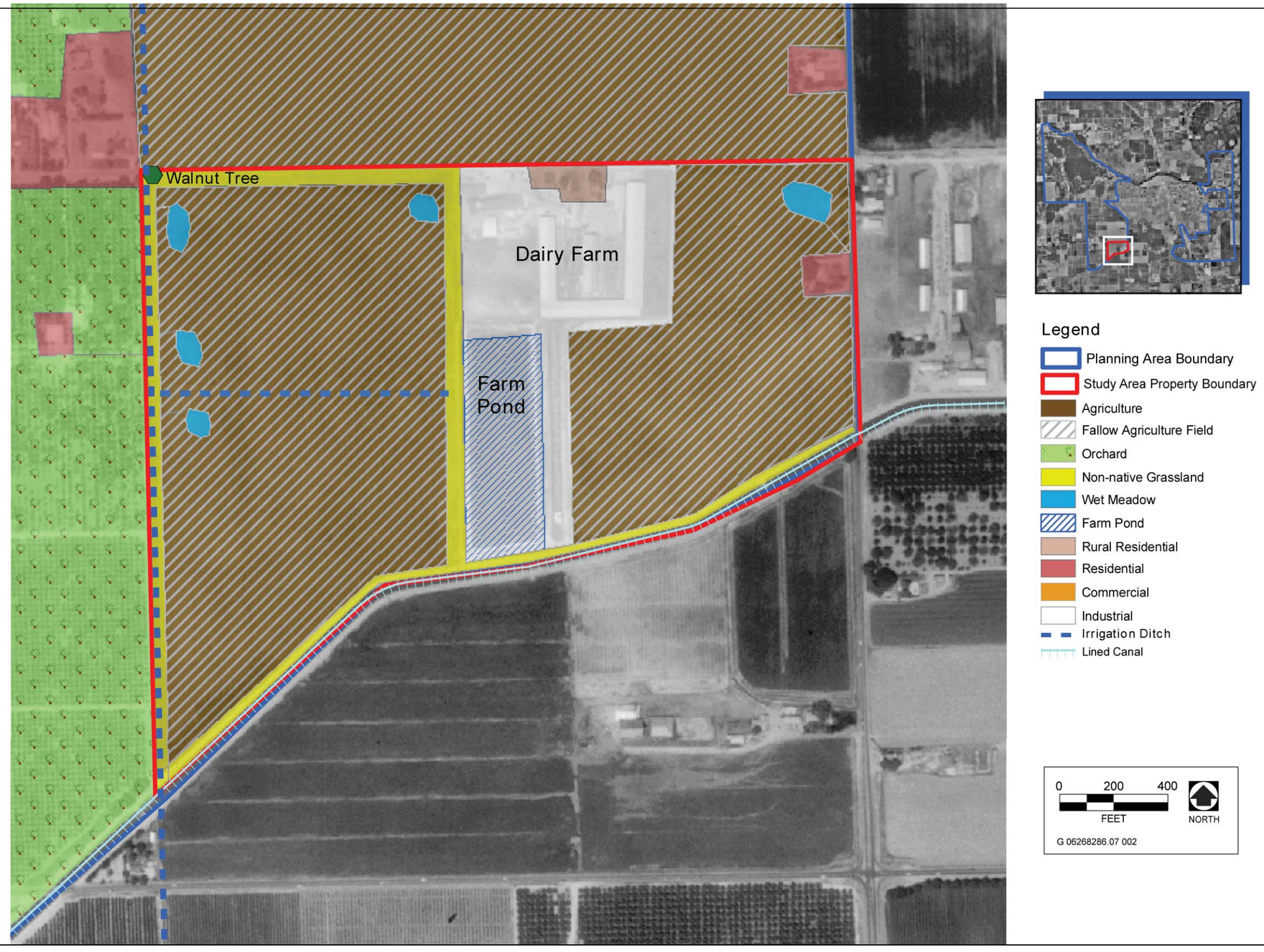
Oak Walnut Elderberry Woodland

This community is present along the side of the bottomlands of the Stanislaus River in the western portion of the Planning Area. It is co-dominated by Valley oak (*Quercus lobata*), interior live oak (*Quercus wizlizenii*), and California walnut. The shrub understory consisted of large stands of blue elderberry (Sambucus mexicana), bush



Source: P&D Consultants 2005

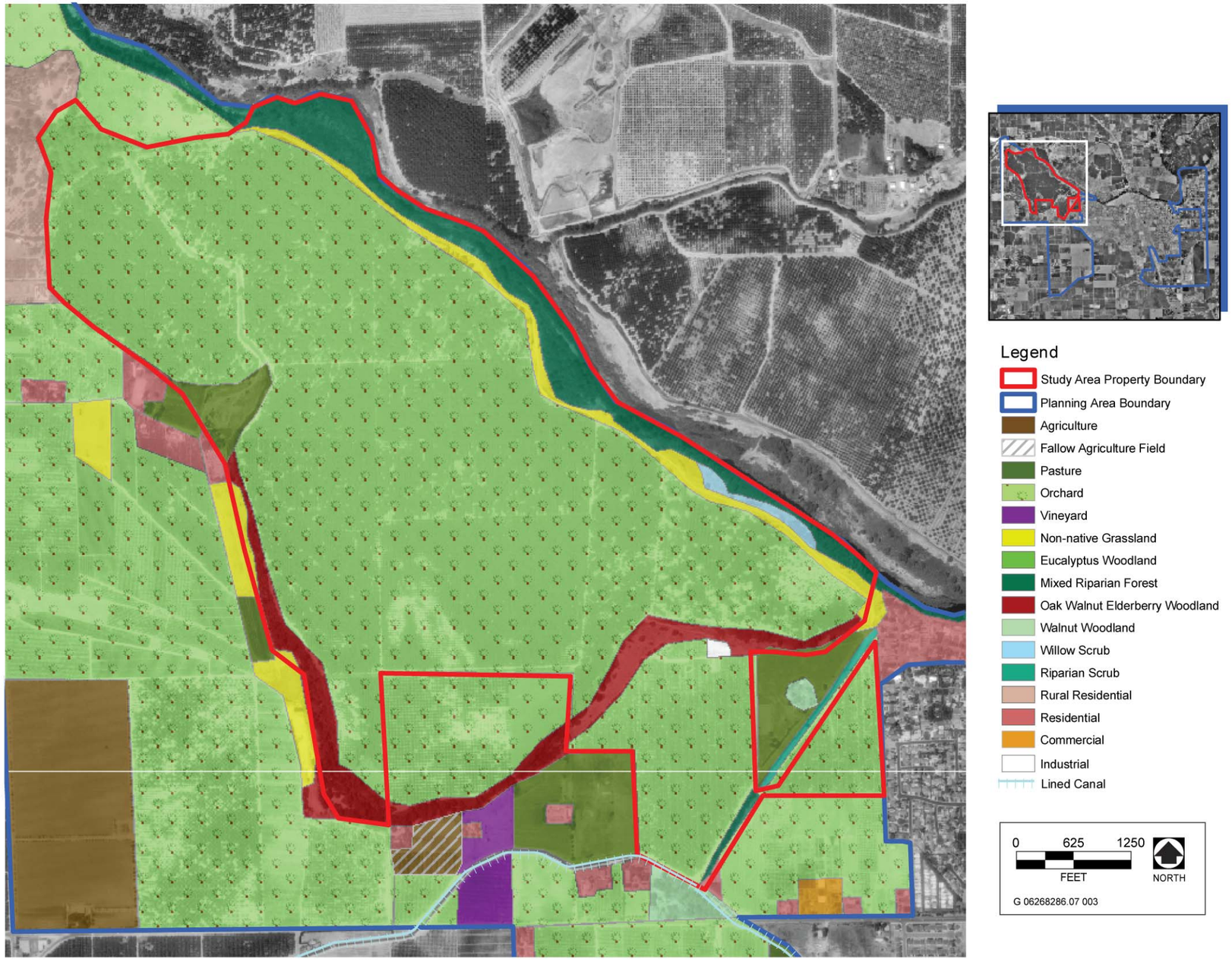
Habitat Map **Exhibit 4.5-1**



Source: P&D Consultants 2005

Southwestern Study Area

Exhibit 4.5-2



Source: P&D Consultants 2005

Northwestern Study Area **Exhibit 4.5-3**

lupine (*Lupinus* sp.), and California blackberry. Wild cucumber (*Marah macrocarpa*) vines were persistent throughout. The herbaceous groundcover is comprised of species such as pineapple weed (*Chamomilla suaveolens*), fiddleneck (*Amsinkia* sp.), mugwort, telegraph weed (*Heterotheca grandiflora*), and milkvetch.

Walnut Woodland

This woodland is characterized by an open tree canopy consisting primarily of California walnut with a grassy understory. This series occurs on relatively moist, fine-textured soils of valley slopes and bottoms. The Walnut Woodland community is present in two small inclusions south-southeast of the Northwestern Study Area Property. Understory herbaceous species present included wild oats and various bromes (*Bromus* sp.).

Willow Scrub

The Great Valley Willow Scrub series is described as an open to dense, broadleaved, winter deciduous shrubby streamside thicket, dominated by any of several willow species. Dense stands usually have little understory or herbaceous component. More open stands have grassy understories, usually dominated by introduced species. This habitat is found along all the major rivers and most of the smaller streams throughout the Great Valley watershed, usually below 1,000 feet above mean sea level, in elevation.

This community is present along the outer margins of the Great Valley Mixed Riparian Forest along the Stanislaus River. Willow species, including arroyo willow and narrow-leaved willow (*Salix hindsiana*), dominate the canopy, and a few almond trees had propagated in this area as a result of the neighboring orchard. A few shrub species are present, including California rose and nettle (*Urtica* sp.). Grassy species are present throughout the understory, as well as cheeseweed, and mugwort.

Riparian Scrub

The riparian scrub community is present along an unlined channel along the southeast property line of the Northwestern Study Area Property. This community is very similar in species composition to the Great Valley Mixed Riparian Forest series, but is characterized by a less mature and less extensive canopy. Tree species noted in the Planning Area include Fremont's cottonwood, California walnut, and various willow species (*Salix* sp.). Nutsedge (*Scirpus* sp.), nettle, curly dock (*Rumex crispus*), and miner's lettuce (*Claytonia* sp.) were noted in the understory along with California wild grape (*Vitis californica*). Filaree (*Erodium botrys*) dominated the groundcover.

Freshwater Marsh

A small area of freshwater marsh is present east of the Santa Fe railroad tracks and north of a large industrial plant. This series is dominated by perennial, emergent monocots to four to five meters tall, often forming completely closed canopies. Prolonged saturation permits accumulation of deep, peaty soils.

Wet Meadow

The wet meadow classification is closely associated with the non-native grassland community but occurs where hydrologic conditions such as frequent flooding, ponding, or waterlogged soils persisting for longer durations of time have led to the establishment of hydrophytic vegetation species. Inclusions of these wet meadows were detected on the Southwestern Study Area Property and on a large parcel located west of the Santa Fe railroad at the southern limit of the eastern Planning Area. The species noted on the Southwestern Study Area Property included a few sedge species (*Carex* sp.), curly dock, and snakeweed (*Senecula* sp.). The wet meadow in the eastern Planning Area was dominated by a tall-growing rush species (*Juncus* sp.).

Disturbed Wetland

The area classified as disturbed wetland is adjacent to the wet meadow complex located adjacent to the southern boundary of the eastern Planning Area. This area was being used for livestock grazing in March 2005, but the saturated soils and hydrophytic plants indicated wetland ecology. If the disturbance regime was modified, this area would likely be very similar in function and composition to the neighboring wet meadow.

Non-Native Grassland

This grassland series is comprised of dense to sparse cover of annual grasses and is often associated with numerous species of showy-flowered, native annual forbs, especially in years of favorable rainfall. This community occurs on fine-textured, usually clay soils that are moist or waterlogged during the winter rainy season and dry during the summer and fall. Non-native grassland communities in the Planning Area are dominated by invasive grasses, including ripgut grass (*Bromus diandrus*), wild oats (*Avena* sp.), smooth brome (*Bromus hordaceus*), and foxtail chess (*B. madritensis* ssp. *rubens*).

Eucalyptus Woodland

A few small isolated Eucalyptus Woodlands were noted throughout the Planning Area. The overstory was dominated by various species of non-native gum trees (*Eucalyptus* sp.). An understory of shade-tolerant grasses, forbs, and small shrubs is present.

Agricultural Land

This land use represents areas used for row and field crops. The species propagated are primarily introduced grain species. Some of the agricultural fields were designated as fallow, due to lack of maintenance and activity. Non-native herbaceous species were observed in the fallow agricultural fields, including mustard (*Brassica* sp.), filaree, milk thistle (*Silibum* sp.), and wild radish (*Rhaphnus* sp.). Some native herbaceous species were observed in the fallow agricultural field, including fiddleneck, and snake weed.

Pasture

This land-use classification represents fields that are used primarily for grazing livestock. Non-native grass species dominate these areas.

Orchard

This land-use classification represents areas that are used to commercially produce fruit and nut products. This land-use represents the most dominant type within the Planning Area, accounting for approximately 156 acres. Some of the species noted in the orchard understory included peppergrass (*Lepidium* sp.), filaree, rat-tail fescue (*Vulpia myuros*), telegraph weed (*Heterotheca californica*), and mustard.

Vineyard

This land-use classification represents areas that are used for commercially producing grapes. One vineyard was observed south of the Northwestern Study Area Property in the western Planning Area.

Rural Residential

This land use classification represents rural to low-density residential areas with single-family homes on a minimum of 0.5-acre lots. Many of these properties also have associated pastures, croplands, and small orchards on-site.

Residential

This land use classification represents medium- to high-density residential development.

Commercial

This land use classification represents land designated for commercial purposes, such as shopping centers or small factories.

Industrial

This land use classification represents land designated for industrial purposes, such as large manufacturing plants, dairy farms, and land along railroad tracks.

WILDLIFE

Wildlife species commonly associated with the vegetation communities that occur within the Planning Area vicinity were documented by P&D biologists during the March 2005 biological reconnaissance survey. Wildlife species were detected either through direct observation or indirectly through calls, tracks, scat, and other signs. The wildlife species observed or detected within the Planning Area are typical of the predominant agricultural land use prevalent in the Great Valley. Sensitive species observed or potentially occurring are discussed in the Sensitive Biological Resources section below. For a list of all wildlife species detected within and adjacent to the Planning Area, please refer to Appendix B, the Biological Resources Appendix.

Invertebrates

The Planning Area likely supports a wide variety of terrestrial and aquatic invertebrates. Common invertebrate species were detected in the Planning Area including darkling beetle (*Eleodes* sp.), cricket (*Stenopelmatus* sp.), honey bee (*Apis mellifera*) and a cabbage white butterfly (*Pieris rapae*). In addition, a blue-eyed darner (*Rhionaeschna multicolor*), various spider species, and argentine ant (*Iridomyrmex humilis*) were noted in the Planning Area vicinity.

Fish

No fish were observed during biological surveys due to the cloudiness of the Stanislaus River. Over 40 species of fish are reported to occur in the Stanislaus River including lamprey, sturgeon, shad, salmon, trout, sucker, carp, goldfish, minnow, catfish, mosquito fish, bass, sunfish, bluegill, perch, sculpin, stukleback, hardhead, hitch, squawfish, roach, and dace (City of Riverbank 1987).

Amphibians

No amphibians were observed during the March 2005 biological reconnaissance. The riparian and wetland habitats in the Planning Area are suitable habitat for several common species, including the bullfrog (*Rana catesbeiana*), pacific treefrog (*Hyla regilla*), and California toad (*Bufo boreas*).

Reptiles

No reptiles were observed during the March 2005 biological reconnaissance. The weather, which was rainy and cold, precluded any reptiles from activity. Common reptile species expected to occur within the Planning Area vicinity include western fence lizard (*Sceloporus occidentalis*), pacific gopher snake (*Pituophis melanoleucus*), and common garter snake (*Thamnophis sirtalis*).

Birds

A variety of birds were observed within the Planning Area vicinity and the well-established riparian habitats along the Stanislaus River provide excellent foraging and nesting sites for songbirds, raptors, and other riparian and waterfowl species. The habitats identified, including the riparian forest and flooded agricultural fields within the Planning Area, would support a large and diverse number of resident and migratory bird species. Due to the timing and limited number of surveys, however, many species expected or known to occur were not detected. Bird species most commonly observed in the general Planning Area vicinity included yellow-billed magpie (*Pica hudsonia*), Brewer's blackbird (*Euphagus cyanocephalus*), western scrub-jay (*Apheloma californica*), mourning dove (*Zenaida macroura*), house sparrow (*Passer domesticus*), and black phoebe (*Sayornis nigricans*). Additionally, red-shouldered hawk (*Buteo lineatus*), American crow (Corvus brachyrhynchos), and common raven (*Corvus corvax*) were observed. Other more specialized species such as the American kestrel (*Falco sparverius*), Anna's hummingbird (*Calypte anna*), song sparrow (*Melospiza melodia*), tree swallow (*Tachycineta bicolor*), and northern flicker (*Colaptes auratus*) were observed in the areas with more native habitat attributes.

Mammals

Muskrat (*Ondatra zibethicus*) was observed in the area classified as Disturbed Wetland, and California ground squirrel (*Spermophilus beecheyi*) was observed in various locations throughout the Planning Area vicinity. Evidence of cottontail rabbit (*Sylvilagus audubonii*) and various small mammal burrows were observed in many of the habitats and land-use areas throughout the Planning Area vicinity. Coyote (*Canis latrans*) scat indicated the presence of this predator on the Northwestern Study Area Property. Additionally, domestic dog (*Canis familiaris*), cattle, horses, and other livestock species were commonly observed. Raccoon (*Procyon lotor*) and Virginia opossum (*Didelphis virginiana*), are also likely to be present in the Planning Area.

SPECIAL STATUS SPECIES AND SENSITIVE HABITATS

Occurrences of special-status species reported in the CNDDB and the CNPS database within the Riverbank USGS 7.5 minute quadrangle and surrounding quadrangles were reviewed. In addition, the species covered under the Recovery Plan for Upland Species of the San Joaquin Valley, California (USFWS 1998) were evaluated for the likelihood of occurrence within the city of Riverbank and the Planning Area vicinity.

Special Status Plants

The CNDDB and CNPS databases contained reported occurrences of Colusa grass (*Neostaphia colusana*), Beaked clarkia (*Clarkia rostrata*), big tarplant (*Blepharizonia plumosa*), legenere (*Legenere limosa*), San Joaquin Valley Orcutt Grass (*Orcuttia inaequalis*), and Greene's tuctoria (*Tuctoria greenei*) within the Riverbank and surrounding quadrangles. Beaked clarkia and big tarplant are known to occur in valley and foothill grasslands, and the other species occur only in vernal pools. Vernal pool habitats do not occur within the Planning Area; therefore, these species are not considered further in this document. Valley grassland habitat may be associated with non-native grasslands and pasture habitats as described above; these species are described further below. No focused surveys for sensitive plant species were conducted and no sensitive plant species were observed during the general biological reconnaissance conducted on March 22 and 23, 2005.

The following species are covered under the Recovery Plan for Upland Species of the San Joaquin Valley, California (USFWS 1998): California jewelflower (*Caulanthus californicus*), Palmate-bracted bird's beak (*Cordylanthus palmatus*), Kern mallow (*Eremalche kernensis*), Hoover's wooly-star (*Eriastrum hooveri*), San Joaquin wooly-threads (*Lembertia congdonii*), Bakersfield cactus (*Opuntia basilaris* var. *treleasei*), thirteen arid grassland, and shrubland plants. P&D reviewed the vegetation community associations of these plants, included in the floral compendium in Appendix B. Due to the lack of native grassland and shrubland habitats within the Planning Area, alkaline soils, or limited regional distribution of the species, these plants have a low potential to occur within the Planning Area and are not considered further in this document.

Beaked Clarkia

Beaked clarkia, a CNPS List 1B species, is endemic to California and found in Merced, Mariposa, Stanislaus, and Tuolumne counties. Clarkia ssp. are annual herbs with slender to stout stems. They are found in valley foothill grasslands and cismontane woodlands in the San Joaquin Valley on north-facing slopes, sometimes on sandstone. They typically bloom from April through May and occur below 1500 feet (CNPS 2007, CNDDB 2007). This species could occur in the non-native grassland and pasture habitats present in the project area.

Big Tarplant

Big tarplant is a CNPS List 1B species endemic to the Mount Diablo foothills and is found primarily in eastern Contra Costa, eastern Alameda, and western San Joaquin Counties (Hoover 1937). This species occurs in annual grassland on clay to clay-loam soils, usually on slopes and often in burned areas, below 1,500 feet (CNDDB 2007). Big tarplant is an herbaceous annual that grows to between 1 and 3 feet tall producing many heads with white flowers, generally between August and October but can occur as early as July (Hickman 1993, CNPS 2007). Big tarplant occurs in only a few highly restricted populations and is endangered throughout its range (CNPS 2007). This species could occur in the non-native grassland and pasture habitats present in the project area.

FISHERIES RESOURCES

The Stanislaus River is the primary aquatic habitat within the Planning Area. This aquatic resource provides vital fish spawning, rearing, and/or migratory habitat for a diverse assemblage of native and nonnative fish species. Native species can be separated into anadromous (i.e., species that spawn in fresh water after migrating as adults from marine habitat) and resident species. Native anadromous species that occur or have the potential to occur in the Stanislaus River includes two runs of Chinook salmon (*Oncorhynchus tshawytscha*), steelhead trout (*O. mykiss*), green and white sturgeon (*Acipenser medirostris* and *A. transmontanus*), and Pacific lamprey (*Lampetra tridentata*). Native resident species include Sacramento pikeminnow (*Ptychocheilus grandis*), Sacramento splittail (*Pogonichthys macrolepidotus*), Sacramento sucker (*Catostomus occidentalis*), hardhead (*Mylopharodon conocephalus*), San Joaquin roach (*Lavinia symmetricus* sp. *symmetricus*), and resident rainbow trout (*O. mykiss*). Nonnative resident species include largemouth bass (*M. salmoides*), smallmouth bass (*M. dolomieu*), redeye bass (*M. coosae*), white and black crappie (*Pomoxis annularis* and *P. nigromaculatus*), white catfish (*Ameiurus catus*), brown bullhead (*Ictalurus nebulosus*), bluegill (*Lepomis macrochirus*), green sunfish (*Lepomois cyanellus*), golden shiner (*Notemigonus crysaleucas*), and brown trout (*Salmo trutta*).

In the Stanislaus River and in others rivers throughout the Central Valley, the use of different portions of aquatic resources by various fish species is influenced by variations habitat conditions, and by the habitat requirements, life history, and daily and seasonal movements and behavior of each species. The distribution of common native fishes in the Stanislaus River reflects the historical distribution of common native fishes in the larger Central Valley drainage. Four general fish assemblages can usually be recognized in Central Valley streams: (1) the rainbow trout assemblage, (2) the pikeminnow-hardhead-sucker assemblage, (3) the California roach assemblage, and (4) the deep-bodied fishes assemblage (Moyle 2002). The section of the Stanislaus River within the Planning Area is occupied primarily by the pikeminnow-hardhead and California roach assemblages. As discussed above, anadromous fishes, including steelhead, fall-/late fall-run Chinook salmon, and Pacific lamprey are also present in the Stanislaus River (Moyle et al. 1998).

Special-Status Fish Species

A total of six special-status fish species occur or have the potential to occur in the section of the Stanislaus River within the Planning Area (Table 4.5-2) and are described below. Of the six species, Central Valley steelhead Evolutionarily Significant Unit (ESU) and green sturgeon are listed as federally threatened species. The USFWS de-listed Sacramento splittail from its federally threatened status on September 22, 2003. NMFS has determined

that listing is not warranted for Central Valley fall/late fall-run Chinook salmon; however, it is still designated as a species of concern. The two remaining species (San Joaquin roach and hardhead) are considered Species of Special Concern by DFG. The Planning Area is upstream of any potential habitat for delta smelt, a federally threatened species. Brief descriptions follow for the special-status species with potential to occur in the section of the Stanislaus River within the Planning Area.

Table 4.5-2
Special-Status Fish Species Potentially Occurring in the Planning Area

Species	Status	Habitat	Potential to Occur in the Stanislaus River
Central Valley steelhead *Oncorhyncus mykiss*	Fed: Threatened	Requires cold, freshwater streams with suitable gravel for spawning; rears seasonally inundated floodplains, rivers, tributaries, and Delta.	Occurs in the Stanislaus River.
Central Valley fall/late fall–run Chinook salmon *Oncorhyncus tshawytscha*	CA: Species of Special Concern	Requires cold, freshwater streams with suitable gravel for spawning; rears seasonally inundated floodplains, rivers, tributaries, and Delta.	Occurs in the Stanislaus River.
Green sturgeon *Acipenser medirostris*	Fed: Threatened	Requires cold, freshwater streams with suitable gravel for spawning; rears seasonally inundated floodplains, rivers, tributaries, and Delta.	Known to occur in the Sacramento and San Joaquin rivers and tributaries. Has potential to occur in the Stanislaus River.
Delta smelt *Hypomesus transpacificus*	Fed: Threatened CA: Threatened	Spawns in tidally influenced freshwater wetlands and seasonally submerged uplands; rears seasonally inundated floodplains, tidal marsh, and Delta.	Known to occur in the Sacramento-San Joaquin Delta. Does not occur in the Stanislaus River in the Planning Area.
Sacramento splittail *Pogonichthys macrolepidotus*	Fed: Delisted Threatened CA: Species of Special Concern	Spawning and juvenile rearing from winter to early summer in shallow weedy areas inundated during seasonal flooding in the lower reaches and flood bypasses of the Sacramento and San Joaquin rivers.	Known to occur in the Stanislaus River.
Hardhead *Mylopharodon conocephalus*	CA: Species of Special Concern	Spawning occurs in pools and side pools of rivers and creeks; juveniles rear in pools of rivers and creeks, and shallow to deeper water of lakes and reservoirs.	Known to occur in the Stanislaus River.
Sacramento-San Joaquin roach *Lavinia symmetricus* sp.	CA: Species of Special Concern	Spawning occurs in pools and side pools of rivers and creeks; juveniles rear in pools of rivers and creeks.	Known to occur in the Stanislaus River.

Steelhead

The Central Valley steelhead ESU is a federally threatened species. Steelhead occurs in the Stanislaus River. The Central Valley steelhead includes all naturally spawned populations of steelhead in the Sacramento and San

Joaquin rivers and their tributaries (63 *Federal Register* [FR] 13347). Critical habitat was designated for the Central Valley steelhead ESU on August 12, 2005. Critical habitat was designated to include select waters in the Sacramento and San Joaquin river basins including the Stanislaus River. Steelhead have a complex life history, including the capability to be anadromous or resident (called rainbow trout) (Moyle 2002). Species that are anadromous spend most or a portion of their adult life in the ocean and then migrate back into freshwater to reproduce. Spawning and rearing habitat for steelhead typically occurs in perennial streams with clear, cool to cold, fast flowing water with a high dissolved oxygen content and abundant gravels and riffles. After spending 1–4 years in the ocean, adult steelhead return to their home streams to spawn (Moyle 2002). Migration into freshwater begins in August and peaks in September–October, after which the steelhead hold until flows are sufficiently high to enable migration into tributaries (Moyle 2002). Spawning begins in late December and peaks in February–March (Busby et al. 1996). Steelhead eggs hatch in 3–4 weeks (at 50–59°F), and fry emerge from the gravel 2–3 weeks later (Moyle 2002). After steelhead fry emerge from spawning gravels, they continue to grow and mature in freshwater for 1–3 years before emigrating to the ocean (Moyle 2002). Unlike salmon, steelhead do not necessarily die after spawning and can spawn more than one time. In central California, most spawning steelhead are 3 years old, with one year spent in the ocean (Busby et al. 1996).

Green sturgeon

Green sturgeon has recently has been listed as threatened by NMFS (71 FR 17757). Green sturgeon has the potential to occur in the Stanislaus River. Critical habitat has not been designated for green sturgeon. Green sturgeon occur in the lower reaches of large rivers, including the Sacramento–San Joaquin river basin, and in the Eel, Mad, Klamath, and Smith rivers. Green sturgeon adults and juveniles occur throughout the upper Sacramento River, based upon observations incidental to winter-run Chinook monitoring at the Red Bluff Diversion Dam in Tehama County (NMFS 2005). Green sturgeon spawn predominantly in the upper Sacramento River. They are thought to spawn every 3–5 years (Tracy 1990). Their spawning period is March to July, with a peak in mid-April to mid-June (Moyle et al. 1992). Juveniles inhabit the estuary until they are approximately 4–6 years old, when they migrate to the ocean (Kohlhorst et al. 1991).

Chinook salmon

Central Valley fall-/late fall-run Chinook salmon ESU is a federal species of concern. Chinook salmon occurs in the Stanislaus River. No critical habitat has been designated for fall-/late fall-run Chinook salmon. Fall-/late fall-run Chinook salmon is the most widely distributed and most numerous run occurring in the Sacramento and San Joaquin rivers and their tributaries (Moyle 2002). Chinook salmon is an anadromous fish species that requires cold, freshwater streams with suitable gravel for reproduction. After spending 2–4 years maturing in the ocean, Chinook salmon return to their natal streams to spawn (Moyle 2002). After spawning, eggs generally hatch in 6–12 weeks, and newly emerged larvae remain in the gravel for another 2–4 weeks until the yolk is absorbed. Juveniles typically rear in fresh water for up to 5 months before migrating to sea. Unlike steelhead, adult Chinook salmon die after spawning (Moyle 2002).

Sacramento Splittail

Sacramento splittail has been de-listed from its federal threatened status but remains a California Species of Special Concern. Sacramento splittail occurs in the Stanislaus River. This large cyprinid (minnow family) is endemic to California and occurs in sloughs, lakes, and rivers of the Central Valley (Moyle 2002). Sacramento splittail spawns on terrestrial vegetation and debris on floodplains inundated by high spring flows (Moyle 2002).

San Joaquin Roach

San Joaquin roach is a California Species of Special Concern. San Joaquin roach occurs in the Stanislaus River. It is one of six subspecies of California roach. San Joaquin roach is a small native minnow found throughout the San Joaquin river drainage and tributaries (Moyle 2002). San Joaquin roach is abundant in a large number of streams but is now absent from many stream reaches where it once occurred. San Joaquin roach is generally found in

small, warm streams. Dense populations are also frequently sighted in isolated pools in intermittent streams. However, within a watershed, roach can be found in a diversity of habitats, from cool headwater streams to warm water areas characterizing many lower stream reaches. It appears to be excluded from many waters by piscivorous (fish-eating) fishes, especially in habitats occupied by introduced piscivorous fishes. Roach is tolerant of relatively high water temperatures (86–95°F) and low oxygen levels, a characteristic that enables it to survive in conditions too extreme for other fishes (Moyle 2002). Roach reach maturity at 2 or 3 years of age. Spawning occurs between March through early July, when water temperatures exceed 60ºF (Moyle 2002).

Hardhead

Hardhead is a California Species of Special Concern. Hardhead occurs in the Stanislaus River. It is a large minnow that resembles the pikeminnow. It prefers clear, deep pools and runs with sand-gravel-boulder substrates and slow water velocities. Most of the streams in which it occurs have summer temperatures in excess of 60°F. However, hardhead tends to be absent from streams that have been severely altered by humans and where introduced species, especially sunfish, predominate (Moyle 2002). Hardhead is widely distributed in low to mid-elevation streams in the main Sacramento-San Joaquin river drainage. Despite its widespread distribution, hardhead populations are increasingly isolated from one another, making them vulnerable to local extinctions (Moyle 2002). As a result, hardhead is much less abundant than it once was (Moyle 2002).

SPECIAL STATUS WILDLIFE

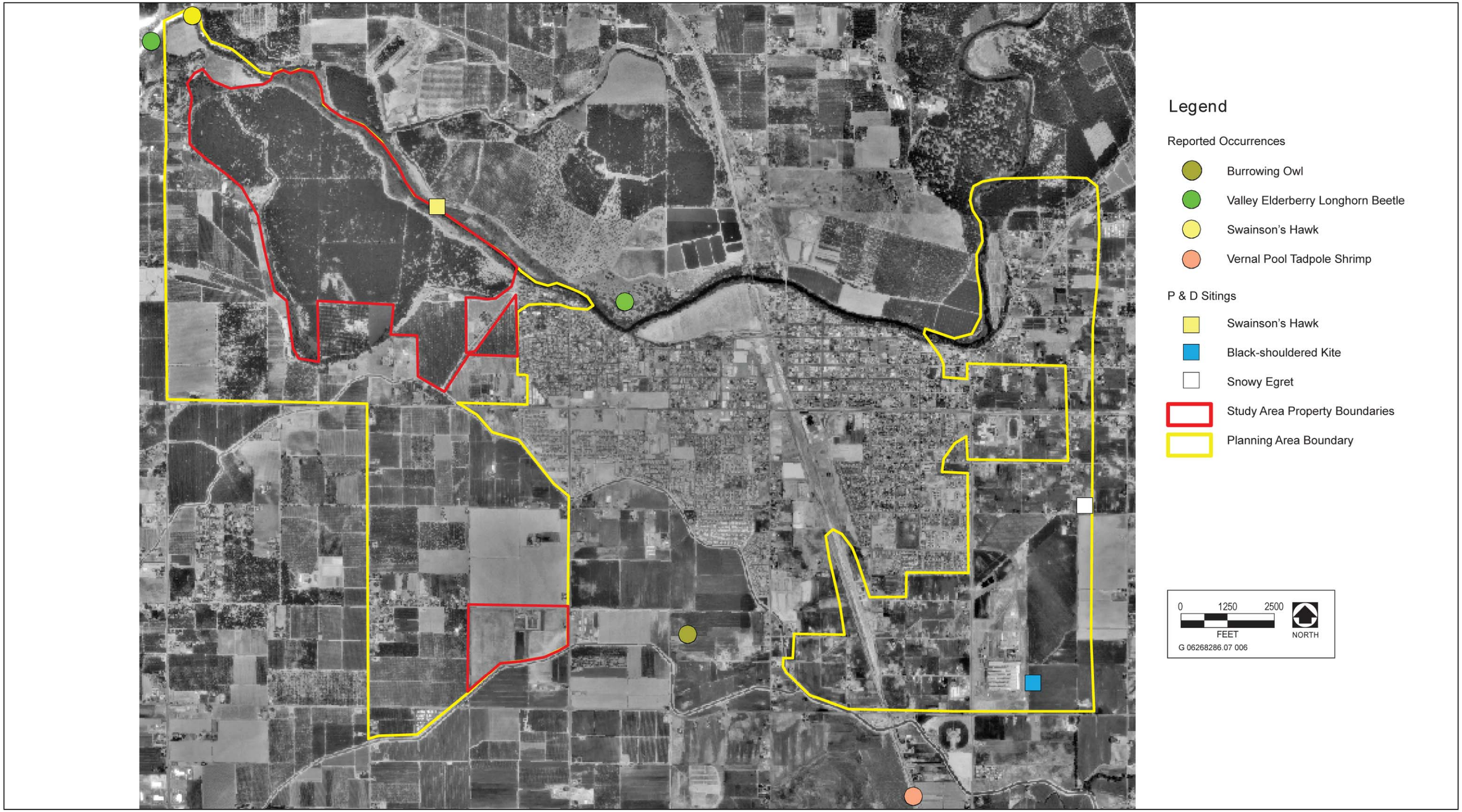
Occurrences reported in the CNDDB within 5 miles of the Planning Area were evaluated for there potential to occur in the Planning Area. Several species with known occurrences in the vicinity of the Planning Area are presumed extirpated or require specific habitats not found in the Planning Area and are therefore not expected to occur. California tiger salamander (*Ambystoma californiense*), a federal threatened species, is known from two observations in 1920 and 1975 within 5 miles of the Planning Area; the species is considered extirpated from both of these sites (CNDDB 2007). Suisun Song sparrow (*Melospiza melodia maxillaries*) is known from one observation in 1915 within 5 miles of the Planning Area; it is typically associated with tule marsh and brackish marsh in Suisun Bay and not expected to occur in the Planning Area. Riparian woodrat, a state species of special concern and federal endangered species historically occurred along the San Joaquin, Stanislaus, and Tuolumne rivers. However, it is currently restricted to Caswell Memorial State Park on the Stanislaus River, approximately 12 miles from the project site; a second population may occur near Vernalis, in San Joaquin County (USFWS 2007).[1] These three species are unlikely to occur in the Planning Area and not discussed further in this document.

The following species have been observed or determined to have a moderate or higher probability of occurring in the Planning Area vicinity, primarily based on natural history, known occurrences, and the presence of suitable habitat (Table 4.5-3). Exhibit 4.5-4 depicts the location of the sensitive species reported on the CNDDB and the location of sensitive species observed during P&D Consultants' March 2005 biological reconnaissance.

Valley Elderberry Longhorn Beetle

The valley elderberry longhorn beetle is federally listed as a threatened. The valley elderberry longhorn beetle is completely dependent on its host plant, elderberry (*Sambucus* sp.), which is a common component of the remaining riparian forests and adjacent upland habitats of California's Central Valley. Use of the elderberry by the beetle, a wood borer, is rarely apparent. Frequently, the only exterior evidence of the elderberry's use by the beetle is an exit hole created by the larva just prior to the pupal stage. The life cycle takes one or two years to complete. The animal spends most of its life in the larval stage, living within the stems of an elderberry plant. Adult emergence is from late March through June, about the same time the elderberry produces flowers. The adult stage is short-lived.

[1] This conclusion differs from the findings in the General Plan Biological Resources section based on the current known distribution of riparian woodrat populations in the Central Valley as reported by the USFWS (2007).



Source: P&D Consultants 2005, CNDDB 2007

Sensitive Species **Exhibit 4.5-4**

Table 4.5-3
Special-Status Wildlife Species Known or with Potential to Occur in the Planning Area

Species	Status	Habitat	Potential for Occurrence
Invertebrates			
Vernal pool fairy shrimp *Branchinecta lynchi*	Fed: Threatened	Vernal pools and other seasonal wetlands in valley and foothill grasslands.	Could occur; species documented 0.3 mile south of the Planning Area.
Vernal pool tadpole shrimp *Lepidurus packardi*	Fed: Endangered	Vernal pools and other seasonal wetlands in valley and foothill grasslands.	Could occur; species documented 0.3 mile south and less than 5 miles northwest of the Planning Area.
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	Fed: Threatened	Elderberry shrubs are host; generally found in riparian areas, also open hillsides and rocky outcroppings	Could occur; species documented within the Stanislaus River corridor adjacent to the Planning Area
Reptiles			
Western pond turtle *Emmys marmorata*	CA: Species of Concern	Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation	Could occur; suitable habitat is present and species has been documented 7 miles north of the Planning Area.
Birds			
White-tailed kite *Elanus leucurus*	CA: Fully Protected	Forages in grasslands and agricultural fields; nest in isolated trees or small woodland patches	Known to occur; observed within the Planning Area, suitable foraging and nesting habitat present.
Swainson's hawk *Buteo swainsoni*	CA: Threatened	Forages in grasslands, and agricultural fields; nests in open woodland or scattered trees	Known to occur; documented in the Planning Area.
Tricolored blackbird *Agelaius tricolor*	CA: Species of Concern	Forages in grasslands and agricultural fields; nests in freshwater marsh with dense cattails and tules, riparian scrub, and other dense shrubs and herbs for nesting	Could occur; suitable habitat present within Planning Area.
Burrowing owl *Athene cunicularia*	CA: Species of Concern	Forages and nests in grasslands, agricultural land, and open woodlands	Known to occur; documented in the Planning Area.
Yellow breasted chat *Icteria virens*	CA: Species of Concern	Forages in dense riparian thickets of willows, vine tangles, and dense brush associated with aquatic habitats.	Could occur; suitable habitat present within Planning Area.
Mammals			
Western mastiff bat *Eumops perotis californicus*	CA: Species of Concern	Found throughout California in wide range of habitats; nests in cliffs; intolerant of human activity	Could occur; one occurrence documented in 1957 northwest of the Planning Area, but roosting habitat is limited.

Source: CNDDB 2007

Elderberry shrubs within the Planning Area, especially the Stanislaus River corridor and Oak Walnut Elderberry Woodland on and adjacent to the Northwestern Study Area Property, provide suitable habitat for this species. There are four reported occurrences of valley elderberry longhorn beetle within five miles of the Planning Area, including one within the Stanislaus River Corridor immediately to the north (CNDDB 2007).

Vernal Pool Crustaceans

Vernal pool crustaceans, including vernal pool fairy shrimp, federally listed as threatened, and vernal pool tadpole shrimp, federally listed as endangered, are small crustaceans (½ inch to 2 inches long) that are restricted to vernal pools, swales, and other seasonal pools. Eggs of these species lie dormant during most of the year in the form of cysts that are capable of withstanding extreme environmental conditions such as heat, cold, and prolonged desiccation. The cysts hatch when the pools fill with rainwater and the young rapidly develop into sexually mature adults. Not all of the cysts hatch with the first rainfall; some remain dormant to hatch during subsequent events or in later years.

Vernal pool fairy shrimp occupy a variety of different vernal pool habitats, from small, clear, sandstone rock pools to large, turbid, alkaline, grassland valley floor pools. Although the species has been collected from large vernal pools, including one exceeding 25 acres, it tends to be present in smaller pools. It is most frequently found in pools measuring less than 0.05 acre. These are most commonly found in grass-or mud-bottomed swales, or basalt flow depression pools in unplowed grasslands. Vernal pool tadpole shrimp inhabit vernal pools containing clear to highly turbid water, ranging in size from 54 square feet at the former Mather Air Force Base area of Sacramento County to the 89-acre Olcott Lake at Jepson Prairie.

Although the Planning Area does not support vernal pool habitat, both vernal pool tadpole shrimp have potential to occur because they have recently been observed in degraded non-vernal pool wetland less than ½ mile south of the Planning Area, near the intersection of Terminal Avenue and Plainview Road. The wet meadow habitat and other areas of seasonal inundation could provide suitable habitat for these species within the Planning Area.

Western Pond Turtle

The western pond turtle is a state species of special concern. Pond turtles generally occur in streams, ponds, freshwater marshes, and lakes. They require still or slow-moving water with instream emergent woody debris, rocks, or other similar features for basking sites. Nests are typically located on unshaded upland slopes in dry substrates with sandy, clay or silt soils excavated by the female up to 400 meters (usually less) from the aquatic habitats where they occur.

There two reported occurrences of this species within seven miles of the Planning Area (CNDDB 2007). Suitable aquatic habitat in the Planning Area includes the Stanislaus River corridor, ponds, and seasonal wetlands.

White-tailed Kite

The white-tailed kite is a year-round resident over much of California. White-tailed kites nest in woodlands, small groves, or isolated trees in areas bordering grassland and open fields. Kites hunt for food in any open grassy area and are often seen hovering even over weedy margins of highways. Their prey consists primarily of small rodents, but they also feed on terrestrial insects.

There are no CNDDB occurrences of this species within 5 miles of the Planning Area (CNDDB 2007), however, a white-tailed kite was observed in the Planning Area hovering over the non-native grassland habitat adjacent to an industrial facility west of the Santa Fe Railroad.

Swainson's Hawk

During the early 1900s, the Swainson's hawk nested in lowlands throughout most of California, maintaining populations as large as 17,000 pairs. Ten years ago, only 550 nesting pairs were found in California, and numbers have been slowly declining. Today, most nesting is confined to the Central Valley and parts of the Great Basin. About two-thirds of the statewide population nest in the southern Sacramento Valley and northern San Joaquin Valley regions.

The Swainson's hawk prefers habitats with open grasslands with abundant prey in association with suitable nest trees such as oaks, cottonwoods, walnuts, and willows. Suitable hunting grounds include native grasslands or lightly grazed pastures, alfalfa, and other hay crops and certain grain and row croplands. Croplands in which prey is scarce or difficult to get at because of the density of vegetative cover are unsuitable hunting grounds for this hawk, such as, vineyards, orchards, and rice, corn, and cotton crops. Typical prey includes small mammals such as mice, gophers, ground squirrels, rabbits, and voles. The Swainson's hawk will also feed on other small birds, bats, and insects that it captures while in flight.

There are three reported an occurrence of Swainson's hawk within five miles of the Planning Area (CNDDB 2007). On March 23, 2005, P&D observed a pair of Swainson's Hawks vocalizing and circling above the riparian forest near the Stanislaus River in the Northwestern Study Area.

Burrowing Owl

The burrowing owl is a resident of open, dry grassland and desert habitats. They are also found in grasslands and open shrub stages of pinyon-juniper and ponderosa pine habitats. This small owl is found the length of the State of California in appropriate habitats and has been found as high as 5,300 feet above sea level in Lassen County.

This ground owl preys mostly on insects, small mammals, reptiles, birds, and carrion. Burrowing owls usually nests in the old burrow of a ground squirrel, badger, or other mammal, although they may dig their own burrow in soft soil. The burrowing owl's numbers have been markedly reduced in California during at least the past 60 years. Conversion of grasslands to agriculture, other habitat destruction, and poisoning of ground squirrels, has contributed to the reduction in numbers in recent decades, which was noted in the 1940s and earlier.

The non-native grasslands, pasture, fallow agricultural fields, and the berms along canals provide suitable habitat for burrowing owl in the Planning Area. There is one reported occurrence of this species in the Planning Area and another occurrence within five miles of the Planning Area (CNDDB 2007).

Yellow-breasted Chat

The yellow-breasted chat is a species of special concern in California. Chats require dense riparian thickets of willows, vine tangles, and dense brush associated with streams, swampy ground, and the borders of small ponds. This species has been extirpated from most of the Sacramento Valley but still occurs sparingly in several of the northern foothill tributaries (e.g., Dye Creek and Clear Creek contain dense populations), as well as Tulare and Fresno counties in the San Joaquin Valley.

The mixed riparian forest along the Stanislaus River provides suitable habitat for this species. There is one reported occurrence of this species 12.5 miles northeast of the Planning Area (CNDDB 2007).

Tricolored Blackbird

The tricolored blackbird is a California species of special concern. It breeds in dense colonies in California's Central Valley, Coast Ranges, and southern California. The tricolored blackbird defends very small breeding territories within a colony and forages outside the colony, often several miles away. Original habitat for the tri-colored blackbird consisted of extensive freshwater emergent marshes and native grasslands that once covered the

Central Valley and other parts of California. Most of the prime native habitat for the tricolored blackbird has been destroyed or degraded, and current nesting colonies are often found in grain crops.

The habitats identified within the Planning Area vicinity that could potentially support nesting tricolored blackbirds include freshwater marsh, riparian scrub, willow scrub, and agricultural fields. This species could also utilize agricultural fields, grasslands, and pasture as foraging habitat.

Western Mastiff Bat

The western mastiff bat, a large south western bat, is a state species of special concern. They feed on insects and occur in semi-arid to arid environments and roost in cliffs, trees, buildings or tunnels with an available 2–3 meter drop to facilitate flight. The species was widespread in the San Joaquin Valley; the decline in population is thought to be a result of extensive loss of habitat due to urbanization, cultivation of foraging areas, loss of wetlands, and widespread use of insecticides. There is one 1957 occurrence reported in the CNDDB located approximately one mile north of the city of Oakdale. Oakdale is east of the Riverbank Planning Area.

SENSITIVE HABITATS

Sensitive habitats include those that are of special concern to resource agencies or are afforded specific consideration through CEQA, Section 1602 of the California Fish and Game Code, Section 404 of the Clean Water Act (CWA), or the State's Porter-Cologne Act, as discussed in the Regulatory Setting section, below. Sensitive habitats may be of special concern to these agencies and to conservation organizations for a variety of reasons, including their locally or regionally declining status, or because they provide important habitat to common and special-status species. Many of these habitats are tracked in the CNDDB. The sensitive habitats noted within the Planning Area vicinity include riparian habitats, waters of the United States, and wildlife movement corridors.

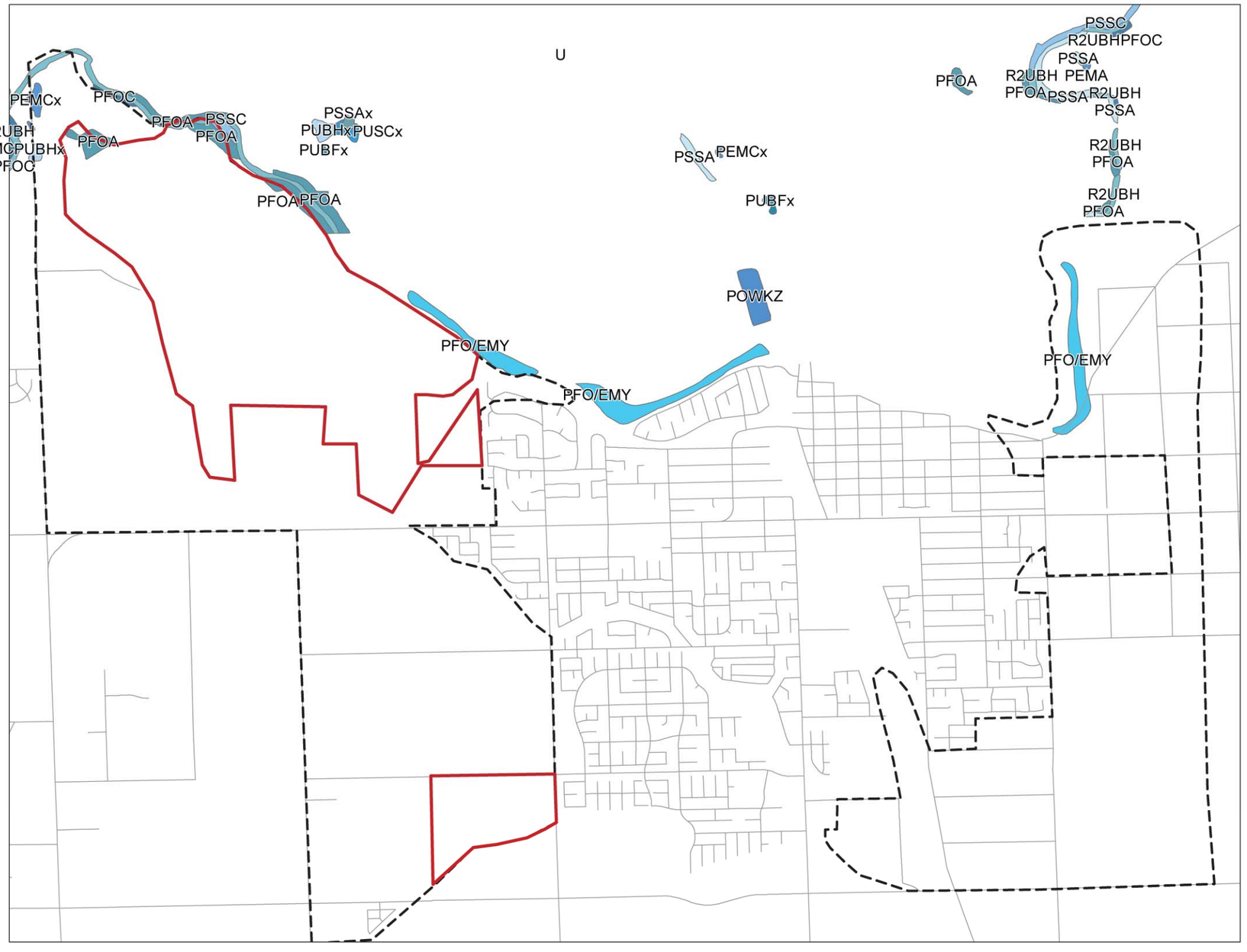
Riparian Habitat and Wildlife Movement Corridor

Riparian habitats that occur within the Planning Area include great valley mixed riparian forest, great valley willow scrub, riparian scrub, and oak walnut elderberry woodland. Some of these are considered sensitive habitats by DFG and tracked in the CNDDB. The structure and species composition of the riparian habitats are described above in the Habitat section of this chapter. These riparian habitats occur along the Stanislaus River corridor.

The Stanislaus River provides a valuable corridor for wildlife movement. It connects suitable wildlife areas in a region that is otherwise fragmented by rugged terrain, changes in vegetation, and human disturbance. The natural features such as drainages, ridgelines, and areas with vegetation cover provide corridors for wildlife travel. These corridors provide access to mates, food, and water; they allow the dispersal of individuals away from high population density areas and facilitate genetic exchange between populations. Because the Stanislaus River is surrounded by development, the basin provides a movement corridor for birds, amphibians, fish, and mammals.

Waters of the United States

P&D Consultants reviewed the NWI for the Planning Area vicinity. The wetlands indicated are primarily associated with the Stanislaus River riparian area and therefore classified as Palustrine and Forested. Exhibit 4.5-5 provides a detailed NWI map of the Planning Area. In addition to the riparian and wetland habitats associated with the Stanislaus River, P&D Consultants identified potential jurisdictional isolated wetlands, including the wet meadow complexes. Habitats identified within the Planning Area vicinity where hydrophytic vegetation was present and would be considered jurisdictional by DFG and/or USACE include freshwater marsh, wet meadow, and disturbed wetland and are illustrated in Exhibit 4.5-6.



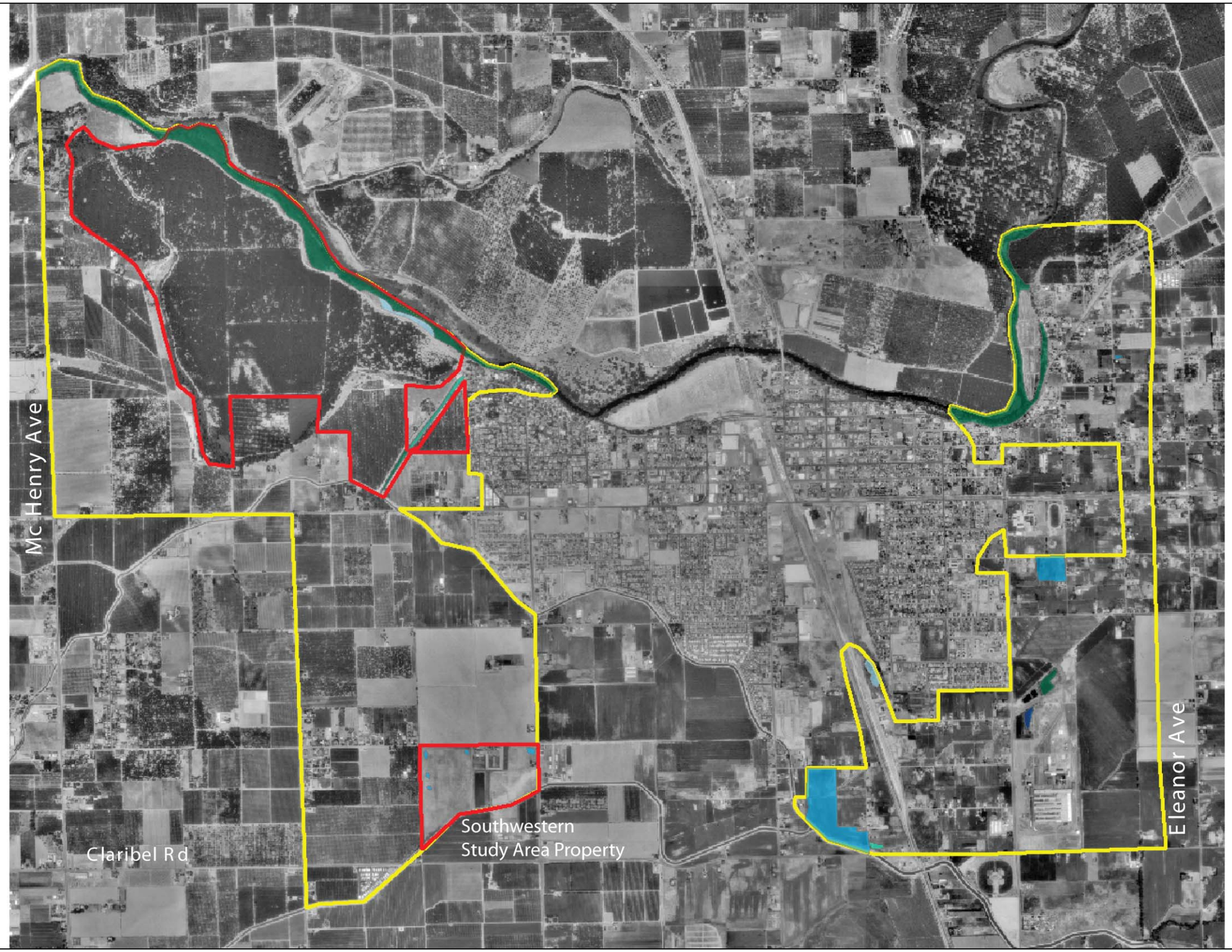
Legend

- Planning Area Boundary
- Study Area Property Boundaries

PEMCx	Palustrine, Emergent, Seasonally Flooded, Excavated
PUBHx	Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated
PUBFx	Palustrine, Unconsolidated Bottom, Semipermanently Flooded, Excavated
PFOA	Palustrine, Forested, Temporarily Flooded
PFOC	Palustrine, Forested, Seasonally Flooded
PSSC	Palustrine, Scrub-Shrub, Seasonally Flooded
PSSA	Palustrine, Scrub-Shrub, Temporarily Flooded
PSSAx	Palustrine, Scrub-Shrub, Temporarily Flooded, Excavated
PUSCx	Palustrine, Unconsolidated Shore, Seasonally Flooded, Excavated
PFO/EMY	Palustrine, Forested/Emergent, Saturated/Semipermanent/Seasonal
POWKZ	Palustrine, Open Water/Unknown Bottom, Artificially Flooded, Intermittently Exposed/ Permanent
R2UBH	Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded
PEMA	Palustrine, Emergent, Temporarily Flooded
U	Upland

Source: U.S. Fish & Wildlife Service National Wetlands Inventory, 2007.

National Wetlands Inventory Map **Exhibit 4.5-5**



Legend

- Mixed Riparian Forest
- Willow Scrub
- Riparian Scrub
- Freshwater Marsh
- Wet Meadow
- Disturbed Wetland
- Study Area Property Boundaries
- Planning Area Boundary

0 1250 2500
FEET
NORTH
G 06268286.07 005

Source: P&D Consultants, 2005.

Wetlands Map **Exhibit 4.5-6**

4.5.3 REGULATORY SETTING

Many sensitive biological resources in California are protected and/or regulated by federal and state laws and policies. Prior to implementation, the proposed project must be in compliance with these regulations.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

Federal Endangered Species Act

Pursuant to the federal ESA, the USFWS has regulatory authority over federally listed species. Under the ESA, a permit to "take" a listed species is required for any federal action that may harm an individual of that species. Take is defined under Section 9 of the ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Under federal regulation, take is further defined to include habitat modification or degradation where it would be expected to result in death or injury to listed wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

Section 7 of the ESA outlines procedures for federal interagency cooperation to conserve federally listed species and designated critical habitat. Section 7(a)(2) requires federal agencies to consult with USFWS to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species. For projects where federal action is not involved and take of a listed species may occur, the project proponent may seek to obtain an incidental take permit under Section 10(a) of the ESA. Section 10(a) allows USFWS to permit the incidental take of listed species if such take is accompanied by a habitat conservation plan that includes components to minimize and mitigate impacts associated with the take.

Section 404 of the Clean Water Act

In accordance with Section 404 of the CWA, the USACE regulates discharge of dredged or fill material into waters of the United States. Waters of the United States and their lateral limits are defined in Title 33, Part 328.3(a) of the Code of Federal Regulations to include:

- navigable waters of the United States,
- interstate waters,
- all other waters where the use or degradation or destruction of the waters could affect interstate or foreign commerce,
- tributaries to any of these waters, and
- wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries.

Waters of the United States are often categorized as "jurisdictional wetlands" (i.e., wetlands over which the USACE exercises jurisdiction under Section 404) and "other waters of the United States" when habitat values and characteristics are being described. "Fill" is defined as any material that replaces any portion of a water of the United States with dry land or that changes the bottom elevation of any portion of a water of the United States. Any activity resulting in the placement of dredged or fill material within waters of the United States requires a permit from the USACE.

In accordance with Section 401 of the CWA, projects that apply for a USACE permit for discharge of dredged or fill material must obtain water quality certification from the appropriate RWQCB indicating that the project will uphold state water quality standards.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA), first enacted in 1918, implements domestically a series of treaties between the United States and Great Britain (on behalf of Canada), Mexico, Japan, and the former Soviet Union that provide for international migratory bird protection. The MBTA authorizes the Secretary of the Interior to regulate the taking of migratory birds; the act provides that it shall be unlawful, except as permitted by regulations, "to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird…" (U.S. Code Title 16, Section 703). This prohibition includes both direct and indirect acts, although harassment and habitat modification are not included unless they result in direct loss of birds, nests, or eggs. The current list of species protected by the MBTA includes several hundred species and essentially includes all native birds.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

California Endangered Species Act

Pursuant to the California Endangered Species Act (CESA), a permit from DFG is required for projects that could result in the take of a plant or animal species that is state-listed as threatened or endangered. Under CESA, "take" is defined as an activity that would directly or indirectly kill an individual of a species, but the CESA definition of take does not include "harming" or "harassing," as the ESA definition does. As a result, the threshold for take is higher under CESA than under ESA (i.e., habitat modification is not necessarily considered take under CESA).

California Fish and Game Code Sections 3503 and 3503.5—Protection of Bird Nests and Raptors

Section 3503 of the California Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 specifically states that it is unlawful to take, possess, or destroy any raptors (i.e., species in the orders Falconiformes and Strigiformes), including their nests or eggs. Typical violations of these codes include destruction of active nests resulting from removal of vegetation in which the nests are located. Violation of Section 3503.5 could also include failure of active raptor nests resulting from disturbance of nesting pairs by nearby project construction. This statute does not provide for the issuance of any type of incidental take permit.

California Fish and Game Code—Fully Protected Species

Protection of fully protected species is described in Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code. These statutes prohibit take or possession of fully protected species. DFG is unable to authorize incidental take of fully protected species when activities are proposed in areas inhabited by those species. DFG has informed nonfederal agencies and private parties that they must avoid take of any fully protected species in carrying out projects.

California Fish and Game Code Section 1602—Streambed Alteration

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources are subject to regulation by DFG under Section 1602 of the California Fish and Game Code. Under Section 1602, it is unlawful for any person, governmental agency, or public utility to do the following without first notifying DFG:…substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. A stream is defined as a body of water that flows at least periodically or intermittently through a bed or channel that has banks and supports fish or other aquatic life. This definition includes watercourses with a surface or subsurface flow that supports or has supported riparian vegetation. DFG's jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife. A DFG streambed alteration agreement must be obtained for any project that would result in an impact on a river, stream, or lake.

Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Water Quality Control Act, "waters of the state" fall under the jurisdiction of the appropriate RWQCB. Under the act, the RWQCB must prepare and periodically update water quality control basin plans. Each basin plan sets forth water quality standards for surface water and groundwater, as well as actions to control nonpoint and point sources of pollution to achieve and maintain these standards. Projects that affect wetlands or waters must meet waste discharge requirements of the RWQCB, which may be issued in addition to a water quality certification or waiver under Section 401 of the CWA.

4.5.4 SIGNIFICANCE THRESHOLDS

THRESHOLDS OF SIGNIFICANCE

Thresholds for determining the significance of impacts on biological resources were based on Section 15065 and Appendix G of the State CEQA Guidelines. The proposed project would have a significant impact on biological resources if it would:

- 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 DFG or USFWS;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in any local or regional plans, policies, or regulations, or by DFG or USFWS;
- have a substantial adverse effect on federally protected waters of the United States, including wetlands, as defined by Section 404 of the CWA through direct removal, filling, hydrological interruption, or other means;
- interfere substantially with the movement of any native resident or migratory 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;
- conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan; or
- substantially reduce the habitat of a fish and wildlife species, cause a fish or wildlife species to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or reduce the number or restrict the range of an endangered, rare, or threatened species.

The term "substantial" in relation to adverse effects on plant and wildlife resources has not been quantitatively defined in CEQA. What is considered substantial can vary with each species or habitat and with the circumstances pertinent to a particular geographic area. Impacts were considered less than significant if they did not meet at least one of the criteria listed above.

4.5.5 IMPACTS AND MITIGATION MEASURES

IMPACT ANALYSIS

IMPACT 4.5-1 Effects on special-status plants, wildlife, and fisheries. *The proposed General Plan would involve construction and occupation of many different urban land uses, as well as preservation and conservation of*

certain lands. These changes could affect special-status species or the habitats they depend on. However, detailed policies in the General Plan ensure that impacts are ***less than significant.***

The Stanislaus River supports a variety of fish species, including five special-status species know or with potential to occur in the river. Terrestrial habitats within the Planning Area, particularly the Stanislaus River riparian corridor, support a variety of terrestrial wildlife species support habitat for many plants and animals. Most of these species are locally and regionally common, but two special-status plants and 10 special-status animals are known or have potential to occur in the Planning Area.

The Conservation and Open Space Element of the General Plan includes several goals and policies designed to minimize adverse effects to special-status species and the habitats that support them.

Goal CONS-4 focuses on preservation of habitat along the Stanislaus River, and Policy CONS-4.1 requires that approved projects, plans, and subdivisions avoid conversion of habitat within the existing Stanislaus River riparian corridor and preserve an open space buffer along the Stanislaus River and associated riparian areas. Implementation of this policy would preserve, in its entirety, the portion of the existing Stanislaus River riparian corridor within the Planning Area. Policy CONS-4.2 provides further protection of the Stanislaus River by requiring measures to ensure projects do not decrease water quality or alter hydrology of the river or associated groundwater recharge areas.

Goal CONS-4: Preserve Habitat Associated With the Stanislaus River While Increasing Public Access

- Policy CONS-4.1: Approved projects, plans, and subdivisions shall avoid conversion of habitat within the existing Stanislaus River riparian corridor, including Great Valley Mixed Riparian Forest, Great Valley Willow Scrub, and Riparian Scrub areas, and shall preserve an open space buffer along the Stanislaus River and associated riparian areas. The open space buffer shall be designed to avoid impacts to habitat and special status species in the riparian corridor, as specified in Policy CONS 5.1, Policy CONS 5.2, Policy CONS 5.3, and Policy CONS 5.6, based on project specific biological resource assessment. The precise size of buffer from the river and associated riparian corridor is to be determined by site specific analysis. The riparian corridor preservation and open space buffer shall be provided through a permanent covenant, such as a conservation easement and shall also include an ongoing maintenance agreement with a land trust or other qualified nonprofit organization. The preservation of the riparian corridor and ongoing maintenance agreement is required prior to City approval of any subdivision of property or development project located in areas outside City limits as of January 1, 2007. Low-impact recreation could be allowed in this buffer area to the extent that impacts to these sensitive habitats are avoided or fully mitigated by demonstrating no net loss of habitat functions or value. Urban development shall not be allowed in this buffer area.

- Policy CONS-4.2: Approved projects, plans, and subdivisions shall provide for collection, conveyance, treatment, detention, and other stormwater management measures in a way that does not decrease water quality or alter hydrology in the Stanislaus River or associated groundwater recharge areas.

Potential adverse effects to special-status species are further addressed by General Plan Goal CONS-5 which is designed to preserve the natural diversity in the Riverbank Planning Area. Policies CONS-5.2 and CONS 5-3 minimize potential effects by requiring development applications to demonstrate how impacts to habitats supportive of special-status species are being avoided and requiring that developments be clustered to avoid important habitat areas. Policies CONS 5.4 through 5.6 require detailed information on any unavoidable habitat disruption, full mitigation of adverse effects, and compliance with applicable regulations for special-status species.

Goal CONS-5: Preserve the Natural Diversity in the Riverbank Planning Area

- Policy CONS-5.1: Approved projects, plans, and subdivisions shall avoid urban development of the existing Stanislaus River riparian corridor and other habitat that is rare, declining, unique, or supportive of special-status species.

- Policy CONS-5.2: Development applications involving areas with important habitat shall submit site plans that specifically show how development will avoid impacts to habitat that is rare, declining, unique, or supportive of special-status species.

- Policy CONS-5.3: The City will require the use of clustering to avoid important habitat areas.

- Policy CONS-5.4: When the loss of important habitat is unavoidable, mitigation measures will be designed to reduce impacts to the maximum extent feasible. This mitigation may include, but is not limited to off-site mitigation banking with restoration and enhancement components. For projects that would affect the function and value of river, stream, lake, pond, or wetland features, each of these features shall be delineated. For wetlands, the delineation shall be conducted in accordance with the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual and verified by USACE. The project applicant shall determine the exact acreage of important habitat (including those protected by federal, state, regional, and/or local regulations) that would be impacted by project implementation. A mitigation plan to replace or rehabilitate affected habitats in a manner that ensures no net loss of habitat functions and values shall be prepared and implemented in accordance with applicable regulations. The plan shall be reviewed and approved by the appropriate regulatory agencies and all relevant permits and authorizations shall be obtained. Mitigation monitoring shall be conducted to ensure performance criteria are met.

- Policy CONS-5.5: Approved projects, plans, and subdivisions shall comply with applicable federal and state laws and regulations (e.g., federal and state endangered species acts and California Fish and Game Code) that require the protection of special-status species.

- Policy CONS-5.6: For all development projects involving discretionary review that have the potential to affect special status species, the project applicant shall be required to perform a reconnaissance level assessment of the project site for special-status species and their habitat. For projects with the potential to have a substantial adverse effect on special-status species, their habitats, or movement corridors, or result in the fragmentation of their habitats, a Biological Inventory Report shall be prepared by a qualified biologist, to determine if, and to what extent special-status species and their habitat may be affected by a proposed project. Projects shall be designed to avoid disturbance or fragmentation of important habitats and wildlife movement corridors. For projects where avoidance is not possible, the project applicant shall be required to fully mitigate the effects the development on special-status species, and the loss and/or fragmentation of their habitat.

- Policy CONS-5.7: A mitigation plan shall be prepared and reviewed and approved by the appropriate regulatory agencies for projects where avoidance of adverse effects to special-status species is not feasible, and authorization for take of listed species shall be obtained, if necessary. The mitigation plan shall include measures to minimize potential for effects during project construction (e.g., pre-construction surveys and timing of construction) and measures to compensate for loss of special-status species habitat. Loss of Swainson's hawk foraging habitat shall be compensated for by preservation and management of foraging habitat of at least a similar quality at an appropriate location. Mitigation plans shall identify an appropriate mitigation site, compensation acreage, performance criteria, and monitoring and management requirements to ensure the site provides suitable habitat for the applicable species. Long-term protection of mitigation lands shall be ensured through fee title acquisition, conservation easement, or other suitable mechanisms. Long-term management of mitigation lands shall be ensured by establishing a management

endowment or other suitable funding source. Alternatively, it may be appropriate to contribute funds to existing mitigation programs. Use of such a program shall be approved by the appropriate regulatory agencies.

General Plan policies described above are designed to avoid potential loss and other adverse effects to special-status species habitat provided by the Stanislaus River and associated riparian corridor. The policies also address potential adverse effects to species that could occur in the Planning Area by requiring evaluation of potential effects and development and implementation of plans to fully mitigate unavoidable effects in a manner acceptable to the resource agencies. Successful implementation of these conservation policies would avoid, minimize, and/or compensate for potential adverse effects to special-status species, as well as other more common species that utilize the same habitats.

Therefore, implementation of the plan is unlikely to result in substantial adverse effects to special-status species or their habitat. This impact is considered **less than significant**.

Mitigation Measure: No mitigation is required.

IMPACT 4.5-2 **Effects on Federally Protected Waters of the United States, sensitive natural communities, and wildlife corridors and nursery sites.** *The proposed General Plan would involve construction and occupation of many different urban land uses, as well as preservation and conservation of certain lands. These changes could affect directly or indirectly affect Waters of the United States and other important resource areas as described below. However, detailed policies in the General Plan ensure that impacts are less than significant.*

The Planning Area supports several vegetation communities that likely qualify for protection under state and/or federal regulations, including the Stanislaus River and associated riparian habitats and woodland and wetland features elsewhere in the Planning Area. These could include agricultural/drainage canals that traverse and border portion of the Planning Area. The Stanislaus River corridor also serves as an important corridor for fish and terrestrial wildlife species and could serve as a nursery site.

As mentioned above, Policy CONS-4.1 would preserve habitat within the existing Stanislaus River riparian corridor, and Policy CONS-4.2 would protect water quality and hydrology of the Stanislaus River. Policy CONS-4.1 also requires that potential adverse effects to the corridor from low-impact recreation use of the adjacent buffer would only be allowed if such effects could be fully mitigated by demonstrating no net loss of habitat functions or value. Implementation of these policies would almost entirely avoid adverse effects to the Stanislaus River corridor and would ensure unavoidable indirect effects would be mitigated.

Potential adverse effects to protected habitats, including those outside of the river corridor, are further addressed by Policy CONS-5.2, which requires that development applications demonstrate how impacts to sensitive habitats are being avoided and Policy CONS-5.3, which requires that developments be clustered to avoid important habitat areas. Policy CONS-5.4 addresses potential unavoidable impacts by requiring mitigation measures to be designed to reduce impacts to the maximum extent feasible and compensate for unavoidable impacts. This policy also specifies means of determining exact acreages of important habitat (including those protected by federal, state, regional, and/or local regulations) that would be impacted and requires preparation and implementation of a mitigation plan (approved by the appropriate regulatory agencies) to replace or rehabilitate affected habitats in a manner that ensures no net loss of habitat functions and values. It also requires that any applicable regulatory permits and authorizations be obtained.

General Plan policies described above are designed to avoid potential loss and other adverse effects to the Stanislaus River corridor and other areas of protected habitat within the Planning Area. The policies also require evaluation of potential effects and development and implementation of plans to fully mitigate unavoidable effects in a manner acceptable to the resource agencies. Successful implementation of these conservation policies would

avoid, minimize, and/or compensate for potential adverse effects to protected habitats. Therefore, implementation of the General Plan is unlikely to result in substantial adverse effects to federally protected waters of the United States, sensitive natural communities, and wildlife corridors and nursery sites. This impact is considered **less than significant**.

Mitigation Measure: No mitigation is required.

IMPACT 4.5-3 **Effects on approved local, regional, or state habitat conservation plans or other policies and ordinances protecting biological resources.** *The City is adjacent to San Joaquin County, which has an adopted habitat conservation plan, the SJMSCP. Implementation of proposed General Plan policies would ensure potential adverse effects to natural resources protected under the SJMSCP are avoided to a great extent and that residual unavoidable effects are fully mitigated. Therefore, the Plan would be consistent with the SJMSCP and other plans and ordinances that protect biological resources. This impact is considered less than significant.*

The City is adjacent to San Joaquin County, which has an adopted habitat conservation plan, the SJMSCP. Although the City itself is located in Stanislaus County, its wastewater treatment facility and other properties are in San Joaquin County. Therefore, they are also located within the area covered by the SJMSCP. In addition, the Conservation/Open Space Element of the Stanislaus County General Plan includes goals, policies and implementation measures intended to protect natural resources throughout the county, including the Planning Area.

Policy CONS-4.3 requires compliance with the SJMSCP, as applicable.

- Policy CONS-4.3: The City will require compliance with the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan for projects to expand Jacob Myers Park, or other projects within San Joaquin County, as applicable.

Implementation of other policies under Goals CONS-4 and CONS-5 would further ensure potential adverse effects to natural resources protected under the SJMSCP are avoided and that residual unavoidable effects are fully mitigated. Therefore, the Plan would be consistent with the SJMSCP and other plans and ordinances that protect biological resources. This impact is considered **less than significant**.

Mitigation Measure: No mitigation is required.

4.6 CULTURAL RESOURCES

4.6.1 INTRODUCTION

This section summarizes information regarding known prehistoric and historic-era resources within the Riverbank Planning Area and provides an assessment of the potential effects of the proposed General Plan these cultural resources.

4.6.2 ENVIRONMENTAL SETTING

As with most cities in California, Riverbank has been evolving as a community since its inception in the late 1800s. The following provides a brief overview of the prehistory and history of Riverbank from the time Native Americans inhabitated the area of what is the city of Riverbank today.

STANISLAUS RIVER AND THE LAQUISIMAS INDIANS

Over two centuries ago the Stanislaus River was surrounded by a dense accumulation of trees and undergrowth. The landscape of sloughs and swamps was abundant with wildlife and the river was crowded with salmon, crawdads, and frogs.

When the first Spanish missionaries came, probing east to the lower San Joaquin River in 1776, the valley floor was inhabited by groups who called themselves "Yokuts", specifically those inhabiting the Stanislaus River were of a group known as Lakisamne. Estimates of the number of Valley Yokuts range from 11,000 to 31,000. Independent studies of the Indians of Stanislaus County, has identified more than 50 burial sites, some as large as 45 acres, evidence that the county's Indian population was substantial.

In 1806, the Spanish reached the Stanislaus River, and intended to use the local peoples for labor in the missions. In 1828 Estanislao, Chief of the Laquisismas Yokuts, lead a rebellion against the missions. He defeated Mariano Vallejo and the Mexican Army. However in 1829, Vallejo returned with more troops and the Laquisismas were finally defeated at Arroyo Seco.

THOMPSON RANCHO AND BURNEYVILLE SETTLEMENT

At the time there were few roads and those that did exist were in poor condition, therefore early settlements in the central valley were established along the rivers, the primary transportation routes available at the time. With California's gold rush in 1849, a stampede of people flooded the state, seeking their fortunes. Following the gold rush many stayed to establish towns and cities in northern California.

Between 1836, when the Spanish secularized the missions, and 1846, when the Americans took control of the state, the Mexican Government issued some 30 land grants in California, specifically for agricultural purposes (primarily the raising of cattle). All but six of these grants were subsequently confirmed by the United States Land Commission, a process complicated by the vagueness by which they originally were measured and described. Descriptions included direction such as from "this tree to that tree" and measurements were by the "length of a rawhide riata," which was subject to stretching. The grants were limited to a maximum of eight square leagues, a Spanish league being slightly more than 2.6 miles.

Five grants addressed land in what now is Stanislaus County. Alfias Basilio Thompson received 35,000 acres along both sides of the Stanislaus River between the present sites of Oakdale and Riverbank. Thompson, a shipmaster from Rancho Santa Barbara who was married to a Mexican woman named Francisca Carillo, received the grant on June 13, 1846 by Pio Pico, then Mexican Governor of California. Because land was abundant at this time, large grants from the Mexican Government were common. It is also felt that these gifts were given in the hope that the new landowners would protect the Mexican lands from the expected American invasion.

Captain Thompson did not move his home to the land granted to him because he considered the land too wild and believed it to be covered with "wild animals and Indians."

The land grant covered the area now bounded on the south by Patterson Road, on the north by Carter Road, on the east by a line made up of Valley View Avenue in Oakdale, Alpers Road south of Oakdale and Twenty Eight Mile Road north of Oakdale, and on the west by Santa Fe Road in Riverbank and Henry Avenue north of Riverbank.

The Mexicans called this area the "San Joaquin District" and it became part of the United States on May 10, 1848 as a result of the Guadalupe-Hidalgo Treaty that ended the Mexican War. As a result of the treaty, titles for many of the Mexican or Spanish land grants were questioned. The Thompson Grant was put before the Board of Land Commissioners in June 1855 and a decision was made in favor of Captain Thompson. On the 24th of December 1856, the Thompson Land Grant was validated by the Federal District Court.

In as much as Captain Thompson had no intention of living in this area, he broke up the grant and sold it to two groups. On July 20, 1854, over 10,000 acres of the grant was sold for $10,000 to H. W. Hallock, A. C. Peachy and Frederick Billings, a San Francisco law partnership.

The following year, on May 3, 1855, the remaining 24,800 acres were sold for $29,000 to a partnership operating under the name G. B. Post Co. of San Francisco. A mortgage of $12,000 was secured on the purchase from San Francisco banker William T. Sherman of the Lucas Turner & Co. banking firm. The loan was paid off in seven months and the title to the land parcel was clearly deeded to the G. B. Post Company name.

In September 1856, it appears that the G. B. Post Company was in financial trouble as all the individuals making up the company, or partnership, turned control of their assets over to a Trustee for management and sale, in order to pay their creditors. As a personal letter shows, at this time partner Joseph Post made a visit to the area to try and sell parcels of land to the individuals who were already "squatting" on the land. He reported that the settlers on the southern bank of the Stanislaus River were following James Major Burney.

In 1854, Stanislaus County was organized with a population of less than 1,000 people. The county was named after Estanislao, the chief mentioned above who had fought battles along the rivers in the area. A statue was dedicated in the Stanislaus County Courthouse Park to honor Chief Estanislao.

In 1867, Mr. Burney established a ferry on the Stanislaus River, near what is now Santa Fe Road. The location was deemed the best river crossing and provided a direct route to Stockton.

The settlement that grew around the ferry was named Burneyville. Major Burney was born on November 3, 1814 in Craven County, North Carolina. At the age of 21, James Burney was appointed as a Major, serving the Governor of Virginia. Major Burney arrived in San Francisco on July 5, 1849 as a gold miner and Indian fighter.

Transportation into Stanislaus County became easier with the advent of river steamers and better roads. The population swelled, with newcomers settling on the prime river bottom land. In 1860, the Census recorded 2,245 residents in Stanislaus County. By 1870, the population had tripled. In 1869 debris along Stanislaus River was cleared, beginning at Burneyville (Riverbank) to the San Joaquin River, allowing safer travel along the river.

Two factors that contributed to the growth of Stanislaus County in the 1800s were cattle and wheat. As rail transportation grew, so did the export of wheat throughout the state of California.

RAILROADS AND CITY OF RIVERBANK

In 1895, the San Francisco & San Joaquin Railroad rolled into the Central Valley. A bridge spanning the Stanislaus River, warehouses, and stores soon were built. A year later, the community of Riverbank was established. In 1900, the Atchison, Topeka, and Santa Fe Railroad bought the rail properties and five years later, the train depot was built. In 1910, Riverbank became the location of the railroad division terminal. The company

immediately constructed a $1,000,000 terminal, consisting of machine shops, roundhouse, towers, storage tanks, and spur lines. In less than a year, nearly five hundred people had settled in the "Town with the Big Payroll." The railroad station was moved to its present location during World War II. The Roundhouse, which sat across the tracks, was torn down in the early 1950s.

In 1911, Riverbank's wide streets were laid out by Guy M. Rush. The purpose of those wide streets was to make it easy for mule-drawn wagons to turn around. These remarkably wide streets are still evident today.

In 1922, Riverbank incorporated as a California municipality. The Ross family operated the Burneyville Ferry and the first Riverbank Post Office was in their home.

In 1942, the Aluminum Company of America (ALCOA), under the authority of the Defense Plant Corporation, built the Riverbank Army Ammunition Plant, just outside the southern city boundaries of Riverbank. This facility would serve as an aluminum reduction plant to supply military requirements. The plant closed in 1944 and reopened in 1951, with Norris Industries, Inc. as the operating contractor. Other manufactured products included grenades and projectiles, which the Army ships to other ammunition plants for loading operations. As a result of industrial activities, the site has generated corrosive wastes, solvents, and wastewater containing heavy metals.

HISTORICAL RESOURCES

A historical resource is defined as a building, structure, object, prehistoric or historic archaeological site, or district possessing physical evidence of human activities over 45 years old. Because the entire City has not been subject to an extensive historic resource investigation, there may be unidentified features that are 45 years or older and considered as potentially historical resources requiring further study and evaluation by a qualified professional.

According to the State Office of Historic Preservation's Historic Property Data File for Stanislaus County, several historic properties within or adjacent to Riverbank are listed in State and Federal inventories (see Appendix H for complete listing).

Riverbank Branch Library

Riverbank Branch Library is the only structure in Riverbank listed under the National Register of Historic Places as a Multiple Property Submission (MPS) under the California Carnegie Libraries. The Riverbank Branch Library, listed in 1996, is one of 142 Carnie Libraries built in California. The National Register multiple property designation is designed to be a flexible tool for recording written statements of historic context and providing a framework for evaluating the significance of a related group of historic properties.

Carnegie and the Carnegie Corporation provided funding for 1,681 public library buildings in 1,412 U.S. communities between 1889 and 1923. This philanthropy had a great impact on the growth of public library development in the United States. Of California's 142 public and two academic Carnegie libraries that were completed, only 85 of the original Carnegie public library buildings are still standing, including the one in Riverbank, which now operates as a museum. Of these, 36 are still operating as libraries; 21 are museums, 13 are used for community services; the remaining 15 have a variety of uses. The two academic Carnegies are still in use by colleges, but now serve as classrooms and administration offices. The Carnegie Library building in Riverbank is downtown, on the north side of Santa Fe Street between Second and Third streets. The old library itself is residential in appearance, one of four Craftsman style California Carnegies and one of the last three Carnegies constructed in California. The building is a small, one-story frame building with Craftsman detailing in the rafters, window trim, porch columns, and displays window boxes which are unique to the Riverbank building. The craftsman buildings are significant because of the Bungalow and Craftsman styles are rarely associated with civic buildings. In addition, they reflect Carnegie's support for branch libraries in rural communities.

The library had its beginning in 1917 when Stanislaus County received a Carnegie grant of $3,000 for each of the communities of Riverbank and Patterson for the construction of libraries. Building plans were delayed by World War I and afterwards, when Riverbank seemed slow to move, Patterson requested Riverbank's $3,000. Spurred to action, the Riverbank community contributed to the purchase of a site notable for its large oak, which they later enhanced with other memorial and gift trees. The library was eventually constructed in 1921. The name of the contractor, "Miller," is listed but not that of the architect. When a new county library was built, citizens again rallied to save the library from being sold.

Other Historical Resources in the Study Area

According the 2000 U.S. Census, there are nearly 1,800 housing units that are at least 45 years or older in Riverbank (see Table 4.6-1). Some of these residential units may be of historical value, but since no comprehensive historical study has been conducted for the City, it is unknown whether any of these structures are of historical value.

Table 4.6-1
Year Housing Structure Built (2000 Census)

Year	Number of Housing Units	Percent of Total	Percent Increase
1939 or earlier	312	5.3	--
1940 to 1949	294	5.0	-6
1950 to 1959	530	9.1	80
1960 to 1969	641	11.0	21
1970 to 1979	1,100	18.8	72
1980 to 1989	918	15.7	-17
1990 to 2000	2,042	35.0	122
Total	5,837	100.0	--

Note: Does not include commercial buildings
Source: U.S. Census Bureau 2000

The Stanislaus County Assessor data for 2004 indicates that over 700 structures, either residential, commercial, or industrial buildings are at least 45 years or older, see Table 4.6-2. Unfortunately, the Assessor data is not very comprehensive and does not include complete data for every single parcel in the City. Figure CR-1 depicts only those, parcels with complete data by, the year the structure was built (see also Table 4.6-2).

California Historical Resource Inventory

There are 39 buildings or structures in or adjacent to the City of Riverbank which is listed in the Historic Resource Inventory (HRI). Of the 39 listed properties, 22 are located on the Riverbank Army Ammunition Plant just outside the Riverbank General Plan Planning Area.

Other Historic Resources

The E Clampus Vitas (Chapter No. 58) has erected three monuments in the City of Riverbank marking historic places, people, or structures. These monuments are as follows:

- Site No. 3 – Burnville, 1867 settlement by Major James Burney, corner of High and First Streets;
- Site No. 13 – Statue of Justice, Justice Court, courthouse east wall; and
- Site No. 27 – Riverbank Historical Museum, Santa Fe Avenue.

Table 4.6-2
Year Structure Built (2004 Stanislaus County Assessor)

Year	Structures by Land Use			Total
	Commercial	Industrial	Residential	
1900 to 1909	--	--	1	1
1910 to 1919	4	--	23	27
1920 to 1929	1	1	41	43
1930 to 1939	4	4	67	75
1940 to 1949	21	3	209	233
1950 to 1959	9	3	121	133
1960 to 1969	16	2	175	193
1970 to 1979	6	1	357	364
1980 to 189	6	3	336	345
1990 to 1999	7	1	1,720	1,728
2000 to 2004	8	2	379	389
Total	**82**	**20**	**3,429**	**3,531**

Note: Does not include all buildings in Riverbank
Source: Stanislaus County Assessor Data, January 2005

ARCHAEOLOGICAL RESOURCES

The Riverbank General Plan Study Area lies within the San Joaquin Valley, which was inhabited for centuries, first by Native Americans, the Yokuts people, and later by Euro-American immigrants. The cultural heritage of California begins at least 12,000 years ago, when the first of several migrations of people arrived and settled here. California's prehistoric population was one of the largest and most diverse in the Western hemisphere. This long occupation created tens of thousands of archaeological sites representing villages, hunting, gathering and fishing areas, religious and ceremonial locations, trails, and rock art sites. These prehistoric sites represent the material remains of Native American societies and their activities.

Archaeologists identify such sites by the presence of one or more of the following:

- stone flakes made of chert, jasper, obsidian, basalt, quartzite, quartz; and other rock types;
- shell, and non-human bone;
- groundstone tools such as manos, metates and mortars used for grinding seeds;
- stone artifacts, such as arrow or spear points;
- darker soil resulting from human occupation, called "midden"; and
- circular depressions representing the remains of pit houses or ceremonial structures.

These remains mark areas which have been, and often continue to be, of economic, social and/or religious significance to peoples today. They include Native American sacred areas where religious ceremonies are practiced or which are central to their origins as a people. They also include areas where Native Americans gather plants for food, medicinal, or economic purposes. A certain measure of protection is provided for such resources by State Law.

A records search of the files at the Central California Information Center (CCIC), located at the California State University, Stanislaus, indicated that no prehistoric cultural resources are recorded within the General Plan Planning Area, however it is possible that they may be present in surface and subsurface contexts.

4.6.3 REGULATORY SETTING

Various local, state, and federal laws govern and guide preservation authority that affects the City of Riverbank. These are briefly summarized below.

LOCAL PRESERVATION LAWS AND AUTHORITY

Authority for most municipal functions comes from the state, which has established legislation for planning in the *Government Code*, the *Public Resources Code*, and the *Health and Safety Code*, among others. Specifically, *California Government Code* Sections 65880, 25373, and 37361 enable city and county legislative bodies to provide for the protection, enhancement, perpetuation, or use of places, sites, buildings, structures, works of art, and other objects having a special character or aesthetic interest or value.

STATE LAWS AND PROGRAMS

The California Environmental Quality Act (CEQA) offers directives regarding impacts on historical resources and unique archaeological resources. CEQA states generally that if implementation of a project would result in significant environmental impacts, then public agencies should consider whether such impacts can be substantially lessened or avoided through feasible mitigation measures or feasible alternatives. This general mandate applies equally to significant environmental effects related to certain cultural resources.

Only significant cultural resources (e.g., "historical resources" and "unique archaeological resources") need to be addressed. State CEQA Guidelines defines an "historical resource" as, among other things, "a resource listed or eligible for listing on the California Register of Historical Resources" (CRHR) (CEQA Guidelines, Section 15064.5, subdivision (a)(1); see also Public Resources Code Sections 5024.1, 21084.1.) A historical resource may be eligible for inclusion on the CRHR, as determined by the State Historical Resources Commission or the lead agency, if the resource:

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage; or

(2) Is associated with the lives of persons important in our past; or

(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

(4) Has yielded, or may be likely to yield, information important in prehistory or history.

In addition, a resource is presumed to constitute an "historical resource" if it is included in a "local register of historical resources" unless "the preponderance of evidence demonstrates that it is not historically or culturally significant." (CEQA Guidelines, Section 15064.5, subdivision (a)(2)). The State CEQA Guidelines require consideration of unique archaeological sites (Section 15064.5). (See also Public Resources Code Section 21083.2.) A "unique archaeological resource" is defined as "an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

(1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

(2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.

(3) Is directly associated with a scientifically recognized important prehistoric or historic event or person (Section 21083.2).

Senate Bill 18

California Senate Bill (SB) 18 states that prior to a local (city or county) government's adoption of any general plan or specific plan, or amendment to general and specific plans, or a designation of open space land proposed on or after March 1, 2005, the city or county shall conduct consultations with California Native American tribes for the purpose of preserving or mitigating impacts to Cultural Places.

A Cultural Place is defined in the PRC sections 5097.9 and 5097.995 as:

- Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine (PRC Section 5097.9), or;

- Native American historic, cultural, or sacred site, that is listed or may be eligible for listing in the California Register of Historic Resources pursuant to Section 5024.1, including any historic or prehistoric ruins, any burial ground, or any archaeological or historic site (PRC Section 5097.995).

  The intent of SB-18 is to establish meaningful consultation between tribal governments and local governments ("government-to-government") at the earliest possible point in the planning process so that cultural places can be identified and preserved and to determine necessary levels of confidentiality regarding Cultural Place locations and uses. According to the Government Code (GC) Section 65352.4, "consultation" is defined as:

  - The meaningful and timely process of seeking, discussing, and considering carefully the views of others, in a manner that is cognizant of all parties' cultural values and, where feasible, seeking agreement. Consultation between government agencies and Native American Tribes shall be conducted in a way that is mutually respectful of each party's sovereignty. Consultation shall also recognize the tribes' potential needs for confidentiality with respect to places that have traditional tribal cultural significance.

While consultation is required to take place on a government-to-government level, the SB-18 process begins with a letter from the local government to the Native American Heritage Commission requesting a list of tribal organizations appropriate to the plan or plan amendment area or proposed open space designation. Once contacted by the local government, the tribes have up to 90 days to respond and request consultation regarding the preservation and treatment of known cultural place(s) if any have been identified by the tribe.

Health and Safety Code

Public Resource Code Sections 7052, 7050.5 and the California Native American Historical, Cultural and Sacred Sites Act of the California Public resource Code Section 5097.0 provide protection for Native American historical, cultural and sacred sites discovered on non-federal public and private lands. Section 7052 states that the disturbance of Native American cemeteries is a felony. Sections 7050.5 and 5097.0 require that if human remains are uncovered during ground-disturbing activities, the contractor and/or the project proponent shall immediately halt potentially damaging excavation in the area of the burial and notify the County Coroner and a professional archaeologist to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the Native American Heritage Commission (NAHC) by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). Following the coroner's findings, the property owner,

contractor or project proponent, an archaeologist, and the NAHC-designated Most Likely Descendent (MLD) shall determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed. The responsibilities for acting upon notification of a discovery of Native American human remains are identified in California Public Resources Code Section (PRC) 5097.9.

Upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity (according to generally accepted cultural or archaeological standards and practices) is not damaged or disturbed by further development activity until consultation with the MLD has taken place. The MLD shall have 48 hours to complete a site inspection and make recommendations after being are granted access to the site. A range of possible treatments for the remains, including nondestructive removal and analysis, preservation in place, relinquishment of the remains and associated items to the descendents, or other culturally appropriate treatment may be discussed. PRC 5097.9 suggests that the concerned parties may extend discussions beyond the initial 48 hours to allow for the discovery of additional remains. The following is a list of site protection measures that the landowner shall employ:

(1) Record the site with the NAHC or the appropriate Information Center of the California Historical Resources Information System (CHRIS)

(2) Utilize an open-space or conservation zoning designation or easement

(3) Record a document with the county in which the property is located

The landowner or their authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance if the NAHC is unable to identify a MLD or the MLD fails to make a recommendation within 48 hours after being granted access to the site. The landowner or their authorized representative may also re-inter the remains in a location not subject to further disturbance if they reject the recommendation of the MLD, and mediation by the NAHC fails to provide measures acceptable to the landowner. Adherence to these procedures and other provisions of the California Health and Safety Code will reduce potential impacts to human remains to a less-than-significant level.

FEDERAL LAWS

Evaluation Criteria

Determining the NRHP eligibility of cultural resources under Federal administration is guided by the specific legal context of the site's significance as set out in Section 106 of the National Historic Preservation Act (NHPA) (16 USC 470), as amended. The NHPA authorizes the Secretary of the Interior to expand and maintain a National Register of districts, sites, buildings, structures and objects of significance in American history, architecture, archaeology, engineering and culture. A property may be listed in the NRHP if it meets criteria for evaluation defined in 36 CFR 60.4:

The quality of significance in American history, architecture, archaeology, engineering and culture is present in districts, sites, buildings, structures and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association and:

(a) That are associated with events that have made a significant contribution to the broad patterns of our history; or

(b) That are associated with the lives of persons significant in our past; or

(c) That embody the distinctive characteristics of a type, period or method of construction, or that represent the work of a master, or that possess a artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) That have yielded, or may be likely to yield, information important in prehistory or history.

Most prehistoric archaeological sites are evaluated with regard to Criterion d of the NRHP which refers to site data potential. Such sites typically lack historical documentation that might otherwise adequately describe their important characteristics. Archaeological methods and techniques are applied to gain an understanding of the types of information that may be recovered from the deposits. Data sought are those recognized to be applicable to scientific research questions or to other cultural values.

Defining Historic and Cultural Resources

Both federal and State guidelines have been established for assessing significance of historic and cultural resources. While similar they exhibit small differences in their approach.

National Register of Historic Places

The National Register of Historic Places (NRHP) is a list of properties located throughout the United States that are associated with significant national, state, or local events, people, design movements, or topics in historic and prehistoric research. The register is maintained by the National park Service, and a property is nominated to the register through the State Office of Historic Preservation (OHP), after thorough research, and documentation verifying the property's significance and integrity. As of 2006, Riverbank has one structure listed on the National Register. This is the Riverbank Branch Library, which was listed in 1996.

California maintains a similar register of properties that embody significant aspects of California's history. The California Register of Historical Resources (CRHR) lists properties that are significant for their association with events, people, design trends, or research topics that are important in the history of the United States, California, or California's communities. This list is maintained by the OHP, a division of the State Department of Parks and Recreation.

4.6.4 SIGNIFICANCE THRESHOLDS

METHOD OF ANALYSIS

The following section discusses the potential impacts to cultural resources that could occur as a result of acceptance of the proposed General Plan.

THRESHOLDS OF SIGNIFICANCE

The following thresholds of significance may be used to determine whether implementing the proposed General Plan would result in a significant impact. A cultural resource impact is considered significant if General Plan implementation would:

- Cause a substantial adverse change in the significance of an historic resource pursuant to Section 15064.5,
- Cause a substantial adverse change in the significance of a unique archaeological resource as defined in Section 21083.2 of CEQA and Section 15064.5 of the State CEQA Guidelines, respectively, or
- Disturb any human remains, including those interred outside formal cemeteries.

Section 15064.5 of the State CEQA Guidelines defines "substantial adverse change" as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings.

4.6.5 IMPACTS AND MITIGATION MEASURES

IMPACT ANALYSIS

IMPACT 4.6-1 **Cause a Substantial Adverse Change in the Significance of an Historic Resource.** *The General Plan encourages infill development and revitalization of areas of the city where there may be older buildings. The General Plan anticipates growth in areas historically used for farming. It is possible that changes in policies included as a part of the General Plan could cause an adverse change relative to historic resources. However, the proposed General Plan update includes policies to reduce such impacts. The impact is considered* ***less than significant****.*

The majority of future development is expected to be in areas surrounding the current City of Riverbank on lands which historically have been used for farming. Consequently, with the exception of farm related structures and residences there is a lack of a built environment. However, many of these structures are greater than 45 years of age and would be required to be assessed for CRHR and/or NRHP significance/eligibility.

Other development/re-development may consist of the revitalization and infill in specific areas within the existing developed City, where the Stanislaus County Assessor data for 2004 indicates that over 700 residential, commercial, or industrial buildings and structures are in excess of 45 years of age. Such structures may qualify as significant historic structures.

The existing Riverbank General Plan (the General Plan in effect prior to the current update) does not have policies in place that address prehistoric or historic-era resources. The proposed General Plan outlines the City's goals for protecting historic resources that serve as significant, visible reminders of the City's social and architectural history.

Goal CONS-1: Maintain Riverbank's Historic Resources

- Policy CONS-1.1: Historically significant buildings shall not be demolished or changed in a way that affects their historic value, except to protect public health and safety, or where saving the structure is infeasible.
- Policy CONS-1.2: Buildings and other cultural resources that are not historically significant but have historical or architectural value should be preserved or relocated, wherever feasible. Where this is not feasible, the resource shall be documented and the information retained in a secure, but publicly accessible location. An acknowledgment of the resource should be incorporated in historic signage and the reuse or display of historic materials and artifacts.
- Policy CONS-1.3: The City shall promote and encourage adaptive reuse of historic buildings. Consistent with health, safety, and other basic considerations, the City will be flexible in applying building and zoning standards to encourage continued use and adaptive reuse of historic buildings.
- Policy CONS-1.4: The City shall coordinate with local, State, and federal agencies to ensure that historic preservation regulations are implemented.

Goal DESIGN-7: Downtown Is A Vital, People-Oriented Place

- Policy DESIGN-7.1: The City will encourage new buildings to reflect a scale, treatment, and character in harmony with the traditional urban buildings that give the Downtown its character.

Goal DESIGN-9: Historic Features Continue to Add to the Character of Downtown Riverbank

- Policy DESIGN-9.1: The City will retain as many historic features as possible in the restoration or renovation of historical buildings. Wherever possible, maintain or restore original proportions, dimensions, and elements. Where applicable, follow historic preservation techniques appropriate to maintain historic registry status of subject buildings.

- Policy DESIGN-9.2: New buildings in the Downtown shall be compatible with the scale, proportions, massing, general architectural elements, and materials of neighboring buildings of historical quality or significance.

- Policy DESIGN-9.3: The City will encourage preservation and upgrades of the physical appearance and usability of buildings and sites with special historic and/or architectural interest, insofar as these actions do not jeopardize the historical registry status of subject buildings and sites.

- Policy DESIGN-9.4: The City will celebrate the history and cultural diversity of Riverbank by encouraging buildings, uses, and events which reflect that history and cultural diversity.

Policies CONS-1.1 through 1.3 would promote and encourage the conservation of historic buildings and structures. In the event that preservation is infeasible or in conflict with health and safety considerations, Policy CONS-1.2 requires documentation of the historic resource. Policy CONS-1.4 requires the City to coordinate with local, State, and federal agencies to ensure that historic preservation regulations are implemented. With implementation of the aforementioned policy as the City develops, the impact is considered **less than significant**.

Mitigation Measures: No mitigation measures required.

IMPACT 4.6-2 Cause a Substantial Adverse Change in the Significance of a Unique Archaeological Resource. *There is a strong possibility that previously unidentified unique archaeological remains may be discovered in subsurface contexts prior to or during General Plan implementation. It is possible that a unique archaeological resource could be adversely affected by General Plan implementation. However, the proposed General Plan update includes policies to reduce such impacts. The impact is considered less than significant.*

During the prehistoric period settlement was primarily tied to water resources such as the Stanislaus River located directly north of the town of Riverbank. This settlement pattern continued into the historic period with the establishment of the Burneyville Ferry and later the San Francisco and San Joaquin Railroad the establishment of the town of Riverdale. While field investigations conducted thus far have failed to identify archaeological deposits within and in the vicinity of the town of Riverbank, these studies have been limited in scope and number, and therefore may not be indicative of the full potential for the presence of buried archaeological deposits within the in the vicinity of the town.

A lack of extensive archaeological investigations coupled with the location of the town on the banks of the Stanislaus River, a potentially archaeologically sensitive area, indicates that there is a strong possibility that previously unidentified unique archaeological remains may be discovered in subsurface contexts prior to or during General Plan implementation.

The draft Riverbank General Plan addresses prehistoric resources as a part of the Conservation and Open Space Element:

Goal CONS-2: Minimize Negative Impacts to Archaeological Resources

- Policy CONS-2.1: Approved projects, plans, and subdivision requests shall incorporate all available measures, with a preference for avoidance, to reduce or eliminate impacts to known and unknown archaeological and paleontological resources.

- Policy CONS-2.2: All Native American cultural and archaeological sites shall be protected permanently from urban development, wherever possible.

- Policy CONS-2.3: The City shall restrict the circulation of cultural resource locational information to prevent potential site vandalism.

- Policy CONS-2.4: The City shall not knowingly approve any public or private project that may adversely affect an archaeological site without first consulting with the Central California Information Center of the California Historical Resources Information System (CHRIS) and if necessary consult with a qualified professional archaeologist regarding the significance of the site. Implementation of this policy shall be guided by Section 15064.5 of the State CEQA guidelines.

- Policy CONS-2.5: As guided by State law in the event of the inadvertent discovery of previously unknown archaeological sites during excavation or construction, all construction affecting the site shall cease and the contractor shall contact the appropriate City agency. If Native American human remains are discovered the City shall work with local Native American representatives to insure that the remains and associated artifacts are treated in a respectful and dignified manner.

- Policy CONS-2.4 requires that the City shall not knowingly approve any public or private project that may adversely affect an archaeological site without first consulting with the North Central Information Center of the California Historical Resources Information System (CHRIS), and if necessary consult with a qualified professional archaeologist regarding the significance of the site. Not all prehistoric sites are known. Excavation can uncover important cultural resources. Policy CONS-2.5 deals with this eventuality. In the event of the inadvertent discovery of previously unknown archaeological deposits all construction affecting the site hall cease and the contractor shall contact the appropriate City agency. State Law provides guidance as to assessing the cultural resource find, and avoiding impacts through project redesign and/or monitoring. Implementation of these policies will minimize or eliminate adverse impacts to unique archaeological resources. The impact is considered **less than significant**.

Mitigation Measures: No mitigation measures required.

IMPACT 4.6-3 Disturb any Human Remains, Including Those Interred Outside Formal Cemeteries. *Human remains dating to the prehistoric period of California have been located at numerous locations along rivers and streams within the San Joaquin Valley, including San Joaquin County. It is possible that General Plan implementation would involve some construction that could disturb human remains. California law recognizes the need to protect interred human remains, particularly Native American burials and associated items of patrimony, from vandalism and inadvertent destruction. Existing State regulations and proposed City policy ensure a less-than-significant impact.*

Human remains dating to the prehistoric period of California have been located at numerous locations along rivers and streams within the San Joaquin Valley, including San Joaquin County. While none have been located thus far in the proximity to the City of Riverbank, there is a reasonable chance that excavation for future development within and in the vicinity of the town of Riverbank may impact as yet unidentified human remains.

California law recognizes the need to protect interred human remains, particularly Native American burials and associated items of patrimony, from vandalism and inadvertent destruction. The procedures for the treatment of

discovered human remains are contained in California Health and Safety Code Section 7050.5 and Section 7052 and California Public Resources Code Section 5097. Riverbank General Plan Policy CONS-2.5 also provides guidance for activities within the Planning Area.

In accordance with the California Health and Safety Code, if human remains are uncovered during ground disturbing activities all such activities in the vicinity of the find shall be halted immediately and the Agency or the Agency's designated representative shall be notified. The Agency shall immediately notify the county coroner and a qualified professional archaeologist. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the Native American Heritage Commission by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). The responsibilities of the Agency for acting upon notification of a discovery of Native American human remains are identified in detail in the California Public Resources Code Section 5097.9. The Agency or their appointed representative and the professional archaeologist will consult with an MLD determined by NAHC regarding the removal or preservation and avoidance of the remains and determine if additional burials could be present in the vicinity.

Existing State regulations and proposed City policy ensure a **less-than-significant** impact.

Mitigation Measures: No mitigation measures required.

4.7 ENERGY CONSERVATION

4.7.1 INTRODUCTION

Conventional approaches to building construction, site planning, and community planning can contribute to unnecessary and excessive levels of environmental degradation, habitat destruction, and resource depletion. With informed decision-making, California's cities and counties can create use land development patterns and promote use of building materials and methods that conserve energy and promote sustainability.

The purpose of this section of the EIR is to highlight the energy related impacts of different approaches to construction and development, describe energy conservation and sustainability measures that can easily be incorporated into the design of projects to reduce energy consumption and promote sustainability, and disclose potential impacts related to energy use of the proposed General Plan update.[1]

State demographers estimate that California's population will grow by more than 20 million between 2000 and 2050 (State of California 2007). Such growth will severely tax already constrained energy resources and the associated infrastructure, and will challenge the state's ability to provide the energy that new communities, homes, schools, industry, and other workplaces will require. However, it is feasible and increasingly routine to design to retrofit existing structures to be more energy efficient and design new structures to be very energy efficient, avoiding the need for later retrofitting later.

4.7.2 ENVIRONMENTAL SETTING

TRANSPORTATION AND LAND USE

Land use patterns and transportation network design greatly dictate energy use in California and throughout the world. The use of energy has important ramifications for greenhouse gas production and global climate change, in addition to a variety of economic, social, and environmental issues. In general, inefficient use of land, poor or nonexistent land use/transportation planning, and tax policy has led to decreased energy efficiency in transportation and other areas of energy use. As noted by the California Energy Commission's August 2007 report, "The Role of Land Use in Meeting California's Energy and Climate Change Goals (California Energy Commission 2007a):"

Land use patterns play a direct role in the rate and growth of vehicle miles traveled, influencing the distance that people travel and the mode of travel they choose. Residential density may have the most profound effect on travel behavior, with higher density reducing vehicle miles traveled per capita. Balancing jobs and housing in a given area may also reduce vehicle miles traveled per capita by shortening commute distances. In addition, the type of housing that California's aging population chooses (for example, smaller units closer to services) may affect whether Californians drive more or less as they age … State Propositions 13 and 218 have reduced the role of property-based taxation as a local government revenue source and have thus encouraged local governments to turn to large retail establishments to strengthen their tax bases. Such retail establishments, typified by "big box" stores, commonly require substantial vehicle travel on the part of consumers and require large amounts of energy to heat and cool.

However, there are well known principles and many successful examples that local governments, such as Riverbank, can use to greatly increase energy efficiency, compared to "business as usual." Please refer to the proposed Riverbank General Plan update, which outlines a wide array of strategies proposed for use locally.

[1] Perhaps the most recognized and elegantly simple definition of sustainability was developed by the World Commission on Environment and Development (the Brundtland Commission in 1987: "Sustainable Development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Specifically, please refer to the Air Quality, Circulation, Community Character and Design, and Land Use elements.

ELECTRICITY

In 2007, California will use over 291,000 gigawatt hours of electricity (California Energy Commission 2007b). California's electricity was produced from power plants fueled by natural gas (41.5%), coal (15.7%), hydroelectric power (19%), nuclear (12.9%), and renewables (10.7%) (California Energy Commission 2007b). Approximately 78% of the electricity was generated within California, with the balance imported from other states, Canada, and Mexico.

Electricity supply in California involves a maze of transmission lines delivering power from an amalgam of power plants throughout the western United States and beyond. California and other states have experienced problems with meeting increasing peak electricity demand in recent times. Price fluctuations and trading in energy futures is further complicated by what is known as "energy deregulation." Energy shortages increased utility rates and cause rolling blackouts. The crises also led to greater awareness of the need for energy conservation. Energy conservation measures not only have economic benefits. Since fossil fuels are burned to create electricity, conservation measures would also improve the public health through air pollution reduction and fight global climate change.

Energy demand will continue to rise with California's rapidly growing population and growing business activity (California Energy Commission 2005). In general, conservation and development of new energy supplies is not keeping pace with the state's increasing demand. According to the California Energy Commission (California Energy Commission 2005):

> California's energy infrastructure may be unable to meet the state's energy delivery needs in the near future. The most critical infrastructure issue is the state's electricity transmission system, which has become progressively stressed in recent years. The systematic under-investment in transmission infrastructure is reducing system reliability and increasing operational costs…As the state's demand for electricity increases, California could face severe shortages in the next few years…The 2005 Energy Report assessment of electricity supply and demand concludes that maintaining adequate electricity reserves will be difficult over the next few years….Reducing the demand for energy is the most effective way to reduce energy costs and bolster California's economy. Reducing demand also reduces the likelihood of supply shortages that can cause costly price spikes and affect reliability. California will continue to depend upon petroleum fuels and natural gas to meet its energy needs for the foreseeable future. The state needs to act now to implement energy efficiency measures for petroleum fuels and increase its use of alternatives to reduce its reliance upon these increasingly volatile fuel supplies…While energy use per person in the rest of the nation has increased by 45 percent over the last 30 years, California's per capita use has remained relatively flat as a result of the state's energy efficiency measures…The recent passage of SB 1037 (Kehoe) Chapter 366, Statutes of 2005, further reinforces the state's energy efficiency policies by requiring all utilities to meet their unmet resource needs first with energy efficiency and demand reduction resources that are cost-effective, reliable, and feasible. The state's efficiency programs need to focus on peak savings as well as energy savings. Because California's electricity demand is driven by short summer peaks, reducing peak demand is essential for improving electricity reliability, reducing price volatility, and delaying the need for expensive power plants that operate only a few hours a year.

When cities and counties consider the effects of their long-range land use planning relative to electricity demand, it is important to keep in mind that electricity demand varies substantially according to the types of operations within buildings, type of construction materials used in a building, whether buildings are reused or built anew, and the efficiency of all electricity consuming devices within a building.

In general, residential accounts in Stanislaus County had an overall electricity demand of 9,429 kWh in 2005 (California Energy Commission 2005). This is approximately 35% higher than California as a whole (6,966 kWh per residential account, 2005). For non-residential uses, on a per-account basis, Stanislaus County users have a lower overall demand for electricity compared to the state as a whole (102,711 kWh versus 104,792 kWh, 2005). All of this said, it is difficult to compare electricity demand on a per-unit or per-account basis. Two-bedroom townhomes would have a much lower electricity demand than would five-bedroom single-family detached housing units, all else being equal. On the national level, multi-family units with 2-4 units in the structure consume about 40% less electricity than do single-family units. Multi-family units with 5 or more units in the structure consume approximately 50% less electricity than single-family units (United States Department of Energy 2001). For non-residential land uses, the electricity demand has similar high variability. For example, on a per-square footage basis, grocery stores have a much higher electricity demand than do warehouses.

Modesto Irrigation District (MID) serves all of the Riverbank Planning Area south of the main canal and random customers north of the main canal (Jack Kreig. pers. comm., 2005a). The main transmission lines follow Oakdale, Patterson, Roselle, and Claribel roads. No major new facilities are planned for Riverbank at this time (Jack Kreig. pers. comm., 2005b). According to Jack Krieg of MID, it is not possible within the MID system to measure the use for the exact area of the city. However, the California Energy Commission has determined a load forecast for the MID electrical planning area, with peak demand and electricity sales forecast.

As indicated in the Table 4.7-1, the estimated annual average growth in peak energy demand is 1.4% for the entire MID service area. Average annual growth in electricity sales is also 1.4%.

Table 4.7-1
Forecast Energy Demand, Modesto Irrigation District

Annual Peak Demand (MW)				Average Annual Growth 2006-2016	Annual Electricity Sales (gWh)				Average Annual Growth 2006-2016
2004	2006	2009	2016		2004	2006	2009	2016	
492	525	548	605	1.4%	2,409	2,506	2,618	2,873	1.4%

Source: California Energy Commission, 2004-2016, LSE Forecast – Base Case. Online. http://www.energy.ca.gov/2005publications/CEC-400-2005-034/CEC-400-2005-034-SF-ED2.PDF. California Energy Demand 2006-2016 Staff Energy Demand Forecast, California Energy Commission 2005)

PG&E serves all of the Riverbank Planning Area north of the Main Canal (Miguel Valdez. pers. comm., 2005a). The two substations that serve Riverbank are the substation in Riverbank on River Road and the Cottle substation in Oakdale (Miguel Valdez. pers. comm., 2005b). PG&E has 30 megawatts of substation spare capacity at Cottle Substation and four megawatts of substation spare capacity at Riverbank Substation (Miguel Valdez. pers. comm., 2005c). A megawatt is 1 million watts, which is represents the energy needs of roughly 1,000 homes. Cottle has more capacity remaining than the substation in Riverbank has, but the substation in Riverbank can undergo a capacity increase if one of the banks is replaced. PG&E keeps its demand statistics confidential (Miguel Valdez. pers. comm., 2005d).

NATURAL GAS

California used almost 6,246 million cubic feet of natural gas per day in 2004 (California Energy Commission 2007b). Much of that natural gas use was for production of electricity (50%). Other uses of natural gas include industrial uses (18%), in commercial uses (9%), and in residential uses (22%). Approximately 13% of the natural gas was produced within California, with the rest imported from other states and Canada.

Like electricity, natural gas use varies greatly depending on the type of operations within any given building, the construction materials used in a building, and the efficiency of all natural gas systems within a building.

Not including natural gas for electrical generation that is used in residences, in 2005, California housing units averaged roughly 100 cubic feet of natural gas per day (California Energy Commission 2007b). On the whole, multi-family units (which tend to be smaller) use about 40 percent less natural gas than do single-family units (South Coast Air Quality Management District 1993). The average annual usage of natural gas is roughly 2.9 cubic feet per square foot per month for retail commercial buildings and roughly 2.0 cubic feet per square foot per month office buildings (South Coast Air Quality Management District 1993).

The California Energy Commission's 2005 Integrated Energy Policy Report indicates that recent infrastructure investment has improved natural gas conveyance and storage capacity to meet average demand. However, the uncertainty of domestic supplies and increases in prices underscore the need for California to focus on alternative sources of natural gas, such as liquefied natural gas. The Energy Commission notes that using efficiency measures to reduce demand in the state's energy sectors is the highest priority, which has shown great potential in the past to reduce demand for natural gas on a per-household basis in the past.

PG&E provides natural gas to the entire Riverbank Planning Area (Miguel Valdez. pers. comm., 2005e). PG&E does not release the locations of its transmission lines for security reasons (Miguel Valdez. pers. comm., 2005b). PG&E distribution feeder lines connect all areas of Riverbank (Miguel Valdez. pers. comm., 2005e). PG&E keeps its demand statistics confidential (Miguel Valdez. pers. comm., 2005d).

4.7.3 REGULATORY SETTING

Local, State, and federal agencies, as well as energy suppliers, routinely conduct programs to make the public aware of the need for energy conservation and sustainability. The increased and growing demands for non-renewable energy supplies are best addressed through conservation according to these programs and their requirements.

FEDERAL, PRIVATE, QUASI-PUBLIC ENERGY CONSERVATION

A variety of Federal statues regulate the public and private use of energy resources. The Federal Energy Regulatory Commission (FERC) regulates the practices of private energy suppliers. In addition, key federal regulatory statues, such as the Energy Conservation Act and the National Energy Conservation Policy, include rules and regulations seeking to conserve energy at the national distribution levels of energy resources (primarily electricity and natural gas).

Private and public purveyors of energy resources, including the Modesto Irrigation District, have established long-standing energy conservation programs to encourage consumers to adopt energy conservation habits, install energy efficient appliances in their homes, and reduce energy consumption during peak demand periods. These programs extend as well into the area of sustainability by encouraging the construction of new buildings (industrial, commercial, residential) with building materials that lower energy costs.

STATE ENERGY CONSERVATION AND SUSTAINABILITY MEASURES

State CEQA Guidelines

Appendix F, Energy Conservation, of the CEQA Guidelines describes the energy conservation information and analyses that should be included in an EIR. This includes a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of natural oil and gas. In addition, although not described as thresholds for determining the significance of impacts, the Guidelines seek inclusion of information in the EIR addressing the following:

- Measures to reduce wasteful, inefficient and unnecessary consumption of energy during construction, operatic, and maintenance of the project;

- The siting and orientation of buildings and structures to minimize energy consumption, including transportation energy;
- Measures for reducing peak energy demand;
- Incorporation of alternative fuels (particularly renewable ones) or energy systems; and,
- Incorporation of recycling of non-renewable resources.

Title 24 Energy Efficiency Standards

Title 24 energy standards, the energy efficiency standards for residential and nonresidential buildings, were established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods.

California's building efficiency standards (along with those for energy efficient appliances) have saved more than $56 billion in electricity and natural gas costs since 1978. It is estimated the standards will save an additional $23 billion by 2013.

The California Energy Commission recently adopted the changes to the Building Energy Efficiency Standards, to accomplish the following:

- To respond to California's energy crisis to reduce energy bills, increase energy delivery system reliability, and contribute to an improved economic condition for the state;
- To respond to the AB 970 (Statutes of 2000) urgency legislation to adopt and implement updated and cost-effective building energy efficiency standards;
- To respond to various statutes of 2001, which included urgency legislation to adopt energy efficiency building standards for outdoor lighting; and,
- To emphasize energy efficiency measures that save energy at peak periods and seasons, improve the quality of installation of energy efficiency measures, incorporate recent publicly funded building science research, and collaborate with California utilities to incorporate results of appropriate market incentives programs for specific technologies.

Currently, all new residential and nonresidential buildings are required to comply with Title 24 energy conservation requirements, including the recent amendments highlighted above, to reduce energy conservation and promote sustainability.

STATE OF CALIFORNIA ENERGY PLAN

The CEC identifies emerging trends in energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy in the State Energy Plan. The plan calls upon the state to reduce congestion and increase the efficient use of fuel supplies. The plan also encourages urban designs that reduce vehicle miles traveled and accommodate pedestrian and bicycle access.

LOCAL ENERGY CONSERVATION MEASURES

The existing (prior to the current proposed update) General Plan does not directly address energy conservation. An appendix to the existing General Plan makes reference to different circulation strategies and their gasoline-

saving potential. Other than this reference, there is no explicit policy in the existing document, although some of the policies would have indirect energy-saving potential.

By contrast, the proposed General Plan Conservation and Open Space Element, Community Design Element, and Air Quality Element directly address energy conservation. In addition, goals and policies throughout the proposed General Plan propose strategies that would have energy-saving potential. Those goals and policies are listed below.

Goal Cons-8: Minimize the use of Energy through Sustainable Development Patterns, Construction Practices, and Construction Materials

- Policy CONS-8.1: The City will encourage the use of cost effective, renewable energy sources as a part of new construction projects, as well as existing buildings and facilities.

- Policy CONS-8.2: The City will encourage material and energy-efficient building design, including strategies certified by the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) Program.

- Policy CONS-8.3: The City will encourage the incorporation of energy conservation features in the design of all new construction and the installation of conservation devices in existing development.

- Policy CONS-8.4: The City will encourage the use of passive design concepts that make use of the natural climate to increase energy efficiency. New development shall be designed to allow access to natural light by adjoining properties for solar energy systems. Approved plans, projects, and subdivisions shall orient the majority of proposed single-family detached housing structures in a north/south orientation to increase energy efficiency. The City's goal in this respect will be 80 percent of such structures.

- Policy CONS-8.5: New development areas shall be located and designed to encourage travel by pedestrians and bicyclists.

- Policy CONS-8.6: The City will encourage compact development to achieve more efficient use of resources and provision of public facilities and services.

- Policy CONS-8.7: The City will incorporate conservation practices and sustainable energy sources and in existing and new City facilities.

- Policy CONS-8.8: The City will locate any new government offices in pedestrian-friendly, mixed-use areas where the urban design promotes pedestrian and bicycle travel.

- Policy CONS-8.9: Approved projects, plans, and subdivision requests shall include native, drought-tolerant, landscaping.

Goal Design-18: Renewable Resource use and Energy-Efficiency in Site and Architectural Design

- Policy DESIGN-18-1: The City will promote safe and sustainable energy collection and distribution systems that draw from renewable energy sources.

- Policy DESIGN-18.2: The City will encourage passive and natural lighting systems in architectural design to conserve electricity.

- Policy DESIGN-18.3: The City will encourage building-site orientation, articulated windows, roof overhangs, appropriate insulation materials and techniques, and other architectural features that allow for improved passive interior climate control.

- Policy DESIGN-18.4: The City will ensure that municipal buildings are LEED™ certified and promote LEEDTM certification of multi-family, commercial, and industrial properties.

Goal 2: Construction Practices and Materials Used in Riverbank Minimize Direct and Indirect Air Pollutant Emissions

- Policy AIR-2.3: The City of Riverbank will work with the local energy providers and developers on voluntary, incentive-based programs to encourage the use of energy efficient designs and equipment.
- Policy AIR-2.4: The City of Riverbank will cooperate with the local building industry, utilities and the District to promote enhanced energy conservation standards for new construction.
- Policy AIR-2.5: The City of Riverbank will encourage new residential, commercial, and industrial development to reduce air quality impacts from area sources and from energy consumption.

4.7.4 SIGNIFICANCE THRESHOLDS

THRESHOLDS OF SIGNIFICANCE

The California Environmental Quality Act (CEQA) Guidelines, Appendix F indicates "a project may be deemed to have a significant effect on energy conservation" if it:

- Includes wasteful, inefficient, and unnecessary consumption of energy during project construction, operation, maintenance and/or removal that cannot be feasibly mitigated; or,
- Preempts future energy development or future energy conservation.

4.7.5 IMPACTS AND MITIGATION MEASURES

IMPACT ANALYSIS

IMPACT 4.7-1 Wasteful, inefficient, and unnecessary consumption of energy or preemption of future energy development or future energy conservation. *The General Plan would accommodate a large amount of urban development, as well as resource conservation, which would increase demand and consumption of energy. However, the General Plan includes policies to ensure efficient land use patterns and efficient use of energy in areas of land use change. The impact is less than significant.*

General Plan policies establish land capacity to accommodate substantial new development within the Planning Area. Development projects anticipated to occur pursuant to General Plan policy will result in increased demand for energy resources. Tables 4.7-2 and 4.7-3 report the anticipated increases in demand for electricity and natural gas. Other than burning of fossil fuel for transportation, these are two of the primary types of energy relevant for consideration at the General Plan level. As noted previously, there is great variation in energy demand based on land use, materials, and methods. The estimates presented here are generalized. Precise estimates at the General Plan level are not possible.

The demand for electricity is anticipated to increase by about 8 million kWh per month. The future energy supply for Riverbank and the state is considered a major task for long-range planning. MID will need to consider the future generation of electricity with careful consideration of the anticipated peak usage for their service areas. Individual development projects proposed pursuant to the General Plan will be required to assess project impacts during the environmental review process to ensure that MID has sufficient electricity supply to meet demand. Additionally, new developments will be required to comply with the current energy performance standards of the

California Energy Code, Part 6 of the California Building Standards Code (Title 24), as well as policies in the General Plan that address energy conservation.

Table 4.7-2
Estimated Additional Monthly Electricity Demand from Riverbank General Plan Implementation

Land Use	Use Factor (Kwh/month/sf or du)	Proposed du/ksf	Additional Demand at Buildout (kWh/month)
Residential	469	10,700	5,016,963
Retail	1.13	678,980	766,682
Miscellaneous	0.875	2,637,020	2,307,393
TOTAL			8,091,037

Notes: kwh = kilowatt hours; mwh = megawatt hours; du = dwelling units; sf = square feet; ksf = thousand square feet.
Source of Generation Factors: South Coast Air Quality Management District, CEQA Air Quality Handbook, 1993.

Table 4.7-3
Estimated Additional Monthly Natural Gas Demand from Riverbank General Plan Implementation

Land Use	Use Factor (cubic feet/month/sf or du	Proposed du/sf	Additional Demand at Buildout (cubic feet/month)
Single-Family Residential	6,665	9,130	60,851,450
Multi-Family Residential	4,011.5	1,600	6,418,400
Industrial	3.3	1,999,540	6,598,482
Commercial	2.9	1,316,460	3,817,734
TOTAL			77,686,066

du = dwelling units; sf = square feet.
Source of Generation Factors: South Coast Air Quality Management District, CEQA Air Quality Handbook, 1993.

Currently, average year annual energy needs are met by existing MID resources. Between 2002 and 2006 MID will have invested $156 million in new local generation, part of a diversified resource mix that also includes long- and short-term power purchases (Modesto Irrigation District 2007). MID's commitment is to meet 20 percent of customers' energy needs with renewable sources by 2017. MID has been involved in several upgrades that contribute to energy conservation.

A new 95 megawatt (MW) power plant in Ripon, north of Modesto became operational summer of 2006, as well as a peaking plant (Modesto Irrigation District 2007). The new equipment includes retrofitted older gas turbine units with state-of-the-art emission controls, and increases the useful life of the 112 MW local generation plant. MID has also recently purchased renewable energy, adding 50 MW of renewable wind energy generated in northern California, which allowed the District to meet about eight percent of customers' energy needs with nonpolluting wind turbines in 2006. The District has invested in infrastructure, including environmental studies for a 17-mile, 230 kilovolt transmission line, which will improve service reliability, access to wholesale power markets. MID recently began collaboration with other public agencies, including joining the control area formed by Sacramento Municipal Utility District, Western Area Power Administration (part of U.S. Department of Energy), which will assist in coordinating operation of their electric systems, and power reserves for mutual benefit. Like MID, these agencies focus on reliability, and cost-effectiveness.

The demand for natural gas is anticipated to increase by about 77 million cubic feet per month. PG&E would be involved with new developments that are proposed to construct additional natural gas infrastructure as necessary to meet demand. Individual development projects proposed pursuant to the General Plan will be required to assess project impacts during the environmental review process to ensure that PG&E has sufficient electricity supplies to meet demand.

A fundamental focus of proposed General Plan update goals, policies, and implementation measures is to address energy consumption directly and indirectly. The Conservation and Open Space Element of the City's General Plan emphasizes the efficient development and use of modern technologies that can help to minimize the City's overall energy demand and consumption. Goals, policies, and implementation strategies throughout the Land Use, Circulation, Community Character and Design, and Air Quality Elements address energy conservation by ensuring that land use and transportation decisions reduce dependence on the automobile. Examples of such policies are included below:

Goal Air-1: Create and Enhance Development Patterns That Encourage People to Walk, Bicycle, or use Public Transit for a Significant Number of Their Daily Trips

- Policy AIR-1.1: In new development areas of the City, approved projects, City investment, and approved Specific Plans shall create small-scale, pedestrian-friendly neighborhood centers (with schools, parks, shops, community centers, compact housing, etc.), within walking distance (approximately ¼ mile maximum) that allow residents to meet many needs without the use of an automobile. (See also Goal DESIGN-10 and accompanying policies and policies LAND-2.2, LAND-2.3, LAND-3.1, andCIRC-2.1).

- Policy AIR-1.2: Approved plans, subdivisions, and projects shall provide highly-connected circulation networks that accommodate safe, direct, and convenient alternatives to vehicular travel, and shorten trip lengths for vehicular travel. (See also Community Character and Design Element Policy DESIGN 1.5).

- Policy AIR-1.3: Approved plans, subdivisions, and projects shall provide neighborhood parks in proximity to activity centers such as schools, libraries, community centers, and higher-density housing (more than 16 units per acre, net).

- Policy AIR-1.4: Schools shall be located, designed, and the surrounding area planned to ensure that students can safely and conveniently walk or bicycle to school from their homes.

- Policy AIR-1.5: The City will not allow arterial-focused, automobile-oriented commercial development within new and existing neighborhoods. This includes volume discount stores, regional shopping centers, automobile dealerships, and similar vehicle-oriented land uses. Such land uses, to the extent they are allowed by the City, shall be designed and located such that neighborhood pedestrian and bicycle access is not adversely affected.

- Policy AIR-1.6: Transit improvements are required at sites deemed appropriate and necessary by the City and relevant transit provider/s and consistent with long-range transit plans.

- Policy AIR-1.7: New major activity centers, office, and commercial development shall accommodate alternatives to automobile access, including provision of secure bicycle storage and parking facilities.

- Policy AIR-1.8: The City will coordinate with transit providers and County and regional transportation agencies to plan for a multi-modal transportation system that supports and encourages alternatives to automobile travel.

- Policy AIR-1.9: The City of Riverbank will preserve and enhance existing neighborhoods and commercial districts having pedestrian-, bicycle-, and transit-oriented designs.

- Policy AIR-1.10: Projects or portions of projects that implement a fine-grained mixing of housing types and land uses, and that include other pedestrian, bicycle, and transit oriented design elements, which generate fewer vehicle trips, will have a correspondingly lower contribution toward any roadway or intersection improvement mitigation measures required in City environmental documents and conditions of approval.

- Policy AIR-1.11: The City acknowledges the following facts: carbon dioxide is the most important anthropogenic greenhouse gas from future development in Riverbank; global increases in atmospheric carbon dioxide concentration are due primarily to fossil fuel combustion and land use changes; anthropogenic increases in greenhouse gas concentrations cause climate change; and, the economic, social, and environmental consequences of climate change are catastrophic. The City will monitor and comply with relevant local, regional, statewide, and federal legislation and regulation designed to address climate change.

Goal Circ-1: Riverbank's Circulation Network Provides Convenience and Choice Among all Modes of Transportation

- Policy CIRC-1.1: Approved plans, projects, and subdivision requests in new growth areas shall include the construction or pro-rata funding of transportation infrastructure that includes a connected and integrated system of bicycle facilities and pedestrian facilities, designed to comply with the Americans with Disabilities Act.

- Policy CIRC-1.2: Approved plans, projects, and subdivision requests in new growth areas shall provide a fully connected network of smaller roadways that provide many alternatives between each point of origin and destination.

- Policy CIRC-1.3: Approved projects, plans, and subdivision requests in new growth areas shall arrange streets in an interconnected block pattern, so that pedestrians, bicyclists, and drivers are not forced onto arterial streets for inter- or intra-neighborhood travel. This approach will also ensure safe and efficient movement of fire emergency vehicles.

- Policy CIRC-1.4: Approved projects, plans, and subdivision requests with an internal street network shall provide an internal connectivity index of 1.4 or higher. The connectivity index is calculated by dividing the total number of road segments the number of nodes. Nodes are intersections plus cul-de-sacs. Roadway segments are between intersections. Cul-de-sacs are prohibited except where physical constraints make any other roadway solution impossible.

- Policy CIRC-1.5: Approved projects, plans, and subdivision requests shall connect with adjacent roadways and stubbed roads and shall provide frequent stubbed roadways in coordination with future planned development areas. Plans and projects shall connect to adjacent planned development areas and adjacent roadways at a minimum of 600-foot intervals. This minimum interval does not include development areas that are adjacent to existing or planned future limited-access highways, freeways, or expressways.

- Policy CIRC-1.6: Approved projects, plans, and subdivision requests shall provide a roadway network such that driving distance from any dwelling to the nearest collector street is a maximum of 2,000 feet and no more than three turning movements at intersections are required in order to travel from any home to a collector street.

- Policy CIRC-1.7: The City will ensure frequent street and trail connections between new residential developments and established neighborhoods, between downtown and surrounding neighborhoods, across the railroad, across the river, and between other important origin and destination points.

- Policy CIRC-1.8: City street improvement standards and the street classification system will reflect the need to accommodate the full range of locally available travel modes.

- Policy CIRC-1.9: In new and existing developed areas, the City will invest in a convenient, well-maintained, and safe system of pedestrian and bicycle paths that connect residences with shopping centers, public buildings, parks, places of employment, and schools.

- Policy CIRC-1.10: The City will incorporate pedestrian and bicycle improvement projects into the City's Capital Improvements Program.

- Policy CIRC-1.11: The City's level of service standards will balance the need to provide convenient vehicular travelways during peak hours of demand with other community goals, such as the desire to accommodate pedestrian and bicycle access.

- Policy CIRC-1.12: The City will use Level of Service D as the goal for roadway segments, as measured on a daily basis.

- Policy CIRC-1.13: City environmental documents and associated mitigation programs will explicitly consider compact development, mixing of land uses, affordable housing, and other pedestrian, bicycle, and transit oriented design elements that generate fewer vehicle trips. Such approved plans, projects, and subdivision requests will have a correspondingly lower contribution toward any roadway or intersection improvement mitigation measures required in City environmental documents.

- Policy CIRC-1.14: The City will ensure provision of signage and secure storage facilities in appropriate locations for bicycles.

- Policy CIRC-1.15: The City will ensure that the pedestrian network is safe, accessible, attractive and efficient, running largely along public spaces (including streets and open spaces) fronted by houses, and avoids uses that generate major breaks in surveillance on routes to and from public transport and other routes used at night.

Goal Circ-2: The City's Urban Development Pattern Supports all Locally Available Modes of Transportation

- Policy CIRC-2.1: Approved plans, projects, and subdivision requests in new growth areas will provide an appropriate balance of higher-activity land uses, such as schools, parks, retail and commercial services, small offices, civic uses, apartments, in accessible neighborhood centers. Higher-activity land uses shall not be provided in a linear fashion along large roadways.

- Policy CIRC-2.2: The City will not allow large, unbroken surface parking lots, which unnecessarily inhibit travel on foot and by bicycle. Please refer also to Community Character and Design Element policies that address the location and nature of surface parking.

- Policy CIRC-2.3: Approved projects, plans, and subdivisions shall provide shade trees in parking areas in a ratio of at least one tree for every four parking spaces. These trees shall be dispersed throughout the parking area.

- Policy CIRC-2.4: The City will ensure that redevelopment and revitalization efforts in the existing City are designed to accommodate and encourage pedestrian and bicycle travel, as well as public transit options, as such options become more widely available.

- Policy CIRC-2.5: The City will be flexible in parking requirements or eliminate off-street parking requirements for redevelopment, infill, and multi-family projects by allowing cooperative shared use of parking between properties with different parking demand peaking periods, utilization of on-street parking spaces to meet parking requirements, allowing parking reductions for projects located in walkable areas with

improvements that accommodate alternative forms of travel, and allowing parking reductions for multi-family development to reflect the trip generation characteristics of this type of development.

- Policy CIRC-2.6: The City will pursue in the existing developed area and require in new growth areas pedestrian amenities, such as street furniture, shade trees, pedestrian lighting, water fountains, and pedestrian oriented signage.

- Policy CIRC-2.7: The City will encourage and support appropriate home-based businesses in residential areas and telecommuting centers in appropriate areas.

Goal Circ-3: Increase the Availability and use of Transit

- Policy CIRC-3.1: The City will work with the Riverbank Oakdale Transit Agency, the Stanislaus Area Regional Transit District (START), and any future providers serving Riverbank to enhance and expand transit services throughout the City and surrounding region.

- Policy CIRC-3.2: The City will promote the development, improvement, expansion, and increased ridership of transit within the City, including the development of new transit agencies and new forms of transit, as they become available.

- Policy CIRC-3.3: Approved plans, projects, and subdivision requests will accommodate transit facilities consistent with transit agency planning.

- Policy CIRC-3.4: When transit stops are required in existing developed portions of Riverbank or new growth areas, the City will ensure stops are safe, convenient, comfortable, well maintained, and complementary to the urban design in the surrounding vicinity.

- Policy CIRC-3.5: The City will coordinate with local and regional transit providers in developing transit plans that link important origin and destination points affecting Riverbank residents and businesses.

- Policy CIRC-3.6: The City will work with local businesses and transit providers to develop transit incentive programs.

Goal Design-1: Street and Circulation Patterns that Encourage Walking, Bicycling, Transit use, and Reduce Traffic Congestion

- Policy DESIGN-1.1: Approved projects, plans, and subdivision requests in new growth areas shall arrange streets in an interconnected block pattern, so that local pedestrian, bicycle, and automobile traffic do not have to use arterial streets to circulate within the neighborhood.

- Policy DESIGN-1.2: Neighborhood centers, parks, landmarks, and schools shall be located and designed so that people may conveniently reach these destinations by foot, bicycle, car, or bus.

- Policy DESIGN-1.3: The City will ensure frequent street and trail connections between new residential developments and established neighborhoods.

- Policy DESIGN-1.4: The City will encourage the construction of alleys in new neighborhoods to serve residential garages and waste collection services, except where site configuration or other features impede their use. Alley design should promote safety and security, as well as accessibility to adjacent properties.

- Policy DESIGN-1.5: Approved projects, plans, and subdivision requests with an internal street network shall provide an internal connectivity index of 1.4 or higher. The connectivity index is calculated by taking the total number of road segments divided by nodes. Nodes are intersections plus cul-de-sacs. Roadway segments are

between intersections. Cul-de-sacs are prohibited except where physical constraints make any other roadway solution impossible.

- Policy DESIGN-1.6: Approved projects, plans, and subdivision requests shall connect with adjacent roadways and stubbed roads and shall provide frequent stubbed roadways in coordination with future planned development areas. Plans and projects shall connect to adjacent planned development areas and adjacent roadways at a minimum of 600-foot intervals. This does not include any limited access freeways or expressways.

Goal Design-2: Amenities and Features Along Neighborhood Residential and Commercial Streets That Accommodate all Travel Modes

- Policy DESIGN: 2.1 The City will require distinctive crosswalks at major street intersections in locations expected to generate significant pedestrian traffic. Approved projects, plans, and subdivision requests will incorporate such features, as appropriate.

- Policy DESIGN-2.2: The City will require separate travel areas for motorized vehicles, bicycles, and pedestrian traffic along busy streets.

- Policy DESIGN-2.3: The City will require appropriate signage and traffic control devices to safely accommodate pedestrian, bicyclists, and vehicular traffic.

- Policy DESIGN-2.4: The City will require construction of intersections with the minimum dimensions and turning radii necessary to maintain established levels of service.

- Policy DESIGN-2.5: The City will require visually attractive streetscapes with street trees and sidewalks on both sides of streets, planting strips, attractive transit shelters, benches, and pedestrian-scale streetlights in appropriate locations.

- Policy DESIGN-2.6: Where appropriate, the City will require streetscapes that make use of traffic calming techniques to provide a safer and more comfortable environment for pedestrians and bicyclists. The City will not pursue closed streets or half-closed streets, or other measures that limit connectivity as a traffic-calming solution.

- Policy DESIGN-2.7: In general, the City will require the construction of sidewalks on both sides of all new streets. In industrial areas, sidewalks may not be appropriate.

- Policy DESIGN-2.8: The City will coordinate with transit providers and, as appropriate, require land and amenities to accommodate transit.

The proposed Land Use Diagram and Circulation Diagram also illustrate the use of energy efficiency policies at the conceptual level. Application of the proposed policies will reduce the City's overall energy demand and consumption compared to buildout of the existing General Plan (with no update).

Implementation of the proposed General Plan update will result in **less-than-significant** impacts on energy resources. The General Plan would not accommodate wasteful, inefficient, or unnecessary consumption of energy. The General Plan would not preempt future energy development or future energy conservation. However, it must be noted that energy costs to consumers could increase compared to past levels depending on future relationships between demand and supply.

Despite the less-than-significant conclusion, mitigation measures to further reduce impacts are recommended.

Mitigation Measures

- The City will coordinate with Modesto Irrigation District, PG&E, and other responsible companies to provide for the continued maintenance, development, and expansion of energy efficient electricity and natural gas systems.

- The City will participate in regional siting plans for energy facilities.

- The City will use local utilities infrastructure planning and financing strategies to promote energy efficient land use practices. The City's goal for energy conservation strategies will be to reduce energy demand generated by infrastructure to serve new development and offset remaining demand through generation of renewable sources within the development.

- The City will identify opportunities and support programs to reduce electricity demand related to the water supply system during peak hours and opportunities to reduce the energy needed to operate water conveyance and treatment systems.

4.8 GEOLOGY, SOILS, AND MINERAL RESOURCES

4.8.1 INTRODUCTION

EXISTING CONDITIONS

Geology of the Riverbank Area

Riverbank is located in the northern San Joaquin Valley, which considered part of the southern section of the Great Central Valley of California. The Great Central Valley is a sedimentary basin lined by the Coast Range to the west and the Sierra Nevada to the east. The majority of sediments that fill the Great Central Valley eroded from the Sierra Nevada and deposited in the San Joaquin Valley over the past two million years. The oldest of the sediments originate from volcanic rocks eroded from early volcanoes. As erosion stripped the cover of volcanic rocks from the granite rock, their accrual of pale quartz and feldspar sand began to wash into the Great Central Valley.

Slope Instability

Generally, slopes in Riverbank are nearly level across the entire city. Elevation ranges from 75 feet above mean sea level in areas directly adjacent to the Stanislaus River to 150 feet above mean sea level in the extreme eastern portions of the Riverbank Planning Area. In general, areas in the southern and eastern portions of the Planning Area are slightly higher in elevation than area areas in the northern and western portion of the Planning Area (see Exhibit 4.8-1). Slope instability is not major constraint to land uses in most portions of the Planning Area because of the relatively flat topography. There is a relatively steep ridge along the southern edge of the Stanislaus River area, approximately 10 to 30 feet high, depending on the location within the Planning Area. This ridge is north of the existing developed City of Riverbank and extends through the northwestern portion of the Riverbank Planning Area.

4.8.2 ENVIRONMENTAL SETTING

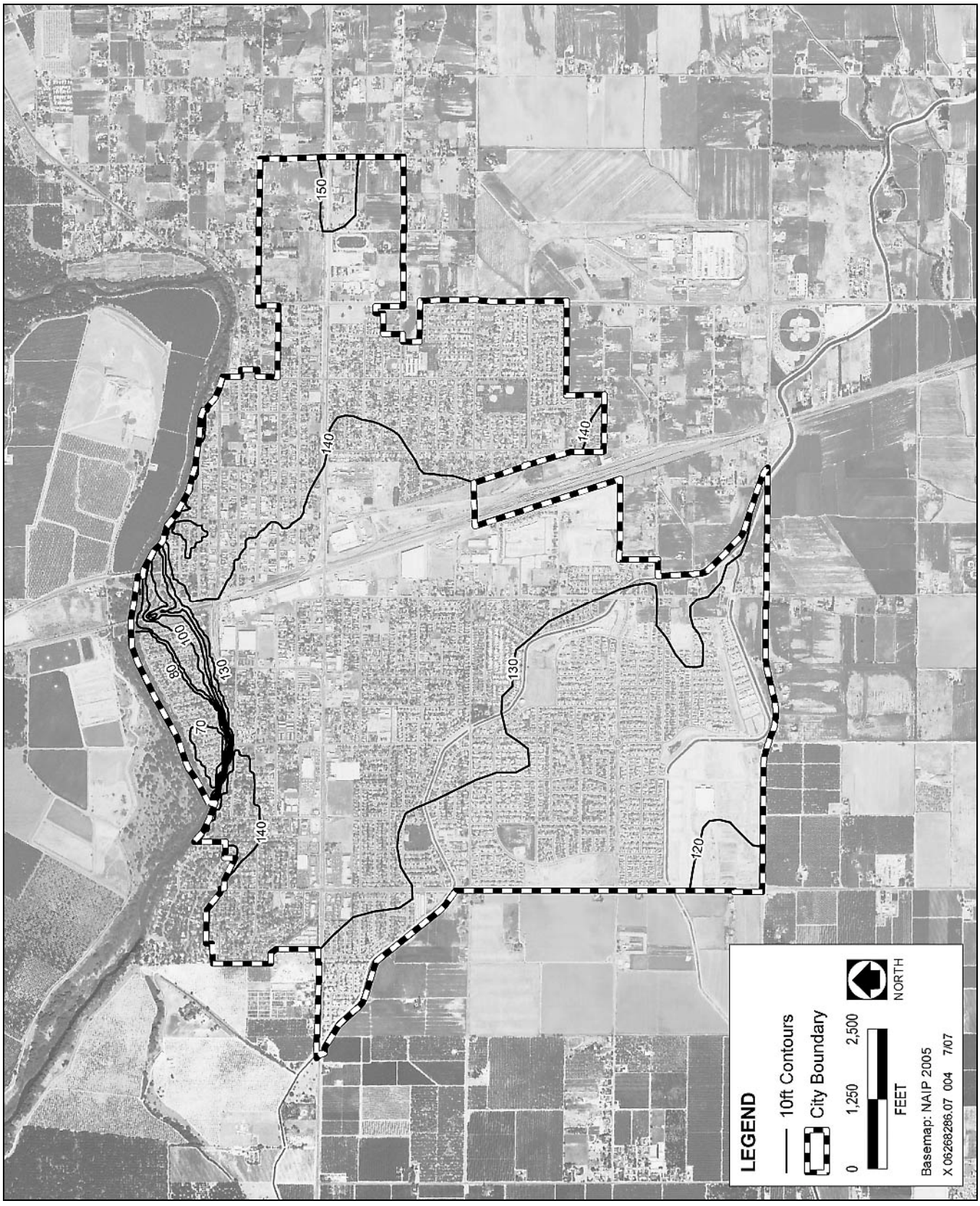
STUDY AREA SOILS

The Natural Resource Conservation Service (NRCS) publishes a Soil Survey for Eastern Stanislaus County. According to the soil survey, there are 23 soil series in the Riverbank Planning Area. A soil series consists of soils that incorporate similar characteristics in their profile. Characteristics include color, texture, structure, reaction, consistency, mineral, and chemical composition, and arrangement in the profile.

The majority of the soils in the Planning Area were formed in alluvium and are found on low alluvial fans, low terraces, and floodplain along the Stanislaus River. These soils are shallow and drainage ranges from somewhat poorly drained to somewhat excessively drained on these soils. The water table is relatively high.

Soils found in the city include:

- CaA, Chualar sandy loam, 0 to 3 percent slopes
- DeA, Delhi loamy sandy, 0 to 3 percent slopes
- DeB, Delhi loamy sand, 3 to 8 percent slopes
- DhA, Delhi sand, 0 to 3 percent slopes
- DhB, Delhi sand, 3 to 8 percent slopes
- GfA, Grangeville fine sandy loam, 0 to 1 percent slopes
- GmA, Grangeville very fine sandy loam, 0 to 1 percent slopes
- GsA, Greenfield sandy loam, 0 to 3 percent slopes
- GvA, Greenfield sandy loam, deep over hardpan, 0 to 3 percent slopes



Source: USGS Riverbank DEM

Major Topography **4.8-1**

- HbA, Hanford fine sandy loam, 0 to 3 percent slopes
- HdA, Hanford sandy loam, 0 to 3 percent slopes
- HdpA, Hanford sandy loam, moderately deep over silt, 0 to 1 percent slopes
- HdsA, Hanford sandy loam, deep over silt, 0 to 1 percent slopes
- HfA, Hilmar loamy sand, 0 to 1 percent
- MdA, Madera sandy loam, 0 to 2 percent slopes
- MmA, Modesto clay loam, 0 to 1 percent slopes
- OaA, Oakdale sandy loam, 0 to 3 percent slopes
- SaA, San Joaquin sandy loams, 0 to 3 percent slopes
- SnA, Snelling sandy loam, 0 to 3 percent slopes
- TuA, Tujunga loamy sand, 0 to 3 percent slopes
- Tx, Terrace escarpments
- WmC, Whitney sandy loams, 8 to 15 percent slopes
- WrA, Whitney and Rocklin sandy loams, 0 to 3 percent slopes

Erosion Potential

Erosion can be defined as a combination of processes in which the materials of the surface of the earth are loosened, dissolved, or worn away and transported from one place to another by natural agents. The primary concerns related to soil erosion involve soil loss and water quality degradation resulting from erosion and sedimentation.

There two types of soil erosion including water erosion and wind erosion. Related to water erosion and according to the Soil Survey, soils in the city are moderately susceptible to water erosion based on soil structure and saturated hydraulic conductivity. In addition, water erosion is also considered low because of the drainage characteristics of soils and the nearly flat topography in the city.

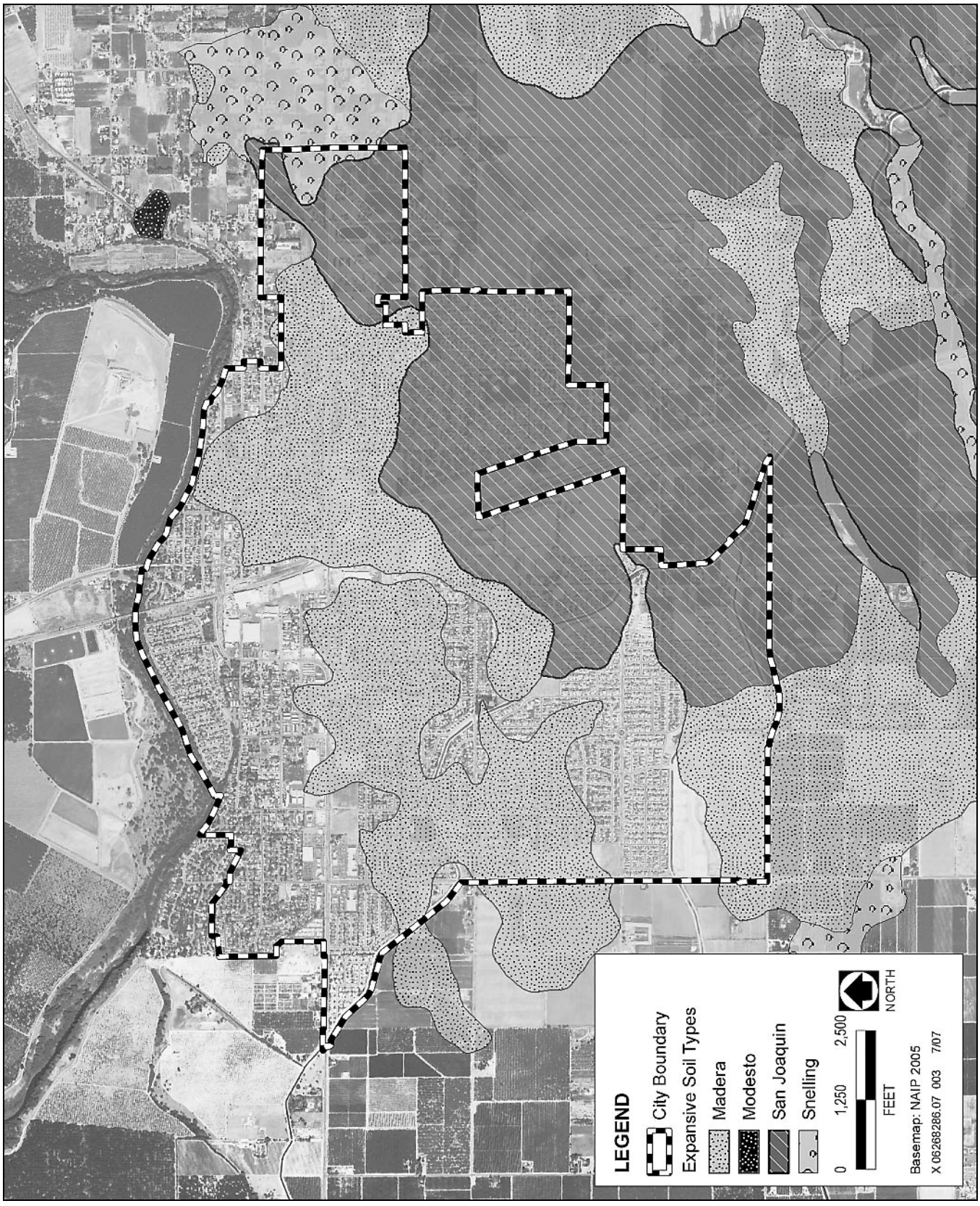
Related to wind erosion, the Carquinez Strait located approximately 70 miles west-northwest of the city is a sea-level gap in the Coastal Range. Prevailing winds blowing through the Carquinez Strait push marine air over relatively flat terrain of the Great Central Valley. This can cause wind erosion potential within the city to increase during the spring, summer, and fall months and generally decrease during the winter months as the sea breezes diminish. According to the Soil Survey, soils in the city are moderately susceptible to wind erosion based on soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas.

Subsidence Potential

Subsidence involves the settlement of soils which can result desiccation (dehydration) and shrinkage or from oxidation of organic material, or both following drainage. According to the soil survey, subsidence is not a characteristic of any soil series found in the city. Further discussion of subsidence can be found in the Hydrology and Water Quality background report.

Expansive Soils

Expansive soils increase in volume when they absorb water and shrink when they dry out, which is commonly referred to as ‘shrink-swell’ potential. The soil survey rates shrink-swell potential of soils on a low, medium, and high basis. If the shrink-swell potential is rated moderate to high, shrinking and swelling of soils can cause damage to buildings, roads, and other structures and special design techniques are often required. Four soils found in the city are identified as expansive soils: one with moderate shrink-swell potential, two with high shrink-swell potential, and one with moderate and high shrink-swell potential (see Table 4.8-1 and Exhibit 4.8-2).



Source: NRCS SSURGO 2007

Expansive Soils **Exhibit 4.8-2**

SEISMICITY

Seismicity is defined as the frequency or magnitude of earthquake activity in a given area. A seismic hazard is a risk or danger to our environment due to existence of active or potentially active earthquake faults. The term earthquake is used to define a sudden movement of the earth's crust caused by the release of stress accumulated along geologic faults or by volcanic activity.

Table 4.8-1
Expansive Soils in City of Riverbank

Soil	Shrink-Swell Potential
Snelling (SnA)	moderate potential at depth of 19-56 inches
San Joaquin (SaA)	high potential at depth of 13-24 inches
Modesto (MmA)	moderate potential at depths of 0-12 and 35-55 inches high potential at depths of 12-35 inches and 55-62 inches
Madera (MdA)	high potential at depth of 19-30 inches

Earthquake Hazards

Earthquake hazards include surface faulting, ground shaking, landslides, liquefaction, tectonic deformation, tsunamis, and seiches. The risk associated with earthquake hazards is generally described in terms of the probability of building damage and the number of people that could be hurt or killed if an earthquake occurred along a particular fault.

Earthquakes are measured by their physical effects and by the amount of energy being released. The Modified Mercalli Scale (also known as the Maximum Moment Magnitude scale) is used to measure the physical effect of earthquakes (see Table 4.8-2). This scale ranges from I to XII with an earthquake intensity of XII resulting in nearly total damage to manmade structures and displacement of large masses of rock. The Richter Scale is used to assign a number to the calculated energy release of an earthquake, measuring the amplitude of seismic waves recorded by a seismograph. The Richter Scale is logarithmic and an increase of one number in magnitude is the same as an increase of 32 times in energy release (see Table 4.8-3).

Uniform Building Code Seismic Zones

The Uniform Building Code (UBC) includes a Seismic Zone Map to determine applicable construction standards for proposed structures. Seismic zones range from 0 to 4 with Zone 0 being the least active and Zone 4 being the most active. Riverbank is located in Seismic Zone 3, and all buildings constructed in the city must comply with UBC requirements for this seismic zone.

Alquist-Priolo Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. This State law was a direct result of the 1971 San Fernando Earthquake, which was associated with extensive surface fault ruptures that damaged numerous homes, commercial buildings, and other structures. Surface rupture is the most easily avoided seismic hazard.

Table 4.8-2
Modified Mercalli Scale

Value	Description of Shaking Severity	Summary Damage Description	Full Description
I			Not felt. Marginal and long period effects of large earthquakes.
II			Felt by persons at rest, on upper floors, or favorably placed.
III			Felt indoors. Hanging objects swing. Vibration like passing of light trucks. Duration estimated. May not be recognized as an earthquake.
IV			Hanging objects swing. Vibration like passing of heavy trucks; or sensation of a jolt like a heavy ball striking the walls. Standing motor cars rock. Windows, dishes, doors rattle. Glasses clink. Crockery clashes. In the upper range of IV, wooden walls and frame creak.
V	Light	Pictures move	Felt outdoors; direction estimated. Sleepers wakened. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Doors swing, close, open. Shutters, pictures move. Pendulum clocks stop, start, change rate.
VI	Moderate	Objects fall	Felt by all. Many frightened and run outdoors. Persons walk unsteadily. Windows, dishes, glassware broken. Knickknacks, books, etc., off shelves. Pictures off walls. Furniture moved or overturned. Weak plaster and masonry D cracked. Small bells ring (church, school). Trees, bushes shaken (visibly, or heard to rustle).
VII	Strong	Nonstructural damage	Difficult to stand. Noticed by drivers of motor cars. Hanging objects quiver. Furniture broken. Damage to masonry D, including cracks. Weak chimneys broken at roof line. Fall of plaster, loose bricks, stones, tiles, cornices (also unbraced parapets and architectural ornaments). Some cracks in masonry C. Waves on ponds; water turbid with mud. Small slides and caving in along sand or gravel banks. Large bells ring. Concrete irrigation ditches damaged.
VIII	Very Strong	Moderate damage	Steering of motor cars affected. Damage to masonry C; partial collapse. Some damage to masonry B; none to masonry A. Fall of stucco and some masonry walls. Twisting, fall of chimneys, factory stacks, monuments, towers, elevated tanks. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Decayed piling broken off. Branches broken from trees. Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes.
IX	Violent	Heavy damage	General panic. Masonry D destroyed; masonry C heavily damaged, sometimes with complete collapse; masonry B seriously damaged. (General damage to foundations.) Frame structures, if not bolted, shifted off foundations. Frames racked. Serious damage to reservoirs. Underground pipes broken. Conspicuous cracks in ground. In alluvial areas sand and mud ejected, earthquake fountains, sand craters.
X	Very Violent	Extreme damage	Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. Rails bent slightly.
XI			Rails bent greatly. Underground pipelines completely out of service.
XII			Damage nearly total. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into the air.

Source: California Geologic Survey 2005

Table 4.8-3
Comparison of Richter Magnitude and Modified Mercalli Intensity

Richter Magnitude	Modified Mercalli Maximum Intensity (at epicenter)	Definition
2	I-II	Usually detected only by instruments
3	III	Felt indoors
4	IV-V	Felt by most people
5	VI-VII	Felt by all; many people frightened and run outdoors; damage minor to moderate
6	VII-VIII	Everybody runs outdoors; damage moderate to major
7	IX-X	Major damage
8+	X-XI	Total and major damage

The Alquist-Priolo Earthquake Fault Zoning Act's main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. The Seismic Hazards Mapping Act, passed in 1990, addresses non-surface fault rupture earthquake hazards, including liquefaction and seismically induced landslides.

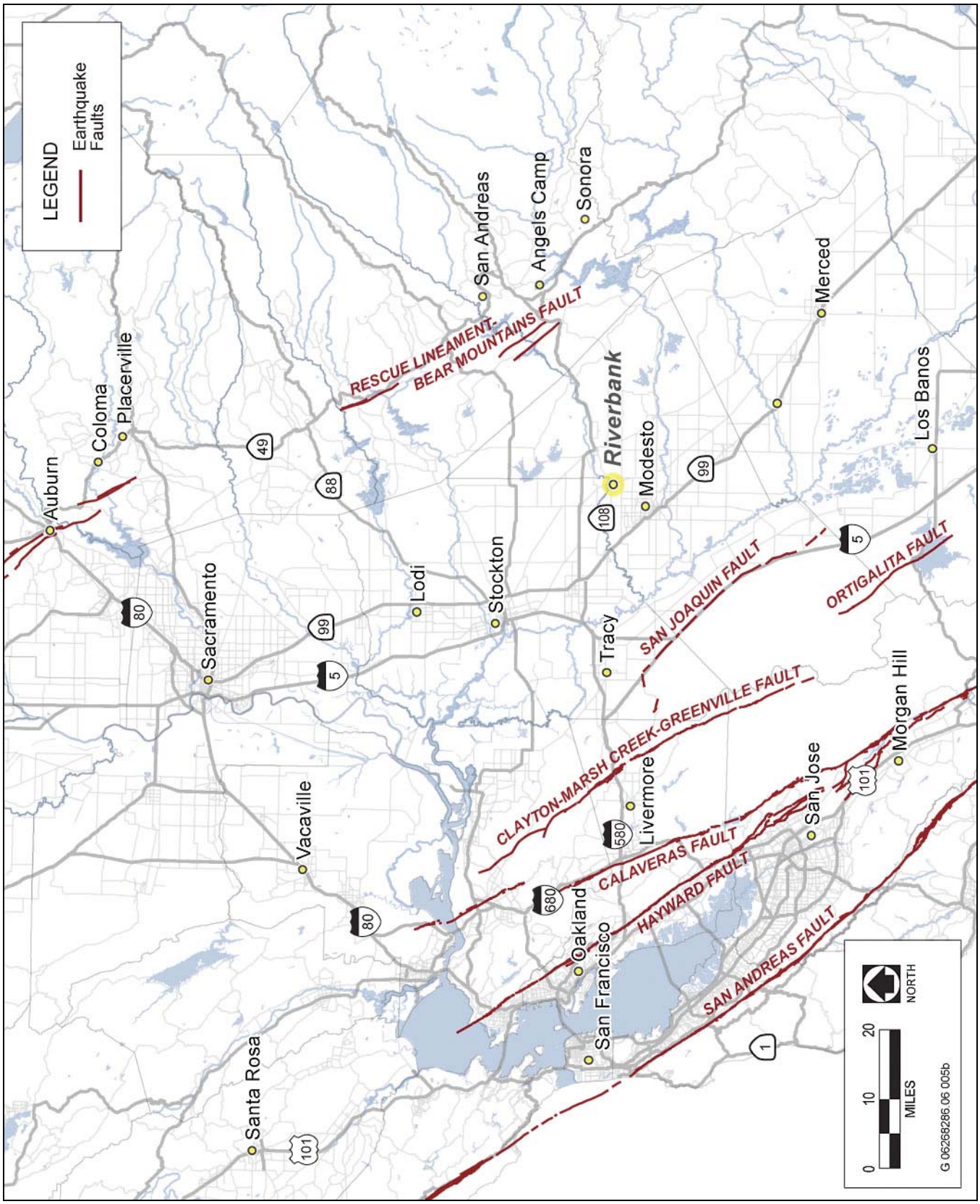
According to the California Department of Conservation, Geological Survey, Riverbank is not located within an Alquist-Priolo Fault Rupture Hazard Zone. In addition, areas within Stanislaus County have not been mapped as part of the Seismic Hazards Mapping Act. Therefore, the Riverbank is not susceptible to seismic hazards related to fault rupture.

However, seismic activity in other parts of the state can affect the Riverbank area. Prominent fault systems that could affect Riverbank are detailed below. Faults nearby include the San Joaquin fault, Rescue Lineament – Bear Mountains fault, Clayton – Marsh Creek – Greenville fault, Calaveras fault, and Ortigalita fault (see Exhibit 4.8-3).

San Andreas Fault Zone – The San Andreas Fault is one of the longest, most thoroughly studied, and most active faults in the world. The presence of the San Andreas fault was brought dramatically to world attention on April 18, 1906, when sudden displacement along the fault produced the great San Francisco earthquake and fire.

The San Andreas fault forms a continuous narrow break in the Earth's crust that extends from northern California southward to Cajon Pass near San Bernardino. Southeastward from Cajon Pass several branching faults, including the San Jacinto and Banning faults, share the movement of the crustal plates. In this stretch of the fault zone, the name ‘San Andreas’ generally is applied to the northeastern most branch (USGS 2007).

Over much of its length, a linear trough reveals the presence of the San Andreas fault; from the air, the linear arrangement of lakes, bays, and valleys in this trough is striking. Viewed from the ground, however, the features are more subtle. For example, many people driving near Crystal Springs Reservoir, near San Francisco, or along Tomales Bay, or through Cajon or Tejon Passes may not realize that they are within the San Andreas fault zone. On the ground, the fault can be recognized by carefully inspecting the landscape. The fault zone is marked by distinctive landforms that include long straight escarpments, narrow ridges, and small undrained ponds formed by the settling of small blocks within the zone. Many stream channels characteristically jog sharply to the right where they cross the fault (USGS 2007).



Source: U.S. Geological Survey, Earthquake Hazards Program – Northern California 2007

Fault Lines in the Project Area **Exhibit 4.8-3**

Hayward Fault – The Hayward Fault is part of the complex plate boundary system in central California and is a major branch of the San Andreas Fault System. Near Hollister, the Calaveras fault branches off from the San Andreas fault toward a more northerly direction, and further north, the Hayward fault branches off from the Calaveras toward the northwest. The last major earthquake on the Hayward fault occurred in 1868 and the Hayward fault is a prime candidate in Northern California for a magnitude 7 earthquake within the next 30 years (Berkeley 2007).

4.8.3 REGULATORY SETTING

FEDERAL

Earthquake Hazards Reduction Act

In October 1977, the U.S. Congress passed the Earthquake Hazards Reduction Act to reduce the risks to life and property from future earthquakes in the United States. To accomplish this, the act established the National Earthquake Hazards Reduction Program (NEHRP). This program was significantly amended in November 1990 by the National Earthquake Hazards Reduction Program Act (NEHRPA) by refining the description of agency responsibilities, program goals, and objectives.

The mission of NEHRP includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improved building codes and land use practices; risk reduction through post-earthquake investigations and education; development and improvement of design and construction techniques; improved mitigation capacity; and accelerated application of research results. The NEHRPA designates the Federal Emergency Management Agency (FEMA) as the lead agency of the program and assigns several planning, coordinating, and reporting responsibilities. Other NEHRPA agencies include the National Institute of Standards and Technology, National Science Foundation, and USGS.

STATE

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. The main purpose of the law is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The law addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards. The Alquist-Priolo Act requires the State Geologist to establish regulatory zones known as 'Earthquake Fault Zones' around the surface traces of active faults and to issue appropriate maps. The maps are distributed to all affected cities, counties, and state agencies for their use in planning efforts. Local agencies must regulate most development projects within the zones, including all land divisions and most structures for human occupancy.

The project site is not located within an earthquake fault zone as designated by the Alquist-Priolo Act (California Geological Survey 2005).

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act, passed by the California legislature in 1990, addresses earthquake hazards from nonsurface fault rupture, including liquefaction and seismically induced landslides. The act established a mapping program for areas that have the potential for liquefaction, landslide, strong ground shaking, or other earthquake and geologic hazards.

California Uniform Building Code

The State of California provides minimum standards for building design through the California Building Standards Code (California Code of Regulations, Title 24). Where no other building codes apply, Chapter 29 regulates excavation, foundations, and retaining walls. The California UBC also applies to building design and construction in the state and is based on the national UBC used widely throughout the country (generally adopted on a state-by-state or district-by-district basis). To reflect California conditions, the California UBC has numerous regulations that are more detailed or more stringent than those in the national UBC.

The State earthquake protection law (California Health and Safety Code Section 19100 et seq.) requires that structures be designed to resist stresses produced by lateral forces caused by wind and earthquakes. Specific minimum seismic safety and structural design requirements are set forth in Chapter 16 of the California UBC. The California UBC identifies seismic factors that must be considered in structural design.

Chapter 18 of the California UBC regulates the excavation of foundations and retaining walls, and Appendix Chapter A33 regulates grading activities, including drainage and erosion control, and construction on unstable soils, such as expansive soils and areas subject to liquefaction.

4.8.4 SIGNIFICANCE THRESHOLDS

METHOD OF ANALYSIS

This analysis is based on review of existing geological conditions in the Riverbank area from information provided by the U.S. Geological Survey and California Department of Conservation.

THRESHOLDS OF SIGNIFICANCE

An impact is considered significant, as defined by the State CEQA Guidelines (Appendix G), if the proposed project or alternatives would:

- expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
- the rupture of a known earthquake fault as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known active 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 landsliding, lateral spreading, subsidence, liquefaction, or collapse; or
- be located on expansive soil, as defined in Table 18-1-B of the UBC, creating substantial risks to life or property; or
- have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

4.8.5 IMPACTS AND MITIGATION MEASURES

IMPACT ANALYSIS

IMPACT 4.8-1 Expose People or Structures to Potential Substantial Adverse Affects Involving the Rupture of a Known Earthquake Fault. *Riverbank is not located within an earthquake fault zone and surface rupture from faulting is not expected to occur in the city. This impact would be less than significant.*

Riverbank is not located within an earthquake fault zone as designated by the Alquist-Priolo Earthquake Fault Zone Act (California Geological Survey 2007). The nearest active fault is the San Joaquin fault, which is located approximately 22 miles southwest of the city (see Exhibit 4.8-3) and is a potential source of risk for seismic events. Because no known faults are located in the city, the potential for surface rupture (cracking or breaking of the ground during an earthquake) would be **less than significant**.

Mitigation Measures: No mitigation is required.

IMPACT 4.8-2 Expose People or Structures to Potential Substantial Adverse Affects Involving Strong Seismic Ground Shaking. *The City of Riverbank is located in an area considered by the California Geological Survey to experience lower levels of shaking less frequently. Ground shaking, as a result of seismic activity from nearby or distant earthquake faults, could cause seismic-related ground failure. The water-saturated alluvial soils located in the city are considered to possess low strength and could potentially liquefy during a seismic event. Development of homes and other structures has the potential to expose people to substantial adverse effects from seismic hazards, including ground shaking and liquefaction. However, the City of Riverbank General Plan and municipal code include measures that lessen the possible exposure of people and structures to ground shaking or ground failure. This impact would be less than significant.*

Ground shaking may pose a risk to increased numbers of people and property resulting from the proposed General Plan, and can elevate risk if buildings are not properly designed for seismic safety. Development in the city must comply with the California UBC, which outlines standards for seismic design, foundations and drainage. Compliance with the UBC is already required by City ordinance and would also be required for development anticipated under the General Plan.

Lands located in Stanislaus County have not been mapped by the California Department of Mines and Geology Seismic Hazard Zone Mapping System. This program maps areas potentially susceptible to liquefaction and landslides. Because of the relatively flat topography of the city the possibility of landslides is less than significant. Review of soil types located in the city found that subsidence is not a characteristic. However, earthquakes from regional fault systems have affected Stanislaus County in the past and, therefore, the possibility of ground shaking occurring in the city sometime in the future is likely. In addition, the relatively high water table found in Riverbank could result in impacts related to liquefaction.

To lessen the possible exposure of people and structures to ground shaking or ground failure, including liquefaction, the City of Riverbank General Plan Safety Element includes the following goals, policies, and implementation measures:

Goal SAFE-1: Minimize the Loss of Life and Damage to Property Natural and Human-Caused Hazards

- Policy SAFE-1.2: The City will continue to enforce State of California Building Standards Commission uniform codes, such as the Uniform Building Code and Fire Code.

- Policy SAFE-1.3: The City will encourage the retrofitting of older buildings to current safety standards, and require compliance to recommendations of the fire and law enforcement service providers and the State Building Standards Commission uniform codes in coordination with major remodeling or additions.

- Policy SAFE-1.11: Proposed developments located within river bluff areas and other areas prone to geologic and soil limitations require a detailed geotechnical study prepared by an independent qualified geologist approved by the City. Approved plans, projects, and subdivision requests shall incorporate measures to reduce risks identified in the geotechnical study, to the City's satisfaction.

- Policy SAFE-1.12: The City will not allow the location of water wells in areas where subsidence could occur as a result or where existing potential for subsidence could be increase as a result of operation of a domestic water well.

With implementation of these goals, policies, and implementation measures of the City of Riverbank General Plan, the potential for exposing people or structures in the city to substantial adverse affects involving strong seismic ground shaking would be reduced to a **less-than-significant** level.

Mitigation Measures: No mitigation is required.

IMPACT 4.8-3 Result in Substantial Soil Erosion or the Loss of Topsoil. *Excavation and grading of soil could result in localized erosion during construction activities occurring in the city. Further, dewatering may be required during some excavation activities as a result of high groundwater levels, which could increase the potential for soil erosion. The Riverbank General Plan includes goals, policies, and implementation measures to lessen the potential for soil erosion and loss of topsoil. This would be a* ***less-than-significant*** *impact.*

The majority of the Planning Area is flat land with little risk of erosion. However, construction activities occurring in the city could involve excavation and grading of soil, which could remove vegetative cover and expose soils to wind and water erosion.

In addition, high groundwater levels in the city could result in the need for dewatering during excavation activities deeper than five feet, thereby increasing the potential for erosion.

Because of the partial to moderate drainage characteristics of soils found in Riverbank and the relatively flat topography, water erosion hazards are considered less than significant.

However, the potential for wind erosion in the city ranges from moderate to high. Although excavation activities, grading, and construction would be conducted according to standard construction practices, construction activities have the potential to create substantial localized erosion during wind and rain events.

To lessen possible soil erosion and loss of topsoil, the City of Riverbank General Plan Air Quality Element and Conservation and Open Space Element include the following goals and policies, which relate to soil erosion:

Goal AIR-2: Construction Practices and Materials Used In Riverbank Minimize Direct and Indirect Air Pollutant Emissions

- Policy AIR-2.1: The City of Riverbank, in coordination with the San Joaquin Valley Air Pollution Control District, will require approved projects, plans, and subdivisions to reduce particulate emissions from construction, grading, excavation, and demolition to the maximum extent feasible.

Goal CONS-6: Maintain or Increase Surface and Groundwater Quality and Supply

- Policy CONS-6.1: The City will require that waterways, floodplains, watersheds, and groundwater recharge areas are maintained in their natural condition, wherever feasible.

- Policy CONS-6.3: Approved projects, plans, and subdivisions in new growth areas shall incorporate natural drainage system design that emphasizes infiltration and decentralized treatment (rather than traditional piped approaches that quickly convey stormwater to large centralized treatment facilities).

- Policy CONS-6.4: The City will encourage the use of permeable surfaces for hardscape. Impervious surfaces such as driveways, streets, and parking lots will be minimized so that land is available for a natural drainage system to absorb stormwater, reduce polluted urban runoff, recharge groundwater, and reduce flooding.

- Policy CONS-6.7: The City will require mitigation measures, in coordination with the Regional Water Quality Control Board, as a part of approved projects, plans, and subdivisions to address the quality and quantity of urban runoff, including that attributable to soil erosion.

With implementation of these goals and policies, and compliance with existing regulations from the Regional Water Quality Control Board and City conditions on grading permits, the potential for soil erosion and loss of topsoil in the city would be reduced to a **less-than-significant** level.

Mitigation Measures: No mitigation is required.

IMPACT 4.8-4 Expose People or Structures to Hazards Involving Expansive Soils. *Soils located in areas of the city are moderately to highly susceptible to expansive soil behavior. Expansive soils may cause differential and cyclical foundation movements that can cause damage and/or distress to overlying structures. In addition, the groundwater table is shallow which enhances the potential for shrink and swell. However, the City of Riverbank General Plan includes goals, policies, and implementation measures to lessen the possible exposure of people and structures to hazards involving expansive soils. This impact would be less than significant.*

Four soil types found in Riverbank have been identified as expansive soils (moderate to high shrink-swell potential) which can cause damage to buildings, roads, and other structures. To lessen possible exposure of people and structures to hazards involving expansive soils, the Riverbank General Plan Safety Element includes the following goal and policy:

Goal SAFE-1: Minimize the Loss of Life and Damage to Property Natural and Human-Caused Hazards

- Policy SAFE-1.2: The City will continue to enforce State of California Building Standards Commission uniform codes, such as the Uniform Building Code and Fire Code.

- Policy SAFE-1.11: Proposed developments located within river bluff areas and other areas prone to geologic and soil limitations require a detailed geotechnical study prepared by an independent qualified geologist approved by the City. Approved plans, projects, and subdivision requests shall incorporate measures to reduce risks identified in the geotechnical study, to the City's satisfaction.

With implementation of the aforementioned goal and policies, as well as adherence to existing regulations, the potential exposure of people and structures to hazards involving expansive soils in the city would be reduced to a **less-than-significant** level.

Mitigation Measures: No mitigation is required.

IMPACT 4.8-5 Placement of Septic Tanks or Alternative Wastewater Systems in Soils Incapable of Supporting Their Use. *The entire City of Riverbank is served by the city's public sewer system. Implementation of the General Plan would result in* ***no impact****.*

All new development that occurs in the Riverbank would be served by the City's public sewer system. No septic tanks or alternative waste water systems would be used. Therefore, implementation of the Riverbank General Plan would result in **no impact**.

Mitigation Measures: No mitigation is required.

4.9 HAZARDS AND HAZARDOUS MATERIALS

4.9.1 INTRODUCTION

This section summarizes information on public health and safety hazards, including routine transport, use, or disposal of hazardous materials; wildland fire protection; and emergency preparedness in the City of Riverbank. This section also provides an evaluation of the effects of the proposed General Plan on public health and safety.

Information on seismic and geological hazards can be found in Section 4.8, Geology, Soils, and Mineral Resources, and information of flooding hazards is provided in Section 4.10, Hydrology and Water Quality. Existing fire and law enforcement services, and the potential for impacts associated with increased demands for fire and law enforcement personnel and services are discussed in Section 4.14, Public Services, including Recreation.

4.9.2 ENVIRONMENTAL SETTING

HAZARDOUS MATERIALS

Definition of Terms

For purposes of this section, the term "hazardous materials" refers to both hazardous substances and hazardous wastes. A "hazardous material" is defined in the Code of Federal Regulations (CFR) as "a substance or material that … is capable of posing an unreasonable risk to health, safety, and property when transported in commerce" (49 CFR 171.8). California Health and Safety Code Section 25501 defines a hazardous material as follows:

> "Hazardous material" means any material that, because of its quantity, concentration, or physical, or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous waste, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

"Hazardous wastes" are defined in California Health and Safety Code Section 25141(b) as wastes that:

> … because of their quantity, concentration, or physical, chemical, or infectious characteristics, [may either] cause, or significantly contribute to an increase in mortality or an increase in serious illness[, or] pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Hazardous Waste Generators

The U.S. Environmental Protection Agency's (EPA's) Envirofacts web site presents information from several regulatory agencies and databases, including those for EPA, California Department of Toxic Substances Control (DTSC), and Office of Emergency Services (OES), and contains a variety of environmental information maintained by EPA, such as the locations of releases of more than 650 toxic chemicals. Information includes facilities that handle hazardous material, have released toxic materials, and are listed as a Superfund cleanup site.

According to the EPA's Envirofacts database, the City of Riverbank General Plan Planning Area (Planning Area) includes:

- two Superfund sites, one of which is currently on the final National Priority List (NPL);
- two facilities releasing discharges to water;

- three facilities reporting toxic releases;
- 17 facilities handling hazardous materials; and,
- three facilities producing and releasing air pollutants.

Pursuant to federal law, businesses in the Planning Area that handle hazardous wastes must register with the EPA for record-keeping and recording. Table 4.9-1 lists the EPA-regulated facilities in the Planning Area.

Table 4.9-1
EPA-Regulated Facilities in the Planning Area

Facility Name/Address	Permitted Discharges to Water?	Toxic Releases Reported?	Hazardous Waste Handler?	Active or Archived Superfund Report?	Air Releases Reported?
Arco AM/PM Stations 6345 Oakdale Rd.	No	No	**Yes**	No	No
Bill Alsman Trucking 2836 Patterson Rd.	No	No	**Yes**	No	No
Burlington Northern and Santa Fe Railway 3242 Talbot Ave.	No	No	**Yes**	No	No
Cipponeri Trucking 2015 Patterson Rd.	No	No	**Yes**	No	No
Dura Built Truss Co. 3312 Patterson Rd.	No	No	**Yes**	No	No
G&O Auto Wrecking Yard 5536-D Roselle	No	No	**Yes**	No	No
Gangi Brothers Packing Company 2906 Santa Fe St.	No	No	**Yes**	No	No
Hogan Manufacturing Inc. 19527 S. Mc Henry Ave.	No	No	**Yes**	No	No
J G Cook Trucking 2661 Ross Ave.	No	No	**Yes**	No	No
Joe G. Oliveira 5106 Langworth	**Yes**	No	No	No	No
Monschein Industries 6344 Roselle Ave.	No	No	**Yes**	No	No
Munn & Perkins 26292 E. River Rd.	No	No	No	No	**Yes**
Online Trucking 5707 Chenault Dr.	No	No	**Yes**	No	No
Pacific Bell 3201 Santa Fe St.	No	No	**Yes**	No	No
Phil Adrian 26554 E. River Rd.	No	No	No	No	**Yes**
Schali Transport Inc. 5612 State Route 108	No	No	**Yes**	No	No
Silgan Containers Mfg. 3250 Patterson Rd.	No	**Yes**	**Yes**	No	**Yes**
Stueve Farm 5448 Claribell Rd.	**Yes**	No	No	No	No
Sunrise Rents Rocks Redi Mix 4518 Oakdale Rd.	No	**Yes**	No	No	No
Thunderbolt Wood Treating Co. 3400 Patterson Rd.	No	No	**Yes**	**Yes**	No
US Army Riverbank Ammunitions Plant 5300 Claus Rd.	No	**Yes**	**Yes**	**Yes**	No
USDA Forest Service Mi Wuk Ranger Dist. 24695 Highway 108	No	No	**Yes**	No	No

Source: EPA 2007.

Toxic Releases

The EPA has established the Toxics Release Inventory (TRI), a publicly available database that contains information on toxic chemical releases and other waste management activities of chemicals reported annually by certain industry groups, as well as federal facilities. The TRI database identified two sites in the Planning Area, as shown in Table 4.9-2. The release of chemicals on these sites does not reflect potential adverse effects on human health and the environment. The determination of potential risk depends on many factors, including toxicity of the chemical and the amount and duration of human or other exposure to the chemical after release.

Table 4.9-2
TRI Reported Releases for Facilities in the Planning Area

Facility	Location	Chemical	Total On-Site Releases	Total Off-Site Releases	Total Releases
Silgan Containers Corp.	3250 Patterson Road	1,2,4-trimethylbenzene, certain glycol ethers, ethylbenzene, methyl ethyl ketone, methyl isobutyl ketone, N-butyl alcohol, N-hexane, xylene (mixed isomers)	15,134	0	15,134
Riverbank Army Ammunition Plant	5300 Claus Road	Copper, sulfuric acid	32,485	0	32,485

Source: EPA 2004.

Leaking Underground Storage Tanks

Leaking underground storage tanks (LUSTs) have been an environmental concern in recent years and there have been new State requirements for underground storage tanks. New requirements have led to the installation of new tanks, with associated cleanup of sites where leaking tanks were identified. Nevertheless, there remain some sites with underground storage tanks that have not yet been remediated.

The State Water Quality Control Board's (SWRCB's) GeoTracker web site maintains an inventory of LUST sites throughout the state. Table 4.9-3 identifies 11 LUST sites in the Planning Area. Seven sites have been identified as containing soil contamination and four sites have been identified as a potential threat to an aquifer used for drinking water (SWRCB 2007). LUST cases have been closed on seven of these sites, indicating that cleanup has been completed or that no further action needs to be taken.

Site Mitigation and Brownfields Reuse

The State of California Hazardous Waste and Substances Site List (also known as the "Cortese List") is a planning document used by State, local agencies, and developers to comply with the CEQA requirements in providing information about the location of hazardous materials sites. California Government Code Section 65962.5 requires the California Environmental Protection Agency (Cal/EPA) to annually update the Cortese List. The DTSC is responsible for preparing a portion of the information that comprises the Cortese List. Other State and local government agencies are required to provide additional hazardous material release information that is part of the complete list. DTSC's Site Mitigation and Brownfields Reuse Program EnviroStor database provides the DTSC's component of Cortese List data by identifying State Response and/or Federal Superfund and backlog sites listed under Health and Safety Code Section 25356. In addition, DTSC's Cortese List includes Certified with Operation and Maintenance sites.

The Riverbank Army Ammunition Plant was identified on the DTSC Site Mitigation and Brownfields Reuse Program for the Planning Area, which includes the DTSC's component of the Cortese List (DTSC 2007).

Table 4.9-3 Leaking Underground Storage Tank Sites in the Planning Area				
Facility	Location	Substance	Case Type	Status
Riverbank Army Ammunition Plant	5300 Claus Road	Gasoline	Soil contamination	Closed
U Gas	3701 Atchison	Gasoline	Drinking water aquifer	Preliminary investigation report submitted
Contadina Company	2906 Santa Fe Street	N/L	Drinking water aquifer	Closed
Rai's Market	2707 Patterson Road	Gasoline	Soil contamination	Leak being confirmed
Silgan Containers Corp.	3250 Patterson Road	Chlorinated hydrocarbons	Soil contamination	Closed
Jay Cook Transport	2536 Patterson Road	Gasoline	Soil contamination	Closed
Hub Service	2772 Patterson Road	N/L	Drinking water aquifer	Closed
Arco #5565	6345 Oakdale Road	Gasoline	Soil contamination	Closed
Quick N Save	5925 Terminal Avenue	Gasoline	Soil contamination	Leak being confirmed
Stop N Save #5	3702 Atchison	Gasoline	Drinking water aquifer	Problem assessment report completed
Cipponeri Trucking	2017 Patterson Road	Diesel	Soil contamination	Closed

N/L – not listed
Source: SWRCB 2007.

Riverbank Army Ammunition Plant

The Riverbank Army Ammunition Plant is located at 5300 Claus Road, approximately 1.5 miles southeast of downtown Riverbank. The plant comprises approximately 175 acres, consisting of 145 acres within the main plant area and 30 acres of evaporation-percolation ponds located about 1.5 miles north of the main plant area. Sparsely populated residential areas are located north, west, and south of the plant site, and pasture land is to the east. The estimated population within a one-mile radius of the plant is 3,400 (U.S. Department of Health and Human Services 1997).

The plant was originally opened in 1943 as an aluminum plant, and the plant has operated on an on-and-off basis since 1943. The plant was closed in 1944 and was used for storage of a variety of government surplus materials, including corn and grain. Following a series of intergovernmental transfers, the property was assigned to the U.S. Army in 1951, and was converted to the manufacture of steel cartridge cases. In 1994, the plant was deactivated and placed in preservation status but was subsequently reactivated to meet ammunitions needs related to military activities after 2001 (U.S. Department of Health and Human Services 1997). In May of 2005, the U.S. Department of Defense announced the closure of the Riverbank Army Ammunition Plant.

The Riverbank Army Ammunition Plant manufactured casings for mortar projectiles, grenades, and artillery shells. Plant activities included the on-site disposal of acids, heavy metals, and solvents. Cyanide was used in large quantities in the plating processes that were a part of the casing production. Cyanide wastes were initially disposed in a landfill in the northeastern portion of the main plant area. Other wastes generated by the plating process were primarily metals, such as chromium, cobalt, copper, lead, mercury, nickel, silver, and zinc.

The plant was listed on the NPL in 1990, primarily as a result of groundwater contamination. A Remedial Investigation of the site identified soil and groundwater contamination, primarily by heavy metals, chrome, and

cyanide. The inactive landfill has been capped with clean soil and has a drainage system to direct surface water runoff into the plant wastewater treatment system. Additionally, metals-contaminated soils and sediment have been removed from the percolation ponds north of the main facility. The on-site groundwater treatment system has been active since the spring of 1995, and the off-site groundwater extraction system began operation in the fall of 1996. These remedial activities are intended to reduce or eliminate the groundwater contamination. Groundwater monitoring wells, located on- and off-site, are sampled quarterly to check for reduction in concentrations of chromium and cyanide (U.S. Department of Health and Human Services 1997).

The City of Riverbank Redevelopment Agency is proposing the adoption and implementation of Riverbank Reinvestment Project. The reinvestment project would amend and extend the boundaries of the existing 1,000-acre Riverbank Reinvestment Plan area to encompass the Riverbank Army Ammunition Plant and adjacent properties in unincorporated Stanislaus County. The extension of plant boundaries would allow redevelopment in portions of the Ammunitions Plant area that were previously developed but that cannot be utilized in their present condition because of substandard infrastructure and existing buildings that do not meet California Building Code regulations. One of the primary concerns for the redevelopment of the plant is the extent of hazardous materials remaining in the plant facilities and on-site, and the potential for these materials to spread to adjacent properties. Closure of the plant and redevelopment of the site and surrounding areas could include safety issues involving the permanent deactivation of the facility and the removal of hazardous materials and unexploded ordnance (Pinasco 2007, City of Riverbank 2007).

On June 25, 2007, the City of Riverbank issued a notice of preparation (NOP) to inform agencies and the general public that an EIR was being prepared for the reinvestment project, and invited comments on the scope and content of the document. The NOP was published by the State Clearinghouse and was mailed to interested agencies and citizens. The NOP was circulated for 30 days as mandated by CEQA. The public comment period for the NOP closed on July 24, 2007.

HAZARDOUS MATERIALS TRANSPORT

Hazardous materials are transported in the Planning Area by trucks and by rail. Trucks typically use interstates and state routes, since these roads are better able to handle truck traffic. State Route (SR) 108 runs east and west through the city and is the main highway through the city. All motor carriers and drivers involved in the transportation of hazardous materials must comply with the requirements of federal and State regulations, and must apply for and obtain a hazardous materials transportation license from the California Highway Patrol (CHP). When transporting explosives, inhalation hazards, and highway route-controlled quantities of radioactive materials, safe routing and safe stopping places are required.

The Burlington Northern and Santa Fe (BNSFRR) railroad bisects the city from north to south. According to State officials, one of seven railroad cars carries some type of hazardous material. It is not known how many rail cars carry hazardous material loads at a given time. However, railroad personnel keep detailed inventories of the types of hazardous materials being transported (Stanislaus County 1987). Any transportation of hazardous materials on the BNSFRR is required to comply with State and federal laws for the transportation of hazardous materials on railroads. Such laws are designed to protect public and environmental health.

PETERSON AIRPORT

The Peterson Airport is a privately owned airport located at 5800 Langworth Road in the City of Oakdale. The airport is located approximately three miles southeast of downtown Riverbank and approximately 0.5 mile east of the eastern edge of the Riverbank Planning Area. The airport houses one single-engine aircraft and operates a single asphalt landing strip that is 40 feet wide and 2,485 feet long (Federal Aviation Administration 2006). The landing strip runs from east to west, and the landing approach is from the southwest (GlobalAir 2007).

The *Stanislaus County Comprehensive Airport Land Use Plan* (CLUP) (1987, as amended 2004) describes safety compatibility standards for privately owned airports in Stanislaus County. Airport operation hazards include: incompatible land uses, power transmission lines, wildlife hazards (e.g., bird strikes), and tall structures that penetrate the imaginary surfaces surrounding an airport. The term "imaginary surfaces," established by Federal Aviation Administration (FAA) regulations (14 CFR 77), refers to heights above which any object or structure is considered by the FAA to constitute a hazard to aircraft navigation, and thus a hazard to both aircraft and people and structures on the ground.

USE OF AGRICULTURAL CHEMICALS

The Planning Area outside of the incorporated City limits consists of agricultural and rural residential uses, similar to much of rural Stanislaus County. Pesticides could have been applied to lands throughout the Planning Area, in conjunction with historic and ongoing agricultural production. Chemicals potentially used in agricultural activities could result in residual concentrations of persistent pesticides in the soil. Persistent pesticides leave residues that remain in the environment without breaking down, such as organochlorine pesticides (e.g., dichlorodiphenyltrichloroethane [DDT]).

HAZARDS ASSOCIATED WITH MOSQUITOES

Mosquitoes are blood-sucking insects whose biting habits can create irritating and unpleasant conditions for outdoor activities. In addition, some types of mosquitoes have the ability to transmit organisms that cause diseases in humans. All species of mosquitoes require standing water to complete their growth cycle; therefore, any body of standing water represents a potential mosquito breeding area. Water quality also affects the productivity of a potential mosquito breeding areas. Typically, greater numbers of mosquitoes are produced in water bodies with poor circulation, higher temperatures, and higher organic content (i.e., poor water quality) than in water bodies having good circulation, lower temperatures, and lower organic content. In addition, irrigation and flooding practices may influence the level of mosquito production associated with a water body. Typically, greater numbers of mosquitoes are produced in water bodies with water levels that slowly increase or recede than in water bodies with water levels that are stable or that rapidly fluctuate. Mosquito larvae prefer stagnant water and the protected microhabitats provided by stems of emergent vegetation (U.S. Army Corps of Engineers 1998). As the human population increases, the risk of infection goes up because of the increased exposure of humans to mosquitoes.

In 1915, the California State Legislature enacted the Mosquito Abatement Act, which allowed local mosquito abatement organizations to form into specific special districts. Mosquito control in the United States has evolved from reliance on insecticide application for control of adult mosquitoes (adulticide) to integrated pest management programs that include surveillance, source reduction, larvicide, and biological control, as well as public relations and education (CDC 2006). Biological control includes use of many predators (dragonfly nymphs and other indigenous aquatic invertebrate predators such as predacious mosquitoes) that eat larvae and pupae; however, the most commonly used biological control adjuncts are mosquito fish (CDC 2006). Mosquito fish are easily reared and therefore have become the most common supplemental biological control agent used in mosquito control (CDC 2006).

The City of Riverbank is located within the East Side Mosquito Abatement District (MAD). The East Side MAD provides mosquito control for all of Stanislaus County north of the Tuolumne River, including the communities of Valley Home, Oakdale, Knights Ferry, Waterford, Riverbank, Empire, Salida, and Modesto. The district was formed in 1939 and serves 520 square miles and approximately 379,978 residents (Stanislaus County West Nile Taskforce 2005).

East Side MAD mosquito technicians are certified by the California Department of Health Services in pesticide usage and mosquito and vector identification. The East Side MAD uses constant surveillance to locate mosquito

breeding sources and to solve mosquito problems using physical, biological and chemical means, along with public education (Stanislaus County West Nile Taskforce 2005).

In Stanislaus County, mosquito abatement efforts are primarily focused on controlling mosquitoes that can transmit West Nile Virus. The spread of West Nile Virus has increased concern over mosquito abatement for the protection of wildlife, domestic animals, and humans. West Nile Virus is transmitted to humans and animals through a mosquito bite. In 2005, 64 confirmed cases of West Nile Virus have been documented in the East Side MAD (Stanislaus County West Nile Taskforce 2005).

EMERGENCY SERVICE PROVIDERS AND DISASTER PREPAREDNESS

Law Enforcement

The City of Riverbank is served under contract by the Stanislaus County Sheriff (SCS) through Riverbank Police Services (RPS). The RPS station has 9,217 square feet of building space. Seventeen full-time officers are stationed at the RPS station. Unincorporated areas surrounding Riverbank are served by the standard SCS service, instead of RPS. The areas in the Planning Area east of the City limits are within the boundaries of the SCS North East Area Command in Knights Ferry. Areas in the Planning Area west of the City limits are within the boundaries of the SCS North West Area Command in Salida. Existing law enforcement services, and the potential for impacts associated with increased demands for law enforcement personnel, facilities, and services are discussed in Section 4.14, Public Services, including Recreation.

Fire Protection and Emergency Response Services

Stanislaus Consolidated Fire Protection District (SCFPD) provides fire protection and first response to emergencies for the City of Riverbank. The district includes six fire stations and has 51 paid employees and approximately 25 volunteers. The district handles in excess of 4,200 calls per year, ranging from medical aids, structural fires, hazardous materials responses, wildland fires, and miscellaneous calls. SCFPD has mutual aid agreements with all Stanislaus County fire protection agencies (Stanislaus Consolidated Fire Protection District 2007). SCFPD also has automatic aid agreements with Salida Fire Protection District, Oakdale Rural Fire Protection District, Oakdale City Fire Depm1ment, Cal Fire (CDF), Denair Fire Protection District, Hughson Fire Protection District, Ceres Emergency Services, and Modesto Fire Department (Stanislaus Consolidated Fire Protection District 2008).

Station #36 serves Riverbank, and is currently staffed with Captain, Engineer, and a Firefighter. The current equipment at the Riverbank station includes one engine company (a truck which carries water and hoses and sprays water), one water tender (a truck which hauls water to unincorporated areas that are not served by fire hydrants), and one brush engine (a small engine for accessing back areas of properties). The engine company ladder can reach up to approximately 18-20 feet. Existing fire services, and the potential for impacts associated with increased demands for firefighter personnel, facilities, and services are discussed in Section 4.14, Public Services, including Recreation.

The Stanislaus County Fire Warden's Office currently provides fire prevention services to the Riverbank Planning Area through a contract. Plans are currently in motion for the SCFPD and the City to provide for the fire prevention services in the near future. Fire investigation services are currently provided by the City of Modesto Fire Department through a contract. Both agencies provide the services to the SCFPD under contract with Stanislaus County from the Less Than County Wide Tax.

Ambulance service within the Planning Area is provided by the Oak Valley Hospital District and American Medical Response.

Wildland Fires

Wildland fires occur in areas with extensive vegetation, such as forests and grasslands. Most vegetated areas in the vicinity of Riverbank are irrigated agricultural lands, including pastures, field crops, orchards, and vineyards with a low potential for wildfire. The most significant area of vegetation potentially subject to wildfire is the riparian area along the Stanislaus River. The bottom of the river, when dry, also poses a great fire hazard, especially to sections of Riverbank where houses are built along the top of the bluff alongside the river.

According to the California Department of Forestry and Fire Protection's (CDF's) Fire Resource Assessment Program, the Planning Area is located in a "developed" zone for wildland fires (CDF 1998). The CDF also identifies wildland fire areas and Very High Fire Hazard Severity Zones for all counties in California. None of these areas or zones are located in or near the Planning Area (California Resources Agency 2003). In addition, the Planning Area is not in a State Responsibility Area (SRA), which is defined as part of the state where the CDF is the primary service responsible for providing basic wildland fire protection assistance (CDF 1998).

Disaster Preparedness

The Planning Area is with in the jurisdiction of the Stanislaus County Office of Emergency Services (OES). The County OES provides preparedness before, and coordination direction during, large-scale emergencies and disasters. OES coordinates with partner agencies including nine cities, special districts, and key private agencies in providing planning, response, recovery, and mitigation activities as a result of disaster-related incidents.

Evacuation Routes

Evacuation routes to be used by a city depend on the nature and location of the disaster that prompts an evacuation. Nevertheless, some general routes can be determined, based upon capacity. The main evacuation route through Riverbank is SR 108. This roadway is capable of handling heavy truck traffic, as well as traffic from passenger vehicles and would be a primary route for evacuations. Other roadways that may be used as evacuation routes include the following (Riverbank General Plan with updates through 2005):

- Patterson Road,
- Claribel Road,
- Sylvan Avenue,
- Coffee Road,
- Oakdale Road,
- Roselle Avenue,
- Claus Road, and
- Terminal Avenue/Santa Fe Avenue.

One potential impediment to evacuations in Riverbank is the BNSFRR railroad track that runs north and south through the center of the City. If a railroad accident occurred on the segment of track within Riverbank, some evacuation routes could be obstructed. However, in such instances, other routes could be used, depending on the location of the obstruction.

4.9.3 REGULATORY SETTING

FEDERAL

U.S. Environmental Protection Agency

EPA is the agency primarily responsible for enforcement and implementation of federal laws and regulations pertaining to hazardous materials. Applicable federal regulations pertaining to hazardous materials are contained

mainly in CFR Titles 29, 40, and 49. Hazardous materials, as defined in the CFR are listed in 49 CFR 172.101. Management of hazardous materials is governed by the following laws:

- Resource Conservation and Recovery Act of 1976 (RCRA) (42 U.S. Code [USC] 6901 et seq.);
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, also called the Superfund Act) (42 USC 9601 et seq.); and,
- Superfund Amendments and Reauthorization Act (SARA) of 1986 (Public Law 99–499).

These laws and associated regulations include specific requirements for facilities that generate, use, store, treat, and/or dispose of hazardous materials. EPA provides oversight and supervision for federal Superfund investigation/remediation projects, evaluates remediation technologies, and develops hazardous materials disposal restrictions and treatment standards.

Hazardous Substances

Hazardous substances are a subclass of hazardous materials. They are regulated under CERCLA and SARA (and the federal Clean Water Act for water resources; see Section 4.10, Hydrology and Water Quality). Under CERCLA, EPA has authority to seek the parties responsible for releases of hazardous substances and ensure their cooperation in site remediation. CERCLA also provides federal funding (the "Superfund") for remediation. SARA Title III, the Emergency Planning and Community Right-to-Know Act, requires companies to declare potential toxic hazards to ensure that local communities can plan for chemical emergencies. EPA maintains a National Priority List of uncontrolled or abandoned hazardous waste sites identified for priority remediation under the Superfund program. EPA also maintains the CERCLIS database, which contains information on hazardous waste sites, potential hazardous waste sites, and remedial activities across the nation.

Hazardous Wastes

Hazardous wastes, although included in the definition of hazardous materials and hazardous substances, are regulated separately under RCRA. A waste can legally be considered hazardous if it is classified as ignitable, corrosive, reactive, or toxic.

Title 22, Section 66261.24 of the California Code of Regulations (CCR) (i.e., 22 CCR 66261.24) defines characteristics of toxicity. Under RCRA, EPA regulates hazardous waste from the time that the waste is generated until its final disposal ("cradle to grave"). RCRA also gives EPA or an authorized state the authority to conduct inspections to ensure that individual facilities are in compliance with regulations, and to pursue enforcement action if a violation is discovered. EPA can delegate its responsibility to a state if the state's regulations are at least as stringent as the federal ones. RCRA was updated in 1984 by the passage of the Federal Hazardous and Solid Waste Amendments, which required phasing out land disposal of hazardous waste.

Regulation of Pesticides

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (7 USC 136 et seq.) provides federal control of pesticide distribution, sale, and use. EPA was given authority under FIFRA not only to study the consequences of pesticide usage but also to require users (farmers, utility companies, and others) to register when purchasing pesticides. Later amendments to the law required users to take exams for certification as applicators of pesticides. All pesticides used in the United States must be registered (licensed) by EPA. Registration assures that pesticides will be properly labeled and that if used in accordance with specifications, they will not cause unreasonable harm to the environment.

Regulation of Polychlorinated Biphenyl

The Toxic Substances Control Act of 1976 (15 USC 2605) banned the manufacture, processing, distribution, and use of polychlorinated biphenyl (PCBs) in totally enclosed systems. PCBs are considered hazardous materials because of their toxicity; they have been shown to cause cancer in animals, along with effects on the immune, reproductive, nervous, and endocrine systems, and studies have shown evidence of similar effects in humans (EPA 2004). The EPA Region 9 PCB Program regulates remediation of PCBs in several states, including California. 40 CFR Section 761.30(a)(1)(vi)(A) states that all owners of electrical transformers containing PCBs must register their transformers with EPA. Specified electrical equipment manufactured between July 1, 1978, and July 1, 1998, that does not contain PCBs must be marked by the manufacturer with the statement "No PCBs" (Section 761.40[g]). Transformers and other items manufactured before July 1, 1978, containing PCBs must be marked as such.

U.S. Department of Transportation

The U.S. Department of Transportation (DOT), in conjunction with EPA, is responsible for enforcement and implementation of federal laws and regulations pertaining to transportation of hazardous materials. The Hazardous Materials Transportation Act of 1974 (49 USC 5101 et seq.) directs DOT to establish criteria and regulations regarding safe storage and transportation of hazardous materials. Hazardous materials regulations are contained in 49 CFR 171–180, and address transportation of hazardous materials, types of materials defined as hazardous, and the marking of vehicles transporting hazardous materials. In particular, 49 CFR 173, titled "Shippers' General Requirements for Shipments and Packagings," defines hazardous materials for transportation purposes; within this portion of the code, 49 CFR 173.3 provides specific packaging requirements for shipment of hazardous materials, and 49 CFR 173.21 lists categories of materials and packages that are forbidden for shipping. 49 CFR 177, titled "Carriage by Public Highway," defines unacceptable hazardous materials shipments.

Occupational Health and Safety Administration

The Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor is responsible for enforcement and implementation of federal laws and regulations pertaining to worker health and safety. Workers at hazardous waste sites must receive specialized training and medical supervision according to the Hazardous Waste Operations and Emergency Response (HAZWOPER) regulations (29 CFR 1910.120).

Federal Aviation Administration

Part 77 of the Federal Aviation Regulations (FAR), "Objects Affecting Navigable Airspace," has been adopted as a means of monitoring and protecting the airspace required for safe operation of aircraft and airports, including helipads. Objects that exceed certain specified height limits constitute airspace obstructions. FAR Part 77 requires that FAA be notified of certain proposed construction or alteration of objects within a specified vicinity of an airport.

STATE

California Environmental Protection Agency (Cal/EPA)

DTSC, a division of Cal/EPA, has primary regulatory responsibility over hazardous materials in California, working in conjunction with the Federal EPA to enforce and implement hazardous materials laws and regulations. DTSC can delegate enforcement responsibilities to local jurisdictions.

The hazardous waste management program enforced by DTSC was created by the Hazardous Waste Control Act (California Health and Safety Code Section 25100 et seq.), which is implemented by regulations described in CCR Title 26. The State program thus created is similar to, but more stringent than, the federal program under

RCRA. The regulations list materials that may be hazardous and establish criteria for their identification, packaging, and disposal.

Environmental health standards for management of hazardous waste are contained in CCR Title 22, Division 4.5. The intent of these regulations is to ensure the protection of public health associated with the use of recycled water. The regulations establish acceptable levels of constituents and pathogens in recycled water for a range of uses and prescribe means of assuring reliability in the production of recycled water. The California Department of Health Services has jurisdiction over the distribution of recycled water and the enforcement of Title 22 regulations. In addition, as required by California Government Code Section 65962.5, DTSC maintains a Hazardous Waste and Substances Site List for the state, called the Cortese List.

California's Secretary for Environmental Protection has established a unified hazardous waste and hazardous materials management regulatory program (Unified Program) as required by Senate Bill 1082 (1993). The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities for the following environmental programs:

- hazardous waste generator and hazardous waste on-site treatment programs;
- UST program,
- hazardous materials release response plans and inventories;
- California Accidental Release Prevention Program (CalARPP);
- Aboveground Petroleum Storage Act requirements for spill prevention, control, and countermeasure plans; and
- California Fire Code hazardous material management plans and inventories.

The six environmental programs within the Unified Program are implemented at the local level by local agencies—Certified Unified Program Agencies (CUPAs). CUPAs carry out the responsibilities previously handled by approximately 1,300 state and local agencies, providing a central permitting and regulatory agency for permits, reporting, and compliance enforcement. Stanislaus County is the designated CUPA in the County for both unincorporated areas and incorporated cities.

State Water Resources Control Board

The SWRCB has primary responsibility to protect water quality and supply. The project site is located within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB). As described in Section 4.10, Hydrology and Water Quality, the RWQCB is authorized by the Porter-Cologne Water Quality Control Act of 1969 to protect the waters of the state. The RWQCB provides oversight for sites where the quality of groundwater or surface waters is threatened. Extraction and disposal of contaminated groundwater due to investigation/remediation activities or due to dewatering during construction would require a permit from the RWQCB if the water were discharged to storm drains, surface water, or land (see Section 4.10, Hydrology and Water Quality).

In addition, the SWRCB regulates the use of aboveground storage tanks through the Aboveground Petroleum Storage Act (Health and Safety Code Sections 25270-25270.13). The act requires that facilities storing petroleum in a single tank greater than 1,320 gallons or facilities storing petroleum in aboveground tanks or containers with a cumulative storage capacity of greater than 1,320 gallons file a storage statement, pay a facility fee, and prepare and implement a federal Spill Prevention Control and Countermeasure (SPCC) plan.

California Department of Industrial Relations, Division of Occupational Health Administration

The California Department of Industrial Relations, Division of Occupational Safety and Health Administration (Cal/OSHA), assumes primary responsibility for developing and enforcing workplace safety regulations within the state. Cal/OSHA standards are more stringent than federal OSHA regulations, and are presented in CCR Title 8. Standards for workers dealing with hazardous materials include practices for all industries (General

Industry Safety Orders); specific practices are described for construction, and hazardous waste operations and emergency response. Cal/OSHA conducts on-site evaluations and issues notices of violation to enforce necessary improvements to health and safety practices.

California Office of Emergency Services

The California Office of Emergency Services (Cal/OES) is the State office responsible for establishing emergency response and spill notification plans related to hazardous materials accidents. Cal/OES regulates businesses by requiring specific businesses to prepare an inventory of hazardous materials (CCR Title 19).

California Department of Transportation and California Highway Patrol

The California Department of Transportation (Caltrans) and CHP enforce and monitor U.S. Department of Transportation hazardous materials and waste transportation laws and regulations in California. Together, these agencies determine container types used and license hazardous waste haulers for hazardous waste transportation on public roads. All motor carriers and drivers involved in transportation of hazardous materials must apply for and obtain a hazardous materials transportation license from CHP. When transporting explosives, inhalation hazards, and highway route-controlled quantities of radioactive materials, safe routing and safe stopping-places are required, as described in 26 CCR Section 13 et seq. A route map must be carried in the vehicle.

Electromagnetic Fields

In 1991, the California Public Utilities Commission (CPUC) began an investigation into the possible health effects of EMFs. A consensus group consisting of citizens, utility representatives, union representatives, and public officials was established to define near-term research objectives and develop interim procedures to guide electric utilities in educating their customers, reducing EMF levels, and responding to potential health concerns.

The consensus group concluded that it finds that the body of scientific evidence continues to evolve. However, it is recognized that public concern and scientific uncertainty remain regarding the potential health effects of exposure (of EMFs generated by electric energy facilities). The consensus group does not find it appropriate to adopt any specific numerical standards in association with EMF until (there is) a firm scientific basis for adopting any particular value (CPUC 2006). The CPUC, based upon these findings, recommended that the state's utilities carry out "no and low cost EMF avoidance measures" in construction of new and upgraded utility projects. However, no requirements were established (CPUC 2006). The State does not have setback requirements from electrical transmission lines for non-school uses (residential, office, commercial, parks).

LOCAL

Stanislaus County General Plan

The Stanislaus County General Plan (1994, as amended 2006) goals and policies apply to development within the Planning Area that is outside of the City limits, until such time those areas are annexed into the City of Riverbank. The following goal and policies from the Safety Element of the County General Plan are applicable to the Planning Area:

Goal 2: Minimize the effects of hazardous conditions that might cause loss of life and property.

- Policy 6: All new development shall be designed to reduce safety and health hazards.
- Policy 7: Adequate fire and sheriff protection shall be provided.

- Policy 13: The Department of Environmental Resources shall continue to coordinate efforts to identify locations of hazardous materials and prepare and implement plans for management of spilled hazardous materials as required.

- Policy 14: The County will continue to enforce state-mandated structural Health and Safety Codes, including but not limited to the Uniform Building Code, the Uniform Housing Code, the Uniform Fire Code, the Uniform Plumbing Code, the National Electric Code, and Title 24.

Stanislaus County Multi-Hazard Mitigation Plan

The Multi-Jurisdictional Hazard Mitigation Plan ensures Stanislaus County complies with the Disaster Mitigation Act of 2000 requirements that only local governments with a State OES and FEMA approved hazard mitigation plan would be eligible to receive federal funding for disasters declared after November 1, 2004. The County prepared the Stanislaus County Multi-Hazard Mitigation Plan, which was approved by the State OES in 2004. In 2005, FEMA approved the County Multi-Jurisdictional Hazard Mitigation Plan, and the plan was subsequently adopted by the County Board of Supervisors.

The County Multi-Jurisdictional Hazard Mitigation Plan provides tools to assist emergency responders in development of planning. The basic elements involved in the Hazard Mitigation Plan include:

- Planning Process/Organize Resources—review existing plans and involve local agencies, businesses and members of the community.

- Risk Assessment—identify hazards, vulnerabilities and impacts to determine and prioritize mitigation actions. For Stanislaus County these hazards include earthquake, landslide, dam failure, flood, and wildfire.

- Mitigation Plan/Strategy—introduce the activities chosen to minimize the risks and losses associated with each hazard, and describe the strategy for implementation.

- Monitor Progress/Plan Maintenance—describe the method and schedule for monitoring, evaluating, and updating the plan.

- Implement and Adopt Plan—the formal adoption of the plan by each governing body to demonstrate the commitment of the community and elected officials to the County's goal of becoming disaster-resistant.

Stanislaus County Environmental Resources Department

Stanislaus County has adopted the Hazardous Waste Management Plan, which is enforced by the Environmental Resources Department (Stanislaus County 2006). As the CUPA for Stanislaus County (both unincorporated areas and incorporated cities), the Environmental Resources Department provides a hazardous materials program that includes:

- implements Risk Management and Prevention laws to minimize chemical releases in the community;

- maintains hazardous materials response team to assist police and fire agencies during transportation and industrial accidents involving chemical spills;

- prepares and implements the County's Area Plan for emergency response to chemical spills in the community;

- inspects facilities affected by the State aboveground storage tanks;

- oversees site investigation for soil and ground water contamination and clean-up;

- inspects, permits, monitors, and implements the underground storage tank program;
- inspects hazardous waste generators;
- reviews procedures for storage, treatment and disposal of hazardous wastes;
- prepares and implements the County's Hazardous Waste Management Plan;
- develops and implements the Household Hazardous Waste collection program;
- inspects medical facilities to ensure compliance with state medical waste management laws;
- implements hazardous materials disclosure laws (business plan programs) to ensure access to information about chemicals handled by businesses;
- promotes the recovery of obsolete electronic equipment (E-Waste) through a free electronics recycling program for consumers; and
- Hazardous Materials Program Fees.

4.9.4 SIGNIFICANCE THRESHOLDS

METHODS OF ANALYSIS

This analysis considers the range and nature of foreseeable hazardous materials use, storage, and disposal resulting from implementation of the Riverbank General Plan, and identifies the primary ways that these hazardous materials could expose individuals or the environment to health and safety risks. As discussed above, compliance with applicable federal, State, and local health and safety laws and regulations by residents and businesses in the Planning Area would generally protect the health and safety of the public. Local and State agencies are required to enforce applicable requirements.

The following reports documenting potential hazardous conditions in the Planning Area were reviewed for this analysis:

- the proposed City of Riverbank General Plan Land Use Map;
- Riverbank General Plan Update Safety Background Report;
- applicable elements and supporting documentation from the Stanislaus County General Plan;
- Stanislaus County Multi-Jurisdiction Hazard Mitigation Plan;
- available literature, including documents published by City, County, State, and federal agencies.

The information obtained from these sources was reviewed and summarized to establish existing conditions and to identify potential environmental effects, based on the standards of significance presented in this section. In determining the level of significance, the analysis assumes that development in the Planning Area would comply with relevant federal, State, and local ordinances and regulations.

The general types of businesses and the range and types of uses that are expected to be located in the Planning Area can be identified; however, the specific businesses that could locate in the Planning Area are unknown at this time. The proposed Planning Area could involve a variety of land uses, including residences, commercial uses, industrial uses, community uses, office space, open space, and public services facilities (i.e., educational and institutional uses). As a result, this analysis assumes and evaluates a broad range of potential uses that could handle hazardous materials in the Planning Area.

THRESHOLDS OF SIGNIFICANCE

Based on Appendix G of the State CEQA Guidelines, a hazards or hazardous materials impact is considered significant if implementation of the Riverbank General Plan would do any of the following:

- 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 or through the routine transport, use, or disposal of hazardous materials;
- result in safety hazards to people residing or working in the project area;
- 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, create a significant hazard to the public or the environment;
- be located within an airport land use plan, within 2 miles of a public airport, or in the vicinity of a private airstrip, such that a safety hazard would result 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.

4.9.5 IMPACTS AND MITIGATION MEASURES

IMPACT ANALYSIS

IMPACT 4.9-1 Create a Safety Hazard to the General Public from Transportation of Hazardous Materials. *Development within the Planning Area would result in an increase in the routine transportation of hazardous materials on Planning Area roadways. Implementation of proposed General Plan policies, in combination with existing federal and State regulations, would reduce the potential impacts from the routine transportation of hazardous materials to a* ***less-than-significant*** *level.*

The amount of hazardous materials transported through the Planning Area on major arterials, regional highways, and state routes is likely to increase as a result of residential, commercial, and industrial development allowed by the proposed General Plan.

Transportation of hazardous materials is regulated by the CHP, Caltrans, DOT (Hazardous Materials Transportation Act), and other regulatory agencies (which includes provisions regarding securing materials and container design) that provide standards designed to avoid releases. In addition, the following General Plan policy would address the routine transport of hazardous materials within the Planning Area:

- Policy SAFE-1.8: The City will require that hazardous materials are used, stored, transported, and disposed in a safe manner and in compliance with local, State, and federal safety standards.

This General Plan policy would not prevent all potential hazardous material releases, but would serve to minimize both the frequency and magnitude of such releases. In combination with existing federal and State regulations, these policies would reduce the potential impacts from the routine transportation of hazardous materials on Planning Area roadways to a **less-than-significant** level.

Mitigation Measures: No mitigation is required.

IMPACT 4.9-2 **Create a Safety Hazard to the General Public from Potential Release and Exposure to Hazardous Materials.** *Development of the General Plan would result in land uses that could result in an increased risk of exposure to hazardous materials. Implementation of proposed General Plan policies, in combination with existing federal, State, and local regulations, would reduce impacts from the potential public health and safety impacts from the accidental release of and exposure to hazardous materials to a* ***less-than-significant*** *level.*

A review of regulatory agency lists for the Planning Area identified two Superfund sites, one of which is currently on the final National Priority List (NPL); two facilities releasing discharges to waterbodies; three facilities reporting toxic releases; 17 facilities handling hazardous materials; three facilities producing and releasing air pollutants; and eleven LUST cases, of which seven cases have been closed.

The Riverbank Army Ammunition Plant manufactured casings for mortar projectiles, grenades, and artillery shells. The plant was listed on the NPL in 1990, and a Remedial Investigation of the site identified soil and groundwater contamination, primarily by heavy metals, chrome, and cyanide. The plant is undergoing ongoing remediation to reduce or eliminate soil and groundwater contamination. In May 2005, the U.S. Department of Defense announced the closure of the Riverbank Army Ammunition Plant. Currently, the City of Riverbank is exploring reuse options. One of the primary concerns for the redevelopment of the plant is the extent of hazardous materials remaining in the plant facilities and on-site, and the potential for these materials to spread to adjacent properties. Closure of the plant and redevelopment of the site and surrounding areas could include safety issues involving the permanent deactivation of the facility and the removal of hazardous materials and unexploded ordnance.

The Planning Area outside of the incorporated City limits mainly consists of agricultural uses, with varying proportions and intensities of cultivated and fallow lands. Persistent residual chemicals including pesticides, herbicides, and fertilizers have the potential to pose a health and safety risk via accidental release, misuse, or historic use in the Planning Area.

Implementation of the General Plan with the proposed residential and non-residential uses would involve the storage, use, and transport of hazardous materials (e.g., gasoline fuels, demolition materials, asphalt, lubricants, toxic solvents, pesticides and herbicides) during construction, demolition, and operational activities. Removal of some structures could include asbestos-containing building materials and lead-containing materials (e.g., paint, sealants, pipe solder), which could become friable or mobile during demolition activities and come into contact with construction workers. Excavation and construction activities at or near areas of currently unrecorded soil and/or groundwater contamination could also expose construction workers and the general public to hazardous materials. If contaminated sites in the Planning Area are not remediated before use of the site, then residents and others could be exposed to hazardous materials.

In addition, certain commercial uses, including gas stations and dry cleaners, that store, use, and routinely transport hazardous material to and from their facilities could pose a potential hazard to the environment. Hazardous materials used during construction and operational activities throughout the Planning Area may expose nearby residents and local schools to toxic emissions.

As discussed under Impact 4.9-1, the transportation of hazardous materials on area roadways is regulated by the CHP, DOT, and Caltrans. The use and storage of these materials is regulated by the DTSC (22 CCR Sections 66001, et seq.). The use, storage, and transport of hazardous materials by developers, contractors, business owners, and others are required to be in compliance with federal, state, and local regulations during project construction and operation. Facilities that use hazardous materials are required to obtain permits and comply with appropriate regulatory agency standards designed to avoid hazardous waste releases. All existing and future projects in the Planning Area would be required to comply with federal, State, and local regulations regarding the handling, disposal, and clean-up of hazardous materials.

The proposed General Plan provides for the development of new schools in association with new urban development. To site and construct a state-funded school, a public school district must complete an extensive and independent statutory review process in accordance with the siting requirements of the California Department of Education. In addition to CEQA review, and to ensure that each new school site is safe from toxic hazards, new school sites may be subject to review from the following agencies: the DTSC; the State Allocation Board, which administers and allocates funding requests; and the Division of the State Architect, which reviews the design, plans, and construction of public-funded schools. The selection of new public school sites must comply with the California Education Code (including Section 17521, requiring the governing board of the school district to adopt a resolution in connection with consideration of proposal for occupancy of a building to be constructed on its property, and to conduct a public meeting), and CCR, Title 5, Sections 14001 through 14012. Because any future siting of schools within the Planning Area would comply with State statutory and regulatory requirements addressing public and environmental health as well as safety from hazards, including hazardous substances, impacts from siting schools in the vicinity of such hazards are not evaluated further in this EIR.

In addition, the following General Plan policies would address potential hazardous material releases within the Planning Area:

- Policy CONS-6.2: The City will coordinate with appropriate regional, State, and federal agencies to address local sources of groundwater and soil contamination, including underground storage tanks, septic tanks, agriculture, and industrial uses.

- Policy SAFE-1.8: The City will require that hazardous materials are used, stored, transported, and disposed in a safe manner and in compliance with local, State, and federal safety standards.

- Policy SAFE-1.9: Developments located on farmland or former farmland shall prepare reports that analyze residual agricultural chemicals that may be present on-site. Developments on such sites shall include measures to remove any risk due to hazardous materials for on-site proposed land uses, as well as existing and proposed land uses and users in the vicinity.

- Policy SAFE-1.10: The City will review development requests and require that any airborne, waterborne, windborne, and other hazardous materials issues are fully disclosed, analyzed, and mitigated to ensure against any risk relative to any nearby planned or existing land uses and their users.

These General Plan policies would not prevent all potential hazardous material releases, but would serve to minimize both the frequency and magnitude of such releases. In combination with existing federal, state, and local regulations regarding the storage and handling of hazardous wastes; the use and removal of LUSTs; as well as the clean-up and remediation of leaking contaminants, hazardous wastes, and hazardous substances, these policies would reduce the potential public health and safety impacts from the accidental release of and exposure to hazardous substances to a **less-than-significant** level.

Mitigation Measures: No mitigation is required.

IMPACT 4.9-3 Exposure to Health Risk Associated with Mosquito Vectors. *Development within the Planning Area may require stormwater detention structures, which, if not properly designed and maintained, have the potential to become breeding grounds for mosquitoes of public health concerns. This impact would be considered potentially significant.*

Increases in mosquito populations, and therefore the risk of spreading associated diseases, may occur when water is artificially retained or stagnant water is allowed to persist near developments. Development within the Planning Area may require stormwater detention structures, which, if not properly designed and maintained, have the potential to become breeding grounds for mosquitoes of public health concerns. This impact would be considered **potentially significant**.

Mitigation Measure 4.9-3: Establish a Vector Prevention and Control Program. The City shall develop a Vector Prevention and Control Program. This program shall be coordinated with and reviewed by the East Side Mosquito Abatement District. This plan shall include applicable prevention and control measures, and address created (e.g., storm drainage features) mosquito vector habitat. Prevention and control measures within the program may include, but not be limited to, one or more of the following: the use of biological controls (natural predators) in wetlands and other standing water features, provide outreach and education information on vectors to homeowners, and utilize storm drainage features that are self-draining.

Significance After Mitigation

Implementation of Mitigation Measure 4.9-3 would minimize the health risks associated with exposure to mosquito vectors to a **less-than-significant** level by ensuring that a vector prevention and control program is prepared and implemented by the City.

IMPACT 4.9-4 Safety Hazards Associated with the Peterson Airport. *Implementation of the proposed General Plan could locate development within the vicinity of a private airstrip, potentially resulting in a safety hazard for people residing or working in the area. Because any new development adjacent to the Peterson Airport would be required to comply with the Stanislaus County CLUP standards and with existing FAA regulations, safety hazards associated with the Peterson Airport would be less than significant.*

The Peterson Airport is a privately owned airport approximately three miles southeast of downtown Riverbank and approximately 0.5 mile east of the proposed eastern Planning Area boundary. The airport houses one single-engine aircraft and operates a single asphalt landing strip that that runs from east to west, and the landing approach is generally from the southwest. The Stanislaus County CLUP describes safety compatibility standards for privately owned airports in Stanislaus County. Airport operation hazards could include: incompatible land uses, power transmission lines, wildlife hazards (e.g., bird strikes), and tall structures that penetrate the imaginary surfaces surrounding an airport. Implementation of the proposed General Plan could locate development within the vicinity of a private airstrip, potentially resulting in a safety hazard for people residing or working in the area.

Any development adjacent to the Peterson Airport would be required to adhere to the Stanislaus County CLUP standards and FAA regulations (14 CFR 77); therefore, safety hazards associated with the Peterson Airport would be **less than significant**.

Mitigation Measures: No mitigation is required.

IMPACT 4.9-5 Interfere with Adopted Emergency Response Plans. *Development within the Planning Area would add additional traffic and residences requiring evacuation in case of an emergency. Implementation of proposed General Plan policies would ensure conformance with local emergency response programs and continued cooperation with emergency response service providers. This impact would be less than significant.*

An efficient roadway and circulation system is vital for the evacuation of residents and the mobility of fire suppression, emergency response, and law enforcement vehicles. Implementation of the General Plan would add additional traffic and residences requiring evacuation in case of an emergency. The General Plan addresses these traffic impacts through a combination of policies and several physical roadway improvements identified in the Circulation Diagram (see Section 4.15, Transportation/Traffic, of this EIR for additional information). As discussed in the Stanislaus County Multi-Hazard Mitigation Plan, the County OES is continuing to coordinate with local jurisdictions to develop evacuation routes in the event of a natural disaster.

In addition, the following General Plan policies would ensure conformance with local emergency response programs and continued cooperation with emergency response service providers:

- Policy SAFE-2.1: The City will require development and maintenance of a road system that provides adequate access for emergency equipment.

- Policy SAFE-2.5: The City will coordinate with the County Office of Emergency Services to identify evacuation routes and operational plans to be used in case of dam failure, flood disaster, and wildfire for any new growth areas in addition to any updates required to serve the existing developed City.

Implementation of these General Plan policies would ensure future development would not interfere with emergency response plans, and this impact would be **less than significant**.

Mitigation Measures: No mitigation is required.

IMPACT 4.9-6 Exposure of People or Structures to Urban and Wildland Fires. *The Planning Area is not located in a designated wildland fire area, a High Fire Hazard Severity Zone, or a SRA area. Compliance with the California Building Code regulations, California Fire Code with adopted Fire District amendments, and other state and local fire safety requirements would minimize wildland fire risks. In addition, proposed General Plan policies would ensure people and structures would not be exposed to significant risk of loss of injury involving wildland fires. This impact would be less than significant.*

The CDF's Fire Resource Assessment Program identifies the Planning Area as a "developed" zone for wildland fires (CDF 1998). No areas or zones in the Planning Area are defined as Very High Fire Hazard Severity, and the Planning Area is not in a SRA, which is defined as part of the state where the CDF is the primary service responsible for providing basic wildland fire protection assistance (CDF 1998). The SCFPD would respond to wildland fires in the Planning Area. New development would be required by law to incorporate California Building Code, California Fire Code with adopted Fire District amendments, and other applicable state and local fire safety requirements. In addition, the following General Plan policies would ensure people and structures would not be exposed to significant risk of loss of injury involving wildland fires:

- Policy SAFE-1.1: The City will ensure that approved development projects and public investments are consistent with the information provided in the Stanislaus County Multi-Jurisdictional Hazard Mitigation Plan.

- Policy SAFE-1.2: The City will continue to enforce State of California Building Standards Commission uniform codes, such as the Uniform Building Code and California Fire Code with adopted Fire District amendments.

- Policy SAFE-1.4: The City will require set backs, ignition resistant building materials, or other measures to reduce exposure to potential wildfires in areas designated for natural open space preservation, in coordination with California Department of Forestry and Fire Protection recommendations and Maintenance of Defensible Space Measures, as appropriate.

- Policy SAFE-1.5: Approved plans, projects, and subdivision requests will ensure adequate fire flow per City and Fire District standards. The installation of automatic fire sprinklers may, at the discretion of the City and the Fire Chief, allow for a reduction in the required fire flow, while still complying with the California Fire Code requirements.

- Policy SAFE-2.2: The City will consult with fire protection service providers in reviewing development proposals. Development proposals will include City conditions that respond to concerns of fire protection service providers.

- Policy SAFE-2.3: New developments will provide fire flow as required in the Public Facilities and Services Element of the General Plan and relevant City Master Plans.

- Policy SAFE-2.4: The City will improve fire flow in existing developed areas of the City, as feasible, to meet standards presented in the Public Facilities and Services Element of the General Plan and relevant City Master Plans.

Implementation of these General Plan policies would not expose people or structures would not be exposed to a significant risk of loss of injury involving wildland fires. This impact would be **less than significant**.

Mitigation Measures: No mitigation is required.

4.10 HYDROLOGY AND WATER QUALITY

4.10.1 INTRODUCTION

This section contains background information on the groundwater and surface water quality and hydrologic characteristics of the City of Riverbank area that are relevant to this analysis.

4.10.2 ENVIRONMENTAL SETTING

HYDROLOGY

Surface Water Hydrology

The City of Riverbank is located within the Middle San Joaquin-Lower Merced-Lower Stanislaus watershed, a sub-watershed of the San Joaquin River watershed, which includes the San Joaquin Valley north of Fresno, along with the adjacent mountainous areas to the east and west (California Area River Assessment [CARA]). The general vicinity consists of very gently sloping floodplains and alluvial fans along and between streams that cross from mountains of the Sierra Nevada to reach the San Joaquin River. The climate is hot and sub-humid with warm, dry summers, and cool, moist winters (USDA 1997). The average rainfall in the Middle San Joaquin-Lower Merced-Lower Stanislaus watershed is approximately 12.1 inches.

The Lower Stanislaus River traverses the Riverbank General Plan area. It marks the northern boundary of the City of Riverbank. Water for the Stanislaus River originates from the higher elevations of the Sierra Nevada mountain range to the east. Three forks have been identified with the Stanislaus River: The North Fork, Middle Fork, and South Fork. The North Fork and Middle Fork originate in Alpine County, while the South Fork originates in the Emigrant Wilderness north of Yosemite National Park. All three forks converge prior to the river flowing into New Melones Lake, a reservoir formed by New Melones Dam located approximately 27 miles northeast of Riverbank. From New Melones Lake, the river flows in a southwesterly direction to Tulloch Lake, a reservoir formed by Tulloch Dam approximately 7 miles to the southwest, then continues its southwesterly flow for approximately 20 miles to Riverbank, until discharging into the San Joaquin River approximately 20 miles to the southwest.

The flow of the Stanislaus River varies seasonally. Fall flows coincide with the latter part of the dry season in the Riverbank area, while the winter totals occur during the middle portion of the wet season. For example, the natural flow as measured at the California Department of Water Resources (DWR) gage station in Calaveras County near Knights Ferry was 17,693 acre-feet in October 2004 and 146,409 acre-feet in January 2005.

Beneficial uses for the Lower Stanislaus River, defined in the Basin Plan as the segment between the Goodwin Dam to the east and the San Joaquin River, are shown in Table 4.10-1.

No other natural streams are located in the Riverbank area. Most of the water channels in the vicinity are manmade canals.

There are no significant large bodies of water in the immediate vicinity of Riverbank. Aside from New Melones Lake, there are four other reservoirs in the general area. Tulloch Reservoir is located downstream from New Melones and Tulloch, approximately 22 miles northeast of Riverbank. Woodward Reservoir, located in the northeastern portion of Stanislaus County, is approximately eight miles from Riverbank. Modesto Reservoir and Turlock Lake are located southwest of Riverbank, approximately 18 miles away. There are no natural lakes, bays or other large bodies of water in the area.

Table 4.10-1 Beneficial Uses Designated for the Lower Stanislaus River
Municipal and Domestic Supply (MUN)
Agricultural Supply: Irrigation (AGI)
Agricultural Supply: Stock Watering (AGSW)
Industrial Process Supply (PROC)
Industrial Service Supply (IND)
Water Contact Recreation: Contact Recreation (REC 1)
Non-Contact Water Recreation (REC 2)
Warm Freshwater Habitat (WARM)
Cold Freshwater Habitat (COLD)
Migration of Aquatic Organisms: Cold Water (MIGR)
Fish Spawning, Warm Water (SPWN)
Fish Spawning, Cold Water (SPCN)
Wildlife Habitat (WILD)
Source: Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin, Fourth Edition, Revised August 2006 (CVRWQCB, 2006)

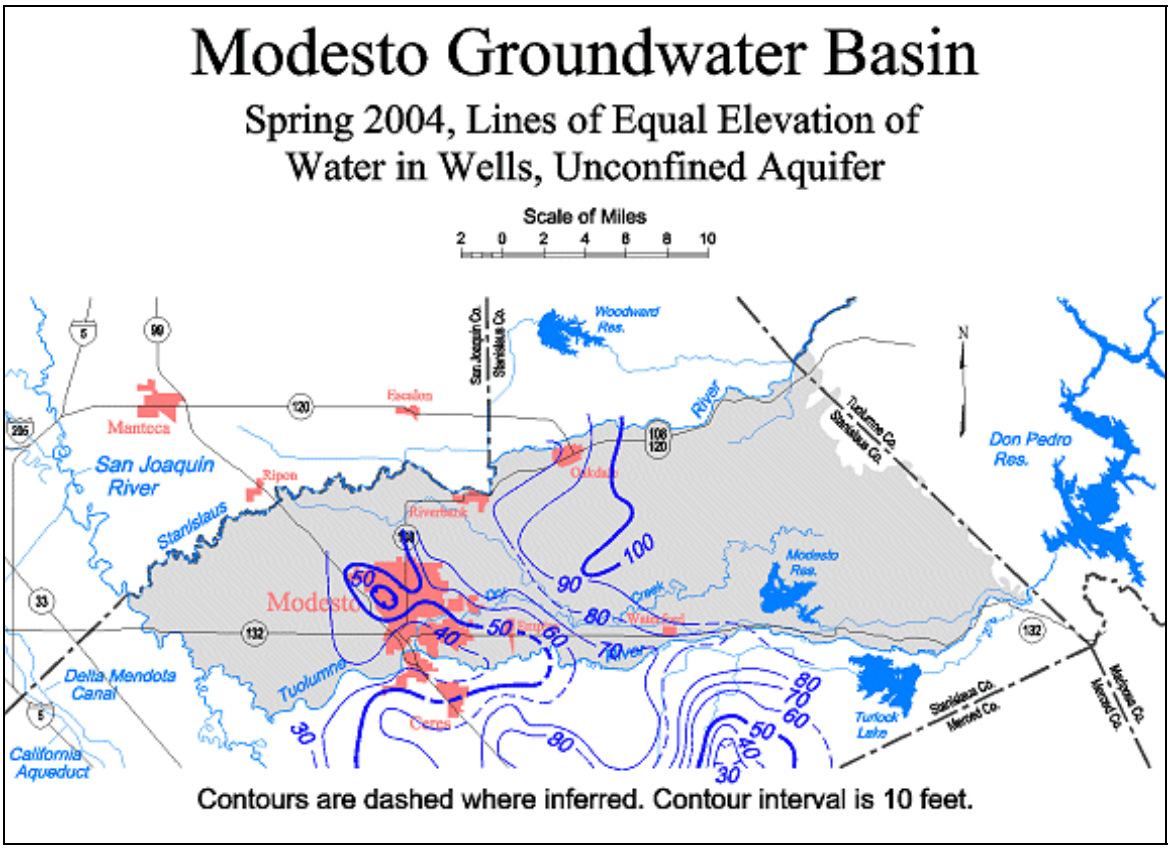
Groundwater Hydrology

The San Joaquin Valley is underlain by a broad structural trough, which extends for most of the valley floor from San Joaquin County to Kern County. The Sierra Nevada mountain range to the east and the Coast range to the west form the boundaries of this trough. Fresh groundwater is contained in unconsolidated continental deposits. Specifically, groundwater is found in the Tulare Formation of the Pliocene and Pleistocene ages, terrace deposits of the Pleistocene age, and alluvium and flood basin deposits of the Pleistocene and Holocene ages.

The City of Riverbank is located on the Modesto Groundwater Basin, a subbasin of the San Joaquin Basin. The subbasin lies almost entirely within Stanislaus County. The approximate physical boundaries of the Modesto Groundwater Basin are the Stanislaus, Tuolumne and San Joaquin rivers. The eastern boundary is based on the limit of water-bearing deposits. Exhibit 4.10-1 shows the location of the Modesto Subbasin.

Three types of aquifers are found in Stanislaus County within the Modesto Groundwater Basin (City of Riverbank 1996):

- A body of unconfined and semi-confined water found in alluvial deposits, which is separated by the Corcoran Clay member of the Tulare Formation.
- A confined groundwater body that lies below the Corcoran Clay in alluvial and lake deposits.
- A zone of saline connate water (i.e., water entrapped in sediments at the time the sediments were deposited) occurring in predominantly marine formations.



Modesto Groundwater Subbasin and Depths to Groundwater **Exhibit 4.10-1**

East of State Highway 99, the Corcoran Clay layer is generally absent. Groundwater is found in the unconfined to semi-confined aquifer, and the saline connate aquifer. These aquifers vary in depth throughout Stanislaus County. Within the Riverbank area, the unconfined aquifer generally flows southwesterly from the eastern mountains to the valley trough, except in areas influenced by rivers or by urban pumping centers. The Modesto Groundwater Basin is essentially closed, with recharge provided by subsurface inflow and by stream and rainfall infiltration. Rainfall infiltration is limited, as the basin receives an average annual precipitation of 11 to 15 inches, with rainfall increasing toward the eastern portion. Recharge also occurs from deep percolation of applied irrigation water and canal seepage from Modesto Irrigation District and Oakdale Irrigation District facilities, as well as seepage from Modesto Reservoir.

The depth to groundwater surface in the valley portion of Stanislaus County ranges from less than five feet to over 100 feet (see Exhibit 4.10-1). Within Riverbank, two monitoring wells are maintained by DWR: one in the western portion of Riverbank, the other in the eastern portion. The latest available data for the west well (1991) indicate a depth to groundwater of 70.6 feet below ground surface. For the eastern well, the most recent data (1993) indicate a depth to groundwater of 71.1 feet below ground surface (City of Riverbank, 1996).

Groundwater is the major source of water for both Riverbank and Stanislaus County. In some areas, where groundwater pumping exceeds recharge, groundwater depressions form. Based on data from the DWR monitoring wells, groundwater depressions are apparent in several areas of Stanislaus County, including Riverbank. Data from the west Riverbank well indicate an increase in the depth to groundwater surface from 39.8 feet below ground surface in 1945 to the depths noted above. The east Riverbank well shows a similar trend, with an increase from 49.4 feet below ground surface in 1946. However, DWR Bulletin 118 notes that water levels in the Modesto

Groundwater Basin have increased by five feet from 1996 to 2000 (DWR 2003). It is not known if groundwater levels rose in the Riverbank area.

The estimated total storage capacity of the Modesto Groundwater Basin is 6.5 million acre-feet to a depth of 300 feet. Natural recharge into the basin is estimated to be 86,000 acre-feet, along with 92,000 acre-feet of applied water recharge. Annual urban and agricultural extractions are estimated to be 81,000 acre-feet and 145,000 acre-feet, respectively (DWR 2003). This has resulted in an overdraft of 48,000 acre-feet, which is likely responsible in part for the gradual decrease in groundwater levels identified in the data from the Riverbank monitoring wells.

WATER QUALITY

Surface Water Quality

Potential sources of the 303(d) listed contaminants for the Stanislaus River, and estimated completion dates for their TMDL implementations, are shown in Table 4.10-2.

Other significant bodies of water in the Riverbank area have not been identified as having water quality problems. The Tulloch and New Melones Reservoirs are not on the State's Section 303(d) list. The Woodward, Modesto, and Turlock Reservoirs are also not listed. Water quality, and in particular, salinity, has been identified in downstream water bodies, such as the San Joaquin River and the Sacramento/San Joaquin delta system.

Table 4.10-2
Potential Sources and Proposed TMDL Completion Dates for Stanislaus River Section 303(d) Listed Pollutants

Pollutant/Stressor	Potential Sources	Proposed TMDL Completion
Diazinon	Agriculture, Urban Runoff/Storm Sewer	2008
Group A Pesticides[1]	Agriculture	2011
Mercury	Resource Extraction (abandoned mines)	2020
Unknown Toxicity[2]	Source Unknown	na

[1] One or more Group A Pesticides (Group A pesticides include aldrin, dieldrin, chlordane, endrin, heptachlor, heptachlor epoxide, BHC (including Lindane), endosulfan, and toxaphene).

[2] Toxicity is known to occur, but the constituent(s) causing toxicity is unknown.

Source: RWQCB 2003 303(d) list and draft revisions

Groundwater Quality

In general, groundwater in the County east of the San Joaquin River does not have the serious problems that exist in groundwater west of the river. The overall quality of the groundwater in the eastern County is good, although groundwater pumping around Modesto, improperly sealed wells, and past dairy farm practices has contributed to increasing concentrations of certain chemicals, including chloride, nitrate, arsenic, sodium, calcium, magnesium, carbonate, DBCP, bicarbonate, and sulfate. Total dissolved solids (TDS) values in DWR monitoring wells range from 60 to 8,300 mg/l, with a typical range of 200 to 500 mg/l. The Department of Health Services (DHS), which monitors Title 22 water quality standards, reports TDS values in 88 wells in the subbasin ranging from 60 to 860 mg/l, with an average value of 295 mg/l. The secondary MCL for TDS is 500 mg/l.

The City of Riverbank obtains its municipal water supply from seven wells located throughout the City. The latest complete drinking water quality report indicated no violation of any State Title 22 drinking water standards from well water samples set by State and federal agencies (City of Riverbank 2003). This includes both secondary

standards, which apply to the taste, odor or appearance of drinking water, as well as primary standards set to protect human health.

A recent assessment of the vulnerability of the City's drinking water sources to contamination was conducted in December 2001 (City of Riverbank 2003). The assessment concluded that the water sources are considered most vulnerable to the following activities, not associated with any detected contaminants in the City's water supply: gasoline stations, automotive repair/body shops, high-density housing, and waste dumps/landfills. Although recent water quality analyses indicate that water from the wells is in compliance with State standards, the wells are still considered vulnerable to the aforementioned activities that are located near them.

4.10.3 REGULATORY SETTING

Numerous State and federal acts, rules, plans, policies, and programs define the framework for regulating hydrology and water quality in California. The following discussion focuses on hydrology and water quality requirements as they are applicable to the City of Riverbank General Plan Update.

HYDROLOGY

Federal Plans, Policies, Regulations, and Laws

Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program to provide subsidized flood insurance to communities that comply with FEMA regulations that limit development in floodplains. FEMA also issues Flood Insurance Rate Maps (FIRMs) that identify which land areas are subject to flooding. These maps provide flood information and identify flood hazard zones in the community.

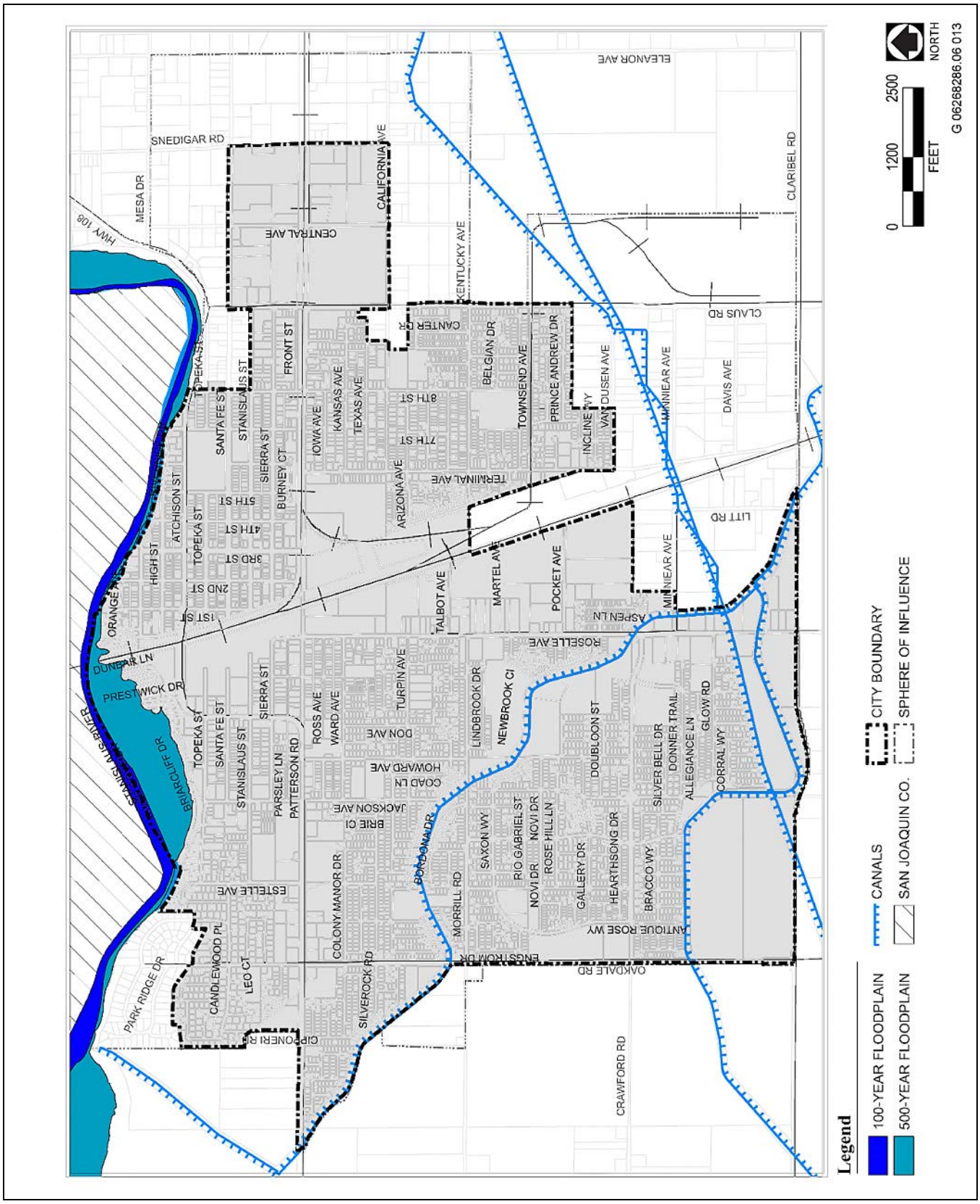
The design standard for flood protection is established by FEMA, with the minimum level of flood protection for new development determined to be the 1-in-100 annual exceedance probability (AEP) (i.e., the 100-year flood event). Specifically, where levees provide flood protection, the levee crown is required by FEMA to have 3 feet of freeboard above the 1-in-100-AEP water surface elevation, except in the vicinity of a structure such as a bridge, where the levee crown must have 4 feet of freeboard for a distance of 100 feet upstream and downstream from the structure.

The current City of Riverbank boundary does not include areas within the 100-year floodplain (Exhibit 4.10-2). However, a portion of the northwest portion of the Riverbank Planning Area contains areas within a 100-year flood zone, based on the FEMA FIRM Map Number 0603910280 A, Panel 280, September 30, 2004 (Exhibit 4.10-3).

State Plans, Policies, Regulations, and Laws

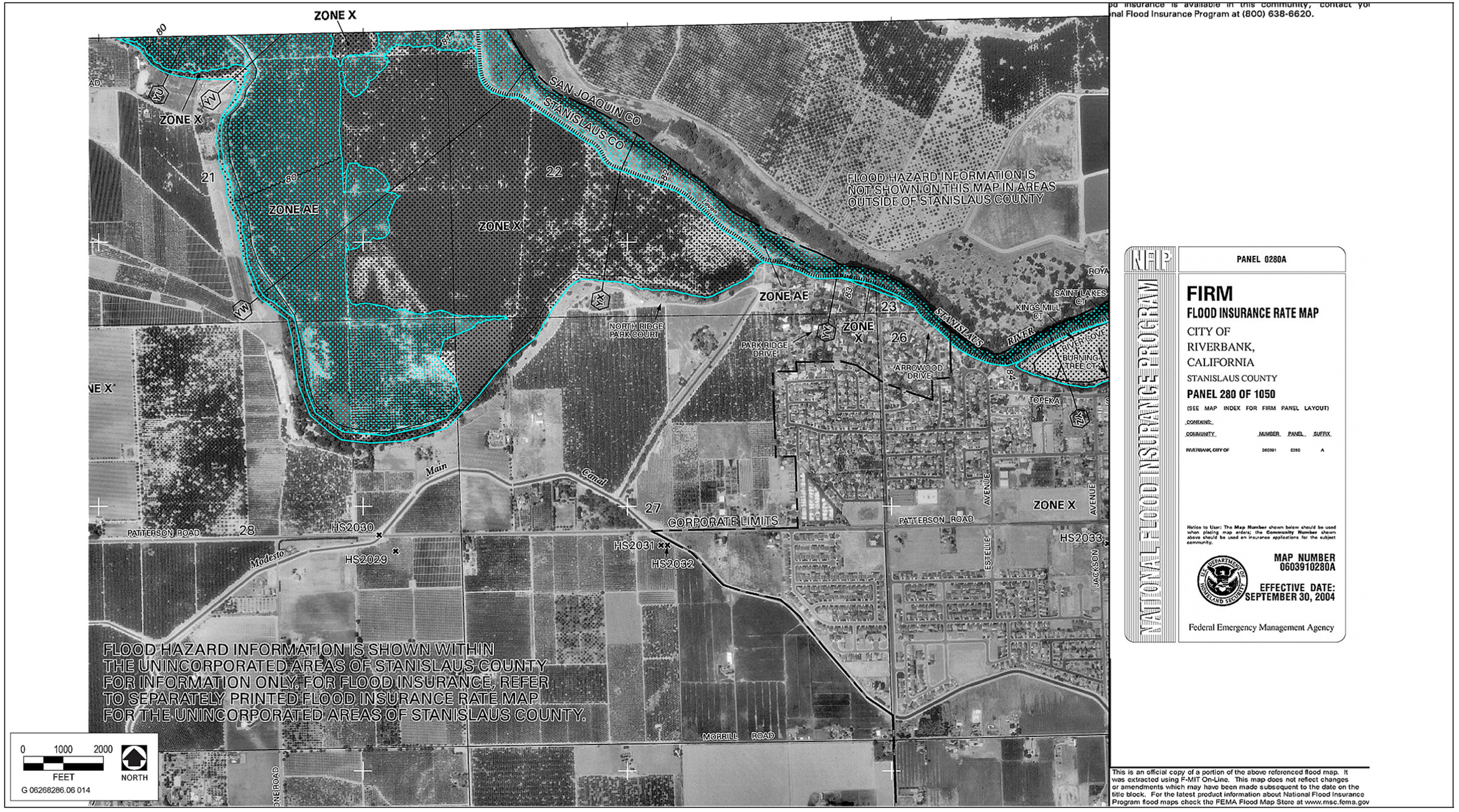
State Reclamation Board

The State Reclamation Board also has jurisdiction over flood control in California. It is responsible for ensuring the serviceability of levees and requires permits for any activity that may affect the capacity of the flood control system. The State Reclamation Board cooperates with the USACE in controlling flooding along the Sacramento and San Joaquin Rivers and tributaries, and its jurisdiction includes the Central Valley, including all tributaries and distributaries of the Sacramento and San Joaquin Rivers. Within its jurisdiction, the Board enforces appropriate standards for the construction, maintenance, and protection of adopted flood control plans that will best protect the public from floods.



Source: FEMA 2004

100- and 500-Year Floodplain and Riverbank City Limits **Exhibit 4.10-2**



Source: FEMA 2004

100- and 500-Year Floodplain and Northwestern Portion of Riverbank Planning Area **Exhibit 4.10-3**

The Central Valley Flood Protection Board ensures the integrity of the Sacramento and San Joaquin river basins flood control system through a permit process (Water Code Section 8710). The adopted plan of flood control under the jurisdiction and authority of CVFPB includes the Sacramento and San Joaquin Rivers and their tributaries and distributaries and their designated floodways. The State Adopted Plan of Flood Control specifies floodways where encroachment permits from the Central Valley Flood Protection Board (CVFPB) would be required for any activities that would affect these floodways (see California Code of Regulations, Title 23). A permit must be obtained prior to initiating any activity, including excavation and construction, removal or planting of landscaping within floodways, levees, and 10 feet landward of the landside levee toes. Additionally, activities located outside of the adopted plan of flood control but which may foreseeable interfere with the functioning or operation of the plan of flood control is also subject to a permit of CVFPB. The CVFPB enforces various standards for construction, maintenance, and protection of adopted flood control plans under Water Code Sections 8534, 8608, 8609, and 8710 – 8723 (DWR 2008). Regulations implementing the Water Code are provided in California Code of Regulations (CCR) Title 23, Division 1. See Appendix F for an illustration of the floodways near the Riverbank Planning Area subject to CVFPB jurisdiction.

2007 Flood Legislation

A package of flood related bills were passed and signed in 2007 dealing with flood protection and land use planning in Central Valley. This legislation raises the standard for flood protection of urban areas, requires the State to provide updated information on the extent of floodplains, and requires local land use entitlement authorities to make more responsible land use decisions in floodplain areas.

The Legislature expressed its intent as follows (California State Water Code Section 9601):

> (a) The Central Valley of California is experiencing unprecedented development, resulting in the conversion of historically agricultural lands and communities to densely populated residential and urban centers.
>
> (b) The Legislature recognizes that by their nature, levees, which are earthen embankments typically founded on fluvial deposits, cannot offer complete protection from flooding, but can decrease its frequency.
>
> (c) The Legislature recognizes that the level of flood protection afforded rural and agricultural lands by the original flood control system would not be adequate to protect those lands if they are developed for urban uses, and that a dichotomous system of flood protection for urban and rural lands has developed through many years of practice.
>
> (d) The Legislature further recognizes that levees built to reclaim and protect agricultural land may be inadequate to protect urban development unless those levees are significantly improved.
>
> (e) Cities and counties rely upon federal flood plain information when approving developments, but the information available is often out of date and the flood risk may be greater than that indicated using available federal information.
>
> (f) The Legislature recognizes that the current federal flood standard is not sufficient in protecting urban and urbanizing areas within flood prone areas throughout the Central Valley.
>
> (g) Linking land use decisions to flood risk and flood protection estimates comprises only one element of improving lives and property in the Central Valley. Federal, state, and local agencies may construct and operate flood protection facilities to reduce flood risks, but flood risks will nevertheless remain for those who choose to reside in Central Valley flood plains. Making those flood risks more apparent will help ensure that Californians make careful choices when deciding

whether to build homes or live in Central Valley flood plains, and if so, whether to prepare for flooding or maintain flood insurance.

The 2007 statutes create new responsibilities for state agencies, such as the Department of Water Resources (DWR) the newly reorganized Central Valley Flood Protection Board (CVFPB), The California Department of Fish and Game (DFG), and the Department of Housing and Community Development (HCD). Some of the primary responsibilities are briefly summarized below. For more information, please refer to official California legislative information, using the web site: www.leginfo.ca.gov/bilinfo.html.

Department of Water Resources

By July 1, 2008, DWR is required to provide preliminary maps of areas within 100- and 200-year floodplains protected by "project levees" (Water Code 9610). "Project levees" are those levees that are part of the facilities of the State Plan of Flood Control. Generally, these are levees for which the Department or CVFPB are responsible for ensuring that they provide flood protection. Currently, the 100-year floodplain is the most frequently cited standard for flood risk and flood protection. DWR is also required, by December 31, 2008, to prepare maps that show levee protection zones, including those lands where flooding would be more than three feet deep if a levee were to fail (Water Code 9130). DWR will forward suggested requirements for adoption by the Building Standards Commission related to construction in areas protected by project levees where flood waters would exceed three feet in a 200-year flood (Health and Safety Code 50465).

By January 1, 2012, DWR is required to have prepared the Central Valley Flood Protection Plan (Water Code 9612). This plan will identify and evaluate the Sacramento-San Joaquin Rivers flood management system; assess climate changes implications for flood control; outline necessary improvements to facilities in the system to provide 200-year flood protection to urban areas; propose structural and non-structural improvements to riverine ecosystem functions; and, related items. "Urban areas" are those with more than 10,000 residents protected by project levees.

Central Valley Flood Protection Board

The State Reclamation Board is now known as the Central Valley Flood Protection Board (CVFPB). This organization maintains its historic responsibility for oversight of project levees. In addition, the CVFPB is responsible for actually adopting the Central Valley Flood Protection Plan (described above), which is drafted by DWR.

Local Agencies

With the addition flood related information provided by the State of California, local agencies will be required to update their plans and regulations to ensure consistency. The 2007 flood bills revised the requirements for the Land Use, Conservation, and Safety elements of city and county General Plans, with special attention to jurisdictions within the Central Valley.

Cities and counties in the Central Valley are required to update their General Plans within 24 months of adoption of the Central Valley Flood Control Plan. The updates must reflect the facilities identified in the State Plan of Flood Control; locations of other flood management facilities; maps of property protected by these facilities; and, the locations of flood hazard zones. Jurisdictions must use the data from the State Plan of Flood Control to create goals and policies that reduce the risk of flood damage. In the future, when Central Valley cities and counties look to update the General Plan safety element, consultation is required with the CVFPB, as well as any local agency that provides flood protection. Specific findings are required if the city or county rejects the advice of the CVFPB or local flood protection agencies (Government Code 65302.7).

Once jurisdictions update their General Plans, the zoning ordinances then must be updated for consistency (including charter cities, which are frequently exempted from requirements of California law). Once the General

Plan and zoning ordinance have been amended, no subdivisions, development agreements, or permits that would place development within a flood hazard zone can be approved unless the city or county makes explicit findings that either existing flood management facilities provide an adequate level of protection from flooding, the city or county has conditioned the project to provide an adequate level of protection, or the local flood management agency has made adequate progress on the construction of a flood protection system that will provide adequate protection.

Central Valley counties, in collaboration with their cities, are required to develop "flood emergency plans" within 24 months of the adoption of the Central Valley Flood Protection Plan. Central Valley cities and counties are also required to collaborate with State and local flood management agencies to reduce flood risk to existing economically disadvantaged communities located in non-urbanized areas (Water Code 9622).

Groundwater Hydrology

California groundwater law is complicated because of the variety of groundwater rights recognized in the state. Groundwater is classified as either a subterranean stream or percolating groundwater. A subterranean stream exists when the flow of groundwater is confined to a known and defined subsurface channel. Groundwater not flowing as a subterranean stream is classified as percolating groundwater. Subterranean streams are subject to surface water law, which recognizes riparian and appropriative rights, and are regulated by the State Water Resources Control Board (SWRCB). Percolating groundwater is subject to general court-enforced principles of groundwater law, which recognize overlying and appropriative rights. This latter category of groundwater can be regulated by ordinances adopted at the local level, but is generally not subject to SWRCB regulation or oversight.

Regional and Local Plans, Policies, Regulations, and Laws

Stanislaus County General Plan Elements

The Stanislaus County General Plan does not apply to land area within the City of Riverbank. However, the City's Planning Area does address areas currently within the unincorporated County. So, while this EIR does not analyze impacts of the General Plan buildout against Stanislaus County General Plan policy, this information is provided as further background in understanding the types of hydrological and water quality issues affecting the Planning Area. The Stanislaus County General Plan (Stanislaus County 1994) addresses hydrology in the following General Plan Elements.

Safety Element

- Policy Two: Development should not be allowed in areas that are within the designated floodway.
- Policy Nine: The County shall support the formation of improvement districts (including flood control districts) to eliminate safety hazards.
- Policy Fifteen: The County will support the Federal Emergency Management Agency (FEMA) Flood Insurance Program so that residents who qualify may purchase such protection.

Conservation and Open Space Element

- Policy Seventeen: Implementation Measure Three. The County will provide information to anyone interested in forming a flood control district in Stanislaus County.

Land Use Element

- Policy Four: Urban development shall be discouraged in areas with growth-limiting factors such as high water table or poor soil percolation, and prohibited in geological fault and hazard areas, flood plains, riparian areas, and airport hazard areas unless measures to mitigate the problems are included as part of the application.

The Stanislaus County General Plan (Stanislaus County 1994) addresses water quality in the following General Plan Elements.

Conservation and Open Space Element

- Goal Two - Conserve water resources and protect water quality in the County.
  - Policy Five: Protect groundwater aquifers and recharge areas, particularly those critical for the replenishment of reservoirs and aquifers.
  - Policy Six: Preserve vegetation to protect waterways from bank erosion and siltation.
  - Policy Seven: New development that does not derive domestic water from pre-existing domestic and public water supply systems shall be required to have a documented water supply that does not adversely impact Stanislaus County water resources.
  - Policy Eight: The County shall continue and, if necessary, expand the water monitoring program of the Stanislaus County Department of Environmental Resources.

City of Riverbank Existing General Plan Elements

The City of Riverbank General Plan will address hydrology in the following Elements.

- Conservation and Open Space Element – water pollution, and groundwater.
- Public Services and Facilities Element – sewer, water, and storm drainage.
- Safety – flood zones

WATER QUALITY

Federal Plans, Policies, Regulations, and Laws

Clean Water Act and Associated Programs

The U.S. Environmental Protection Agency (EPA) is the primary federal agency responsible for water quality management. The Clean Water Act of 1972 (CWA) is the primary federal law that governs and authorizes water quality control activities by the EPA as well as the states. The law authorizes EPA to set point-source effluent limits for industry and publicly owned treatment works (POTWs) and requires states (or EPA in the event of default by states) to set water quality standards for contaminants in surface waters. The CWA also authorizes EPA to delegate many permitting, administrative, and enforcement aspects of the law to state governments. In such cases, however, EPA still retains oversight responsibilities. In California, such responsibility has been delegated to the State, which administers the CWA through the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs). The City of Riverbank is within the Central Valley RWQCB district.

Water Quality Criteria and Standards

Under federal law, the EPA has published water quality regulations under Volume 40 of the Code of Federal Regulations (40 CFR). Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. As defined by the CWA, water quality standards consist of two elements: (1) designated beneficial uses of the water body in question and (2) criteria that protect the designated uses. Section 304(a) requires the EPA to publish advisory water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. In California, the EPA has designated the SWRCB and its nine RWQCBs with authority to identify beneficial uses and adopt applicable water quality objectives.

NPDES Permit Program

The National Pollutant Discharge Elimination System (NPDES) permit program was established in the CWA to regulate municipal and industrial discharges to surface waters of the United States. Federal NPDES permit regulations have been established for broad categories of discharges, including point-source municipal waste discharges and nonpoint-source stormwater runoff. NPDES permits generally identify effluent and receiving water limits on allowable concentrations and/or mass emissions of pollutants contained in the discharge; prohibitions on discharges not specifically allowed under the permit; and provisions that describe required actions by the discharger, including industrial pretreatment, pollution prevention, self-monitoring, and other activities. The RWQCBs in California are responsible for implementing the NPDES permit system, as described below.

Section 401 Water Quality Certification or Waiver

Under Section 401 of the CWA, an applicant for a Section 404 permit (to discharge dredged or fill material into waters of the United States) must first obtain a certificate from the appropriate state agency stating that the fill is consistent with the state's water quality standards and criteria. In California, the authority to either grant water quality certification or waive the requirement is delegated by the SWRCB to the nine RWQCBs.

Section 303(d) Impaired Waters List

Section 303(d) of the CWA requires states to develop lists of water bodies (or sections of water bodies) that will not attain water quality standards after implementation of minimum required levels of treatment by point-source dischargers (i.e., municipalities and industries). Section 303(d) requires States to develop a Total Maximum Daily Load (TMDL) for each of the listed pollutants and water bodies. A TMDL is the amount of loading that the water body can receive and still meet water quality standards. The TMDL can also act as a plan to reduce loading of a specific pollutant from various sources to achieve compliance with water quality objectives. The TMDL must include an allocation of allowable loadings to point and non-point sources, with consideration of background loadings and a margin of safety. Generally, NPDES permit limitations for listed pollutants must be consistent with the load allocation identified in the TMDL.

National Toxics Rule and California Toxics Rule

In 1992, pursuant to the CWA, EPA promulgated the National Toxics Rule (NTR) to establish numeric criteria for priority toxic pollutants for California. The NTR established water quality standards for 42 pollutants not covered, at that time, under California's statewide water quality regulations. As a result of a court-ordered revocation of California's statewide water quality control plan for priority pollutants in September 1994, EPA initiated efforts to promulgate additional numeric water quality criteria for California. In May 2000, EPA issued the California Toxics Rule (CTR) that promulgated numeric criteria for priority pollutants not included in the NTR. The CTR documentation (FR 65 31682, May 18, 2000) "carried forward" the previously promulgated standards of the NTR, thereby providing a single document listing California's fully adopted and applicable water quality criteria for priority pollutants.

Federal Antidegradation Policy

The federal antidegradation policy is designed to protect existing uses and the level of water quality necessary to protect existing uses, and provide protection for higher quality and national water resources. The federal policy directs States to adopt a statewide policy that includes the following primary provisions (40 CFR 131.12):

> "(1)Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.
>
> (2) Where the quality of waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located…
>
> (3) Where high quality waters constitute an outstanding National resource, such as waters of National and States parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected."

State Plans, Policies, Regulations, and Laws

In California, the SWRCB has broad authority over water quality control issues for the state. The SWRCB is responsible for developing statewide water quality policy and exercises the powers delegated to the state by the federal government under the CWA. Other state agencies with jurisdiction over water quality regulation in California include the California Department of Health Services (DHS) (for drinking water regulations), the California Department of Pesticide Regulation, the California Department of Fish and Game (DFG), and the Office of Environmental Health and Hazard Assessment.

Regional authority for planning, permitting, and enforcement is delegated to the nine RWQCBs. The regional boards are required to formulate and adopt water quality control plans for all areas in the region and establish water quality objectives in the plans. The Central Valley RWQCB is responsible for the water bodies in the project vicinity.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) of 1969 is California's statutory authority for the protection of water quality. Under the act, the state must adopt water quality policies, plans, and objectives that protect the state's waters for the use and enjoyment of the people. The act sets forth the obligations of the SWRCB and RWQCBs to adopt and periodically update water quality control plans (also called Basin Plans). The act also requires waste dischargers to notify the RWQCBs of their activities through the filing of Reports of Waste Discharge (RWD) and authorizes the SWRCB and RWQCBs to issue and enforce waste discharge requirements (WDRs), NPDES permits, Section 401 water quality certifications, or other approvals. The RWQCBs also have authority to issue waivers to RWD/WDRs for broad categories of "low threat" discharge activities that have minimal potential for adverse water quality effects when implemented according to prescribed terms and conditions.

Central Valley Regional Water Quality Control Board Basin Plan

Basin Plans are the regional water quality control plans required by both the CWA and Porter-Cologne Act in which beneficial uses, water quality objectives, and implementation programs are established for each of the nine regions in California. The Basin Plan includes numerical and narrative water quality objectives for physical and chemical water quality constituents. Constituents for which numerical objectives are set include temperature;

dissolved oxygen (DO); turbidity; pH; total dissolved solids (TDS); electrical conductivity (EC); bacterial content; and various specific ions, trace metals, and synthetic organic compounds. Narrative objectives are set for parameters such as suspended solids, bio-stimulatory substances (e.g., nitrogen and phosphorus), oil and grease, color, taste, odor, and aquatic toxicity. Narrative objectives are often precursors to numeric objectives. The primary mechanism that the RWQCB uses to ensure conformance with Basin Plan water quality objectives and implementation policies and procedures is WDR issuance for projects that may discharge wastes to land or water. WDRs specify terms and conditions that must be followed during the implementation and operation of a project.

Statewide Implementation Plan (SIP)

The Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (also referred to as the Statewide Implementation Plan, or SIP) (SWRCB 2000) applies to discharges of toxic pollutants into inland surface waters, enclosed bays, and estuaries. The policy describes methods for setting effluent limits in NPDES permits from NTR and CTR standards and priority pollutant objectives established in Basin Plans using one of several methods, including: 1) TMDL waste load allocation procedures; 2) steady-state modeling; and 3) dynamic modeling. The policy also establishes certain monitoring requirements and chronic toxicity control provisions, and includes special provisions for certain types of discharges.

SWCRB Resolution No. 68-16

The goal of State Water Board Resolution No. 68-16 ("Statement of Policy With Respect to Maintaining High Quality Waters in California") is to maintain high quality waters where they exist in the state. State Board Resolution No. 68-16 states, in part:

> "1. Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies.
>
> 2. Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) pollution or a nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained."

The SWRCB has interpreted Resolution No. 68-16 to incorporate the federal antidegradation policy, which is applicable if a discharge that began after November 28, 1975 will lower existing surface water quality.

Water Reclamation Regulations

Wastewater reclamation in California is regulated under Title 22, Division 4, of the California Code of Regulations. The intent of these regulations is to ensure protection of public health associated with the use of reclaimed water. The regulations establish acceptable levels of constituents in reclaimed water for a range of uses and prescribe means for assurance of reliability in the production of reclaimed water. The California Department of Health Services (DHS) has jurisdiction over the distribution of reclaimed wastewater and the enforcement of Title 22 regulations. The RWQCBs are responsible for issuing waste discharge requirements (including discharge prohibitions, monitoring, and reporting programs).

NPDES Permits and WDRs

The SWRCB and Central Valley RWQCB have adopted specific NPDES permits for a variety of activities that have potential to discharge wastes to waters of the state. The SWRCB's statewide stormwater permit for general

construction activity (Order 99-08-DWQ, as amended) is applicable to all land-disturbing construction activities that would disturb more than one acre. The SWRCB has also issued a general NPDES storm water permit for industrial discharges (General Industrial Permit).

These General Permits require (1) submittal to the Central Valley RWQCB of a Notice of Intent (NOI) to discharge, and (2) preparation of a storm water pollution prevention plan (SWPPP) that identifies and describes the best management practices (BMPs) to be implemented at the site to minimize pollution from storm water runoff. The Central Valley RWQCB may also issue site-specific WDRs, or waivers to WDRs, for certain waste discharges to land or waters of the state. In particular, Central Valley RWQCB Resolution R5-2003-0008 identifies activities subject to waivers of WDRs and/or WDRs for a variety of activities, including minor dredging activities and construction dewatering activities that discharge to land.

Construction activities subject to the general construction activity permit include clearing, grading, stockpiling, and excavation. Dischargers are required to eliminate or reduce non-stormwater discharges to storm sewer systems and other waters. The permit also requires dischargers to consider the use of permanent post-construction best management practices (BMPs) that would remain in service to protect water quality throughout the life of the project. All NPDES permits also have inspection, monitoring, and reporting requirements. In response to a court decision, the Central Valley RWQCB implemented mandatory water quality sampling requirements in Resolution 2001-046 for visible and non-visible contaminants in discharges from construction activities.

Water quality sampling is now required if the activity could result in the discharge of turbidity or sediment to a water body that is listed as impaired under Section 303(d) because of sediment or siltation, or if a release of a non-visible contaminant occurs. Where such pollutants are known or should be known to be present and have the potential to contact runoff, sampling and analysis is required. NPDES permits require the implementation of design and operational BMPs to reduce the level of contaminant runoff. Types of BMPs include source controls, treatment controls, and site planning measures.

Discharges subject to the SWRCB's NPDES general permit for construction activity must develop and implement a stormwater pollution prevention plan (SWPPP). The SWPPP includes a site map and description of construction activities and identifies the BMPs that would be employed to prevent soil erosion and discharge of other construction-related pollutants (e.g., petroleum products, solvents, paints, cement) that could contaminate nearby water resources. A monitoring program is generally required to ensure that BMPs are implemented according to the SWPPP and are effective at controlling discharges of stormwater-related pollutants.

Storm Water NPDES Permit

The CWA also established a framework for regulating municipal and industrial storm water discharges under the NPDES Program. In November 1990, the EPA published regulations establishing NPDES permit requirements for specified categories of industries, including wastewater treatment plants. Phase 1 of the permitting program applied to municipal discharges of storm water in urban areas where the population exceeded 100,000 persons. Phase 1 also applied to storm water discharges from a large variety of industrial activities, including general construction activity if the project would disturb more than 5 acres. Phase 2 of the NPDES storm water permit regulations, which became effective in March 2003, required that NPDES permits be issued for construction activity for projects that disturb between 1 and 5 acres. Phase 2 of the municipal permit system (known as the NPDES General Permit for Small MS4s) requires small municipal areas of less than 100,000 persons to develop storm water management programs.

Regional and Local Plans, Policies, Regulations, and Laws

Stanislaus County General Plan Elements

The Stanislaus County General Plan (Stanislaus County 1994) addresses water quality in the following General Plan Elements.

Conservation and Open Space Element

- **Goal Two** - Conserve water resources and protect water quality in the County.
    - Policy Five: Protect groundwater aquifers and recharge areas, particularly those critical for the replenishment of reservoirs and aquifers.
    - Policy Six: Preserve vegetation to protect waterways from bank erosion and siltation.
    - Policy Seven: New development that does not derive domestic water from pre-existing domestic and public water supply systems shall be required to have a documented water supply that does not adversely impact Stanislaus County water resources.
    - Policy Eight: The County shall continue and, if necessary, expand the water monitoring program of the Stanislaus County Department of Environmental Resources.

City of Riverbank Existing General Plan Elements

The City of Riverbank General Plan will address water quality in the following Elements.

- Conservation and Open Space Element – water pollution, and groundwater.
- Public Services and Facilities Element – sewer, water, and storm drainage.
- Safety – flood zones

4.10.4 ENVIRONMENTAL IMPACTS

METHOD OF ANALYSIS

The environmental analysis for hydrology and water quality resource issues was based largely on the following documents – the Hydrology and Water Quality, Conservation and Open Space, and Public Services and Facilities Background Reports for the Riverbank General Plan; the Stanislaus County General Plan (1994); and, several City of Riverbank EIRs and environmental assessments. The effects of the proposed General Plan update were compared to environmental baseline conditions (i.e., existing conditions) to determine impacts.

THRESHOLDS OF SIGNIFICANCE

Based on Appendix G of the State CEQA Guidelines, a water quality or hydrology impact is considered significant if implementation of the proposed project would do any of the following:

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water or groundwater quality;
- 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;

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial on- or off-site erosion or siltation;

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding;

- 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;

- 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 a 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.

4.10.5 IMPACTS AND MITIGATION MEASURES

IMPACT ANALYSIS

IMPACT 4.10-1 **Place Housing or Structures within a 100-year Flood Zone.** *As discussed above, the current Riverbank city limits are outside of the 100-year floodplain, and thus would not be at risk from flooding hazards. However, areas in the northwestern portion of the Riverbank Planning Area are within a designated 100-year flood zone. The proposed General Plan does anticipate some development within this 100-year floodplain area as it is currently designated. However, with the following goals and policies included as part of the proposed Project, this impact is* ***less than significant****.*

As noted, portions of the Planning Area shown for future urban development are within the 100-year floodplain. Wendt Ranch Reclamation District was recently approved for formation by Stanislaus LAFCO. The area served includes the northwestern portion of the Riverbank Planning Area where the 100-year flood zone exists. A recent letter of map revision from FEMA to the Chair of the Stanislaus County Board of Supervisors shows that a portion of this area is to be removed from the 100-year floodplain designation, effective in January of 2008. If the City was to annex this area and urban development would be contemplated, flood issues would have to be fully addressed. The Riverbank General Plan update Safety Element includes the following policies that are intended to reduce impacts related to flood risk:

Goal Safe-1: Minimize the Loss of Life and Damage to Property Natural and Human-Caused Hazards

- Policy SAFE-1.6: The City will not allow the development of housing in the 100-year floodplain as determined by the Federal Emergency Management Agency. The City may permit placement of non-residential improvements within the 100-year floodplain under a very limited set of circumstances. Any development project that includes structures or disturbances of natural features within the 100-year floodplain shall prove that the proposal does not:

    - Create danger to life and property due to increased flood heights or velocities caused by excavation, fill, roads, or intended use.

    - Create difficult emergency vehicle access in times of flood.

- Create a safety hazard due to the unexpected heights, velocity, duration, rate of rise and sediment transport of the flood waters expected at the site.

- Create excessive costs in providing governmental services during and after flood conditions, including maintenance and repair of public facilities.

- Interfere with the existing waterflow capacity of the floodway.

- Substantially increase erosion and/or sedimentation.

- Contribute to the deterioration of any watercourse or the quality of water in any body of water.

► Policy SAFE-1.7: The City will require any public facilities in the 100-year flood zones to be flood-proofed to a point at or above the base flood level elevation from the Stanislaus River.

FEMA levee requirements would be required for any areas where development would occur. Specifically, where levees provide flood protection, the levee crown is required by FEMA to have 3 feet of freeboard above the 1-in-100-AEP water surface elevation, except in the vicinity of a structure such as a bridge, where the levee crown must have 4 feet of freeboard for a distance of 100 feet upstream and downstream from the structure. With the incorporation of proposed General Plan policy and existing FEMA requirements, the impact is considered **less than significant**.

Mitigation Measures: No mitigation is required.

IMPACT 4.10-2 Expose people or Structures to a Significant Risk due to Dam Failure. *A dam failure can occur as the result of an earthquake, structural instability, or heavy rains causing inundation of the Riverbank. Proposed policies address human health and safety issues related to dam failure, but the risk is small and the impact is considered less than significant.*

A dam failure can occur as the result of an earthquake, as an isolated incident due to structural instability, or during heavy rains that exceeds design capacity. The failure of the New Melones Dam would result in the inundation of the City of Riverbank and its Sphere of Influence, as well as most of the northern part of the County, including most of Modesto.

According to Stanislaus County Office of Emergency Services, water would begin to flood the City within 2 ½ hours after dam failure, and would crest at about 5-10 feet in downtown Riverbank. Water would move into the City at approximately 5 miles per hour, crest, and begin subsiding almost immediately. Failure of Turlock Dam would not have a great effect on the City. Only a small area on the south side of the Stanislaus River around Orange Avenue would flood. More importantly, the City's wastewater treatment plant would likely flood if the Turlock Dam were to fail (City of Riverbank 1988).

The Stanislaus County Multi-Jurisdictional Hazard Mitigation Plan (Stanislaus County 2005) includes Office of Emergency Services inundation maps for the New Melones and other dams that would affect the county, in the event of earthquake or other causes of failure. A dam failure plan is integrated into Stanislaus County's Emergency Operations Plan (Stanislaus County 2002). The County's General Plan requires the implementation of a variety of policies designed to address flooding issues, including preservation of floodplain areas, permitting of development that addresses floodplain issues, and maintaining emergency response programs.

If failure of the New Melones Dam were to occur, the City of Riverbank evacuation routes would be to the southeast toward higher ground. The primary evacuation routes would be Terminal/Santa Fe and Claus towards Empire and Waterford.

The Riverbank General Plan update Safety Element includes the following policies that are intended to reduce impacts related to dam failure:

Goal Safe-1: Minimize the Loss of Life and Damage to Property Natural and Human-Caused Hazards

- Policy SAFE-1.1: The City will ensure that approved development projects and public investments are consistent with the information provided in the Stanislaus County Multi-Jurisdictional Hazard Mitigation Plan.

- Policy SAFE-1.6: The City will not allow the development of housing in the 100-year floodplain as determined by the Federal Emergency Management Agency. The City may permit placement of non-residential improvements within the 100-year floodplain under a very limited set of circumstances. Any development project that includes structures or disturbances of natural features within the 100-year floodplain shall prove that the proposal does not:

    - Create danger to life and property due to increased flood heights or velocities caused by excavation, fill, roads, or intended use.

    - Create difficult emergency vehicle access in times of flood.

    - Create a safety hazard due to the unexpected heights, velocity, duration, rate of rise and sediment transport of the flood waters expected at the site.

    - Create excessive costs in providing governmental services during and after flood conditions, including maintenance and repair of public facilities.

    - Interfere with the existing waterflow capacity of the floodway.

    - Substantially increase erosion and/or sedimentation.

    - Contribute to the deterioration of any watercourse or the quality of water in any body of water.

- Policy SAFE-1.7: The City will require any public facilities in the 100-year flood zones to be flood-proofed to a point at or above the base flood level elevation from the Stanislaus River.

Goal Safe-2: Provide Adequate Access for Emergency Response

- Policy SAFE-2.1: The City will require development of, and maintain a road system that provides adequate connectivity and access for emergency equipment.

- Policy SAFE-2.5: The City will coordinate with the County Office of Emergency Services to identify evacuation routes and operational plans to be used in case of dam failure, flood disaster, and wildfire for any new growth areas in addition to any updates required to serve the existing developed City.

Although these policies provide for human health and safety, property damage could still result during a flood event caused by a catastrophic dam or levee failure. However, this risk is small because the risk of dam failure is small.

The United States Bureau of Reclamation continues to maintain the dam to withstand probable seismic activity, and Tulloch Dam is maintained to these same standards. As a result, development under the proposed General Plan update within the dam inundation area is considered **less than significant**.

Mitigation Measures: No mitigation is required.

IMPACT 4.10-3 **Temporary Construction-Related Effects.** *Buildout of the General Plan would involve earth disturbance typical of construction activities. Proposed policies and existing regulations would ensure a* ***less-than-significant*** *impact.*

Disturbances associated with the construction activities in the proposed City of Riverbank General Plan Update areas would create the potential for soil erosion and sedimentation of storm water drainage systems and canals, both within and downstream of the City's Planning Area. The construction process may also involve the potential for releases of other pollutants to surface waters and/or the storm drain system, including oil and gas, chemical substances used in the construction process, accidental discharges, waste concrete and wash water. The proposed General Plan update could entail a bridge crossing and potentially utility crossings of the Stanislaus River. These crossings could involve temporary disturbances of the affected river channel.

Because construction activities would occur over such a large area the substantial construction-related alteration of drainages could result in soil erosion and stormwater discharges of suspended solids, increased turbidity, and potential mobilization of other pollutants from project construction sites as contaminated runoff to on-site and ultimately off-site drainage channels and the Stanislaus River. Many construction-related wastes have the potential to degrade existing water quality by altering the dissolved-oxygen content, temperature, pH, suspended-sediment and turbidity levels, or nutrient content, or by causing toxic effects in the aquatic environment. Project construction activities that are implemented without mitigation could violate water quality standards or cause direct harm to aquatic organisms.

Consequently, project-related impacts on water quality within on-site drainage channels as a result of temporary construction activities are considered potentially significant.

Before the approval of grading permits and improvement plans for construction in the proposed General Plan area, the project applicant(s) for all project phases would consult with the City, the SWRCB, and the Central Valley RWQCB to acquire the appropriate regulatory approvals that may be necessary to obtain Section 401 water quality certification, an SWRCB statewide NPDES stormwater permit for general construction activity, and any other necessary site-specific WDRs or waivers under the Porter-Cologne Act. The project applicant(s) shall prepare and submit the appropriate Notice of Intent (NOIs) and prepare the SWPPP and any other necessary engineering plans and specifications for pollution prevention and control. The SWPPP and other appropriate plans shall identify and specify:

- the use of erosion and sediment-control BMPs, including construction techniques that will reduce the potential for runoff as well as other measures to be implemented during construction;
- the means of waste disposal;
- the implementation of approved local plans, nonstormwater-management controls, permanent postconstruction BMPs, and inspection and maintenance responsibilities;
- the pollutants that are likely to be used during construction that could be present in stormwater drainage and nonstormwater discharges, and other types of materials used for equipment operation;
- spill prevention and contingency measures, including measures to prevent or clean up spills of hazardous waste and of hazardous materials used for equipment operation, and emergency procedures for responding to spills;
- personnel training requirements and procedures that will be used to ensure that workers are aware of permit requirements and proper installation methods for BMPs specified in the SWPPP; and
- the appropriate personnel responsible for supervisory duties related to implementation of the SWPPP.

Where applicable, BMPs identified in the SWPPP would be in place throughout all site work and construction and would be used in all subsequent site development activities. BMPs may include such measures as the following:

- Implementing temporary erosion-control measures in disturbed areas to minimize discharge of sediment into nearby drainage conveyances. These measures may include silt fences, staked straw bales or wattles, sediment/silt basins and traps, geofabric, sandbag dikes, and temporary vegetation.
- Establishing permanent vegetative cover to reduce erosion in areas disturbed by construction by slowing runoff velocities, trapping sediment, and enhancing filtration and transpiration.
- Using drainage swales, ditches, and earth dikes to control erosion and runoff by conveying surface runoff down sloping land, intercepting and diverting runoff to a watercourse or channel, preventing sheet flow over sloped surfaces, preventing runoff accumulation at the base of a grade, and avoiding flood damage along roadways and facility infrastructure.

All construction contractors would retain a copy of the approved SWPPP on the construction site.

The Riverbank General Plan update Conservation and Open Space Element includes the following policies that are intended to reduce impacts related to soil erosion and preserve water quality:

Goal Cons-6: Maintain or Increase Surface and Groundwater Quality and Supply

- Policy CONS-6.1: The City will require that waterways, floodplains, watersheds, and groundwater recharge areas are maintained in their natural condition, wherever feasible.
- Policy CONS-6.7: The City will require mitigation measures, in coordination with the Regional Water Quality Control Board, as a part of approved projects, plans, and subdivisions to address the quality and quantity of urban runoff, including that attributable to soil erosion.

As a result of the above measures and policies, water quality impacts related to construction activities under the proposed General Plan update would be **less than significant**, including impacts to downstream areas.

Mitigation Measures: No mitigation is required.

IMPACT 4.10-4 Substantially Alter Drainage Patterns and Surface Water Alignments. *Construction of projects accommodated under the General Plan is not anticipated to involve substantial alterations in drainage patterns or surface water alignments. The impact is less than significant.*

Development under the proposed General Plan is not anticipated to significantly alter existing drainage patterns or canal alignments. The proposed General Plan includes specific guidance as to how drainage improvements will be implemented. This guidance is specifically crafted to avoid significant water quality and alternation of drainage patterns that would result in environmental impacts, including:

Goal Public-4: Storm Drainage Systems that Protect Public Safety, Preserve Natural Resources, and Prevent Erosion and Flood Potential

- Policy PUBLIC-4.1: The City will maintain and improve, as necessary, existing public storm basins and flood control facilities, as identified in the Stormwater Master Plan.
- Policy PUBLIC-4.2: The City will coordinate with County and Regional agencies, as well as the railroad, in the maintenance and improvement of storm drainage facilities to protect the City's residents, property, and structures from flood hazards.
- Policy PUBLIC-4.3: The City will consider a variety of means for floodplain management, depending on the context, which may include development, improvement, and maintenance of structural flood control facilities;

land use policy and zoning to prohibit incompatible urban development within the floodplain; erosion control techniques; set backs from flood-prone areas; and other measures, as circumstances dictate.

- Policy PUBLIC-4.4: The City will identify areas, such as wetlands, low-lying natural runoff areas, and pervious surfaces and percolation ponds, for natural storm water collection and filtration, in concert with the City's existing and future drainage infrastructure, to help reduce the amount of runoff and encourage groundwater recharge.
- Policy PUBLIC-4.5: New development shall be designed to control surface runoff discharges to comply with the National Pollutant Discharge Elimination System Permit and the receiving water limitations assigned by the California Regional Water Quality Control Board.
- Policy PUBLIC-4.6: The City will establish and new development shall implement non-point source pollution control measures and programs designed to reduce and control the discharge of pollutants into the City's storm drains and river.
- Policy PUBLIC-4.7: The City will require minimization of the amount of new impervious surfaces and directly connected impervious surfaces in areas of new development and redevelopment and, where feasible, maximize on-site infiltration of stormwater runoff.
- Policy PUBLIC-4.8: The City will encourage pollution prevention methods, supplemented by pollutant source controls and treatment. Use small collection strategies located at, or as close to possible to the source (i.e., the point where water initially meets the ground) to minimize the transport or urban runoff and pollutants off-site.
- Policy PUBLIC-4.9: The City will require the preservation and, where possible, will encourage that creation or restoration of areas that provide important water quality benefits, such as riparian corridors, wetlands, and buffer zones.
- Policy PUBLIC-4.10: The City will limit disturbances of natural water bodies and natural drainage systems cause by development, including roads, highways, and bridges.
- Policy PUBLIC-4.11: The City will require that new development avoid development in areas that are particularly susceptible to erosion and sediment loss; or, will require that these areas are identified and protected from erosion and sediment loss.
- Policy PUBLIC-4.12: The City will encourage and/or require the use of open, vegetated swales, stormwater cascades, and small wetland ponds instead of pipes and vaults, as a part of urban development proposed outside current City limits to mitigate stormwater impacts.
- Policy PUBLIC-4.13: The City will enforce a no-net-runoff policy for areas proposed for development outside the current City limits.

New residential or commercial development would be limited in areas adjacent to the Stanislaus River Planned development along the River would include buffer greenway open space, agricultural resource, parks and recreation, with maintenance where possible of existing natural drainage.

Existing development, infill opportunity areas, and high-density residential areas would be located in proximity to 16 identified areas within the city that have a tendency to flood during the City's worst storms (Exhibit 4.16-6). The 2002 City of Riverbank Storm Drainage Study and Master Plan identified performance standards for the system that would be needed to serve a City with a projected population of 30,000 people necessary to protect against the 100-year flood. The City is currently updating the Storm Drain System Master Plan, which would guide improvements required to serve development anticipated under the General Plan update.

The Riverbank General Plan update includes several policies to address impacts to drainage patterns and hydrology or that indirectly address these topics, including:

Goal Cons-4: Preserve Habitat Associated with the Stanislaus River While Increasing Public Access

- Policy CONS-4.1: Approved projects, plans, and subdivisions shall avoid conversion of habitat within the existing Stanislaus River riparian corridor, including Great Valley Mixed Riparian Forest, Great Valley Willow Scrub, and Riparian Scrub areas, and shall preserve an open space buffer along the Stanislaus River and associated riparian areas. The open space buffer shall be designed to avoid impacts to habitat and special status species in the riparian corridor, as specified in Policy CONS 5.1, Policy CONS 5.2, Policy CONS 5.3, and Policy CONS 5.6, based on project specific biological resource assessment. The precise size of buffer from the river and associated riparian corridor is to be determined by site specific analysis. The riparian corridor preservation and open space buffer shall be provided through a permanent covenant, such as a conservation easement and shall also include an ongoing maintenance agreement with a land trust or other qualified nonprofit organization. The preservation of the riparian corridor and ongoing maintenance agreement is required prior to City approval of any subdivision of property or development project located in areas outside City limits as of January 1, 2007 (see Figure CONS-1). Low-impact recreation could be allowed in this buffer area to the extent that impacts to these sensitive habitats are avoided or fully mitigated by demonstrating no net loss of habitat functions or value. Urban development shall not be allowed in this buffer area.

- Policy CONS-4.2: Approved projects, plans, and subdivisions shall provide for collection, conveyance, treatment, detention, and other stormwater management measures in a way that does not decrease water quality or alter hydrology in the Stanislaus River or associated groundwater recharge areas.

Goal Cons-6: Maintain or Increase Surface and Groundwater Quality and Supply

- Policy CONS-6.1: The City will require that waterways, floodplains, watersheds, and groundwater recharge areas are maintained in their natural condition, wherever feasible.

- Policy CONS-6.2: The City will coordinate with appropriate regional, state, and federal agencies to address local sources of groundwater and soil contamination, including underground storage tanks, septic tanks, agriculture, and industrial uses.

- Policy CONS-6.3: Approved projects, plans, and subdivisions in new growth areas shall incorporate natural drainage system design that emphasizes infiltration and decentralized treatment (rather than traditional piped approaches that quickly convey stormwater to large centralized treatment facilities).

- Policy CONS-6.4: The City will encourage the use of permeable surfaces for hardscape. Impervious surfaces such as driveways, streets, and parking lots will be minimized so that land is available for a natural drainage system to absorb stormwater, reduce polluted urban runoff, recharge groundwater, and reduce flooding.

- Policy CONS-6.5: City street standards and parking requirements will balance the needs of transportation with the full range of community planning issues, including water quality, storm drainage, air quality, and other considerations.

- Policy CONS-6.7: The City will require mitigation measures, in coordination with the Regional Water Quality Control Board, as a part of approved projects, plans, and subdivisions to address the quality and quantity of urban runoff, including that attributable to soil erosion.

Implementation of these General Plan policies and actions would mitigate the potential for substantial alteration of drainage patterns such that an environmental impact would result. With incorporation of the referenced policies, the impact is considered **less than significant**.

Mitigation Measures: No mitigation is required.

IMPACT 4.10-5 Impact Surface Water or Groundwater Quality. *Development facilitated by the General Plan will add impervious surfaces and increase runoff. General Plan policies address runoff issues in a way that specifically protects surface and groundwater quality, as noted elsewhere in this section. The impact is* ***less than significant****.*

Development facilitated by the General Plan will result in an increase of impervious surfaces which could increase runoff. General Plan policies address runoff issues in a way that specifically protects surface and groundwater quality, as noted elsewhere in this section. Implementation of the General Plan would include land uses that will require wastewater collection, conveyance, treatment, and disposal. The City Public Works Department Sewer Division repairs and maintains the sewer collection system, including laterals, sewer mains, and the Wastewater Treatment Plant (WWTP). The WWTP, located north of the City in San Joaquin County, has a peak capacity of 7.9 million gallons per day (City of Riverbank 2001). The latest expansion has given the WWTP the capacity to serve the equivalent of 30,000 residents plus the current industrial users. As noted elsewhere, the City is, as of the writing of this document, preparing a sewer collection master plan.

The proposed General Plan includes policies to address any wastewater discharge and related water quality impacts. General Plan goals and policies include both the location of urban development to avoid areas where water quality impacts may result, as well as measures that will be applied at the plan or project level to further ensure against water quality related impact, including water quality impacts at downstream locations. Goals and policies are also included below.

Goal Cons-4: Preserve Habitat Associated with the Stanislaus River While Increasing Public Access

- Policy CONS-4.1: Approved projects, plans, and subdivisions shall avoid conversion of habitat within the existing Stanislaus River riparian corridor, including Great Valley Mixed Riparian Forest, Great Valley Willow Scrub, and Riparian Scrub areas, and shall preserve an open space buffer along the Stanislaus River and associated riparian areas. The open space buffer shall be designed to avoid impacts to habitat and special status species in the riparian corridor, as specified in Policy CONS 5.1, Policy CONS 5.2, Policy CONS 5.3, and Policy CONS 5.6, based on project specific biological resource assessment. The precise size of buffer from the river and associated riparian corridor is to be determined by site specific analysis. The riparian corridor preservation and open space buffer shall be provided through a permanent covenant, such as a conservation easement and shall also include an ongoing maintenance agreement with a land trust or other qualified nonprofit organization. The preservation of the riparian corridor and ongoing maintenance agreement is required prior to City approval of any subdivision of property or development project located in areas outside City limits as of January 1, 2007 (see Figure CONS-1). Low-impact recreation could be allowed in this buffer area to the extent that impacts to these sensitive habitats are avoided or fully mitigated by demonstrating no net loss of habitat functions or value. Urban development shall not be allowed in this buffer area.

- Policy CONS-4.2: Approved projects, plans, and subdivisions shall provide for collection, conveyance, treatment, detention, and other stormwater management measures in a way that does not decrease water quality or alter hydrology in the Stanislaus River or associated groundwater recharge areas.

Goal Cons-5: Preserve the Natural Diversity in the Riverbank Planning Area

- Policy CONS-5.4: When the loss of important habitat is unavoidable, mitigation measures will be designed to reduce impacts to the maximum extent feasible. This mitigation may include, but is not limited to off-site mitigation banking with restoration and enhancement components. For projects that would affect the function and value of river, stream, lake, pond, or wetland features, each of these features shall be delineated. For wetlands, the delineation shall be conducted in accordance with the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual and verified by USACE. The project applicant shall determine the exact acreage of important habitat (including those protected by federal, state, regional, and/or local regulations) that would

be impacted by project implementation. A mitigation plan to replace or rehabilitate affected habitats in a manner that ensures no net loss of habitat functions and values shall be prepared and implemented in accordance with applicable regulations. The plan shall be reviewed and approved by the appropriate regulatory agencies and all relevant permits and authorizations shall be obtained. Mitigation monitoring shall be conducted to ensure performance criteria are met.

Goal Cons-6: Maintain or Increase Surface and Groundwater Quality and Supply

- Policy CONS-6.1: The City will require that waterways, floodplains, watersheds, and groundwater recharge areas are maintained in their natural condition, wherever feasible.
- Policy CONS-6.2: The City will coordinate with appropriate regional, state, and federal agencies to address local sources of groundwater and soil contamination, including underground storage tanks, septic tanks, agriculture, and industrial uses.
- Policy CONS-6.3: Approved projects, plans, and subdivisions in new growth areas shall incorporate natural drainage system design that emphasizes infiltration and decentralized treatment (rather than traditional piped approaches that quickly convey stormwater to large centralized treatment facilities).
- Policy CONS-6.4: The City will encourage the use of permeable surfaces for hardscape. Impervious surfaces such as driveways, streets, and parking lots will be minimized so that land is available for a natural drainage system to absorb stormwater, reduce polluted urban runoff, recharge groundwater, and reduce flooding.
- Policy CONS-6.5: City street standards and parking requirements will balance the needs of transportation with the full range of community planning issues, including water quality, storm drainage, air quality, and other considerations.
- Policy CONS-6.6: The City will encourage the use of recycled water for appropriate use, including but not limited to outdoor irrigation, toilet flushing, fire hydrants, and commercial and industrial processes.
- Policy CONS-6.7: The City will require mitigation measures, in coordination with the Regional Water Quality Control Board, as a part of approved projects, plans, and subdivisions to address the quality and quantity of urban runoff, including that attributable to soil erosion.

Goal Public-1: Public Service and Infrastructure Provision to Meet or Exceed Level of Service Standards Consistent With Other Community Goals

- Policy PUBLIC-1.6: The City will require that the methods, materials, and design of infrastructure and utilities achieve the City's environmental, public health and safety, and community character goals and policies, in addition to the City's level of service standards for public services, facilities, and infrastructure.

Goal Public-2: Adequate Supply of Quality Water to Serve Existing and Future Projected Development Needs

- Policy PUBLIC-2.1: The City will require that water supply, treatment, and delivery meet or exceed local, State, and federal standards.
- Policy PUBLIC-2.3: New developments shall incorporate water conservation techniques to reduce water demand in new growth areas, including the use of reclaimed water for landscaping and irrigation.
- Policy PUBLIC-2.5: The City will not induce urban development by providing provide water services in areas outside the Planning Area or areas not planned for urban development, such as areas designated for agriculture or open space.

Goal Public-3: Adequate Wastewater Service to Meet Existing and Future Projected Development Determined in the General Plan

- Policy PUBLIC-3.1: The City will require that wastewater collection, conveyance, and treatment facilities meet or exceed local, State, and federal standards, as addressed in the City's Sewer Collection System Master Plan.
- Policy PUBLIC-3.2: The City will identify and utilize, as feasible, best environmental practices and technologies for wastewater collection, conveyance, and treatment.
- Policy PUBLIC-3.3: The City will not induce urban growth by providing wastewater facilities to areas outside the Planning Area or areas not planned for urban development, such as areas designated for agriculture or open space.

Goal Public-4: Storm Drainage Systems that Protect Public Safety, Preserve Natural Resources, and Prevent Erosion and Flood Potential

- Policy PUBLIC-4.1: The City will maintain and improve, as necessary, existing public storm basins and flood control facilities, as identified in the Stormwater Master Plan.
- Policy PUBLIC-4.2: The City will coordinate with County and Regional agencies, as well as the railroad, in the maintenance and improvement of storm drainage facilities to protect the City's residents, property, and structures from flood hazards.
- Policy PUBLIC-4.3: The City will consider a variety of means for floodplain management, depending on the context, which may include development, improvement, and maintenance of structural flood control facilities; land use policy and zoning to prohibit incompatible urban development within the floodplain; erosion control techniques; set backs from flood-prone areas; and other measures, as circumstances dictate.
- Policy PUBLIC-4.4: The City will identify areas, such as wetlands, low-lying natural runoff areas, and pervious surfaces and percolation ponds, for natural storm water collection and filtration, in concert with the City's existing and future drainage infrastructure, to help reduce the amount of runoff and encourage groundwater recharge.
- Policy PUBLIC-4.5: New development shall be designed to control surface runoff discharges to comply with the National Pollutant Discharge Elimination System Permit and the receiving water limitations assigned by the California Regional Water Quality Control Board.
- Policy PUBLIC-4.6: The City will establish and new development shall implement non-point source pollution control measures and programs designed to reduce and control the discharge of pollutants into the City's storm drains and river.
- Policy PUBLIC-4.7: The City will require minimization of the amount of new impervious surfaces and directly connected impervious surfaces in areas of new development and redevelopment and, where feasible, maximize on-site infiltration of stormwater runoff.
- Policy PUBLIC-4.8: The City will encourage pollution prevention methods, supplemented by pollutant source controls and treatment. Use small collection strategies located at, or as close to possible to the source (i.e., the point where water initially meets the ground) to minimize the transport or urban runoff and pollutants off-site.
- Policy PUBLIC-4.9: The City will require the preservation and, where possible, will encourage that creation or restoration of areas that provide important water quality benefits, such as riparian corridors, wetlands, and buffer zones.

- Policy PUBLIC-4.10: The City will limit disturbances of natural water bodies and natural drainage systems cause by development, including roads, highways, and bridges.
- Policy PUBLIC-4.11: The City will require that new development avoid development in areas that are particularly susceptible to erosion and sediment loss; or, will require that these areas are identified and protected from erosion and sediment loss.
- Policy PUBLIC-4.12: The City will encourage and/or require the use of open, vegetated swales, stormwater cascades, and small wetland ponds instead of pipes and vaults, as a part of urban development proposed outside current City limits to mitigate stormwater impacts.
- Policy PUBLIC-4.13: The City will enforce a no-net-runoff policy for areas proposed for development outside the current City limits.

Implementation of these General Plan policies and actions would mitigate the potential for violation of waste discharge requirements and water quality standards. Therefore this impact would be **less than significant**.

Mitigation Measures: No mitigation is required.

IMPACT 4.10-6 Substantially Deplete Groundwater Supply or Impede Recharge. *If significant recharge areas are developed or groundwater extraction occurred without recharge, this could adversely affect supply. Proposed General Plan policies address this issue and as a result, the impact is considered less than significant.*

As mentioned above, the City of Riverbank obtains its domestic water supply from the Modesto Groundwater Basin. There are nine water supply wells in the City. The most recent well began production in the summer of 2006. The City's wells obtained 4,166 acre-feet of water in 2004. Current capacity of the eight existing wells is 6,885 gallons per minute (gpm). In the a recent Water District System Study it was concluded that the City water system should have adequate supply facilities to meet projected peak demands with the largest unit (currently Well #9 at 1300 gpm) out of service, or with 20 percent of the system capacity out of service, without depletion of the aquifer (City of Riverbank, 2005).

The General Plan Policies and Actions listed in Impact 4.10-4 would mitigate the potential for groundwater supply impacts. The following goals and policies would also directly or indirectly address this potential impact:

Goal Public-2: Adequate Supply of Quality Water to Serve Existing and Future Projected Development Needs

- Policy PUBLIC-2.1: The City will require that water supply, treatment, and delivery meet or exceed local, State, and federal standards.
- Policy PUBLIC-2.2: The City will manage and enhance the City's water supply and facilities to accommodate existing and planned development, as identified in the City's Water Master Plan, Urban Water Management Plan, and Groundwater Source Efficiency Report.
- Policy PUBLIC-2.3: New developments shall incorporate water conservation techniques to reduce water demand in new growth areas, including the use of reclaimed water for landscaping and irrigation.
- Policy PUBLIC-2.4: The City will condition approval of new developments on demonstrating the availability of adequate water supply and infrastructure, including multiple dry years, as addressed in the City's Water Master Plan, Urban Water Management Plan, and Groundwater Source Efficiency Report.

- Policy PUBLIC-2.5: The City will not induce urban development by providing provide water services in areas outside the Planning Area or areas not planned for urban development, such as areas designated for agriculture or open space.

Groundwater Quality and Supply

- Policy CONS-6.1: The City will require that waterways, floodplains, watersheds, and groundwater recharge areas are maintained in their natural condition, wherever feasible.

- Policy CONS-6.2: The City will coordinate with appropriate regional, state, and federal agencies to address local sources of groundwater and soil contamination, including underground storage tanks, septic tanks, agriculture, and industrial uses.

- Policy CONS-6.3: Approved projects, plans, and subdivisions in new growth areas shall incorporate natural drainage system design that emphasizes infiltration and decentralized treatment (rather than traditional piped approaches that quickly convey stormwater to large centralized treatment facilities).

- Policy CONS-6.4: The City will encourage the use of permeable surfaces for hardscape. Impervious surfaces such as driveways, streets, and parking lots will be minimized so that land is available for a natural drainage system to absorb stormwater, reduce polluted urban runoff, recharge groundwater, and reduce flooding.

- Policy CONS-6.5: City street standards and parking requirements will balance the needs of transportation with the full range of community planning issues, including water quality, storm drainage, air quality, and other considerations.

- Policy CONS-6.6: The City will encourage the use of recycled water for appropriate use, including but not limited to outdoor irrigation, toilet flushing, fire hydrants, and commercial and industrial processes.

- Policy CONS-6.7: The City will require mitigation measures, in coordination with the Regional Water Quality Control Board, as a part of approved projects, plans, and subdivisions to address the quality and quantity of urban runoff, including that attributable to soil erosion.

With incorporation of the above listed and referenced policies, implementation of the General Plan would result in a **less-than-significant** impact.

Mitigation Measures: No mitigation is required.

4.11 LAND USE

4.11.1 INTRODUCTION

This section briefly describes existing land uses in the Planning Area and analyzes land use planning impacts that would occur with implementation of the City of Riverbank General Plan. The Riverbank General Plan provides overarching policy guidance for urban development, as well as conservation, within the Riverbank Planning Area. The General Plan Background Reports and General Plan Policy Document (both under separate cover) provide a detailed description of the environmental and regulatory setting within the Planning Area and City policy for physical development over the next 20 years. Please refer to those documents for more information.

4.11.2 EXISTING SETTING

The City of Riverbank is located in the California Central Valley, east of SR 99 on the eastern side of the San Joaquin Valley. The Planning Area includes the existing developed City, as well as areas east and west of the exiting developed City where long-term future urban land uses are envisioned. The city is surrounded by agricultural land uses to the north, south, and west, and rural residential land uses to the east. The Stanislaus River creates the northern border of the city. The Burlington Northern Santa Fe railroad line passes through the center of the city in a north-south direction. Land south of the City is planned for urban use by the City of Modesto.

Riverbank is a small, but growing community located along the banks of the Stanislaus River in a mostly agricultural area. The city includes a mixture of residential, commercial, industrial, and civic land uses. The majority of non-residential land is located downtown or along State Highway 108, which is oriented east to west in the northern portion of the city. Industrial land uses are focused along a north-south corridor through the center of Riverbank along the Burlington Northern Santa Fe railroad line.

EXISTING LAND USES

Existing land uses in the City of Riverbank and representative acreages are provided in Table 4.11-1 below.

Table 4.11-1
Existing Land Uses

Existing Land Use	Acres	%
Single-Family Residential	1,062	47%
Public/Quasi-Public	372	17%
Industrial	325	14%
Commercial	179	8%
Vacant	92	4%
Rural Residential	88	4%
Agriculture	56	2%
Multi-Family	29	1%
Mobile Home Park	26	1%
Duplex / Triplex	10	0%
Office	9	0%
Mobile Home	4	0%
Miscellaneous	1	0%
Total	2,251	100%

Riverbank City Limits, as of the writing of this document, encompass approximately 2,500 acres of land (3.8 square miles). The most prevalent use of land in the city (47%) is single-family residences. Public/quasi-public land uses are the next most prevalent land use. This category includes places of worship, City-owned property, County-owned property, and property owned by other public agencies. Industrial lands occupy approximately 325 acres in Riverbank (14%). Commercial land encompasses the 8% of the city. Commercial land includes retail, wholesale, and commercial service land uses. Other land use types, as shown in the table above, have a minor representation in Riverbank, as of the writing of this document.

Rural residential land occupies approximately 88 acres along with vacant lands classified as rural residential areas occupy approximately another 60 acres.[1] Including vacant rural residential lands, vacant land in Riverbank encompasses 92 acres. This is approximately 4% of land in the city. Multi-family residential development accounts for approximately 4% of the total land area in the city and comprises approximately 6% of the city's housing stock.

Homes constructed recently are larger on average compared to older homes built in Riverbank. Larger homes tend to be located on the western side of the city where home and lot sizes are more uniform. A variety of housing types exist in and around downtown Riverbank, in residential neighborhoods just across the railroad from downtown to the west, and residential neighborhoods immediately south of downtown. These areas are within proximity of schools, parks, and commercial opportunities. The majority of remaining areas in the city are comprised mostly of single-family homes with less in the way of mixing of housing types and land uses. Areas where single-family homes are concentrated include areas in the northern portion of the city along the river and west of the railroad, a large area of the city located west of the railroad and south of Patterson Road, and the southeastern-most portion of the existing developed city.

The most prevalent non-residential land use in Riverbank after public/quasi-public land use is industrial development, a land use which typically has a large land demand in urban areas. Approximately eight acres of existing vacant land are zoned for industrial development. Existing industrial development is primarily focused along and adjacent to the railroad line that bisects the city. Industrial development also occurs to a lesser degree along the State Highway 108 corridor.

The majority of commercial development is located along the Highway 108 corridor and in downtown Riverbank. Some small-scale, neighborhood-serving commercial development is also located within residential neighborhoods located south and east of downtown.

Riverbank has more than 90 acres of vacant land with an average size of slightly less than two acres.

Farmland surrounding Riverbank is generally used for orchards (e.g., fruits, nuts) to the west and pastureland to the south and east.

4.11.3 REGULATORY SETTING

CITY OF RIVERBANK GENERAL PLAN AND ZONING ORDINANCE

All cities and counties in California are required to adopt a "comprehensive, long-term general plan for [their] physical development" (Government Code, Section 65300). The general plan acts as a policy blueprint for the location of land uses, open space, agricultural land, and transportation facilities; for the conservation of natural resources; and for the avoidance of physical hazards. A general plan is implemented by the city's or county's zoning ordinance (which establishes specific development standards and regulations), subdivision ordinance (which establishes the rules for subdividing land), and other adopted plans and regulations. Each city and each county has a unique general plan and unique implementing ordinances.

[1] Rural residential land is classified by the Assessor as rural residential land use or similar and normally on parcels of more than one acre in area)

The City of Riverbank General Plan and Zoning Ordinance, together guide and regulate the use of land within City limits. The "project" evaluated by this EIR is the adoption of an update to the Riverbank General Plan. The City will consider revisions to the Zoning Code following update of the General Plan to ensure consistency, as required by State law.

Riverbank, its neighboring cities, and Stanislaus County each have independent land use authority over lands within their respective boundaries. Pursuant to State law, a city may establish a general plan planning area that extends beyond its corporate limits when that land "bears relation to its planning."[2] The planning agency (in this case, the City of Riverbank), is using the General Plan update to advise other agencies, such as the county and neighboring cities, of the city's land use policy intent for lands surrounding its jurisdictional limits. However, in the interim, portions of the planning area that are outside City limits are subject to the county's land use regulations.

Please refer to the Project Information section of this EIR, Section 3.0, and the General Plan itself for more information on the General Plan update land use designations. See Exhibit 3-1 for the proposed General Plan Land Use Diagram, Exhibit 3-2 for the City's existing Land Use Diagram (pre-update), and Exhibit 3-3 for the City's existing zoning.

STANISLAUS COUNTY GENERAL PLAN

The Stanislaus County General Plan guides land use and other elements of physical development in the unincorporated areas of Stanislaus County, including areas outside the current Riverbank City limits, but within the Planning Area. As is the case with each of the cities in Stanislaus County, with the comprehensive update of a General Plan, through Sphere of Influence amendments, and through annexation, former unincorporated areas of the County become part of incorporated cities. Currently, areas of the unincorporated County surrounding Riverbank are primarily designated "Agriculture" by the Stanislaus General Plan. Areas south of Riverbank planned by the City of Modesto are designated "Urban Transition," as are areas within the eastern and southeastern portion of Riverbank's Sphere of Influence. There also small areas designated "Industrial" and "Low Density Residential" in areas near Riverbank.

STANISLAUS COUNTY LOCAL AGENCY FORMATION COMMISSION

The Stanislaus County Local Agency Formation Commission (LAFCO) is charged with encouraging the orderly formation and development of local agencies, including Spheres of Influence and City limits. The Riverbank General Plan adoption does not include revision to the City's Sphere of Influence or City limits. Therefore, a LAFCO action is not necessary. However, the Riverbank General Plan update could possibly be followed by proposals to LAFCO, and therefore information on LAFCO policies is provided below for the reader's edification.

State law guiding the activities of LAFCO can be found in Section 56301 of the Government Code. Certain objectives, responsibilities, and policies of LAFCO have environmental repercussions. LAFCO has the authority to approve or disapprove boundary changes to cities, among other duties. These decisions can affect the direction and extent of urban growth, which can have a variety of implications for agricultural land conversion, transportation, natural resources preservation, and energy conservation, among many other environmental issues.

State law identifies several factors that LAFCO must consider during review of a proposal, including:

- Land area and land use.
- Topography, natural boundaries, and drainage basins.

[2] State of California Government Code, Section 65300.

- Population, population density, proximity to other populated areas, per capita assessed valuation.
- The likelihood of significant growth in the area, and in adjacent incorporated and unincorporated areas, during the next ten years.
- The effect of the proposed action and of alternative actions, on adjacent areas, on mutual social and economic interests, and on the local governmental structure of the County.
- The need for organized community service.
- The present cost and adequacy of governmental services and controls in the area, and probable future needs for such services and controls.
- The probable effects of the proposal and of alternatives on the cost and adequacy of services and controls in the area and adjacent areas. (As used, "services" refers to governmental services, including necessary public facilities, whether or not the services would be provided by local agencies under LAFCO's jurisdiction, i.e., educational services.)
- Conformity with appropriate city or county general and specific plans.
- The "sphere of influence" of any local agency which may be applicable to the proposal being reviewed.
- The effect of the proposal on maintaining the physical and economic integrity of agricultural lands.
- The definiteness and certainty of the boundaries of the territory, the nonconformance of proposed boundaries with lines of assessment or ownership, the creation of islands or corridors of unincorporated territory and other similar matters affecting the proposed boundary.
- The conformity of the proposal and its anticipated effects with adopted Commission policies on providing planned, orderly, efficient patterns of urban development.
- The ability of the newly formed or annexing agency to provide the services which are identified in the application, and consideration of whether the revenues for those services will be sufficient.
- The timely availability of water supplies adequate for projected needs.
- The extent to which the proposal will assist the receiving entity in achieving its fair share of the regional housing needs as determined by the appropriate council of governments.
- Any information or comments from the landowner or owners, and residents of the study area.

Please refer to the Stanislaus LAFCO Policies and Procedures Manual for more information.[3]

FEDERAL

Federal land is not subject to the provisions of general plans or to local land use regulations. The decommissioned Army Munitions Plant in Riverbank has transferred to the City for consideration of reuse and redevelopment plans.

3 Stanislaus LAFCO. Policies and Procedures. Manual. Online. http://www.stanislauslafco.org/

4.11.4 IMPACTS AND MITIGATION MEASURES

METHOD OF ANALYSIS

To assess land use incompatibilities, this analysis evaluates whether the types of land uses identified in the Riverbank General Plan would physically divide an established community. When land use impacts are identified as significant or potentially significant, mitigation measures are provided to avoid or reduce the intensity of the impact to a less-than-significant level, where feasible.

THRESHOLDS OF SIGNIFICANCE

The Riverbank General Plan would cause a significant impact related to land uses, as defined by the State CEQA Guidelines (Appendix G), if it would:

- 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

As mentioned previously, the "project" being evaluated in this EIR is the updated Riverbank General Plan. The General Plan update involves a comprehensive revision of the City's goals, policies, and implementation programs. The zoning code and other regulations that implement the General Plan would be revised following the General Plan update to ensure consistency. There are no other agencies with jurisdictional authority over land use decisions within the City that have policies conflicting with the updated General Plan. Therefore, this topic is not discussed further in this EIR.

IMPACTS AND MITIGATION MEASURES

IMPACT 4.11-1 Disrupt or Divide an Established Community. *The General Plan includes a revised Land Use Diagram, identification of transportation improvements, and other changes that would primarily change currently undeveloped areas, but that also could affect existing developed parts of the City. However, goals, policies, and implementation measures included throughout the General Plan prevent against disruption of existing communities and no aspect of the General Plan would divide an existing community. This impact would be less than significant.*

Implementation of the Riverbank General Plan is a policy-level document designed to establish where specific land uses would be located, how land uses would be developed, and provide a long-range guide for overall growth and development in the city. The General Plan is designed to establish a future vision for the distribution and layout of land uses in the City of Riverbank. The proposed General Plan Land Use Diagram describes the revised layout of future land uses for the Planning Area. For the existing developed City, the revised Land Use Diagram does not differ substantially from the existing (pre-update) General Plan Land Use Diagram, although different terminology may be used. For example, throughout the downtown Riverbank area and inner neighborhoods, the existing (pre-update) General Plan denotes a residential category called "Medium to High Density Residential." This category accommodated development at up to 20 units per acre, including multi-family residential development. As a part of this General Plan update, the new terminology "Higher-Density Residential" is used to more clearly and accurately portray this land use. The "Higher-Density Residential" land use category in the updated General Plan is effectively the same as the existing General Plan land use designation "Medium to High Density Residential," and these designations occur on the same lands. Therefore, the General Plan does not alter the allowable land on lands with these designations. The City will likely comprehensively update the City's

zoning code following adoption of this General Plan to implement the new Land Use Diagram. This process would involve setting more specific density requirements and development standards to implement the General Plan in different locations within the City.

There are a few locations within the existing developed part of the City where land use changes are envisioned. Along the State Route 108 corridor, along the railroad line that bisects the community, and near downtown Riverbank, there are commercial and industrial land use designations that, under the proposed General Plan update would be designated Mixed Use. This is a flexible land use category that would primarily consist of retail commercial, commercial service, and offices (similar to the existing Commercial land use designation). Similar also to the existing Commercial land use designation, multi-family residential development is allowed. The areas formerly designated as Commercial in the existing (pre-update) General Plan are now designated as a part of the proposed General Plan as Mixed Use. The effective change in the allowable range of land uses on these lands is minor. Some areas formerly designated Industrial would also be called out for Mixed Use, under the proposed General Plan. This change could appreciable affect the range of allowable land uses on certain properties the community may wish to see redeveloped. This change could reduce potential environmental impacts compared to some of the more noxious industrial land uses that otherwise might have been able to become established on lands formerly designated Industrial. The City's definition of the "Mixed-Use" designation clarifies that existing neighborhoods would be preserved, and the focus in existing developed parts of the City will be on vacant and underutilized properties.

There is a small area southwest of the intersection of Patterson Road and Claus Road that is designated Mixed Use in the proposed General Plan update but was designated Medium to High Density Residential as a part of the existing (pre-update) General Plan. There is an area along Claribel Road west of the railroad line that is designated for Higher-Density Residential in the proposed General Plan update but was designated Low to Medium Density Residential in the existing General Plan.

In summary, the General Plan identifies generalized use of land, transportation facilities, and other components of urban development and conservation throughout the Planning Area. None of these land use changes involves dividing or disrupting existing neighborhoods or communities. There is a vast array of General Plan goals, policies, and implementations strategies that are drafted to ensure against adverse physical environmental impacts of this type. Therefore, existing neighborhoods and communities in the city would not be divided or disrupted with implementation of the General Plan. This would be a ***less-than-significant*** impact.

IMPACT 4.11-2 Conflict with any applicable habitat conservation plan or natural community conservation plan. *There is no habitat conservation plan or natural community conservation plan in effect for the Planning Area. The Conservation and Open Space Element discusses biotic resources, including some of those addressed by neighboring San Joaquin County's habitat conservation planning efforts. These habitat conservation planning efforts do not apply to areas of the Riverbank Planning Area where land use change is anticipated. The City will require compliance with this conservation plan, where applicable. This impact would be* ***less than significant****.*

There is no habitat conservation plan or natural community conservation plan in effect for the City of Riverbank portion of the City's Planning Area. Riverbank has the unusual situation of having a wastewater treatment facility and City park across the County and City boundaries, in San Joaquin County. Since this area clearly has an important relationship to the City's land use planning efforts, the General Plan Planning Area also extends into San Joaquin County to include the wastewater treatment plant lands and the City park. The General Plan does not propose any land use changes for this area.

The Biological Resources section of this EIR, Section 4.5 of this EIR, discusses biotic resources, including some of those addressed by neighboring San Joaquin County's habitat conservation planning efforts. This conservation plan does not apply to the parts of the Riverbank Planning Area where land use change is anticipated. Nonetheless, adoption of the General Plan may indirectly create the need for wastewater treatment plant

expansion, park expansion, or related changes across the Stanislaus River. In order to ensure any activities in San Joaquin County are in accord with ongoing conservation planning efforts, the City's General Plan includes Policy CONS-4.3, which requires compliance with the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan for projects to expand Jacob Myers Park, or other projects within San Joaquin County, as applicable.

The impact is **less than significant**.

4.12 NOISE

4.12.1 INTRODUCTION

This section includes a description of ambient noise conditions, a summary of applicable regulations related to noise and vibration, and an analysis of the potential impacts resulting from the implementation of the proposed Riverbank General Plan. Mitigation measures are recommended, as necessary, to reduce significant noise impacts. This section relies on information completed by Bollard Acoustical Consultants in 2005, including community noise survey information and monitoring of stationary noise sources. Please refer to the Riverbank General Plan Noise Background Report, under separate cover, on file with the City for maps and other noise information.

SOUND FUNDAMENTALS

Noise is generally defined as sound that is loud, disagreeable, unexpected, or unwanted. Sound, as described in more detail below, is mechanical energy transmitted in the form of a wave by a disturbance or vibration that causes pressure variation in air that the human ear can detect.

SOUND PROPERTIES

A sound wave is introduced into a medium (air) by a vibrating object. The vibrating object (e.g., vocal chords, the string of a guitar or the diaphragm of a radio speaker) is the source of the disturbance that moves through the medium. Regardless of the type of source creating the sound wave, the particles of the medium through which the sound moves are vibrating in a back and forth motion at a given rate (frequency). The frequency of a wave refers to how often the particles vibrate when a wave passes through the medium. The frequency of a wave is measured as the number of complete back-and-forth vibrations of a particle per unit of time. One complete back-and-forth vibration is called a cycle. If a particle of air undergoes 1,000 cycles in 2 seconds, then the frequency of the wave would be 500 cycles per second. The common unit used for frequency is in cycles per second, called Hertz (Hz).

Each particle vibrates as a result of the motion of its nearest neighbor. For example, the first particle of the medium begins vibrating at 500 Hz and sets the second particle of the medium into motion at the same frequency (500 Hz). The second particle begins vibrating at 500 Hz and thus sets the third particle into motion at 500 Hz. The process continues throughout the medium; hence each particle vibrates at the same frequency, which is the frequency of the original source. Subsequently, a guitar string vibrating at 500 Hz will set the air particles in the room vibrating at the same frequency (500 Hz), which carries a sound signal to the ear of a listener that is detected as a 500 Hz sound wave.

The back-and-forth vibration motion of the particles of the medium would not be the only observable phenomenon occurring at a given frequency. Because a sound wave is a pressure wave, a detector could be used to detect oscillations in pressure from high to low and back to high pressure. As the compression (high-pressure) and rarefaction (low-pressure) disturbances move through the medium, they would reach the detector at a given frequency. For example, a compression would reach the detector 500 times per second if the frequency of the wave were 500 Hz. Similarly, a rarefaction would reach the detector 500 times per second if the frequency of the wave were 500 Hz. Thus, the frequency of a sound wave refers not only to the number of back-and-forth vibrations of the particles per unit of time but also to the number of compression or rarefaction disturbances that pass a given point per unit of time. A detector could be used to detect the frequency of these pressure oscillations over a given period of time. The period of the sound wave can be found by measuring the time between successive high-pressure points (corresponding to the compressions) or the time between successive low-pressure points (corresponding to the rarefactions). The frequency is simply the reciprocal of the period; thus an inverse relationship exists so that as frequency increases, the period decreases, and vice versa.

A wave is an energy transport phenomenon that transports energy along a medium. The amount of energy carried by a wave is related to the amplitude (loudness) of the wave. A high-energy wave is characterized by large amplitude; a low-energy wave is characterized by small amplitude. The amplitude of a wave refers to the

maximum amount of displacement of a particle from its rest position. The energy transported by a wave is directly proportional to the square of the amplitude of the wave. This means that a doubling of the amplitude of a wave is indicative of a quadrupling of the energy transported by the wave.

SOUND AND THE HUMAN EAR

Because of the ability of the human ear to detect a wide range of sound-pressure fluctuations, sound-pressure levels are expressed in logarithmic units called decibels (dB) to avoid a very large and awkward range in numbers. The sound-pressure level in decibels is calculated by taking the log of the ratio between the actual sound pressure and the reference sound pressure and then multiplied by 20. The reference sound pressure is considered the absolute hearing threshold (Caltrans 1998). Use of this logarithmic scale reveals that the total sound from two individual 65-dB sources is 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB).

Because the human ear is not equally sensitive to all audible frequencies, a frequency-dependent rating scale was devised to relate noise to human sensitivity. An A-weighted dB (dBA) scale performs this compensation by discriminating against frequencies that are more sensitive to humans. The basis for compensation is the faintest sound audible to the average ear at the frequency of maximum sensitivity. This dBA scale has been chosen by most authorities for the purpose of regulating environmental noise. Typical indoor and outdoor noise levels are presented in Exhibit 4.12-1.

With respect to how humans perceive and react to changes in noise levels, a 1-dBA increase is imperceptible, a 3-dBA increase is barely perceptible, a 6-dBA increase is clearly noticeable, and a 10-dBA increase is subjectively perceived as approximately twice as loud (Egan 1988), as presented in Table 4.12-1. Table 4.12-1 was developed on the basis of test subjects' reactions to changes in the levels of steady-state pure tones or broad-band noise and to changes in levels of a given noise source. It is probably most applicable to noise levels in the range of 50 to 70 dBA, as this is the usual range of voice and interior noise levels. For these reasons, a noise level increase of 3 dBA or more is typically considered substantial in terms of the degradation of the existing noise environment.

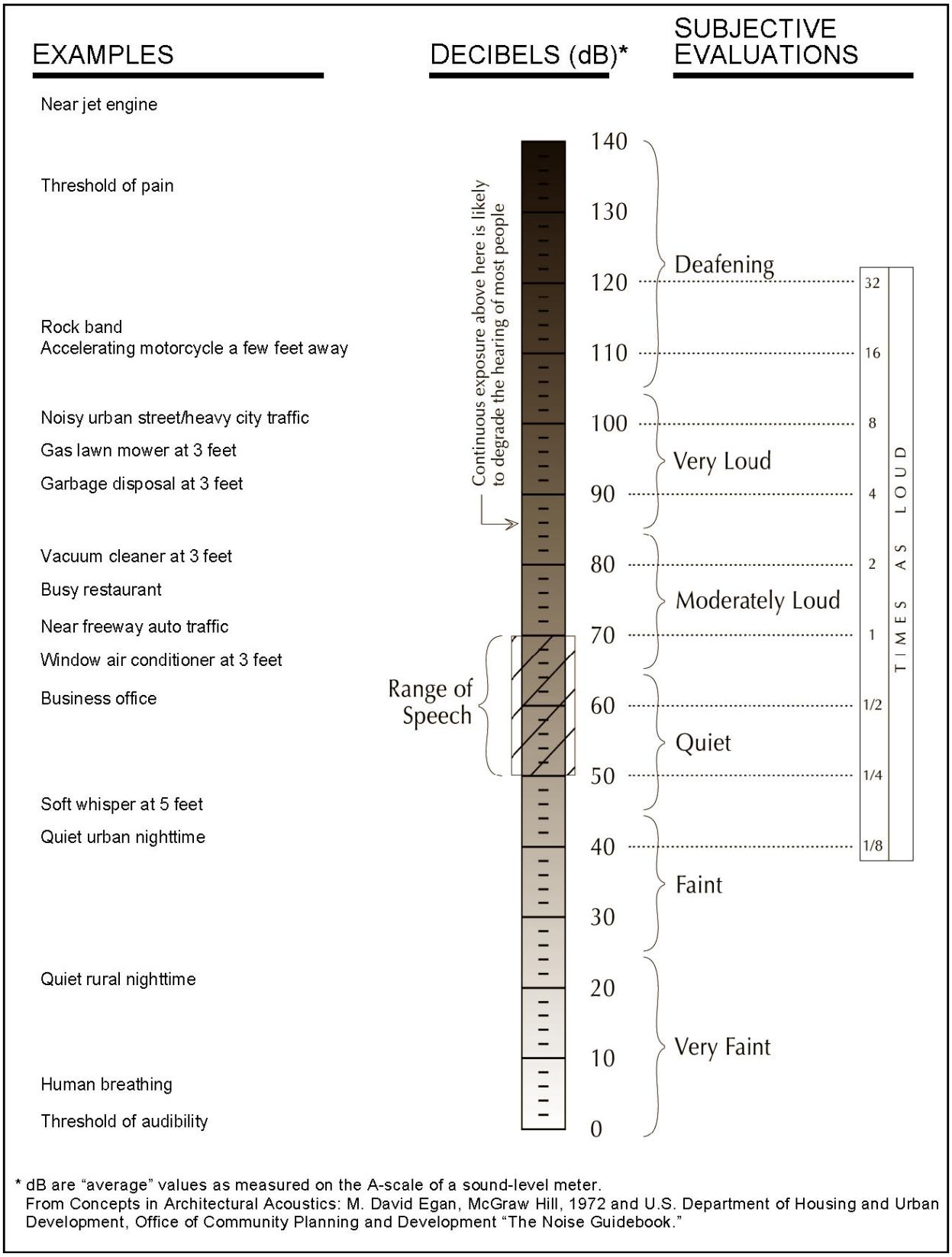
Table 4.12-1
Subjective Reaction to Changes in Noise Levels of Similar Sources

Change in Level, dBA	Subjective Reaction	Factor Change in Acoustical Energy
1	Imperceptible (Except for Tones)	1.3
3	Just Barely Perceptible	2.0
6	Clearly Noticeable	4.0
10	About Twice (or Half) as Loud	10.0

Source: Egan 1988.

SOUND PROPAGATION AND ATTENUATION

As sound (noise) propagates from the source to the receptor, the attenuation, or manner of noise reduction in relation to distance, is dependent on surface characteristics, atmospheric conditions, and the presence of physical barriers. The inverse-square law describes the attenuation caused by the pattern in which sound travels from the source to receptor. Sound travels uniformly outward from a point source in a spherical pattern with an attenuation rate of 6 dBA per doubling of distance (dBA/DD). However, from a line source (e.g., a road), sound travels uniformly outward in a cylindrical pattern with an attenuation rate of 3 dBA/DD. The surface characteristics between the source and the receptor may result in additional sound absorption and/or reflection. Atmospheric conditions such as wind speed, temperature, and humidity may affect noise levels. Furthermore, the presence of a



Source: EDAW 2006

Typical Noise Levels **Exhibit 4.12-1**

barrier between the source and the receptor may also attenuate noise levels. The actual amount of attenuation is dependent upon the size of the barrier and the frequency of the noise. A noise barrier may be any natural or human-made feature such as a hill, tree, building, wall, or berm (Caltrans 1998).

All buildings provide some exterior-to-interior noise reduction. A building constructed with a wood frame and a stucco or wood sheathing exterior typically provides a minimum exterior-to-interior noise reduction of 25 dBA with its windows closed, whereas a building constructed of a steel or concrete frame, a curtain wall or masonry exterior wall, and fixed plate glass windows of one-quarter-inch thickness typically provides an exterior-to-interior noise reduction of 30–40 dBA with its windows closed (Paul S. Veneklasen & Associates 1973, cited in Caltrans 2002).

NOISE DESCRIPTORS

The selection of a proper noise descriptor for a specific source is dependent upon the spatial and temporal distribution, duration, and fluctuation of the noise. The noise descriptors most often encountered when dealing with traffic, community, and environmental noise are defined below (Caltrans 1998, Lipscomb and Taylor 1978).

- L_{max} (Maximum Noise Level): The maximum instantaneous noise level during a specific period of time. The L_{max} may also be referred to as the peak (noise) level.

- L_{min} (Minimum Noise Level): The minimum instantaneous noise level during a specific period of time.

- L_X (Statistical Descriptor): The noise level exceeded X% of a specific period of time.

- L_{eq} (Equivalent Noise Level): The energy mean (average) noise level. The instantaneous noise levels during a specific period of time in dBA are converted to relative energy values. From the sum of the relative energy values, an average energy value is calculated, which is then converted back to dBA to determine the L_{eq}. In noise environments determined by major noise events, such as aircraft overflights, the L_{eq} value is heavily influenced by the magnitude and number of single events that produce the high noise levels.

- L_{dn} (Day-Night Noise Level): The 24-hour L_{eq} with a 10 dBA 'penalty' for noise events that occur during the noise-sensitive hours between 10:00 p.m. and 7:00 a.m. In other words, 10 dBA is 'added' to noise events that occur in the nighttime hours, and this generates a higher reported noise level when determining compliance with noise standards. The L_{dn} attempts to account for the fact that noise during this specific period of time is a potential source of disturbance with respect to normal sleeping hours.

- CNEL (Community Noise Equivalent Level): The CNEL is similar to the L_{dn} described above, but with an additional 5 dBA 'penalty' added to noise events that occur during the noise-sensitive hours between 7:00 p.m. to 10:00 p.m., which are typically reserved for relaxation, conversation, reading, and television. If using the same 24-hour noise data, the reported CNEL is typically approximately 0.5 dBA higher than the L_{dn}.

- SENL (Single Event [Impulsive] Noise Level): The SENL describes a receiver's cumulative noise exposure from a single impulsive noise event, which is defined as an acoustical event of short duration and involves a change in sound pressure above some reference value. SENLs typically represent the noise events used to calculate the L_{eq}, L_{dn}, and CNEL.

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 noise 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 Leq is the foundation of the composite noise descriptors such as L_{dn} and CNEL, as defined above, and shows very good correlation with community response to noise.

NEGATIVE EFFECTS OF NOISE ON HUMANS

Negative effects of noise exposure include physical damage to the human auditory system, interference, and disease. Exposure to noise may result in physical damage to the auditory system, which may lead to gradual or traumatic hearing loss. Gradual hearing loss is caused by sustained exposure to moderately high noise levels over a period of time; traumatic hearing loss is caused by sudden exposure to extremely high noise levels over a short period. Gradual and traumatic hearing loss both may result in permanent hearing damage. In addition, noise may interfere with or interrupt sleep, relaxation, recreation, and communication. Although most interference may be classified as annoying, the inability to hear a warning signal may be considered dangerous. Noise may also be a contributor to diseases associated with stress, such as hypertension, anxiety, and heart disease. The degree to which noise contributes to such diseases depends on the frequency, bandwidth, the level of the noise, and the exposure time (Caltrans 1998).

VIBRATION

Vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure borne noise. Sources of groundborne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, groundborne vibrations may be described by amplitude and frequency.

Vibration amplitudes are usually expressed in peak particle velocity (PPV) or root mean squared (RMS), as in RMS vibration velocity. The PPV and RMS velocity are normally described in inches per second (in/sec). PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is often used in monitoring of blasting vibration because it is related to the stresses that are experienced by buildings (FHWA 1995, Caltrans 2002, FTA 2006).

Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. It takes some time for the human body to respond to vibration signals. In a sense, the human body responds to average vibration amplitude. The RMS of a signal is the average of the squared amplitude of the signal, typically calculated over a 1-second period. As with airborne sound, the RMS velocity is often expressed in decibel notation as vibration decibels (VdB), which serves to compress the range of numbers required to describe vibration (FHWA 1995). This is based on a reference value of 1 microinch per second (μin/sec).

The background vibration-velocity level in residential areas is usually approximately 50 VdB. Groundborne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels (FHWA 1995).

Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Construction activities can generate groundborne vibrations, which can pose a risk to nearby structures. Constant or transient vibrations can weaken structures, crack facades, and disturb occupants (FHWA 1995).

Construction vibrations can be transient, random, or continuous. Transient construction vibrations are generated by blasting, impact pile driving, and wrecking balls. Continuous vibrations result from vibratory pile drivers, large pumps, horizontal directional drilling, and compressors. Random vibration can result from jackhammers,

pavement breakers, and heavy construction equipment. Table 4.12-2 describes the general human response to different levels of groundborne vibration-velocity levels.

Table 4.12-2
Human Response to Different Levels of Groundborne Noise and Vibration

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

Note: VdB = vibration decibels referenced to 1 µinch/second and based on the root mean square (RMS) velocity amplitude.
Source: FTA 2006

4.12.2 ENVIRONMENTAL SETTING

EXISTING NOISE-SENSITIVE LAND USES

Noise-sensitive land uses generally include those uses where exposure to noise would result in adverse effects, as well as uses where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Other noise-sensitive land uses include schools, hospitals, convalescent facilities, parks, hotels, places of worship, libraries, and other uses where low interior noise levels are essential.

Noise-Sensitive Areas

The following noise-sensitive areas have been identified within the City of Riverbank:

- Residential Areas
  - All dwellings, including single-family residences, multi-family units, mobile homes, etc.

- Schools
  - California Avenue School
  - Cardoza School
  - Rio Altura School
  - Riverbank High School

- Convalescent Hospitals and Care Facilities (7 or more capacity)[1]
  - Adena
  - Del Rio Rest Home
  - Mar-Ric Jones Care Home
  - Valley View Care Center
  - Woods Board and Care

- Parks and Recreation Areas
  - Castleberg Park
  - Hutcheson Park

[1] Under State law, care facilities with capacity of six or fewer are considered residential uses and may be located in zones that allow for residential uses. For the purposes of this report, such facilities are considered dwellings in residential areas.

- Jacob Myers Park
- Pioneer Park
- Riverbank Community Center and Veterans Park
- Safreno Park
- Staley Park and Skate Park
- Whorton Park
- Zerillo Park

EXISTING NOISE SOURCES

In addition to Highway 108, the ambient noise environment in Riverbank is defined by local traffic on City streets, activities at commercial and industrial properties, active recreation areas of parks and outdoor play areas of schools, and occasional railroad operations on the Burlington Northern Santa Fe (BNSF) tracks. Each of these noise sources is discussed individually below. There are no airports in the immediate vicinity of the City of Riverbank, although occasional commercial, military, and general aviation aircraft overflights occur at higher altitudes. Major noise sources in the Planning Area include:

- Highways and Major Local Streets:
  State Route (SR) 108
  Santa Fe Road
  Roselle Avenue
  Patterson Road
  Oakdale Road
  Morrill Road
  Crawford Road
  Coffee Road
  Claus Road
  Claribel Road
  First Street

- Railroad Operations:
  Burlington Northern and Santa Fe Railroad

- Industrial/Stationary Sources:
  Monschien Industries
  Silgan Containers Corporation
  Durabilt Truss Company
  Thunderbolt Wood Treating Plant
  Barnett Heating and Air Conditioning Service
  American Laminates
  General Service Commercial & Light Industrial Uses
  Parks and Playing Fields

HIGHWAYS AND MAJOR LOCAL STREETS

The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used to predict traffic noise levels within the Riverbank City Limits.[2] The FHWA Model is the traffic noise prediction model currently preferred by the Federal Highway Administration, the State of California Department of Transportation (Caltrans), and most city and county governments, for use in traffic noise assessment. Distances from the center of the roadway to L_{dn} contour values of 70, 65 and 60 dB are summarized in Table 4.12-3. These

[2] The FHWA model uses Calveno vehicle noise emission curves.

Table 4.12-3
Summary of Modeled Traffic Noise Contours under Existing Conditions

#	Street	From	To	Daily Volume	Level at 50 ft (from Centerline of Near Travel Lane (dBA L_{dn})	Distance (feet) from Roadway Centerline to Noise Contour			
						70 L_{dn} dBA	65 L_{dn} dBA	60 L_{dn} dBA	55 L_{dn} dBA
1	**SR 108**	**McHenry Avenue**	**New Collector**	**21,000**	**70**	**53**	**115**	**248**	**534**
2	New Collector	SR 108	Morrill Road	-	-	-	-	-	-
3	New Collector	Morrill Road	Crawford Road	-	-	-	-	-	-
4	**SR 108**	**New Collector**	**Coffee Road**	**21,000**	**70**	**53**	**115**	**248**	**534**
5	Morrill Road	New Collector	Coffee Road	-	-	-	-	-	-
6	Crawford Rd	New Collector	Coffee Road	-	-	-	-	-	-
7	**Claribel Rd**	**McHenry Avenue**	**Coffee Road**	**16,271**	**69**	**45**	**97**	**209**	**450**
8	Coffee Rd	New Collector	SR 108	-	-				
9	**Coffee Rd**	**SR 108**	**Morrill Road**	**4,242**	**63**	**18**	**40**	**85**	**184**
10	**Coffee Rd**	**Morrill Road**	**Crawford Road**	**6,900**	**66**	**25**	**55**	**118**	**254**
11	**Coffee Road**	**Crawford Road**	**SR 108**	**6,900**	**66**	**25**	**55**	**118**	**254**
12	**Coffee Rd**	**SR 108**	**Vella Road**	**10,290**	**67**	**33**	**71**	**154**	**332**
13	**SR 108**	**Coffee Road**	**Hot Springs Lane**	**19,036**	**70**	**50**	**108**	**232**	**500**
14	**Morrill Road**	**Coffee Road**	**New Collector**	**2,803**	**59**	**10**	**21**	**44**	**96**
15	Crawford Road	Coffee Road	New Collector	329	50	2	5	11	23
16	New EW Collector	Coffee Road	New Collector	-	-	-	-	-	-
17	**Claribel Rd**	**Coffee Road**	**Commercial Access**	**13,371**	**68**	**40**	**85**	**183**	**395**
18	New NS Collector	SR 108	New Collector	-	-	-	-	-	-
19	NS Collector	SR 108	Morrill Road	-	-	-	-	-	-
20	NS Collector	Morrill Road	Crawford Road	-	-	-	-	-	-
21	NS Collector	Morrill Road	Crawford Road	-	-	-	-	-	-
22	**SR 108**	**Hot Springs Lane**	**Oakdale Road**	**21,000**	**70**	**53**	**115**	**248**	**534**
23	**Morrill Road**	**NS Collector**	**Oakdale Road**	**2,803**	**59**	**10**	**21**	**44**	**96**
24	Crawford Rd	NS Collector	Oakdale Road	329	52	3	7	16	33
25	EW Collector	NS Collector	Oakdale Road	-	-	-	-	-	-
26	**Claribel Rd**	**Commercial Access**	**Oakdale Road**	**13,731**	**69**	**40**	**87**	**187**	**402**
27	Oakdale Road	Karen Ahlen	SR 108	4,006	61	12	26	56	121
28	**Oakdale Road**	**SR 108**	**Colony Manor**	**12,354**	**68**	**37**	**81**	**174**	**375**
29	**Oakdale Road**	**Colony Manor**	**Morrill Road**	**12,354**	**68**	**37**	**81**	**174**	**375**
30	**Oakdale Road**	**Morrill Road**	**Crawford Road**	**10,966**	**68**	**35**	**75**	**161**	**346**
31	**Oakdale Rd**	**Crawford Road**	**Retail Access**	**15,866**	**69**	**44**	**95**	**206**	**443**
32	**Oakdale Road**	**Retail Access**	**Claribel Road**	**15,866**	**69**	**44**	**95**	**206**	**443**

Table 4.12-3
Summary of Modeled Traffic Noise Contours under Existing Conditions

#	Street	From	To	Daily Volume	Level at 50 ft (from Centerline of Near Travel Lane (dBA L_{dn})	Distance (feet) from Roadway Centerline to Noise Contour			
						70 L_{dn} dBA	65 L_{dn} dBA	60 L_{dn} dBA	55 L_{dn} dBA
33	**Oakdale Rd**	**Claribel Road**	**Mable Avenue**	**15,382**	**69**	**43**	**93**	**201**	**434**
34	**SR 108**	**Oakdale Road**	**Jackson Avenue**	**26,000**	**71**	**62**	**133**	**286**	**616**
35	**Morrill Road**	**Oakdale Road**	**Zellman Court**	**6,232**	**63**	**16**	**35**	**76**	**163**
36	**Crawford Road**	**Oakdale Road**	**Antique Rose Way**	**7,819**	**64**	**19**	**41**	**88**	**189**
37	Claribel Rd	Oakdale Road	Squire Wells Way	-	-	-	-	-	-
38	Estelle Avenue	SR 108	Almondwood Ave	1,967	58	8	16	35	75
39	Squire Wells Way		SR 108	-	-	-	-	-	-
40	Jackson Ave	Ross Avenue	SR 108	2,211	58	8	18	38	82
41	Jackson Ave	SR 108	Parsley Avenue	1,339	56	6	13	27	58
42	Topeka Ave	Jackson Avenue	SR 108	1,191	56	5	12	25	54
43	**SR 108**	**Jackson Avenue**	**Callander Avenue**	**26,000**	**71**	**62**	**133**	**286**	**616**
44	**SR 108 – Callander**	**Patterson Road**	**Prestwick Drive**	**19,000**	**70**	**50**	**108**	**232**	**499**
45	**SR 108 – Atkinson**	**Prestwick Drive**	**1st Street**	**19,000**	**70**	**50**	**108**	**232**	**499**
46	**Patterson Road**	**Callander**	**Roselle Avenue**	**8,720**	**67**	**30**	**64**	**138**	**297**
47	**Roselle Ave**	**Patterson Road**	**Ward**	**6,000**	**65**	**36**	**78**	**169**	**364**
48	**Morrill Rd**	**Carnwood Drive**	**Roselle Avenue**	**2,816**	**59**	**10**	**21**	**45**	**96**
49	Crawford Road	Prospector Pkwy	Roselle Avenue	2,309	58	8	18	39	84
50	**Roselle Ave**	**Glow Road**	**Claribel Road**	**8,303**	**66**	**29**	**62**	**133**	**288**
51	**Claribel Rd**	**Squire Wells Way**	**Roselle Avenue**	**10,839**	**68**	**34**	**74**	**159**	**343**
52	**Roselle Ave**	**Claribel Road**	**Plainview Road**	**7,011**	**66**	**26**	**55**	**119**	**257**
53	**Claribel Road**	**Roselle Avenue**	**Terminal Avenue**	**10,780**	**68**	**34**	**74**	**159**	**342**
54	**Sante Fe Rd**	**Henry Road**	**Myers Road**	**11,548**	**68**	**36**	**77**	**166**	**358**
55	**1st Street**	**High Street**	**SR 108**	**14,780**	**69**	**42**	**91**	**196**	**422**
56	**1st Street**	**SR 108**	**Topeka Street**	**6,650**	**65**	**25**	**53**	**115**	**248**
57	1st Street	Topeka Street	Patterson Road	-	-	-	-	-	-
58	**Patterson Rd**	**Roselle Avenue**	**1st Street**	**14,264**	**69**	**41**	**89**	**191**	**412**
59	**SR 108**	**1st Street**	**8th Street**	**21,000**	**70**	**53**	**115**	**248**	**534**
60	**SR 108**	**5th Street**	**Claus Road**	**20,500**	**70**	**53**	**113**	**244**	**525**
61	**Patterson Road**	**1st Street**	**Terminal Avenue**	**-**	**-**				
62	**Terminal Ave**	**Paterson Road**	**Iowa Avenue**	**6,517**	**63**	**17**	**36**	**78**	**168**
63	**Terminal Ave**	**Reich Lane**	**Van Dusen Ave**	**4,850**	**62**	**14**	**30**	**64**	**138**
64	**Terminal Ave**	**Davis Avenue**	**Claribel Road**	**4,827**	**62**	**14**	**30**	**64**	**137**

Table 4.12-3
Summary of Modeled Traffic Noise Contours under Existing Conditions

#	Street	From	To	Daily Volume	Level at 50 ft (from Centerline of Near Travel Lane (dBA L_{dn})	Distance (feet) from Roadway Centerline to Noise Contour			
						70 L_{dn} dBA	65 L_{dn} dBA	60 L_{dn} dBA	55 L_{dn} dBA
65	**Terminal Ave**	**Claribel Avenue**	**Plainview Avenue**	**3,872**	**61**	**12**	**26**	**55**	**119**
66	**Patterson Road**	**Terminal Avenue**	**8th Street**	**6,735**	**65**	**25**	**54**	**116**	**250**
67	California St	Terminal Avenue	8th Street	1,050	55	5	11	23	50
68	Kentucky Ave	Terminal Avenue	8th Street	2,190	58	8	17	38	81
69	**Claribel Ave**	**Terminal Avenue**	**Claus Road**	**6,745**	**65**	**25**	**54**	**116**	**250**
70	Sante Fe Street	8th Street	Claus Road	1,072	55	5	11	23	50
71	**Claus Road**	**Patterson Road**	**Sante Fe Street**	**8,279**	**66**	**29**	**62**	**133**	**287**
72	**Claus Road**	**Patterson Road**	**Kentucky Avenue**	**10,296**	**67**	**33**	**72**	**154**	**332**
73	**Claus Road**	**Davis Road**	**Claribel Road**	**10,217**	**67**	**33**	**71**	**153**	**330**
74	**Claus Road**	**Claribel Road**	**Plainview Road**	**11,452**	**68**	**36**	**77**	**165**	**356**
75	**SR 108**	**Claus Road**	**Snediger Road**	**15,500**	**69**	**44**	**94**	**202**	**436**
76	Sante Fe Street	Claus Road	Central Avenue	768	54	4	9	19	40
77	Patterson Road	Claus Road	Snediger Road	4,713	64	20	42	92	197
78	California Ave	Claus Road	Snediger Road	-	-	-	-	-	-
79	Kentucky Ave	Claus Road	Snediger Road	-	-	-	-	-	-
80	**Claribel Road**	**Claus Road**	**Eleanor Avenue**	**8,788**	**67**	**30**	**64**	**139**	**299**
81	Mesa Drive	SR 108	Eleanor Avenue	-	-	-	-	-	-
82	Snediger Road	SR 108	Patterson Road	-	-	-	-	-	-
83	Snediger Road	Patterson Road	Kentucky Ave	-	-	-	-	-	-
84	**SR 108**	**Snediger Rd**	**Langworth Road**	**15,500**	**69**	**44**	**94**	**202**	**436**
85	Eleanor Ave	SR 108	Patterson Road	-	-	-	-	-	-
86	Eleanor Ave	Patterson Road	Kentucky Ave	-	-	-	-	-	-
87	Eleanor Ave	Kentucky Ave	Claribel Rd	505	52	3	7	14	30

Refer to Appendix for complete FHWA model input and output.
Source: Bollard Acoustical Consultants 2005

contours and distances represent worst-case estimates of traffic noise exposure, as calculations do not take into consideration shielding that may occur from topography or buildings.

As shown, many of Riverbank's roadways carry traffic in a volume and mix that would create noise compatibility issues for adjacent noise sensitive land uses. The previous Noise Element of the General Plan characterizes areas with exterior noise exposure of more than 60 dB L_{dn} as 'noise impacted,' and as areas where future residential or other noise sensitive land uses would not be allowed without mitigation to meet noise standards (Riverbank General Plan 1985). Noise generation along roadways at more than 60 dB L_{dn} at least 40 feet from the roadway centerline would potentially expose adjacent noise sensitive properties to noise in excess of current standards. Such entries in the '60 dB Ldn' column below are presented in boldface type.

RAILROAD OPERATIONS

Railroad operations within the City of Riverbank consist of freight and Amtrak passenger service on the BNSF mainline track. This track runs through the central part of Riverbank in a north-south direction adjacent to many of the City's industrial land uses. There is also a branch line of this railway that runs east of the mainline track to Oakdale. There is generally one round trip per day on this branch line during the daylight hours.

Noise measurements were conducted in Riverbank to document noise levels generated by individual train operations in the community.

There were 32 recorded train passages in a 24-hour period in a recent noise study by Bollard Acoustical Consultants of the BNSF. In addition to the train passages, occasional switching occurs along the tracks. Although switching activities generate elevated maximum noise levels during coupling and decoupling of rail cars, switching activities are at a very slow speed and do not appreciably affect the overall railroad noise levels reported below. At a distance of 270 feet from the main railroad tracks, the L_{dn} was measured to be 64 dB. Based on this noise level, distances to the 60, 65 and 70 dB L_{dn} noise contours were computed using a standard sound level decrease of 4.5 dB for each doubling of distance from the railroad tracks. Those noise contour distances are shown numerically in Table 4.12-4.

Table 4.12-4
Approximate Distances to Railroad Noise Contours

Noise Contour, dB L_{dn}	Distance from Center of Tracks, feet
60	410
65	165
70	50

Note: Noise level contours are based on a measured mean SEL of 91.4 dBA at a distance of 270 feet from the near railroad tracks, an assumed 32 daily operations (randomly distributed), and a distance of 50 feet to the effective noise source location (nearest tracks).
Source: Bollard Acoustical Consultants 2005

INDUSTRIAL AND OTHER STATIONARY NOISE SOURCES

Many processes and activities in cities produce noise, even when the best available noise control technology is used. Noise exposure within industrial facilities is controlled by federal and state employee health and safety regulations. Noise levels outside of industrial and other facilities are subject to local standards. In addition to industry, activities at other commercial, recreational, and public facilities can also produce noise that affects neighbors and the community at-large.

Communities typically approach exposure to noise from two perspectives through land use planning:

- prevent the introduction of new noise-producing land uses in noise-sensitive areas; and,
- prevent encroachment of noise-sensitive uses upon existing noise-producing facilities.

With the exception of City parks, most of the City's stationary noise-producing land uses are located near the railroad line in the east-west center of the City. The ambient noise environment in the immediate vicinity of these uses includes noise from other industries, local traffic, and the railroad.

COMMUNITY NOISE SURVEY

As required by the Government Code and the Office of Noise Control Guidelines, a community noise survey was conducted as a part of the research and analysis supporting the 2005 Riverbank General Plan update. The survey documented noise exposure in areas of the community containing noise-sensitive land uses. Noise monitoring sites were selected to be representative of typical conditions in areas of the community where noise-sensitive uses are located. To quantify existing noise levels in the quieter parts of the City of Riverbank, a community noise survey was performed at seven locations in the City which are removed from major noise sources. Two of the seven locations were monitored over a continuous 24-hour period, while the other five locations were each monitored for one 10-minute period during the morning, afternoon, and evening hours.

The results of the community noise survey are provided in Table 4.12-5.

Table 4.12-5
Summary of Community Noise Survey Results and Estimates

Site	Location	Dates[1]	Time Period	L_{eq}	L_{max}	L_{50}	Estimated L_{dn}	Sources
1.	Corner of McAllister Lane and McDevitt Drive. Safreno Park	7-8-05	Morning	46.1	61.1	44.4	50–55	Distant traffic and pedestrians
		7-7-05	Afternoon	47.6	58.1	45.7		
		7-7-05	Nighttime	47.3	64.0	45.6		
2.	Corner of First Street and High Street. Pioneer Park	7-8-05	Morning	62.6	76.0	60.5	65	Roadway traffic, neighborhood dogs and children, as well as the Riverbank Pallet Company
		7-7-05	Afternoon	61.8	74.3	59.3		
		7-7-05	Nighttime	55.2	67.7	51.9		
3.	Corner of Santa Fe Street and Seventh Street. Riverbank Community Center	7-8-05	Morning	56.2	66.3	53.5	55–60	Roadway traffic, pedestrians, and distant train horns
		7-7-05	Afternoon	54.9	64.0	52.0		
		7-7-05	Nighttime	54.3	68.4	49.4		
4.	Corner of Kentucky Avenue and Eighth Street. Castleberg Park	7-8-05	Morning	59.2	77.5	52.1	65	Roadway traffic and children playing
		7-7-05	Afternoon	58.7	70.7	54.4		
		7-7-05	Nighttime	60.1	80.1	50.9		
5.	End of Prospectors Parkway at the Canal	7-8-05	Morning	52.1	72.0	48.7	55	Distant traffic and construction noise
		7-7-05	Afternoon	52.6	62.8	51.0		
		7-7-05	Nighttime	49.9	58.9	49.0		

Note: The noise level data collected at 908 Cedar Street appears to be artificially high, as BAC staff observations indicated that this residential area was rather quiet. The data collected at 505 Turre Street is believed to be more representative of ambient noise levels in the residential areas of Riverbank.

[1] Levels monitored in 2005 would still be representative of current day conditions since overall population and traffic levels have not increased notably.

Source: Bollard Acoustical Consultants 2005

At noise monitoring site 1, which was located in a primarily residential area but also adjacent to a park site, noise levels are typical of such an environment, in the range of 50 to 55 dB L_{dn}. The primary sources of noise include traffic in the distance and pedestrians.

At noise monitoring location 2, a primarily residential neighborhood in a historic area of the City near the river, noise levels are slightly higher. This monitoring station is closer in proximity to Santa Fe Street, Highway 108, and other nearby sources of traffic noise, as well as the Riverbank Pallet Company, an industrial source of noise. The estimated noise level is 65 dB L_{dn}.

At noise monitoring station 3, which was located adjacent to a school and the Riverbank Community Center, noise levels are in a range typical of this environment. Outside of the school and community center, the predominant use of land in the vicinity is residential. During monitoring, the distant sound of train horns was observed. Ambient noise levels of between 55 and 60 dB L_{dn} are estimated for this location.

At monitoring station 4, which was also located in a primarily residential area near a City park, the estimated ambient noise level is approximately 65 dB L_{dn}. The primary sources of noise observed during monitoring included traffic and children playing.

Finally, noise monitoring station 5 was placed in an area of the City that has new residential construction and ongoing single-family residential development. The sound of distant construction and traffic were observed during monitoring. The estimated ambient noise level is 55 dB L_{dn}.

Continuous noise monitoring was also conducted in two locations in the City: Site A is located in the eastern portion of the City's Sphere of Influence. The vicinity of Site A is could be characterized as an urban-rural transition area currently developed with low-density residences, as well as grazing land. Continuous noise monitoring at Site A shows unexpected peak noise levels around midnight and 1:00 a.m., which is possibly attributable to dairy operations in the vicinity. Milking operations are known to occur during this timeframe. This maximum level affects the overall Ldn of 73.

Site B is located downtown near the railroad line and the City Skate Park. This monitoring location is located along the mainline railroad tracks and near several sources of industrial noise. Site B has an ambient noise level of 69 dB Ldn.

4.12.3 REGULATORY SETTING

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

There are no federal plans, policies, regulations, or laws related to noise that are applicable to the Riverbank General Plan update.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

Title 24 of the California Code of Regulations (CCR) establishes standards governing interior noise levels that apply to all new single-family and multi-family residential units in California. These standards require that acoustical studies be performed before construction at building locations where the existing L_{dn} exceeds 60 dBA. Such acoustical studies are required to establish mitigation measures that will limit maximum L_{dn} levels to 45 dBA in any habitable room. Although there are no generally applicable interior noise standards pertinent to all uses, many communities in California have adopted an L_{dn} of 45 as an upper limit on interior noise in all residential units.

In addition, the State of California General Plan Guidelines (State of California 2003), published by the state Governor's Office of Planning and Research (OPR), provides guidance for the acceptability of projects within

specific CNEL/L_{dn} contours. Table 4.12-6 summarizes acceptable and unacceptable community noise exposure limits for various land use categories. Generally, residential uses are considered to be acceptable in areas where exterior noise levels do not exceed 60 dBA CNEL/L_{dn}. Residential uses are normally unacceptable in areas exceeding 70 dBA L_{dn} and conditionally acceptable within 55 to 70 dBA L_{dn}. Schools are normally acceptable in areas up to 70 dBA CNEL and normally unacceptable in areas exceeding 70 dBA CNEL. Commercial uses are normally acceptable in areas up to 70 dBA CNEL. Between 67.5 and 77.5 dBA CNEL, commercial uses are conditionally acceptable, depending on the noise insulation features and the noise reduction requirements. The guidelines also present adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

Table 4.12-6
State Land Use Noise Compatibility Guidelines

Land Use Category	Community Noise Exposure (Ldn or CNEL, dBA)			
	Normally Acceptable[a]	Conditionally Acceptable[b]	Normally Unacceptable[c]	Clearly Unacceptable[d]
Residential-Low-Density Single-Family, Duplex, Mobile Home	<60	55–70	70–75	75+
Residential-Multi-Family	<65	60–70	70–75	75+
Transient Lodging-Motel, Hotel	<65	60–70	70–80	80+
Schools, Libraries, Churches, Hospitals, Nursing Homes	<70	60–70	70–80	80+
Auditoriums, Concert Halls, Amphitheaters		<70	65+	
Sports Arena, Outdoor Spectator Sports		<75	70+	
Playgrounds, Neighborhood Parks	<70		67.5–75	72.5+
Golf Courses, Riding Stables, Water Recreation, Cemeteries	<75		70–80	80+
Office Building, Business Commercial and Professional	<70	67.5–77.5	75+	
Industrial, Manufacturing, Utilities, Agriculture	<75	70–80	75+	

[a] Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
[b] New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
[c] New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design. Outdoor areas must be shielded.
[d] New construction or development should generally not be undertaken.
Source: State of California Governor's Office of Planning and Research 2003

LOCAL PLANS, POLICIES, REGULATIONS, AND LAWS

The applicable sections of the current City of Riverbank General Plan and Noise Ordinance are outlined below.

City of Riverbank Current General Plan

6. Goals and Objectives (City of Riverbank Noise Element of the General Plan 1985).

The following is a summary of the major goals and objectives of the Noise Element of the City of Riverbank General Plan (*City of Riverbank Noise Element of the General Plan* 1985).

(a) Provide sufficient noise exposure information in the General Plan so that existing and potential noise impacts may be effectively addressed in the land use planning and project review process.

(b) Develop and implement effective strategies to abate and avoid excessive noise exposures in the community by requiring that effective noise mitigation measures be incorporated into the design of new noise generating and new noise-sensitive land uses.

(c) Protect areas within the City of Riverbank where the present noise environment is deemed acceptable.

(d) Protect areas within the City of Riverbank which are deemed noise sensitive.

7. Specific Policies

The following specific policies are recommended for adoption and implementation by the City of Riverbank in order to accomplish the above-stated goals and objectives.

(a) Areas within the City of Riverbank exposed to existing or projected future exterior noise levels exceeding 60 dB Ldn shall be designated as noise impacted areas (City of Riverbank Noise Element Figures 2 and 3).

(b) New development of residential or other noise sensitive land uses will not be permitted in noise-impacted areas unless project design to reduce noise levels in outdoor activity areas to 60 dB Ldn or less and interior noise levels to 45 dB Ldn or less. In areas where it is not possible to reduce exterior noise levels to 60 dB Ldn or less using a practical application of the best available noise-reduction technology, an exterior noise level of up to 65 dB Ldn will be allowed. Under no circumstances will interior noise levels exceeding 45 dB Ldn with the windows and doors closed be permitted.

(e) Noise level criteria applied to land uses other than residential or other noise-sensitive uses shall be consistent with recommendations of the California Office of Noise Control (City of Riverbank Noise Element Figure 5).

(g) Noise exposure information developed during the Community Noise Survey described in the Noise Element shall be used as guidelines for the City Council to conduct public hearings to consider adoption of a Noise Ordinance. This ordinance would assist the City of Riverbank in controlling future increases in community noise levels, in addressing noise complaints and to provide local industry with noise level criteria for future development and equipment modifications. The Ordinance shall be consistent with the 'Model Community Noise Control Ordinance' prepared by the California Office of Noise Control in 1977 (Appendix C) with modifications made to reflect local concerns and conditions.

(i) The findings and specific policies of the Noise Element will be incorporated into the City of Riverbank Zoning Ordinance and coordinated with the Land Use and Circulation Elements of the General Plan.

(j) The City of Riverbank will periodically review and update the Noise Element to ensure that noise exposure information and specific policies are consistent with changing conditions within the community.

City of Riverbank Noise Ordinance

The City of Riverbank has adopted a quantitative noise ordinance. The Noise Control Ordinance is contained in Chapter 93 of the City's Municipal Code (City of Riverbank 1995). The Ordinance sets forth procedures for extensions, variations, exceptions and identifies specific prohibitions regarding noise within the City. Codes applicable to this document are outlined below.

Section 93.03 NOISE MEASUREMENT CRITERIA.

(B) The exterior noise levels shall be measured from the property line of the affected property. Where practical, the microphone shall be positioned three to five feet above the ground and away from reflective

surfaces. The interior noise level shall be measured within the affected dwelling unit, at points at least four feet from the wall, ceiling or floor nearest the noise source, with windows in the normal seasonal configuration. The reported interior noise level shall be determined by taking the arithmetic average of the readings taken at the various microphone locations. (Ord. 95-04, passed 4-10-95)

Section 93.04 EXTERIOR NOISE STANDARDS.

(A) It is unlawful for any person at any location within the incorporated area of the city to create any noise, or to allow the creation of any noise, on property owned, leased, occupied or otherwise controlled by such person which causes the exterior noise level when measured at any affected single- or multiple-family residence, school, church, hospital or public library situated in either the incorporated or unincorporated area to exceed the noise level standards as set forth in table 4.12-7:

Table 4.12-7
Exterior Noise Level Standards

Time Period	Allowable Equivalent Hourly Sound Level (L_{eq})	Allowable Maximum Sound Level (L_{max})
7 a.m. - 10 p.m.	50 dBA	70 dBA
10 p.m. - 7 a.m.	45 dBA	65 dBA

Note: from Section 93.04 of the City of Riverbank Noise Ordinance (City of Riverbank 1995).
Source: City of Riverbank 1995

(B) In the event the measured ambient noise level exceeds the applicable noise level standard, the applicable standard shall be adjusted so as to equal the ambient noise level.

(C) Each of the noise level standards specified above shall be reduced by five dBA for simple tone noises, noises consisting primarily of speech or music or for recurring impulsive noises.

(D) If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period so that the ambient noise level can be measured, the noise level measured while the source is in operation shall be compared to the noise level standards specified above.
(Ord. 95-04, passed 4-10-95)

Section 93.05 INTERIOR NOISE STANDARDS.

(A) It is unlawful for any person, at any location within the city, to operate or cause to be operated within a dwelling unit, any source of sound or to allow the creation of any noise which causes the noise level when measured inside a receiving dwelling unit situated in the area either within the city or adjacent to the city to exceed the noise level standards as set forth in table 4.12-8:

Table 4.12-8
Interior Noise Level Standards

Time Period	Allowable Equivalent Hourly Sound Level (L_{eq})	Allowable Maximum Sound Level (L_{max})
7 a.m. - 10 p.m.	40 dBA	60 dBA
10 p.m. - 7 a.m.	35 dBA	55 dBA

Note: from Section 93.04 of the City of Riverbank Noise Ordinance (City of Riverbank 1995).
Source: City of Riverbank 1995

(B) In the event the measured ambient noise level exceeds the applicable noise level standard, the applicable standard shall be adjusted so as to equal the ambient noise level.

(C) Each of the noise level standards specified above shall be reduced by five dB(A) for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises.

(D) If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period so that the ambient noise level can be measured, the noise level measured while the source is in operation shall be compared to the noise level standards specified above.

Section 93.07 NOISE SOURCE EXEMPTIONS.

The following activities shall be exempt from the provisions of this chapter:

(A) Activities conducted in unlighted public parks, public playgrounds and public or private school grounds, during the hours of 7:00 a.m. to 10:00 p.m., and in lighted public parks, public playgrounds and public or private school grounds, during the hours of 7:00 am. to 11:00 p.m., including but not limited to school athletic and school entertainment events.

(B) Any mechanical device, apparatus or equipment used, related to or connected with emergency activities or emergency work.

(C) Noise sources associated with construction provided such activities do not take place between 6:30 p.m. and 6:00 a.m. on weekdays or 5:00 p.m. and 8:00 a.m. on weekends and legal holidays.

(D) Noise sources associated with agricultural activities on agricultural zoned property.

(E) Noise sources associated with the collection of waste, garbage, and street sweeping.

(F) Any activity to the extent regulation thereof has been preempted by state or federal law.

(G) Noise sources associated with work performed by private or public utilities in the maintenance or modification of its facilities.

(H) Noise sources associated with the maintenance of residential property provided such activities take place between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday or 8:00 a.m. and 7:00 p.m., Saturday, Sunday, and holidays.

(I) Noise sources associated with public supported events (that is, Farmers Market, Cheese and Wine Festival, parades, and similar events.)

4.12.4 SIGNIFICANCE THRESHOLDS

METHOD OF ANALYSIS

To assess potential mobile, stationary, and area source noise impacts, noise-sensitive receptors and their relative exposure were identified.

The FHWA Traffic Noise Prediction Model was used to model traffic noise levels along affected roadways, based on daily volumes and the distribution, thereof, from the traffic analysis prepared for the General Plan update (KD Anderson 2007). The project's contribution to the existing traffic source noise levels along area roadways was determined by comparing the modeled noise levels at 50 feet from the centerline of the near travel lane under no project (no General Plan update) and plus project (with General Plan update) conditions. The project's land use

compatibility with 2030 traffic source noise levels was determined by comparing modeled noise levels at proposed noise-sensitive receptors under plus project conditions.

The thresholds of significance applied in this analysis primarily address the exterior noise standards established by the City of Riverbank. Unless otherwise stated, an exceedance of interior noise level standards would not occur if exterior noise standards are achieved because of sufficient exterior-to-interior noise reduction of common buildings.

THRESHOLDS OF SIGNIFICANCE

For the purpose of this analysis, the following thresholds of significance, as identified by the State CEQA Guidelines (Appendix G) and the City of Riverbank have been used to determine whether implementation of the proposed project would result in significant noise impacts. Based on Appendix G of the State CEQA Guidelines, a noise impact is considered significant if implementation of the proposed project under consideration would do any of the following:

- Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies,
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project,
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project,
- Expose people residing or working in the project area to excessive aircraft source noise levels.
- Expose persons to or generation of excessive groundborne vibration or groundborne noise levels.

City of Riverbank standards have also been considered in defining the significance of noise impacts. Applicable standards are described below.

- **Transportation Impacts.** Long-term transportation noise impacts would be significant if noise levels exceed applicable City standards (60 dBA L_{dn}, City of Riverbank Noise Element 7a, 7b) or result in a substantial increase (i.e., 3 dBA) in ambient noise levels at off-site existing nearby noise-sensitive land uses.
- **Stationary and Area Noise Impacts.** Long-term stationary and area noise impacts would be significant if project-generated noise levels exceed applicable City standards (50 dBA L_{eq}/70 dBA L_{max} daytime, 45 dBA L_{eq}/65 dBA L_{max} nighttime, City of Riverbank Noise Ordinance 93.04A) at off-site existing nearby noise-sensitive land uses.
- **Land Use Compatibility Impacts.** Land use compatibility impacts would be significant if noise levels exceed applicable City standards (Tables 4.12-6, 7, and 8) at existing and proposed noise-sensitive land uses.
- **Vibration Impacts.** Vibration impacts would be significant if levels exceed Caltrans recommended standard of 0.2 in/sec PPV with respect to the prevention of structural damage for normal buildings or the Federal Transit Administration's (FTA) maximum acceptable vibration standard of 80 VdB with respect to human response for residential uses (i.e., annoyance) at nearby vibration-sensitive land uses.

4.12.5 IMPACTS AND MITIGATION MEASURES

IMPACT ANALYSIS

IMPACT 4.12-1 Transportation Noise Levels. *Long-term project-generated traffic source noise levels would exceed the applicable standards or create a substantial permanent increase in ambient noise levels at off-site existing and proposed noise-sensitive receptors. Redevelopment and revitalization of downtown Riverbank and Patterson Road corridor could potentially expose sensitive receptors to noise sources, such as roadways and the railroad, in excess of City noise objectives. This impact is* ***potentially significant.***

Traffic

Vehicular traffic on existing roadways in Riverbank would increase as development proceeds and the City's population increases. The Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used to predict traffic noise levels within the City of Riverbank in the year 2030. The FHWA Model is the traffic noise prediction model currently preferred by FHWA, the Caltrans, and most county and city governments, for use in traffic noise assessment. Although the FHWA Model was recently replaced by TNM, the use of RD-77-108 is still considered acceptable for the development of General Plan traffic noise predictions.

Table 4.12-9 shows projected 2030 average daily traffic (ADT) volumes for the major roadways and planned roadways located within Riverbank. It also contains the modeled distance from the roadway centerline to the 55, 60, 65 and 75 dBA Ldn contour for each affected roadway segment and the noise level at 50 feet. The roadway traffic noise levels shown in Table 4.12-9 represent conservative potential noise exposure, which assume no natural or artificial shielding or reflection from existing or proposed structures or topography. Actual noise levels would vary from day to day, depending on factors such as local traffic volumes and speed, shielding from existing and proposed structures, variations in attenuation rates resulting from changes in surface parameters, and meteorological conditions.

Table 4.12-9
Summary of Modeled Traffic Noise Contours under Future Plus General Plan Conditions

#	Street	From	To	Daily Volume	Level at 50 ft* (dBA Ldn)	70 dBA contour* (ft)	65 dBA contour* (ft)	60 dBA contour* (ft)	55 dBA contour* (ft)	dBA Change from Existing
1	SR 108	McHenry Avenue	New Collector	30,600	72	69	148	318	686	2
2	**New Collector**	**SR 108**	**Morrill Road**	**1,400**	**56**	**6**	**13**	**28**	**60**	**>3**
3	**New Collector**	**Morrill Road**	**Crawford Road**	**1,000**	**55**	**5**	**10**	**22**	**48**	**>3**
4	SR 108	New Collector	Coffee Road	29,200	72	67	143	309	665	2
5	**Morrill Road**	**New Collector**	**Coffee Road**	**2,000**	**58**	**8**	**16**	**35**	**76**	**>3**
6	**Crawford Rd**	**New Collector**	**Coffee Road**	**1,000**	**55**	**5**	**10**	**22**	**48**	**>3**
7	**Claribel Rd**	**McHenry Avenue**	**Coffee Road**	**52,500**	**74**	**98**	**212**	**456**	**983**	**5**

Table 4.12-9
Summary of Modeled Traffic Noise Contours under Future Plus General Plan Conditions

#	Street	From	To	Daily Volume	Level at 50 ft* (dBA Ldn)	70 dBA contour* (ft)	65 dBA contour* (ft)	60 dBA contour* (ft)	55 dBA contour* (ft)	dBA Change from Existing
8	**Coffee Rd**	**New Collector**	**SR 108**	**15,950**	**69**	**44**	**96**	**206**	**444**	**>3**
9	**Coffee Rd**	**SR 108**	**Morrill Road**	**25,600**	**71**	**61**	**131**	**283**	**609**	**8**
10	**Coffee Rd**	**Morrill Road**	**Crawford Road**	**21,600**	**71**	**54**	**117**	**252**	**544**	**5**
11	**Coffee Road**	**Crawford Road**	**SR 108**	**22,600**	**71**	**56**	**121**	**260**	**561**	**5**
12	Coffee Rd	SR 108	Vella Road	10,400	67	33	72	155	334	0
13	SR 108	Coffee Road	Hot Springs Lane	20,300	70	52	112	242	522	0
14	**Morrill Road**	**Coffee Road**	**New Collector**	**16,000**	**67**	**31**	**66**	**142**	**305**	**8**
15	**Crawford Road**	**Coffee Road**	**New Collector**	**1,000**	**55**	**5**	**10**	**22**	**48**	**5**
16	**New EW Collector**	**Coffee Road**	**New Collector**	**5,800**	**62**	**16**	**33**	**72**	**155**	**>3**
17	**Claribel Rd**	**Coffee Road**	**Commercial Access**	**42,800**	**74**	**86**	**185**	**398**	**858**	**6**
18	**New NS Collector**	**SR 108**	**New Collector**	**3,400**	**60**	**11**	**23**	**50**	**109**	**>3**
19	**NS Collector**	**SR 108**	**Morrill Road**	**5,700**	**62**	**15**	**33**	**71**	**153**	**>3**
20	**NS Collector**	**Morrill Road**	**Crawford Road**	**1,000**	**55**	**5**	**10**	**22**	**48**	**>3**
21	**NS Collector**	**Morrill Road**	**Crawford Road**	**2,700**	**59**	**9**	**20**	**43**	**93**	**>3**
22	SR 108	Hot Springs Lane	Oakdale Road	15,800	69	44	95	205	442	-1
23	**Morrill Road**	**NS Collector**	**Oakdale Road**	**19,400**	**68**	**35**	**75**	**161**	**347**	**9**
24	**Crawford Rd**	**NS Collector**	**Oakdale Road**	**5,300**	**64**	**21**	**46**	**99**	**213**	**12**
25	**EW Collector**	**NS Collector**	**Oakdale Road**	**9,500**	**65**	**22**	**46**	**100**	**216**	**>3**
26	**Claribel Rd**	**Commercial Access**	**Oakdale Road**	**47,750**	**74**	**92**	**199**	**428**	**923**	**5**
27	**Oakdale Road**	**Karen Ahlen**	**SR 108**	**8,250**	**64**	**20**	**42**	**91**	**196**	**3**

Table 4.12-9
Summary of Modeled Traffic Noise Contours under Future Plus General Plan Conditions

#	Street	From	To	Daily Volume	Level at 50 ft* (dBA Ldn)	70 dBA contour* (ft)	65 dBA contour* (ft)	60 dBA contour* (ft)	55 dBA contour* (ft)	dBA Change from Existing
28	**Oakdale Road**	**SR 108**	**Colony Manor**	**21,500**	**71**	**54**	**117**	**252**	**542**	**3**
29	**Oakdale Road**	**Colony Manor**	**Morrill Road**	**24,600**	**71**	**59**	**128**	**275**	**593**	**3**
30	**Oakdale Road**	**Morrill Road**	**Crawford Road**	**29,200**	**72**	**67**	**143**	**309**	**665**	**4**
31	**Oakdale Rd**	**Crawford Road**	**Retail Access**	**29,000**	**72**	**66**	**143**	**307**	**662**	**3**
32	**Oakdale Road**	**Retail Access**	**Claribel Road**	**29,900**	**72**	**68**	**146**	**314**	**676**	**3**
33	**Oakdale Rd**	**Claribel Road**	**Mable Avenue**	**33,400**	**72**	**73**	**157**	**338**	**727**	**3**
34	SR 108	Oakdale Road	Jackson Avenue	25,800	71	61	132	284	612	0
35	Morrill Road	Oakdale Road	Zellman Court	6,400	63	17	36	77	166	0
36	Crawford Road	Oakdale Road	Antique Rose Way	6,700	63	17	37	79	171	-1
37	**Claribel Rd**	**Oakdale Road**	**Squire Wells Way**	**49,200**	**74**	**94**	**203**	**437**	**942**	**>3**
38	Estelle Avenue	SR 108	Almondwood Ave	2,000	58	8	16	35	76	0
39	**Squire Wells Way**		**SR 108**	**5,000**	**62**	**14**	**30**	**65**	**141**	**>3**
40	Jackson Ave	Ross Avenue	SR 108	2,000	58	8	16	35	76	0
41	Jackson Ave	SR 108	Parsley Avenue	1,500	57	6	14	29	63	1
42	Topeka Ave	Jackson Avenue	SR 108	2,300	58	8	18	39	84	2
43	SR 108	Jackson Avenue	Callander Avenue	26,500	71	62	134	289	623	0
44	SR 108 – Callander	Patterson Road	Prestwick Drive	14,100	69	41	88	190	409	-1
45	SR 108 – Atkinson	Prestwick Drive	1st Street	15,300	69	43	93	201	432	-1
46	Patterson Road	Callander	Roselle Avenue	13,200	68	39	84	182	392	1
47	**Roselle Ave**	**Patterson Road**	**Ward**	**11.800**	**38**	**0**	**1**	**2**	**4**	**3**

Table 4.12-9
Summary of Modeled Traffic Noise Contours under Future Plus General Plan Conditions

#	Street	From	To	Daily Volume	Level at 50 ft* (dBA Ldn)	70 dBA contour* (ft)	65 dBA contour* (ft)	60 dBA contour* (ft)	55 dBA contour* (ft)	dBA Change from Existing
48	**Morrill Rd**	**Carnwood Drive**	**Roselle Avenue**	**5,200**	**62**	**14**	**31**	**67**	**144**	**3**
49	**Crawford Road**	**Prospector Pkwy**	**Roselle Avenue**	**5,800**	**62**	**16**	**33**	**72**	**155**	**4**
50	**Roselle Ave**	**Glow Road**	**Claribel Road**	**13,500**	**69**	**40**	**86**	**185**	**398**	**3**
51	**Claribel Rd**	**Squire Wells Way**	**Roselle Avenue**	**46,100**	**74**	**90**	**194**	**419**	**902**	**6**
52	**Roselle Ave**	**Claribel Road**	**Plainview Road**	**17,700**	**70**	**48**	**103**	**221**	**476**	**4**
53	**Claribel Road**	**Roselle Avenue**	**Terminal Avenue**	**51,000**	**74**	**96**	**208**	**448**	**965**	**6**
54	Sante Fe Rd	Henry Road	Myers Road	14,600	69	42	90	194	419	1
55	1st Street	High Street	SR 108	9,200	67	31	66	143	308	-2
56	1st Street	SR 108	Topeka Street	6,000	65	23	50	107	232	0
57	**1st Street**	**Topeka Street**	**Patterson Road**	**9,300**	**67**	**31**	**67**	**144**	**310**	**>3**
58	Patterson Rd	Roselle Avenue	1st Street	23,400	71	57	124	266	574	2
59	SR 108	1st Street	8th Street	14,900	69	42	91	197	425	-1
60	SR 108	5th Street	Claus Road	14,200	69	41	89	191	411	-1
61	**Patterson Road**	**1st Street**	**Terminal Avenue**	**16,900**	**69**	**46**	**100**	**214**	**462**	**>3**
62	Terminal Ave	Paterson Road	Iowa Avenue	5,000	62	14	30	65	141	-1
63	Terminal Ave	Reich Lane	Van Dusen Ave	6,600	63	17	36	79	169	1
64	**Terminal Ave**	**Davis Avenue**	**Claribel Road**	**11,300**	**65**	**24**	**52**	**112**	**242**	**3**
65	**Terminal Ave**	**Claribel Avenue**	**Plainview Avenue**	**8,150**	**64**	**19**	**42**	**90**	**195**	**3**
66	**Patterson Road**	**Terminal Avenue**	**8th Street**	**12,300**	**68**	**37**	**81**	**173**	**374**	**3**
67	**California St**	**Terminal Avenue**	**8th Street**	**2,500**	**59**	**9**	**19**	**41**	**89**	**4**
68	Kentucky Ave	Terminal Avenue	8th Street	2,500	59	9	19	41	89	1
69	**Claribel Ave**	**Terminal Avenue**	**Claus Road**	**43,800**	**74**	**87**	**188**	**404**	**871**	**9**

Table 4.12-9
Summary of Modeled Traffic Noise Contours under Future Plus General Plan Conditions

#	Street	From	To	Daily Volume	Level at 50 ft* (dBA Ldn)	70 dBA contour* (ft)	65 dBA contour* (ft)	60 dBA contour* (ft)	55 dBA contour* (ft)	dBA Change from Existing
70	Sante Fe Street	8th Street	Claus Road	1,000	55	5	10	22	48	0
71	**Claus Road**	**Patterson Road**	**Sante Fe Street**	**21,500**	**71**	**54**	**117**	**252**	**542**	**5**
72	**Claus Road**	**Patterson Road**	**Kentucky Avenue**	**26,100**	**71**	**62**	**133**	**286**	**617**	**4**
73	**Claus Road**	**Davis Road**	**Claribel Road**	**29,900**	**72**	**68**	**146**	**314**	**676**	**5**
74	**Claus Road**	**Claribel Road**	**Plainview Road**	**23,050**	**71**	**57**	**122**	**264**	**568**	**3**
75	SR 108	Claus Road	Snediger Road	18,100	70	48	104	224	483	1
76	**Sante Fe Street**	**Claus Road**	**Central Avenue**	**2,500**	**59**	**9**	**19**	**41**	**89**	**5**
77	**Patterson Road**	**Claus Road**	**Snediger Road**	**18,900**	**70**	**50**	**107**	**231**	**498**	**6**
78	**California Ave**	**Claus Road**	**Snediger Road**	**1,600**	**57**	**7**	**14**	**31**	**66**	**>3**
79	**Kentucky Ave**	**Claus Road**	**Snediger Road**	**2,250**	**58**	**8**	**18**	**38**	**83**	**>3**
80	**Claribel Road**	**Claus Road**	**Eleanor Avenue**	**29,400**	**72**	**67**	**144**	**310**	**668**	**5**
81	**Mesa Drive**	**SR 108**	**Eleanor Avenue**	**1,100**	**55**	**5**	**11**	**24**	**51**	**>3**
82	**Snediger Road**	**SR 108**	**Patterson Road**	**3,500**	**60**	**11**	**24**	**51**	**111**	**>3**
83	**Snediger Road**	**Patterson Road**	**Kentucky Ave**	**1,500**	**57**	**6**	**14**	**29**	**63**	**>3**
84	SR 108	Snediger Rd	Langworth Road	16,100	69	45	96	208	447	0
85	**Eleanor Ave**	**SR 108**	**Patterson Road**	**1,100**	**55**	**5**	**11**	**24**	**51**	**>3**
86	**Eleanor Ave**	**Patterson Road**	**Kentucky Ave**	**3,000**	**60**	**10**	**22**	**46**	**100**	**>3**
87	**Eleanor Ave**	**Kentucky Ave**	**Claribel Rd**	**7,400**	**63**	**18**	**39**	**85**	**183**	**11**

See FHWA modeling in Appendix

* All contours measured from the centerline of the near travel lane.

Source: EDAW 2007

Noise levels would increase substantially (+3 dBA Ldn or greater) along several major and minor roadways adjacent to existing and planned noise sensitive areas. Traffic on new roadways (those without existing ADT levels) planned in the General Plan would also create noise increases of greater than 3 dBA Ldn. They are indicated in bold in Table 4.12-9. Many of these roadways would be located adjacent to existing or new residential neighborhoods such as the area surrounding Coffee Road, Morrill Road, Crawford Road, and Oakdale Avenue.. These areas will need detailed analysis done during the individual project approval process to ensure that all possible mitigation is incorporated into the project.

The purpose of the policies in the proposed General Plan is to ensure that the citizens of Riverbank are protected from excessive noise levels. Table N-1 in the proposed General Plan outlines guidelines regarding transportation noise for community noise environments. This information, in addition to the City's Noise Ordinance, shall be used to help determine whether transportation impacts from new projects and growth will occur in the city as a result of the General Plan.

The policies under Goal NOISE-1 are meant to create land use patterns and transportation networks that reduce noise:

- Policy NOISE-1.1: Large-scale commercial land uses requiring frequent large truck deliveries shall not be developed within new or existing neighborhoods.

- Policy NOISE-1.2: New growth areas shall avoid the use of large-volume, high-speed roadways within neighborhoods and instead disperse vehicular traffic onto a network of fully connected smaller roadways.

- Policy NOISE-1.4: Development of noise-sensitive land uses in areas exposed to existing or projected levels of noise from transportation, stationary sources, or agricultural operations exceeding, or estimated to exceed, levels specified in Table N-1 shall require transportation planning, traffic calming, site planning, buffering, sound insulation, or other methods to reduce noise exposure in outdoor activity areas and interior spaces to the levels specified in Table N-1.

- Policy NOISE-1.5: Soundwalls are prohibited as a method for reducing noise exposure that could be addressed through other means.

Additionally, Goal NOISE-2 requires that all possible measures shall be taken to reduce noise impacts of new development. Policy NOISE-2.1 defines what noise increases are considered impacts.

The Goals and Policies in the proposed General Plan provide thresholds and guidance to be used in the evaluation of project impacts and criteria to ensure that noise is not a substantial quality of life issue for existing and future Riverbank residents. The proposed General Plan anticipates traffic increases and includes many policies that would effectively mitigate much of the traffic noise attributable to the update of the General Plan and associated activities. The General Plan limits the use of high-volume, high-speed roadways (which are noise generators), and ensures that such roadways are located on the perimeter, rather than through neighborhoods. The General Plan promotes a strategy of using many lower-volume, lower-speed roadways with many choices in routes, rather than directing all traffic to higher-volume, higher-speed routes. The General Plan includes policies throughout the Air Quality, Circulation, Community Character and Design, and Land Use elements that reduce traffic generation and encourage alternatives to travel by car.

However, it would be inaccurate to state that all traffic noise can be mitigated to a level considered less-than-significant based on the General Plan measures alone. Specific project level analysis and mitigation would be appropriate, using General Plan policy as guidance.

Additionally, the traffic source noise levels would still create a substantial permanent increase over current ambient noise levels at the on-site existing noise-sensitive receptors which may not be able to be reduced by planning and design features. As a result, this impact is considered **significant and unavoidable.**

Railroads

Railroad operations within the City of Riverbank consist of freight and Amtrak passenger service on the BNSF mainline track.

There were 32 recorded train passages in a 24-hour period in a recent noise study of the BNSF. In addition to the train passages, occasional switching occurs along the tracks. It would require a doubling of train passages to increase ambient noise levels 3 dBA Ldn. This is not currently projected to occur; as a result an ambient noise impact is unlikely. The modeled 60 dBA Ldn noise contour for the Riverbank line is 410 feet from the track (Table 4.12-4). Given the proximity of existing and proposed sensitive land uses to the railroad line, noise generation is expected to exceed accepted land-use compatibility criteria in certain portions of the City.

General Plan Policy NOISE-1.4 is designed to prevent and mitigate all sources of excessive noise, including those from transportation sources. The guidance included in this General Plan update will be applied at the project level as the City considers land use change in the future. Development projects located along the railroad line will be required to mitigate according to General Plan policy and updated Noise Ordinance policy through project design and site planning. Although many techniques exist to achieve both internal and exterior noise objectives, it is possible that future development projects may encounter significant and unavoidable noise impacts relative to exposure to the railroad line, despite inclusion of all feasible mitigation techniques. The General Plan has identified an 'Infill Opportunity Area' in downtown and west Riverbank, where redevelopment and revitalization efforts are to be directed. Additional area along the Patterson Road corridor and downtown is identified for Mixed-Use development, a land use category that could include noise-sensitive uses, such as apartment buildings.

In order to address train noise, the City has drafted an implementation strategy as a part of the Noise Element to include way side horns or other means to reduce noise levels attributable to trains in coordination with the railroad:

> Implementation Strategy NOISE-4: The City will work with Burlington Northern Santa Fe Railroad to have installed directional warning devices at Riverbank railroad crossings that, compared to whistles mounted on trains, would reduce noise in noise sensitive areas of the community. The City will work to have the Railroad company agree to reduce or eliminate the use of horns in noise sensitive areas of the community with the installation of alternative sounding devices. These improvements will be reflected in Capital Improvements Programming.

Each project specific analysis will account for and mitigate any potential noise exposure issues resulting from train pass-bys in accordance with the City of Riverbank Code and the General Plan. However, it cannot be guaranteed that the City's objectives, upon which this impact analysis is based, could be achieved in every case. The impact, then, is considered **significant and unavoidable**.

Mitigation Measures: None available.

IMPACT 4.12-2 Expose Noise Sensitive Receptors to Construction Noise Levels Exceeding City of Riverbank Standards. *Short-term construction source noise levels could exceed the applicable City standards at nearby noise-sensitive receptors. In addition, if construction activities were to occur during more noise-sensitive hours, construction source noise levels could also result in annoyance and/or sleep disruption to occupants of existing and proposed noise-sensitive land uses and create a substantial temporary increase in ambient noise levels. This impact would be* ***potentially significant.***

Residences and businesses located adjacent to areas of construction activity would be affected by construction noise during build-out of areas addressed under the proposed General Plan. Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (early morning, evening, or

nighttime hours), the construction occurs in areas immediately adjoining noise sensitive land uses, or when construction durations last over extended periods of time.

Major noise generating construction activities could include demolition activities, site grading and excavation, building erection, paving and landscaping. The highest construction noise levels would be generated during grading and excavation, with lower noise levels occurring during building construction.

Large pieces of earth-moving equipment, such as graders, excavators, and dozers, generate maximum noise levels of 85 to 90 dBA at a distance of 50 feet. Typical hourly average construction-generated noise levels are about 80 to 85 dBA measured at a distance of 50 feet from the site during busy construction periods. In addition, pile driving could occur at some of the development sites. This type of construction activity can produce very high noise levels of approximately 105 dBA at 50 feet. These noise levels drop off at a rate of about 6 dBA per doubling of distance between the noise source and receptor. Intervening structures or terrain would result in lower noise levels.

Noise levels anticipated over temporary periods of time as a result of construction facilitated by the proposed General Plan would expose sensitive receptors to noise levels that exceed the current and proposed daytime and nighttime standards (50 and 45 dBA L_{eq}).

Policy NOISE-2.3 and Table N-3 require project specific mitigation of construction noise in the vicinity of noise sensitive land uses. Additionally, City Ordinance 93.07 (C) requires that construction does not take place between 6:30 p.m. and 6:00 a.m. on weekdays or 5:00 p.m. and 8:00 a.m. on weekends and legal holidays. This analysis assumes this regulation is required as a routine City practice.

The aforementioned policies and regulation are sufficient to mitigate most construction noise impacts, however requiring all manufacturer specified noise control be used on construction equipment will reduce the noise level an additional 3-15 dBA and reduce human annoyance in construction vicinities. Manufacturer recommended noise control is not currently required therefore; this is a **potentially significant** impact.

Table 4.12-10
Typical Construction Equipment Noise Levels

Type of Equipment	Noise Level in dBA at 50 feet	
	Without Feasible Noise Control	With Feasible Noise Control [1]
Dozer or Tractor	80	75
Excavator	88	80
Compactor	82	75
Front-end Loader	79	75
Backhoe	85	75
Grader	85	75
Crane	83	75
Generator	78	75
Truck	91	75

[1] Feasible noise control includes the use of intake mufflers, exhaust mufflers, and engine shrouds in accordance with manufacturer's specifications.

Sources: EPA 1971; FTA 2006

Mitigation Measure 4.12-2: The City shall require all construction projects to implement the following mitigation measure to reduce short-term construction noise levels.

- All construction equipment shall be properly maintained and equipped with noise control, such as mufflers, in accordance with manufacturers' specifications.

Significance after Mitigation

Implementation of Mitigation Measure 4.12-2 with the City Ordinance and proposed General Plan would reduce the proposed General Plan buildout generated construction noise levels by approximately 3-15 dBA. The impact is considered **less than significant**.

IMPACT 4.12-3 Expose Noise Sensitive Receptors to Stationary and Area-Source Noise Levels Exceeding City of Riverbank Standards. *Long-term General Plan buildout of stationary- and area- source noise levels would not exceed applicable standards assuming measures in the proposed General Plan and the City Noise Ordinance are enforced. As a result, this impact would be less than significant.*

The proposed General Plan would include residential; commercial, office, and industrial; open space and recreation; and institutional and public facilities (e.g., electrical substations, wastewater treatment facilities and filtered water treatment facilities, and schools) land uses. The long-term operation of these uses could result in stationary and area noise from, but not limited to, the following potential sources: landscape maintenance activities (e.g., lawn and garden equipment), voices, amplified music, mechanical equipment (e.g., pumps, generators heating, ventilation, and cooling systems), loading dock activities, parking lots, garbage collection, heavy-duty equipment, and others. Typical noise levels attributable to the above sources and off-site agricultural activities in terms of the land use compatibility impacts to the City's (e.g., existing and proposed) noise-sensitive receptors are discussed separately below.

The proposed General Plan includes the following policies that would control future noise levels at existing and proposed noise-sensitive land use areas from stationary sources:

- Policy NOISE-1.1: Large-scale commercial land uses requiring frequent large truck deliveries shall not be developed within new or existing neighborhoods.

- Policy NOISE-1.3: Industrial and other noise-generating land uses shall be located away from noise sensitive land uses or shall enclose any substantial noise sources completely within buildings or structures.

- Policy NOISE-2.2: Development projects that produce, or are affected by, non-transportation related noise shall be mitigated to achieve acceptable levels specified in Table N-2, as measured at outdoor activity areas of existing and planned noise-sensitive land uses.

- Policy DESIGN-11.3: Approved projects, plans, and subdivision requests will screen utilities, air conditioning units (HVAC), and waste collection service areas from street frontage using appropriate design and building materials consistent with the development being served.

- Policy DESIGN-6.1: The City will prohibit monolithic expanses of uniform multi-family structures surrounded by parking that breaks up the neighborhood.

- Policy DESIGN-7.6: The City will support efforts to reduce the perceived scale of Downtown streets in relationship to building height and bulk, while allowing for automobile movements. The City will encourage wider sidewalks, additional landscaping, and accommodating a large portion of future parking demand with street, rather than surface parking.

- Policy DESIGN-10.4: The City will require new development to incorporate innovative site design, trees and landscaping, pedestrian paths, and treatment of surface parking areas to avoid a "sea of asphalt."

Landscape Maintenance Activities

One potential source of stationary and area noise levels could include landscape maintenance activities at land uses (e.g., residential; commercial, office, and industrial; recreation; and schools) within the General Plan area. Landscape maintenance activities, such as the use of leaf blowers and gasoline-powered lawn mowers, could result in intermittent noise levels that range from approximately 80 to 120 dBA at 3 feet, respectively. Based on an equipment noise level of 100 dBA, the use of such equipment, assuming a noise attenuation rate of 6 dBA per doubling of distance from the source, may result in exterior noise levels of approximately 75 dBA at 50 feet.

Noise from landscaping equipment that operates between 7:00 a.m. and 7:00 p.m. on weekdays and between 8:00 a.m. and 7:00 p.m. on weekends and legal holidays is considered exempt under Section 93.07 H of the City of Riverbank Noise Ordinance. This impact is considered **less than significant**.

Mechanical Equipment

Another potential source of stationary and area noise levels could include the operation of mechanical equipment at residential, commercial, office, and industrial; and institutional and public facilities (e.g., electrical substations, wastewater treatment facility and filtered water treatment facility, and schools) land uses within the General Plan area. The operation of mechanical equipment (e.g., pumps, generators; heating, ventilation, and cooling systems) could result in intermittent noise levels of approximately 90 dBA at 3 feet. Based on this equipment noise level, the operation of such equipment, assuming a noise attenuation rate of 6 dBA per doubling of distance from the source, may result in exterior noise levels of approximately 60 dBA at 95 feet. Although these types of equipment are required to be shielded from direct exposure (e.g., housed on rooftops, in equipment rooms, or in exterior enclosures), the actual placement is not known at this time. Thus, noise levels could exceed the applicable standards at existing and proposed noise-sensitive receptors and create a substantial permanent increase in ambient noise levels at existing noise-sensitive receptors.

As noted, the proposed General Plan includes policy to ensure less than significant impacts related to non-transportation related sources:

> Policy NOISE-2.2: Development projects that produce, or are affected by, non-transportation related activity areas of existing and planned noise-sensitive land uses. If existing noise levels exceed acceptable levels in Table N-2 as measured at outdoor activity areas of noise sensitive land uses:
>
> - Where existing exterior noise levels are between 60 and 65 dB at outdoor activity areas of noise-sensitive uses, an increase of 3 dB or greater is considered significant and requires mitigation to achieve acceptable levels.
>
> - Where existing exterior noise levels are greater than 65 dB at outdoor activity areas of noise-sensitive uses, an increase of 1.5 dB or greater is considered significant and requires mitigation to achieve acceptable levels.
>
> - Where it is not possible to reduce noise in outdoor activity areas to 60 dB or less using practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB may be allowed, provided that available exterior noise level reduction measures have been implemented.

The above policy ensures a **less-than-significant** impact.

Garbage Collection Activities

Potential sources of stationary and area noise levels could also include garbage collection activities at land uses (e.g., residential; commercial, office, and industrial; and schools) within Riverbank. Garbage collection activities (e.g., emptying large refuse dumpsters, possible multiple times per week, and the shaking of containers with a

hydraulic lift), could result in instantaneous maximum noise levels of approximately 89 dBA L_{max} at 50 feet (EDAW 2004). Although such activities would likely occur during the daytime hours, the exact hours and location of refuse dumpsters are unknown at this time. If such activities were to occur during the more noise-sensitive hours (e.g., evening, nighttime, and early morning) noise levels could exceed the applicable standards at existing and proposed noise-sensitive receptors and create a substantial increase in ambient noise levels. In addition, if such maintenance activities were to occur during these more noise-sensitive hours, noise levels may result in annoyance and/or sleep disruption to occupants of the noise-sensitive land uses. However, under City of Riverbank Ordinance Section 93.07 E any noise from the collection of waste is exempt from City standards. This impact is considered **less than significant**.

Parking Lots

Potential sources of stationary and area noise levels also includes parking lots and parking structures (e.g., vehicles entering/exiting the lot, alarms/radios, and doors slamming) at land uses within Riverbank. Neither the size (i.e., capacity) or location of parking lots is known at this time. However, according to the FHWA, parking lots with a maximum hourly traffic volume of approximately 1,000 vehicles per hour either entering or exiting the lot could result in a peak hour and daily noise levels of approximately 56 dBA L_{eq} and 63 dBA L_{dn}/CNEL at 50 feet.

Proposed General Plan policies are designed to prevent and mitigate sources of excessive noise, including those from projects that may include some amount of parking. Development projects will analyze and mitigation noise impacts, including those attributable to parking areas, in accordance with the City of Riverbank Code and proposed General Plan policies. The above worst-case estimates for noise generation from large parking lots could be reduced through the application of site design and other techniques for mitigation developed at the project level. General Plan policy ensures a **less-than-significant** impact. The City has also specified mitigation for commercial and multi-family projects that require at least a 10-foot wide landscaped setback between surface parking areas and the edge of buildings. This setback could have a minor noise attenuating benefit (see mitigation)**.** See additional parking related policy from the proposed General Plan, included below:

> Policy DESIGN-6.1: The City will prohibit monolithic expanses of uniform multi-family structures surrounded by parking that breaks up the neighborhood.
>
> Policy DESIGN-7.6: The City will support efforts to reduce the perceived scale of Downtown streets in relationship to building height and bulk, while allowing for automobile movements. The City will encourage wider sidewalks, additional landscaping, and accommodating a large portion of future parking demand with street, rather than surface parking.

Other Commercial, Office, and Industrial Activities

Other potential sources of stationary and area noise levels typical of commercial, office, and industrial uses include loading dock activities, and the operation of trash compactors and air compressors. Such activities could result in intermittent noise levels of approximately 91 dBA L_{max} at 50 feet (EPA 1971) and high single event noise levels from backup alarms from delivery trucks during the more noise-sensitive hours of the day. Neither the exact hours of operation nor the location of such potential noise sources are known at this time. Thus, land use related noise levels could exceed the applicable standards at existing and proposed noise-sensitive receptors, especially if such activities were to occur during the more noise-sensitive hours (e.g., evening, nighttime, and early morning) and create a substantial increase in ambient noise levels at existing noise-sensitive receptors. In addition, if such activities were to occur during these more noise-sensitive hours, project-generated noise levels may result in annoyance and/or sleep disruption to occupants of the on-site (e.g., existing and proposed) noise-sensitive land uses.

However, proposed General Plan policies are designed to prevent and mitigate sources of excessive noise, including those from commercial, office, and industrial projects.

The General Plan includes two land use designations, applied mostly in new growth areas (those outside the existing developed city) that are located between noise incompatible land uses. The width of the buffer areas is to be determined through site specific analysis. The two land use designations are:

> BUFFER/GREENWAY/OPEN SPACE (B/G/OS)
>
> This designation provides the opportunity to preserve important open spaces containing natural resources, such as sensitive biological habitat. This category also includes areas where buffering is necessary between different land uses. Bicycle and pedestrian pathways are also accommodated by this Land Use Designation.
>
> Although the Land Use Diagram provides an illustration of where Buffer/Greenway/Open Space areas are located, there is some flexibility in exactly where these areas are located and exactly how large these areas are. For example, B/G/OS areas are shown along many canals in the Riverbank Planning Area. This shows that the City will work with local irrigation districts and other relevant agencies to establish a connected system of bicycle/pedestrian pathways along rights-of-way and easements, where feasible. The precise width of these pathways will be determined through coordination between the City, property owners, and other relevant agencies. Similarly, buffer widths and locations will be determined on a case-by-case basis, according to the goals and policies of this General Plan.
>
> MULTI-USE RECREATION/RESOURCE MANAGEMENT (MUR/R)
>
> This designation would provide opportunities for stormwater management, renewable energy production, and community recreation amenities. This area would accommodate stormwater detention facilities, groundwater recharge areas, wind generators, solar collectors, wind breaks, as well as trails, benches, and other passive recreational areas. Areas designated MUR/R could also act as a buffer between ongoing agriculture and new residential areas and provide an identifiable and permanent boundary to outward expansion of the City. Areas designated MUR/R between new growth areas and ongoing agricultural operations will be identified and appropriate widths established through Specific Plans. The width of MUR/R areas will vary depending on the intended uses taking place within a particular area. The width of the MUR/R for agricultural buffering purposes will be designed to minimize noise, dust, and any adverse impacts related to application of agricultural chemicals as experienced by encroaching residential uses.

These two designations are applied, in part, between anticipated business park/industrial areas in the southeastern portion of the Planning Area and anticipated areas of noise sensitive planned development. These designations are also applied, in part, between anticipated areas of new noise sensitive development and ongoing agricultural operations.

Another General Plan policy, from the Community Character and Design Element, requires screening of mechanical equipment:

> Policy DESIGN-11.3: Approved projects, plans, and subdivision requests will screen utilities, air conditioning units (HVAC), and waste collection service areas from street frontage using appropriate design and building materials consistent with the development being served.

Development projects will analyze and mitigation noise impacts, including that attributable to commercial, office, and industrial operations, in accordance with the City of Riverbank Code and the proposed General Plan. The General Plan land use designations consider the need for buffering between potentially noise incompatible uses. This impact is considered **less than significant.**

Other Residential, School, and Recreation Activities

Other potential sources of stationary and area noise levels typical of residential, school, and recreation uses could include voices and amplified music/speaker systems. Such sources could result in noise levels of approximately 60–75 dBA L_{eq} at 50 feet (EDAW 2001). Although such activities would likely occur primarily during the daytime hours, neither the hours of operation nor location of such sources are known at this time. It is possible that noise levels could exceed the applicable standards at existing and proposed noise-sensitive receptors, especially if such activities were to occur during the more noise-sensitive hours (e.g., evening, nighttime, and early morning) and create a substantial increase in ambient noise levels at existing noise-sensitive receptors. In addition, if such activities were to occur during these more noise-sensitive hours, project-generated noise levels may result in annoyance and/or sleep disruption to occupants of the existing and proposed noise-sensitive land uses.

The Modesto Rifle Club is located on Patterson Road west of Riverbank. The facility is used for small arms, as well as rifle and shotgun firing. Firearms used at this facility and similar shooting ranges generate maximum noise levels ranging from approximately 95 dB to 115 dB (Clark 1984) at a distance of 50 feet. Due to the impulsive nature of the noise generated at this facility, and the fact that impulsive noises have been found to be more annoying than steady state noises, proposals for development of any noise-sensitive land uses in the general vicinity of this use should be carefully evaluated for noise impact.

However, General Plan policies are designed to prevent and mitigate all sources of excessive noise, including those from residential, school, and recreational projects. Development projects will analyze and mitigate noise impacts, including those attributable to this shooting range, in accordance with the City of Riverbank Code and the proposed General Plan.

In addition, noise from activities conducted in unlighted public parks, public playgrounds and public or private school grounds, during the hours of 7:00 a.m. to 10:00 p.m., and in lighted public parks, public playgrounds and public or private school grounds, during the hours of 7:00 am. to 11:00 p.m., including but not limited to school athletic and school entertainment events are considered exempt from the provisions of the City of Riverbank standards under Section 93.07 A of the City code. This impact is considered **less than significant.**

Agricultural Activities

Agricultural activities surrounding the City involve the use of various types of heavy-duty equipment. Dairy operations in the Planning Area involve milking operations, which can occur during noise sensitive times of the day and involve substantial noise levels. The operation of heavy-duty equipment associated with agricultural activities typically results in noise levels of approximately 75 dBA L_{eq} at 50 feet (EPA 1971). The closest distances between proposed noise-sensitive land uses and agricultural land uses would be approximately 50 to 200 feet in several locations around and in the General Plan area. Based on the above noise levels and a typical noise-attenuation rate of 6.0 dBA per doubling of distance, exterior noise levels at noise-sensitive receptors approximately 50 to 200 feet from agricultural activities could exceed 75 and 63 dBA L_{eq}, respectively.

It is important to note that the closest noise-sensitive receptors would not be exposed to this noise level for extended periods, given the mobile nature of agricultural activities (e.g., disking, plowing, harvesting). If, for instance, residential land uses were exposed to 75 dBA L_{eq} for one entire hour during the daytime, and ambient noise levels were 50 dBA L_{eq} during the rest of the daytime hours and 45 dBA L_{eq} during the nighttime hours, then the 24-hour noise level would be 62 dBA L_{dn}/CNEL. Development projects in the General Plan area will be required to be evaluated for noise exposure of proposed noise sensitive land uses, as well as noise generation of proposed uses. This will include exposure of noise sensitive land uses, such as residential development, to ongoing and previously established noises associated with agriculture. Buffers for noise and other aspects of agricultural operations are required for proposed development.

As mentioned previously, the General Plan includes two land use designations, applied mostly in new growth areas (those outside the existing developed city) that are located between noise incompatible land uses. The width of the buffers areas is to be determined through site specific analysis. The two land use designations are:

> BUFFER/GREENWAY/OPEN SPACE (B/G/OS)
>
> This designation provides the opportunity to preserve important open spaces containing natural resources, such as sensitive biological habitat. This category also includes areas where buffering is necessary between different land uses. Bicycle and pedestrian pathways are also accommodated by this Land Use Designation.

Although the Land Use Diagram provides an illustration of where Buffer/Greenway/Open Space areas are located, there is some flexibility in exactly where these areas are located and exactly how large these areas are. For example, B/G/OS areas are shown along many canals in the Riverbank Planning Area. This shows that the City will work with local irrigation districts and other relevant agencies to establish a connected system of bicycle/pedestrian pathways along rights-of-way and easements, where feasible. The precise width of these pathways will be determined through coordination between the City, property owners, and other relevant agencies. Similarly, buffer widths and locations will be determined on a case-by-case basis, according to the goals and policies of this General Plan.

> MULTI-USE RECREATION/RESOURCE MANAGEMENT (MUR/R)
>
> This designation would provide opportunities for stormwater management, renewable energy production, and community recreation amenities. This area would accommodate stormwater detention facilities, groundwater recharge areas, wind generators, solar collectors, wind breaks, as well as trails, benches, and other passive recreational areas. Areas designated MUR/R could also act as a buffer between ongoing agriculture and new residential areas and provide an identifiable and permanent boundary to outward expansion of the City. Areas designated MUR/R between new growth areas and ongoing agricultural operations will be identified and appropriate widths established through Specific Plans. The width of MUR/R areas will vary depending on the intended uses taking place within a particular area. The width of the MUR/R for agricultural buffering purposes will be designed to minimize noise, dust, and any adverse impacts related to application of agricultural chemicals as experienced by encroaching residential uses.

These two designations are applied, in part, between anticipated business park/industrial areas in the southeastern portion of the Planning Area and anticipated areas of noise sensitive planned development. These designations are also applied, in part, between anticipated areas of new noise sensitive development and ongoing agricultural operations.

In addition, noise from agricultural activities is considered exempt from the provisions of the City of Riverbank standards under Section 93.07 D of the City code. This impact is considered **less than significant.**

Impacts from the various sources outlined above are less than significant. The City has specified additional mitigation related to parking lot noise as provided below:

Mitigation Measure 4.12-3:

- Newly constructed commercial and multi-family development projects that involve construction of surface parking lots shall provide at least a 10-foot wide landscaped setback between the edge of the parking lot surface and the edge of the nearest proposed building.

IMPACT 4.12-4 Vibration Levels. *Short-term project-generated construction source vibration levels and vibration from train pass-bys could exceed Caltrans' recommended standard of 0.2 in/sec peak particle velocity (PPV) with respect to the prevention of structural damage for normal buildings and the FTA maximum acceptable vibration standard of 80 vibration decibels (VdB) with respect to human response for residential uses (i.e., annoyance) at vibration-sensitive land uses. As a result, this impact would be* ***significant.***

The short-term operations created by buildout of the General Plan could include major sources of vibration. Construction activities have the potential to result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and operations involved. Vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. Table 4.12-11 displays vibration levels for typical construction equipment.

Table 4.12-11
Typical Construction Equipment Vibration Levels

Equipment		PPV at 25 feet (in/sec)[1]	Approximate Lv at 25 feet[2]
Pile Driver (impact)	Upper range	1.518	112
	Typical	0.644	104
Pile Driver (sonic)	Upper range	0.734	105
	Typical	0.170	93
Large Bulldozer		0.089	87
Caisson Drilling		0.089	87
Trucks		0.076	86
Jackhammer		0.035	79
Small Bulldozer		0.003	58

[1] Where PPV is the peak particle velocity
[2] Where Lv is the velocity level in decibels (VdB) and based on the root mean square (RMS) velocity amplitude.
Source: Federal Transit Administration 2006

The proposed General Plan states in Policy Noise-2.3 that any new project must mitigate vibration from construction as a condition of approval. When implemented, Noise-2.3 would reduce vibration levels from construction to a level considered **less than significant**. No further mitigation is necessary.

Railroads in Riverbank are also a source of ground-borne vibration. Although vibration levels were not measured as part of the General Plan process, the FTA recommends that any potential receptor within 100 feet of a freight line receive a detailed vibration analysis to determine whether vibration generated by trains will cause an impact on the land use (greater than 80 VdB). The proposed General Plan does not have any goals related to transportation vibration. Therefore this is a **significant impact**.

Mitigation Measure 4.12-4: Require, as a condition of approval, that any project that places sensitive receptors within 100 feet of a railroad analyze and mitigate for any potential vibration impacts.

Significance after Mitigation

Implementing Mitigation Measure 4.12-4 will minimize vibration impacts on the General Plan build out and reduce this impact to a level considered **less than significant.**

4.13 POPULATION AND HOUSING

4.13.1 INTRODUCTION

This section presents information on existing and projected population, employment and housing within Riverbank, and describes the effects of the proposed General Plan update related to these topics.

4.13.2 ENVIRONMENTAL SETTING

This section provides a general description of the current population, employment, and housing context in Riverbank.

POPULATION AND DEMOGRAPHICS

According to the U.S. Census Bureau, Riverbank's population in 1990 was just 8,547, increasing to 15,826 by 2000 (U.S. Census Bureau 2007). The population had increased to 19,998 by 2005. By comparison, the 2005 population estimates for nearby cities include 207,634 for Modesto, 61,927 for Manteca, 17,439 for Oakdale, 13,241 for Ripon, and 7,897 for Waterford. Riverbank has added another 1,500 residents between 2005 and 2007. The 2007 population is estimated to be 21,492 (California Department of Finance 2007).

The City grew by 85 percent between 1990 and 2000 and grew 26% between 2000 and 2005. Stanislaus and San Joaquin Counties grew by 21% and 17% respectively between 1990 and 2000 and grew 13% and 16% respectively between 2000 and 2005 according to Census Bureau estimates (Table 4.13-1) (City of Riverbank 2001). Riverbank grew more than the two-county area as a whole during the 1990s, but grew at a similar rate during the first five years of this decade.

As illustrated on Table 4.13-2, several nearby cities have 2000-05 estimated growth rates that are comparable to that of Riverbank: Lathrop (20 percent), Manteca (26 percent), Ripon (31 percent), and Newman (29 percent). The growth rate of these cities, as well as the city of Tracy and the city of Patterson greatly exceed that of the two-county region and California as a whole.

Table 4.13-1
County Population and Riverbank Population, 1990 – 2005

Geographic Area	1990	2000	2005	% Growth 90 - 00	% Growth 00 - 05
San Joaquin Co.	480,628	563,598	653,333	17%	16%
Stanislaus Co.	370,522	446,997	504,482	21%	13%
Riverbank	8,547	15,826	19,988	85%	26%

According to the estimates, Riverbank grew from 18,307 in January 2004 to 19,988 in January 2005 for a growth rate of 9.2%. By comparison, Stanislaus and San Joaquin Counties' estimated growth rates for the same time period were 2.0% and 2.7% respectively. Riverbank's estimated growth rate for this time period also greatly exceeded the previously discussed nearby cities (Modesto, 0.1%; Manteca, 2.7%; Oakdale, 1.3%; Ripon, 6.8%; Escalon, 3.1%; Waterford, -0.1%). The City's population as of 2007 is 21,492 (California Department of Finance 2007).

In 2001, the City estimated that the 2015 population of Riverbank would be 27,210 (City of Riverbank 2001). If the City's average annual growth rate between 2000 and 2007 were used (5%), the City would reach this population instead by 2012.

Riverbank's age distribution shows a generally young population (as of 2000). About 34 percent of Riverbank residents are under 18 years of age. This is higher than the 31 percent in Stanislaus County, and higher than in Modesto, Oakdale, and Escalon. In addition, about 15 percent of Riverbank residents are between 25 and 34 years of age. This is also higher than the countywide average and the proportion of that age group in the surrounding counties. In the higher age groups, Riverbank has only 7.3 percent of its population aged 65 or older. The surrounding communities each have more than 11 percent of their populations in this age group.

Table 4.13-2
San Joaquin and Stanislaus County Population, 2000 – 2005

County/City	2000	2005	% Change
San Joaquin County			
Escalon	5,963	6,912	16%
Lathrop	10,445	12,565	20%
Lodi	56,999	62,467	10%
Manteca	49,258	61,927	26%
Ripon	10,146	13,241	31%
Stockton	243,771	279,513	15%
Tracy	56,929	78,307	38%
County Total	563,598	653,333	16%
Stanislaus County			
Ceres	34,609	38,813	12%
Hughson	3,980	5,942	49%
Modesto	188,856	207,634	10%
Newman	7,093	9,134	29%
Oakdale	15,503	17,439	12%
Patterson	11,606	16,158	39%
Riverbank	15,826	19,988	26%
Turlock	55,810	67,009	20%
Waterford	6,924	7,897	14%
County Total	446,997	504,482	13%
State Total	33,873,294	36,810,358	9%

Since 1990, the educational attainment of Riverbank's population has markedly increased. The percentage of residents with at least a high school diploma increased from 57 percent to 65 percent between 1990 and 2000, while the number of residents with at least a high school diploma more than doubled from 2,735 to 5,839. In addition, the percentage of residents who have attended college grew from 31 percent in 1990 to 40 percent in 2000, while those with at least an associate degree increased from 13 percent to 17 percent.

Relative to the surrounding communities and the rest of Stanislaus County, Riverbank residents have a generally lower educational attainment. The percentages of residents with at least a high school diploma in Modesto,

Oakdale, and Escalon range from 75 to 80 percent, while the countywide average is 68 percent. In addition, the college attendance for residents in the neighboring communities has ranged from 42 percent to 50 percent, with 16 to 24 percent of residents attaining at least an associate degree. Between 1990 and 2000, these communities did not show much change in the overall college education of their residents. This contrasts with Riverbank, where the percentage of residents with college degrees increased.

Riverbank's median income has grown substantially since 1990, and at a faster rate than in the surrounding communities. Riverbank's household income in the 2000 Census had a median of over $44,600. This represents an inflation-adjusted increase of over 25 percent over the $35,625 median income from the 1990 Census. In addition, the median income of Riverbank is now higher than Modesto, Oakdale, and the countywide average. Back in 1990, Riverbank's median income was lower than all of those areas.

The median income in California largely stagnated between 1990 and 2000, and the statewide median income of about $47,500 is only about six percent higher than the income in Riverbank. In 1990, California's median income was about 32 percent higher.

HOUSING

The number of housing units in Riverbank has grown along with the population. Between 2000 and 2007, Riverbank added more housing units (in percentage terms) than Stanislaus County as a whole and more than the state as a whole. The average annual growth rate for housing units was 4.5%, compared to 2.2% for the county and 1.2% for the state (Table 4.13-3).

Riverbank, however, is located in a quickly growing part of the region, which is a quick growing region compared to the state as a whole. Many communities in San Joaquin County and Stanislaus County have experienced rapid housing growth. Patterson's average annual housing unit growth between 2000 and 2007 was 9.1%. Both Lathrop and Hughson both added housing units at an average annual growth rate above 6% for the same years.

EMPLOYMENT OF RIVERBANK RESIDENTS

Since 1990, Riverbank's labor force has shifted towards service/retail industries and away from manufacturing and agriculture (Table 4.13-4). Between 1990 and 2000, the percentage of employed residents in Riverbank working in service/retail industries increased from 44 percent to 48 percent, while manufacturing declined from 22 percent to 18 percent. This trend was similar to the shift that occurred in Oakdale and Escalon. In Modesto, the consolidation of employed residents into services/retail industries was much more pronounced, with the percentage increasing from 50 percent to 59 percent. The changes that occurred in Modesto and Stanislaus County more closely mirrored the magnitude of change that occurred statewide. Riverbank, Oakdale, and Escalon had more modest changes in the industries that their employed residents worked.

The labor force distribution by occupation in Riverbank shows an increasing concentration of residents that work in professional, managerial, technical, or administrative occupations (Table 4.13-5). In 1990, 44 percent of Riverbank's labor force was in these occupations, and this increased to 48 percent by 2000. In particular, the professional and managerial occupations rose sharply. Production and farming occupations declined significantly during this same period. Riverbank still has a lower proportion of its residents working in professional and administrative occupations, but it has by and large caught up with the rest of the county and the surrounding communities.

EMPLOYMENT IN RIVERBANK

Riverbank's job base since 1994 has grown at a faster rate than the population. Between 1994 and 2002, Riverbank's employment base grew by over 75 percent to nearly 3,000 jobs. Even with this high rate of growth in employment, Riverbank still has half the number of jobs as in neighboring Oakdale. If Riverbank can maintain the

previous annual growth rate of 7.3 percent, the employment base will more than double to over 6,000 jobs by 2012. If Riverbank follows the more modest countywide growth trends, the job base will increase by just over 1,100 new jobs to 4,116.

Table 4.13-3
Housing Units, 2000-2007

Place	2000	2001	2002	2003	2004	2005	2006	2007	Avg Annual %
San Joaquin County									
Escalon	2,132	2,171	2,241	2,297	2,319	2,399	2,458	2,479	2.2%
Lathrop	2,991	3,063	3,271	3,377	3,476	3,577	4,092	4,652	6.6%
Lodi	21,381	21,611	21,988	22,192	22,466	22,762	23,000	23,253	1.2%
Manteca	16,936	17,541	18,648	19,231	20,075	20,697	21,410	21,910	3.8%
Ripon	3,448	3,579	3,740	3,845	4,075	4,371	4,618	4,849	5.0%
Stockton	82,042	82,798	84,303	85,988	88,826	91,725	94,409	95,864	2.3%
Tracy	18,087	19,174	20,571	21,628	23,005	24,174	24,976	25,030	4.8%
Unincorp.	42,143	42,331	42,554	42,817	43,207	44,062	44,754	45,932	1.2%
Incorporated	147,017	149,937	154,762	158,558	164,242	169,705	174,963	178,037	2.8%
County Total	189,160	192,268	197,316	201,375	207,449	213,767	219,717	223,969	2.4%
Stanislaus County									
Ceres	10,773	10,818	10,956	11,109	11,399	11,865	12,641	13,040	2.8%
Hughson	1,252	1,284	1,314	1,517	1,614	1,836	1,911	1,907	6.3%
Modesto	67,180	68,265	69,849	70,970	72,018	72,615	73,501	74,297	1.4%
Newman	2,175	2,279	2,283	2,335	2,503	2,756	3,092	3,160	5.6%
Oakdale	5,805	5,842	5,997	6,144	6,292	6,419	6,639	6,968	2.7%
Patterson	3,262	3,404	3,622	3,777	3,918	4,484	5,412	5,932	9.1%
Riverbank	4,698	4,759	4,985	5,025	5,303	5,835	6,257	6,375	4.5%
Turlock	19,096	19,806	20,400	20,934	21,652	22,581	23,084	23,711	3.1%
Waterford	2,080	2,093	2,125	2,259	2,315	2,330	2,448	2,574	3.1%
Unincorp.	34,486	34,712	35,293	35,654	35,911	36,327	36,734	37,076	1.0%
Incorporated	116,321	118,550	121,531	124,070	127,014	130,721	134,985	137,964	2.5%
County Total	150,807	153,262	156,824	159,724	162,925	167,048	171,719	175,040	2.2%
California									
Incorporated Total	9,846,002	9,958,551	10,092,614	10,229,285	10,383,168	10,537,688	10,697,035	10,844,747	1.4%
Unincorp. State	2,368,548	2,348,734	2,356,098	2,369,660	2,374,902	2,405,073	2,443,353	2,467,709	0.6%
State Total	12,214,550	12,307,285	12,448,712	12,598,945	12,758,070	12,942,761	13,140,388	13,312,456	1.2%

Table 4.13-4
Employment by Industry for Employed Residents 16 Years and Older

	Riverbank	Modesto	Oakdale	Escalon	Stanislaus County	California
2000 Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Agriculture, forestry, fishing & hunting	6.2%	1.8%	3.9%	4.6%	5.5%	1.8%
Mining	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%
Construction	8.7%	7.0%	9.8%	7.8%	8.0%	6.2%
Manufacturing	18.3%	13.9%	16.8%	13.8%	14.6%	13.1%
Wholesale trade	5.1%	4.0%	4.4%	4.9%	4.3%	4.1%
Transportation and utilities	4.1%	5.2%	6.4%	5.9%	5.3%	4.7%
Finance, insurance, real estate	4.8%	5.1%	5.3%	5.4%	4.5%	6.9%
Retail and services	48.2%	58.8%	48.5%	53.7%	53.9%	58.6%
Public administration	4.5%	4.1%	4.9%	3.9%	3.9%	4.5%
1990 Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Agriculture, forestry, fishing & hunting	7.4%	2.8%	5.8%	7.0%	7.8%	3.1%
Mining	0.0%	0.0%	0.3%	0.0%	0.1%	0.3%
Construction	8.1%	7.9%	10.5%	6.9%	8.5%	6.8%
Manufacturing	21.7%	17.3%	19.7%	15.8%	18.2%	16.9%
Wholesale trade	3.4%	4.7%	5.2%	3.5%	4.3%	4.6%
Transportation and utilities	5.6%	6.1%	6.2%	10.2%	6.2%	6.7%
Finance, insurance, real estate	5.1%	6.8%	5.1%	6.2%	5.5%	7.6%
Retail and services	44.1%	49.9%	42.5%	45.9%	45.4%	49.6%
Public administration	4.5%	4.5%	4.6%	4.5%	3.9%	4.4%

Source: U.S. Census of Population

Notes: Industry definitions in the 1990 Census used the Standard Industry Classification (SIC) coding system. The 2000 Census used the North American Industry Classification System (NAICS). The industry definitions were aggregated so that the categories shown in the table would match as closely as possible.

Table 4.13-5
Employment by Occupation for Employed Residents 16 Years and Older

Occupation	Riverbank	Modesto	Oakdale	Escalon	Stanislaus County	California
2000						
Managerial and professional specialty occupations	25.6%	28.4%	25.0%	24.0%	26.5%	36.0%
Technical, sales, and administrative support occupations	22.4%	27.7%	24.5%	32.0%	25.6%	26.8%
Service occupations	14.8%	15.9%	17.2%	13.3%	15.4%	14.8%
Farming, forestry, and fishing occupations	4.5%	1.3%	2.1%	3.8%	3.6%	1.3%
Precision production, craft, and repair occupations	11.9%	10.6%	12.6%	9.8%	11.4%	8.4%
Operators, fabricators, and laborers	20.8%	16.1%	18.5%	17.0%	17.5%	12.7%
1990						
Managerial and professional specialty occupations	16.6%	24.0%	18.2%	19.5%	20.8%	28.6%
Technical, sales, and administrative support occupations	27.1%	33.4%	29.7%	30.6%	29.2%	32.4%
Service occupations	13.1%	12.5%	13.1%	11.6%	12.3%	12.4%
Farming, forestry, and fishing occupations	7.0%	2.0%	4.2%	6.4%	6.2%	2.7%
Precision production, craft, and repair occupations	14.6%	13.1%	16.9%	13.7%	14.0%	11.1%
Operators, fabricators, and laborers	21.6%	15.1%	17.9%	18.2%	17.5%	12.8%

Source: U.S. Census of Population.
Note: Occupational definitions were changed prior to the 2000 Census. Data was aggregated so that the occupational categories displayed in the table would match as closely as possible.

Out of Riverbank's 2,980 jobs, over 2,000 are in retail trade/food service, manufacturing, and administrative support (headquarters). Services comprise the largest group of jobs in Riverbank with about 38 percent of the total jobs. About 25 percent of the total jobs are in manufacturing, with 18 percent in retail. Wholesale trade, transportation and warehousing, and health care/social services also each employ over 150 workers.

Riverbank currently has about 28 establishments that employ more than 25 employees. The largest establishment in Riverbank is the MCI Call Center, which employs approximately 500 workers. The next largest business is Silgan Containers with 245 workers.

As Riverbank has added jobs, the average income from these jobs has remained about the same. In 1994, the average income (in constant dollars) for jobs in Riverbank totaled about $27,496. This average income actually declined by 1.9 percent to $26,967 in 2002. For comparison, Escalon increased its average income by 27.7 percent during this period. Oakdale and Stanislaus County had minor increases in average income for local jobs, with annual growth rates of less than one percent.

JOBS-TO-HOUSING BALANCE

Jobs-housing balance represents the degree to which a community's housing development is sufficient to offset the demand that the job base creates. Communities with job to housing ratio higher than 1.5 are generally considered "jobs rich," while those with a ratio lower than 1.5 are considered "housing rich." The community's ratio of jobs to housing increased from 0.45 in 1994 to 0.60 in 2002.

The commute patterns in Riverbank show a very large proportion of residents that commute to jobs outside of the community, and a general trend towards commutes outside of Stanislaus County. In 2000, about 1,045 Riverbank residents also worked locally, which represents about 18 percent of the labor force. Riverbank has a very high out-commute rate compared to neighboring communities and Stanislaus County as a whole. The percentage of Riverbank residents who work in Stanislaus County declined from 84 percent to 75 percent between 1990 and 2000. The general trend for Stanislaus County in general has been a higher out-commute rate, but Riverbank's shift has been more pronounced (Table 4.13-6).

Table 4.13-6
Place and County of Work for Employed Residents, 1990 and 2000

Year	Employment Location	Riverbank	Modesto	Oakdale	Escalon	Stanislaus County	California
2000	Worked in County of Residence	75.0%	80.5%	79.8%	62.0%	79.1%	82.9%
	Worked in Place of Residence	18.2%	56.7%	36.9%	24.0%	36.1%	33.7%
	Not Living in Place	0.0%	0.0%	0.0%	0.0%	12.1%	7.5%
1990	Worked in County of Residence	84.0%	82.6%	85.1%	56.0%	83.4%	84.6%
	Worked in Place of Residence	17.1%	61.1%	42.8%	29.9%	37.7%	36.3%
	Not Living in Place	0.0%	0.0%	0.0%	0.0%	21.8%	8.7%

Source: 2000 U.S. Census of Population.

4.13.3 SIGNIFICANCE THRESHOLDS

The proposed General Plan update would cause a significant impact related to population, employment and housing if it would:

- 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.

4.13.4 IMPACTS AND MITIGATION MEASURES

IMPACT 4.13-1 Growth Inducement. *The General Plan involves a large amount of land use change. The General Plan is comprehensive and policies included in the General Plan update indicate that Riverbank will be a full-service city and not extend infrastructure in way that induces growth. The impact is* ***less than significant****.*

Implementation of the General Plan update will accommodate an increase in population and jobs in the Riverbank Planning Area. The General Plan provides the policy framework that will control and direct land use change, as it occurs. The generalized estimates of General Plan buildout are based on the best available information known to date. However, the actual rate of development that may occur pursuant to the proposed General Plan would also depend on market conditions and other factors, such as availability of infrastructure or environmental constraints.

As noted elsewhere, the General Plan estimates an additional 10,700 dwelling units, more than 3 million square feet of office, retail, commercial, and other nonresidential building construction, and more than 31,000 additional residents. The implementation of the General Plan has many potential environmental impacts, as described in detail throughout this EIR. However, the General Plan is comprehensive in nature. Infrastructure and services required for General Plan implementation are to be provided for the planned land uses, and not in a way that induces growth. For example, the Public Services and Facilities Element includes policies that specifically address growth inducement and extension of public infrastructure:

Goal Public-1: Public Service and Infrastructure Provision to Meet or Exceed Level of Service Standards Consistent with Other Community Goals

- Policy PUBLIC-1.1: The City will coordinate the planning and construction of capital improvements with the timing of urban development within the Planning Area.

- Policy PUBLIC-1.4: The City shall give priority to serving areas within the existing City limits as of the adoption of this General Plan based on current infrastructure and service capacity. New growth proposed outside existing City limits is responsible for providing, or paying a proportionate share of the cost of, public facilities and infrastructure adequate to serve the needs of such development according to the General Plan, a specific plan (if prepared for such development), and/or any infrastructure Master Plan that covers such development through the use of a City-approved development agreement. The use of in-lieu fees or in-lieu financing will be reserved for communitywide facilities that serve areas beyond the proposed project or plan. Construction and dedication of facilities will be the method for providing facilities that serve the proposed project or plan area. The City may make exceptions on the basis of financial hardship or small projects or plans, allowing payment of an in-lieu fee.

- Policy PUBLIC-1.5: The City will upgrade facilities and services that experience deterioration or obsolescence in existing developed areas of the City, as funding permits, to maintain levels of public service established by the City.

Goal Public-2: Adequate Supply of Quality Water to Serve Existing and Future Projected Development Needs

- Policy PUBLIC-2.5: The City will not induce urban development by providing provide water services in areas outside the Planning Area or areas not planned for urban development, such as areas designated for agriculture or open space.

GOAL PUBLIC-3: ADEQUATE WASTEWATER SERVICE TO MEET EXISTING AND FUTURE PROJECTED DEVELOPMENT DETERMINED IN THE GENERAL PLAN

- Policy PUBLIC-3.3: The City will not induce urban growth by providing wastewater facilities to areas outside the Planning Area or areas not planned for urban development, such as areas designated for agriculture or open space.

The environmental impacts, both direct and foreseeable and indirect, of General Plan implementation are described in detail and mitigated throughout this EIR. Riverbank, as detailed throughout the General Plan, intends to be a complete community without generating growth inducement elsewhere. There are no significant growth inducing aspects of the General Plan not addressed elsewhere. This impact is **less than significant**.

Mitigation Measure

None required.

IMPACT 4.13-2 Housing and Population Replacement. *The General Plan encourages revitalization of vacant and underutilized portions of the existing city, although most land use change is anticipated to occur on agricultural lands surrounding the current city limits. A significance conclusion on this topic would be speculative.*

The majority of growth proposed in the General Plan would occur on vacant and agricultural land, which has few existing housing units. Some urban revitalization on vacant and underutilized properties in downtown and west Riverbank is encouraged by General Plan policy. If policies of the General Plan to improve existing developed portions of the city are successful, some amount of land use change will occur. The General Plan does not substantially alter land uses in existing developed areas, as detailed in the Land Use section of this EIR (Section 4.11). The General Plan does not propose projects for areas currently developed with residential uses. The extent to which housing units would be replaced is unknown at this time. Future project-level environmental analysis would be required where discretionary actions of the City are involved and potentially significant impacts could occur. At this time, a significance conclusion on this topic would be speculative.

However, Riverbank has recently enacted a Redevelopment Agency, whose boundaries overlap with the area called out in the General Plan as Infill Opportunity Area. California Redevelopment Law includes specific provisions for housing replacement and investment, which will have a bearing on how certain portions of Riverbank change in the future.

4.14 PUBLIC SERVICES AND FACILITIES

4.14.1 INTRODUCTION

This section provides information on existing public services and facilities within the City of Riverbank. Buildout of the General Plan is analyzed relative to public service provision. This section analyzes any substantial service extensions or expansions required to serve growth accommodated under the General Plan and discloses and mitigates physical adverse environmental impacts related to such service expansions or extensions. This section is organized according to type of community service, with each service analyzed individually. The following service types are addressed in this section:

- Fire Protection
- Law Enforcement
- Schools
- Library
- Parks and Recreation

Water services, wastewater, stormwater, and solid waste are addressed section 4.16 of this EIR, which was not recirculated.

4.14.2 ENVIRONMENTAL SETTING

Exhibit 4.14-1 shows many of the important public services and facilities in Riverbank including schools, parks, the City Hall, the library, the police station, and the fire station. School district and school locations are shown on Exhibits 4.14-2 and 4.14-3.

FIRE PROTECTION

Stanislaus Consolidated Fire Protection District (SCFPD) provides fire protection service to the City of Riverbank. One of SCFPD's six stations, Station 36, is centrally located in downtown Riverbank at 3324 Topeka Street and is staffed 24-hours a day.

The paid staff at this station consists of a Captain, Engineer, and a Firefighter. The station is also served by the SCFPD's reserve firefighters, which number up to 30 at any given time and are paid with a small stipend. The current equipment at the Riverbank station includes one engine company (a pumper truck carrying water and hose and equipped with a 24-foot ladder [1]), one water tender (a truck that hauls water to unincorporated areas that are not served by fire hydrants), and one brush engine (a small engine better suited for off-road use, primarily used for vegetation fires).

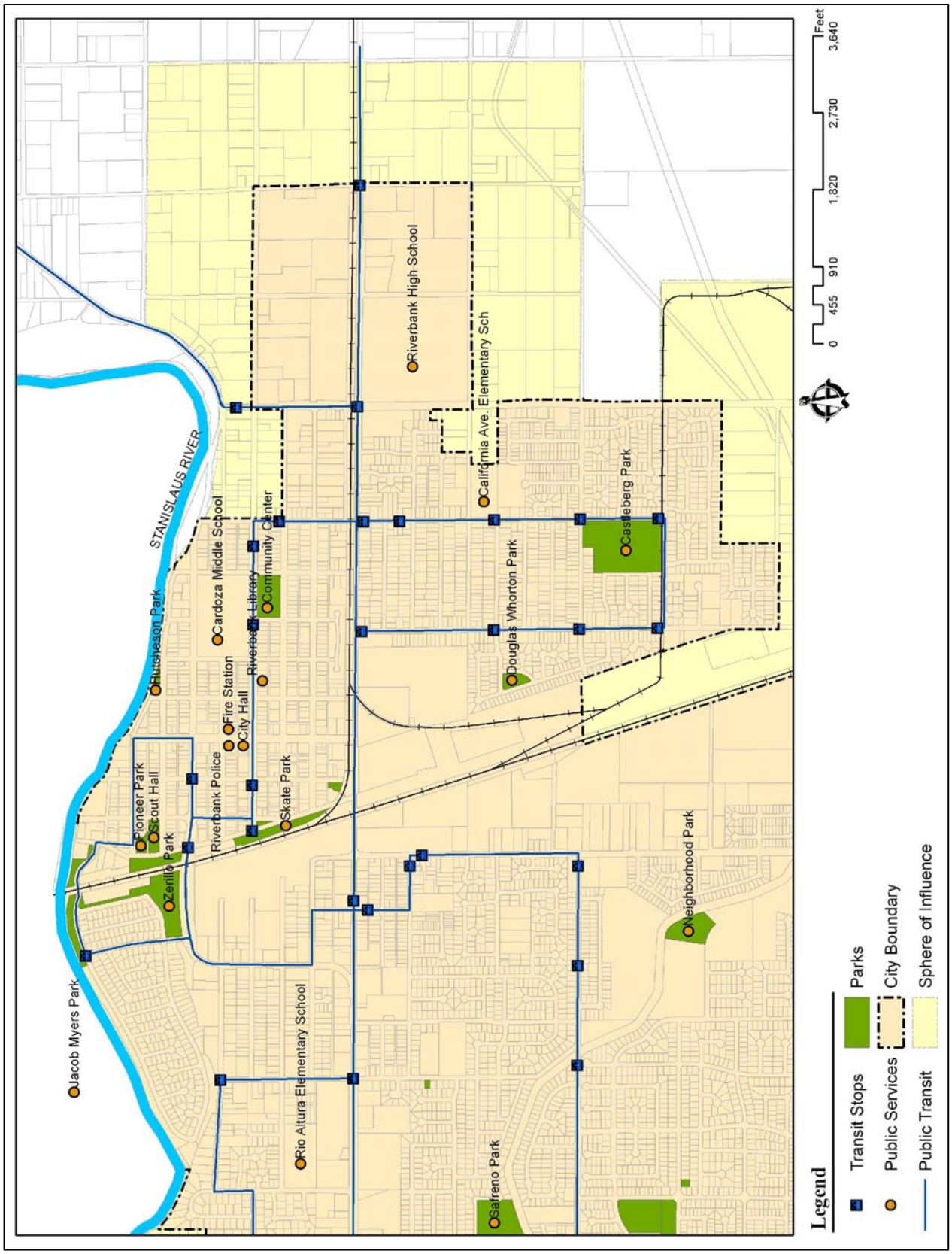
The station is also served by the SCFPD's reserve and/or intern firefighters, which number between 20 and 30 at any given time throughout the SCFPD service area. A typical fire response in Riverbank may include 1 to 5 reserves and/or interns.

Approximately half of SCFPD's service calls are medical emergencies, 25 percent are fires, and 25 percent are other types of calls.[2] Fire Station 36 received 1,354 calls between June 13, 2004 and June 13, 2005.[3]

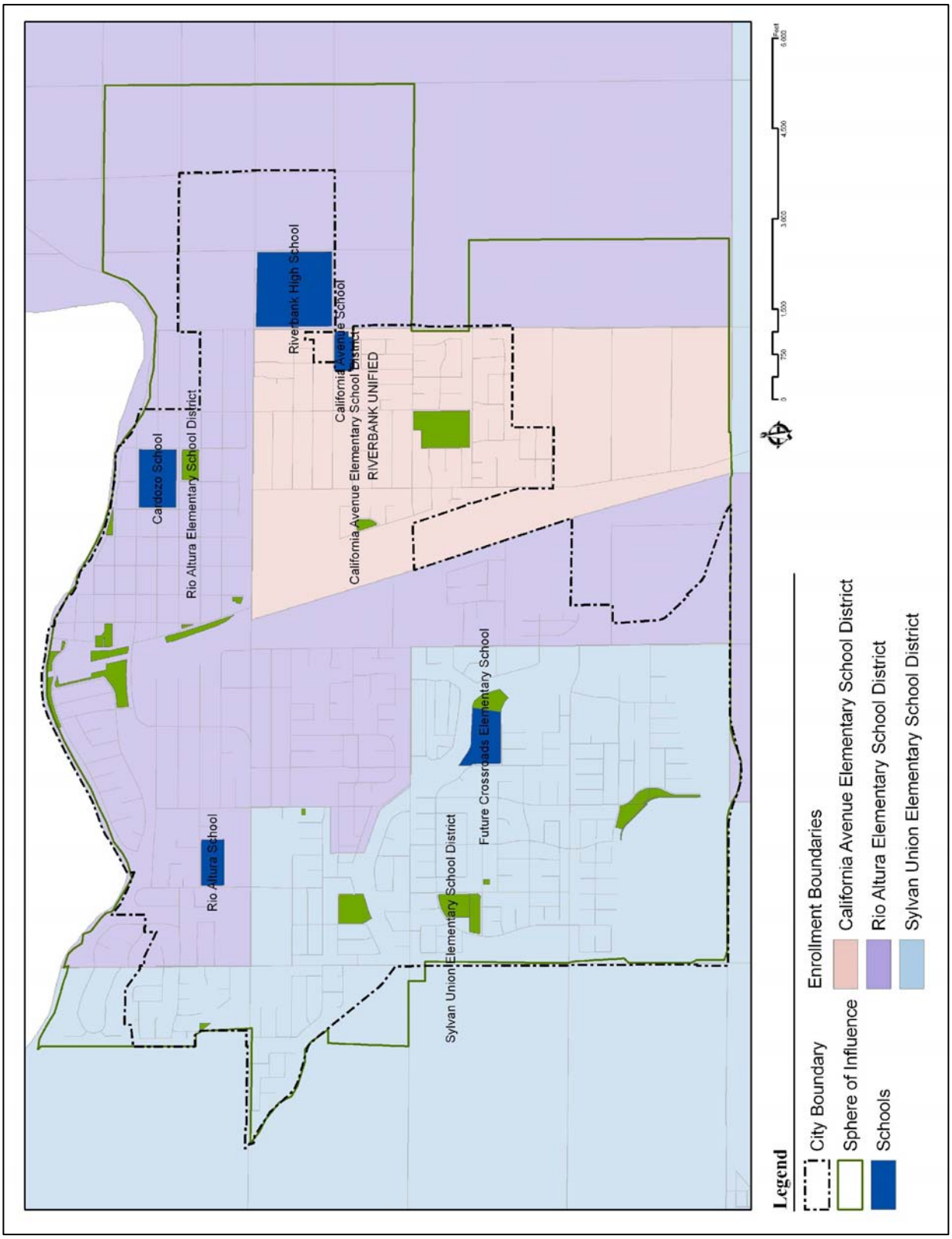
1 Letter from Stephen Mayotte, Fire Chief, Stanislaus Consolidated Fire Protection District to J.D. Hightower, Community Development Director, City of Riverbank, dated March 21, 2008.

2 *Crossroads Community Plan for Services*, City of Riverbank, November 1995

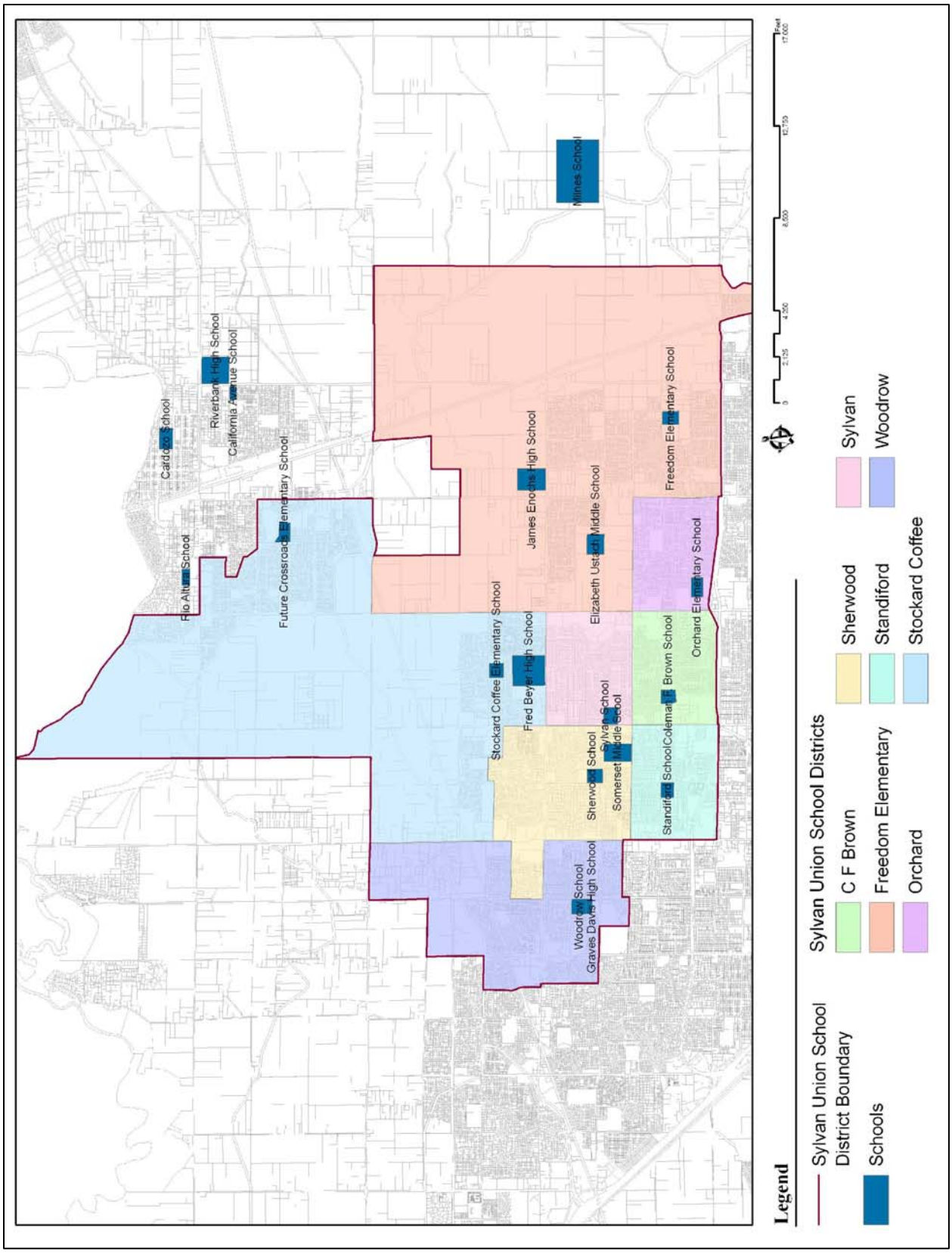
3 Stanislaus Consolidated Fire Protection District



Public Services and Facilities Locations **Exhibit 4.14-1**



RUSD Boundaries and Locations **Exhibit 4.14-2**



SUSD Schools and Boundaries, MCS High Schools Serving Riverbank **Exhibit 4.14-3**

SCFPD's fire protection service is augmented by a mutual aid agreement with all Stanislaus County fire protection agencies (16 total agencies). The Stanislaus County fire protection agencies that border SCFPD's service area are the Hughson Volunteer Fire Department, the City of Modesto Fire Department, the Oakdale Rural Fire Protection District, the Denair Fire Department, and the Salida Fire Protection District.[4] The Escalon Fire Protection District is across the Stanislaus River from Riverbank in San Joaquin County.

SCFPD is currently increasing the number of paid staff at each station from two to three and also intends to place another fire station in Riverbank within the Crossroads Specific Plan Area. SCFPD anticipates the eventual need for another fire station in the Bruinville planning area on the east side of Riverbank.

Fire flow is discussed in the Public Utilities Section (Section 4.16) of this DEIR.

LAW ENFORCEMENT

The City of Riverbank receives law enforcement services through Riverbank Police Services (RPS), which is provided under contract by the Stanislaus County Sheriff (SCS), headquartered in Modesto. RPS does not provide law enforcement service to unincorporated areas surrounding Riverbank. These areas are served by the standard SCS service. The Stanislaus County cities of Patterson, Waterford, and Hughson also are served under contract by SCS.

Seventeen full-time officers are stationed at the 9,217-square-foot RPS station. SCS reserve officers (60 total) are also stationed, when needed, at the station. There are also currently three full-time and three part-time civilian personnel at RPS.

The contract between SCS and the City specifies a minimum of 0.85 officers per 1,000 residents. The current office to resident ratio is between 0.85 and 0.89. Due to the fact that the rate is approaching 0.85 in a rapidly growing community, the addition of a new full-time officer to the RPS force is under consideration.[5]

SCS currently operates a total of 11 vehicles out of the RPS station: six patrol cars, two unmarked cars, one motorcycle, one multi-purpose van, and one utility vehicle.[6]

SCS plans call for the eventual decentralization of the force, such that the RPS station will serve as an area command for SCS, as well as serve at least some of the Riverbank Planning Area outside of the Riverbank corporate limits.[7]

SCHOOLS

The Riverbank Planning Area is served by four school districts: Riverbank Unified, Sylvan Union, Modesto City Schools, and Stanislaus Union School District. The Stanislaus Union School District is not described in detail as it only serves the far west end of the Planning Area west of Coffee Road. The Sylvan Union School District and Stanislaus Union School District provide kindergarten through eighth grade instruction. Students from the Riverbank Planning Area who attend elementary and middle school in these districts attend the Modesto City Schools district for high school (discussed below). Riverbank Unified School District provides kindergarten through 12th grade instruction.

[4] Jim Weigand, Stanislaus Consolidated Fire Protection District. Personal Correspondence, July 25, 2005.
[5] Art Voortman, Stanislaus County Sheriff. Personal Correspondence, June 8, 2005.
[6] Art Voortman, Stanislaus County Sheriff. Personal Correspondence, June 8, 2005.
[7] Art Voortman, Stanislaus County Sheriff. Personal Correspondence, June 30, 2005.

Riverbank Unified School District

Riverbank Unified School District (RUSD) serves all portions of the existing City of Riverbank, including parts of the Riverbank Planning Area that lie east of the City; RUSD does not serve the Crossroads Specific Plan Area. Also part of the district is Riverbank Independent Study Education (RISE), which allows students in special situations to study outside of a classroom setting.[8]

Exhibit 4.14-2 shows the school locations, enrollment boundaries, and district boundary for RUSD. The California Avenue and Rio Altura elementary school districts comprise the RUSD areas shown on Exhibit 4.14-2.

Sylvan Union School District

The Sylvan Union School District (SUSD) serves the Crossroads Specific Plan Area of Riverbank and the parts of the Planning Area west of the city, to one-half mile beyond Coffee Road. Exhibit 4.14-3 shows the Sylvan Union School District. As stated above, SUSD provides kindergarten through eighth grade instruction only. Elementary level students from Riverbank who attend SUSD schools primarily attend Stockard Coffee Elementary School and Sylvan Elementary School, which are both located in the northern portion of the City of Modesto.

SUSD students from Riverbank attend Elizabeth Ustach Middle School, which is located in the northeast corner of the City of Modesto. Exhibit 4.14-3 shows the locations of all SUSD schools that serve Riverbank. Modesto City high schools that serve parts of the Riverbank Planning Area, or that will serve parts of the area in the near future, are also shown in Exhibit 4.14-3.

Modesto City Schools

Riverbank students that attend SUSD for elementary and middle school are served by Modesto City Schools (MCS) for high school. The entire section of the City of Riverbank within the SUSD boundaries are within the MCS service area and are served by Fred Beyer High School (FBHS).[9] FBHS is located on Sylvan Avenue between Oakdale and Coffee Roads on the north end of Modesto. Exhibit 4.14-3, above, shows the locations of this school.

Private Schools in Riverbank

According to the California Department of Education's private school data for the 2004–05 school year, there are two private schools in Riverbank: the Riverbank Christian Academy, located at 6600 Claus Road, with 16 students in grades kindergarten through 12 and Cornerstone Christian, located at 3404 Stanislaus Street, with 15 students in grades kindergarten through eight.

LIBRARIES

The entire Riverbank Planning Area is served by the Stanislaus County Library (SCL) system. SCL has a main library in Modesto and 12 other branches. One branch is located in Riverbank. The 3,594 square-foot Riverbank branch employs two full-time and two part-time staff. The branch is open 46 hours per week (41 weekday hours, five weekend hours).[10] There are approximately 26,000 items—including, books, videos, books on tape, etc.—in the Riverbank branch. There are eight public internet computers (one of which is reserved exclusively for use by children) and three computers that are used for accessing the library catalog.[11]

[8] RUSD Website, http://www.riverbank.k12.ca.us/schools
[9] High School Boundaries map, 2003-4, Modesto City Schools
[10] Charles Teval, Modesto County Library. Personal Correspondence, June 3, 2005.
[11] Charles Teval; Modesto County Library. Personal Correspondence, July 15, 2005.

The SCL system does not record or estimate the number of users per time period, so precise use characteristics are not known. The current library industry service standard is 0.5 square feet per capita. With a branch library of 3,594 square feet, Riverbank's service level is now approximately 0.18 square feet per capita. [12]

PARKS AND RECREATION

The Recreation Department of the City of Riverbank is responsible for establishing and maintaining parks and other recreational facilities within the city. These facilities include one community center (7,074 sq. ft.), one scout lodge (3,607 sq. ft.), and one swimming pool (at Community Center Park). The City has a total of 87.5 acres of City parkland, including 40.5 acres of developed parkland and 47 acres of undeveloped parkland (all undeveloped acres are in Jacob Myers Park).

The City's current parkland is divided into nine parks, including Jacob Myers Park, which is owned by the City but is located just outside of the City limits in San Joaquin County. Exhibit 4.14-4 indicates the acreage and facilities for each park. (Refer to Exhibit 4.14-1 for the locations of the parks).

PARK NAME	ACREAGE	ADDRESS	FACILITIES
Jacob Myers Park	8 developed 47 undeveloped	Santa Fe across the Stanislaus River	
Pioneer Park	3	First Street between High and Riverside	
Zerillo Park	5	Briarcliff Drive and Turnberry Lane	
Hutcheson Park	1	High & Fourth Street	
Castleberg Park	12	Eighth between Kentucky and Townsend	
Staley Park/Skate Park	1/2	First Street between Stanislaus and Santa Fe	
Safreno Park	5	McAllister Lane between Crossroads and McDevitt Drive	
Community Center (Veterans) Park	5	Santa Fe between 6th and 7th Streets	
Whorton Park	1	Memphis Drive	

Playground Equipment
Basketball Courts
Walking Trail
Meeting Hall for Rent
Fishing
Barbecue Area
Restrooms
Boat Ramp
Swimming Pool
Soccer Field
Picnic Tables
Baseball Diamond
Tennis Courts
Picnic Gazebo
Volleyball Court

Facilities in Riverbank Parks **Exhibit 4.14-4**

[12] Charles Teval, Modesto County Library. Personal Correspondence, June 3, 2005.

In addition to the existing parks in Riverbank, new facilities are being planned and anticipated by the Recreation Department. The Department realizes the need for a great increase in the amount of flat parkland, as there is demand for more athletic fields (including soccer fields, of which there are currently none) and picnic areas. Additionally, more flat land that is not used for drainage is needed for parks, as some of the City's flat parkland doubles as drainage basin land, including Castleberg Park's athletic field and the skate park at Staley Park. Some of the City's newest parks do not have much usable flat space as some of the parkland is occupied by drainage basins that are accessible only by steep slopes.

A sports park near Oakdale Road on Morrill Road is currently being developed; 11 acres have been purchased for this park and the Department is waiting to hear about grants.[13] This park will include, among other things, a 22,000-square-foot BMX park for bicycling.

A 10-acre drainage basin near the intersection of Santa Fe Street and Richardson Road is a possible site for a new athletic field.[14] There are also 10 acres of land near the intersection of Terminal Avenue and Claribel Road where the Department hopes to build a sports complex that would potentially include soccer fields, baseball fields, a skate park, and/or a BMX bicycling park.

Other needs and potential developments are also being anticipated by the Department. The Department anticipates the need of a new community pool on the east side, which could potentially be developed on RUSD land east of Eleanor Avenue as a joint effort between RUSD and the Department.

Riverbank Recreation Department anticipates the need for a new community center including more space for classes, teen activities, and other community activities. The Department also hopes to build a dog park sometime in the future.[15]

Areas in the Riverbank Planning Area outside of the Riverbank city limits are served by Stanislaus County Parks and Recreation, although no County parks are located in this area. Stanislaus County has no specific adopted standard for regional parks.[16]

4.14.3 REGULATORY SETTING

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

There are no Federal, Policies, Regulations, and laws related to Public Services.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

Schools

State School Funding

Education Code Section 17620 authorizes school districts to levy a fee, charge, dedication, or other requirement against any development project for the construction or reconstruction of school facilities, provided that the district can show justification for levying of fees. Government Code 65995 limits the fee to be collected to the statutory fee (Level I) unless a school district conducts a Facility Needs Assessment (Government Code Section 65995.6) and meets certain conditions. These fees are adjusted every 2 years in accordance with the statewide cost index for Class B construction as determined by the State Allocation Board.

[13] Sue Fitzpatrick, City of Riverbank Recreation Department. Personal Correspondence, June 20, 2005.
[14] Sue Fitzpatrick, City of Riverbank Recreation Department. Personal Correspondence, July 13, 2005.
[15] Sue Fitzpatrick, City of Riverbank Recreation Department. Personal Correspondence, June 7, 2005.
[16] *Stanislaus County Parks Master Plan*, Amphion Environmental Inc. with Applied Development Economics, 2M Associates, August 24, 1999.

SB 50 (1998) instituted a new school facility program by which school districts can apply for State construction and modernization funds. This legislation imposed limitations on the power of cities and counties to require mitigation for school facility impacts as a condition of approving new development. Proposition 1A/SB 50 prohibits local agencies from using the inadequacy of school facilities as a basis for denying or conditioning approvals of any "legislative or adjudicative act…involving …the planning, use, or development of real property" (Government Code 65996(b)). Additionally, a local agency cannot require participation in a Mello-Roos for school facilities; however, the statutory fee is reduced by the amount of any voluntary participation in a Mello-Roos. Satisfaction of the Proposition 1A/SB 50 statutory requirements by a developer is deemed to be "full and complete mitigation."

State Service Standards Affecting All Districts

The California Education Code section 41402 states that unified school districts are required to have eight administrative employees per 100 teachers.

State standards for the number of students per classroom pursuant to Chapter 407, Statues 1998 (loading standards) require a maximum of 25 students per classroom in elementary schools and 27 students per classroom in both middle and high schools.[17]

Parks

Quimby Act

As part of approval of a final tract or parcel map, the California Quimby Act allows a city to require dedication of land, the payment of in-lieu fees or a combination of both to be used for the provision of parks and recreational purposes. Cities can require land or in-lieu fees for a minimum of 3 acres per 1,000 residents, with the possibility of increasing the requirement to a maximum of 5 acres per 1,000 residents if the City already provides more than 3 acres per 1,000 residents.

4.14.4 SIGNIFICANCE THRESHOLDS

METHOD OF ANALYSIS

Impacts on public facilities that would result from build-out the General Plan were identified by comparing existing service capacity and facilities, staffing, and equipment against future demand associated with General Plan build-out. Goals and Policies of the General Plan that would reduce these impacts have been identified.

THRESHOLDS OF SIGNIFICANCE

For the purpose of this analysis, the following thresholds of significance, as identified by the State CEQA Guidelines (Appendix G) have been used to determine whether implementation of the proposed project would result in significant public services impacts. Based on Appendix G of the State CEQA Guidelines, a public facilities impact is considered significant if implementation of the proposed project under consideration would do any of the following:

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

[17] Riverbank Unified School District School Facility Needs Analysis, Jenkin Advisory Team, Inc., February 2000.

- Fire protection
- Police protection
- Schools
- Parks
- Other public facilities

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

- Require or include the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

4.14.5 IMPACTS AND MITIGATION MEASURES

IMPACT ANALYSIS

IMPACT 4.14-1 *Result in substantial adverse impacts associated with the provision of fire protection services. Development and operation of fire protection are addressed by various plans, and policies and would be kept to a* ***less-than-significant level*** *by adhering to the plans and policies contained in the General Plan.*

There are no official service standards at this time. The basic standard of cover for the Riverbank response area is:[18]

- Respond to 95% of all calls for emergency assistance within 5 minutes of dispatch
- Provide a minimum of 11 firefighters for initial attack to structure fires within 10 minutes
- Provide a minimum of 20 firefighters for sustained attack to structural fires within 20 minutes of dispatch

Also, SCFPD works to ensure that firefighters will reach a victim of a full respiratory or cardiac arrest within six minutes, as the chances of reviving the victim are very small after this point.

Insurance Services Organization (ISO) rates communities on their fire protection service. The ISO rating system for fire protection ranges from level one to level 10; one is the highest level of service possible, and 10 is the lowest level of service possible. Riverbank is rated as a four. A goal of the SCFPD is to obtain an ISO rating of three within the City of Riverbank, assuming facilities and staffing can be provided through the creation of Community Facilities/Services District(s), and ensuring adequate water supply (fire hydrants) are available.[19] The area within the Riverbank station's service area that is outside Riverbank's City limits, but still within five miles of the City limits, is rated as an eight. [20]

A new SCFPD needs assessment will soon increase the number of paid staff at each station from two to three. A second station in Riverbank is planned in the Crossroads Specific Plan Area and SCFPD plans another fire station in the Bruinville planning area in eastern Riverbank. However, as new development occurs pursuant to the proposed General Plan, there would be increased demand for fire and emergency medical protection to ensure adequate levels of service. Additional staff, equipment, and facilities would also be required to maintain or exceed the current response time as Riverbank's population increases due to the growth accommodated under the General Plan update.

Recognizing the potential need for increases in fire protection and emergency medical services, the proposed General Plan includes goals and policies to ensure that adequate facilities, staffing, equipment, and operational

[18] Stephen Moyette, Stanislaus Consolidated Fire Protection District. Memo to J.D. Hightower, October 4, 2006.

[19] Stephen Moyette, Stanislaus Consolidated Fire Protection District. Letter to J.D. Hightower, March 21, 2008.

[20] Jim Weigand, Stanislaus Consolidated Fire Protection District. Personal Correspondence, June 1, 2005.

costs are funded and provided to meet future growth. The following goal and policies from the Public Services and Facilities Element address potential impacts to fire protection service:

Goal PUPLIC-7: Fire Protection Services, Staffing, and Deployment Adequate to Serve the Needs of Existing and Planned Development

- Policy PUBLIC-7.3: The City will require that fire stations be located to ensure the appropriate level of service (including adequate response time per Policy Public 7.5), community compatibility, and efficiency, including the location of such facilities relative existing and planned public parks, libraries, and other activity centers.

- Policy PUBLIC-7.4: The City will coordinate with fire protection providers, including through reciprocity arrangements, to ensure equipment, staffing, and facilities for emergency medical services, urban search and rescue, hazardous materials emergency response, and other relevant needs, as appropriate. The City will ensure consistency with National Fire Protection Association and Stanislaus Consolidated Fire Protection District response requirements, to ensure adequate fire protection is available.

- Policy PUBLIC-7.5: The City will coordinate with fire protection providers to an emergency response system capable of achieving the following standards in 95% of all cases: first fire emergency response unit within six minutes of dispatch; full alarm assignment within 10 minutes of dispatch; second alarm assignment within 15 minutes of dispatch; and an ISO rating of Class 2 for areas within the City.

The proposed General Plan also outlines land use policies to ensure adequacy of public services and facilities to support planned build-out. The following goal and policies from the Land Use Element also address potential impacts to fire protection service:

Goal LAND-5: Full Range of Public Services and Facilities for All Areas of the Community

- Policy LAND-5.1: The City will maintain public services and facilities in the existing developed City and make improvements as necessary to maintain a consistent Citywide level of service.

- Policy LAND-5.5: Approved projects, plans, and subdivisions in new growth areas will set aside adequate land for, and shall otherwise accommodate public infrastructure and service needs consistent with General Plan policy.

As noted throughout the General Plan, the City will coordinate with relevant service providers, including the Stanislaus Consolidated Fire Protection District, to ensure all fire and emergency response and fire repression services are met, including any need for fire fighting equipment to serve public safety needs in taller buildings.

The policies implemented in the General Plan are intended to address impacts related to the projected population growth for Riverbank included in the General Plan. Therefore, potentially significant impacts that may result from increased demand for fire protection services and facilities are addressed by these goals and policies and would be reduced to a **less-than-significant** level by their implementation.

Mitigation Measures: No mitigation measures required.

IMPACT 4.14-2 *Result in substantial adverse impacts associated with the provision of law enforcement services. Policies from the General Plan would apply to potential impacts associated with the construction and operation of police facilities. This would be a* ***less-than-significant*** *impact.*

Implementation of the proposed General Plan would allow for additional residents, businesses, and other urban development, which would increase the need for law enforcement services provided under contract by the SCS.

As previously mentioned, the contract between SCS and the City specifies a minimum of 0.85 officers per 1,000 residents. The current office to resident ratio is between 0.85 and 0.89. Due to the fact that the rate is approaching 0.85 in a rapidly growing community, the addition of a new full-time officer for Riverbank is under consideration.

The City's General Plan is intended to achieve steady and orderly growth that allows for the adequate provision of services and community facilities. To support this goal as it relates to law enforcement, the proposed General Plan outlines policies to ensure the provision of adequate police services needed to provide a safe environment in Riverbank. The following goal and policies from the Public Services and Facilities Element address potential impacts to law enforcement service:

Goal PUBLIC-8: Police Enforcement Services, Staffing and Deployment Adequate to Serve the Needs of Existing and Planned Development

- Policy PUBLIC-8.1: New developments shall fund and/or construct adequate law enforcement facilities to serve new growth areas, as required, in coordination with law enforcement service providers.
- Policy PUBLIC-8.2: The City's goal is to provide 1.25 sworn officers per 1,000 residents. The City will plan and budget and coordinate with service providers with this service standard as a goal.
- Policy PUBLIC-8.3: The City will coordinate with law enforcement service providers to ensure a four-minute average response time for emergency calls within the City.
- Policy PUBLIC-8.4: The City will require design of structures, streetscapes, pathways, project sites, and other elements of the urban environment to allow for surveillance of publicly accessible areas.
- Policy PUBLIC-8.5: The City will coordinate with applicable law enforcement service providers to ensure adequate funding, staffing, training, and direction to provide City residents with responsive and effective law enforcement services of all types, including investigative, patrol, and other non-emergency services.

The proposed General Plan also outlines land use policies to ensure adequacy of public services and facilities to support planned build-out. The following goal and policies from the Land Use Element also address potential impacts to law enforcement service:

Goal LAND-5: full range of public services and facilities for all areas of the community

- Policy LAND-5.1: The City will maintain public services and facilities in the existing developed City and make improvements as necessary to maintain a consistent Citywide level of service.
- Policy LAND-5.5: Approved projects, plans, and subdivisions in new growth areas will set aside adequate land for, and shall otherwise accommodate public infrastructure and service needs consistent with General Plan policy.

Because these General Plan goals and policies are intended to address impacts related to the projected population growth for Riverbank anticipated for build-out of the General Plan, potentially significant impacts that may result

from increased demand for law enforcement services and facilities are mitigated by implementation of these goals and policies and would be reduced to a **less-than-significant** level.

Mitigation Measures: No mitigation measures required.

IMPACT 4.14-3 *Result in substantial adverse impacts associated with the provision of school services. Specific school expansion or improvement projects have been identified in certain areas, and additional project specific environmental analysis would be completed as demand requires. This would be a* ***less-than-significant*** *impact.*

As previously mentioned, the Riverbank Planning Area is served by four school districts: RUSD, SUSD, Modesto City Schools, and Stanislaus Union School District. The Stanislaus Union School District only serves the far west end of the Planning Area west of Coffee Road. The Sylvan Union School District and Stanislaus Union School District only provide kindergarten through eighth grade instruction. Students from the Riverbank Planning Area who attend elementary and middle school in these districts attend the Modesto City Schools district for high school, which is discussed below. Riverbank Unified School District provides kindergarten through 12th grade instruction.

Riverbank Unified School District Enrollment and Capacity

Since the release of the District's *School Facility Needs Analysis* in February 2000, bond financing proposals for new schools have been brought before District voters, but the proposals were voted down. No new schools or additions have been constructed since 2000. Table 4.14-1 shows the current numbers of staff and classrooms at RUSD facilities.

Table 4.14-1
RUSD Current Staff and Classroom Facilities[21]

School	Classrooms	Professional Staff	Classified Staff[22]
California Avenue Elem.	29	30	29
Rio Altura Elem.	27	45	37
Cardozo Middle	23	37	29
Riverbank H.S.	28	46	35
RUSD Total	111	172	202

[21] California Department of Education Dataquest, www.ed-data.k12.ca.us

[22] Classified staff refers to staff positions that do not require a professional college degree, whereas professional staff refers to positions that do require such a degree.

Table 4.14-2 shows the most recent enrollment figures and current capacities for each RUSD facility.

Table 4.14-2
RUSD School Capacities and Enrollments, Fall-to-Spring

School	2007 Enrollment*	Capacity[23]	Enrollment Percentage of Capacity
California Ave. Elem.	670	725	92.4%
Rio Altura Elem.	843**	816*	103.3%
Cardozo Middle	731	621	117.7%
Riverbank H.S.	913	756	120.7%
R.I.S.E.	60	n/a	n/a

* Enrollment figures from Great Schools. Online. http://www.greatschools.net. Accessed July 24, 2007.
** Year-round capacity provided by Rick John, RUSD. Personal Correspondence, July 8, 2005.

As indicated in Table 4.14-2, Rio Altura Elementary operates over 100 percent of capacity. California Avenue enrollment is currently at 90 percent of capacity. The only middle school in the District, Cardozo, is operating over capacity, at approximately 117 percent, while Riverbank High School is operating at approximately 120 percent of capacity.

Currently, RUSD facilities have the capacity to serve 2,877 students. With 3,118 students enrolled in the District as of October 2004,[24] the District is currently over capacity.

Sylvan Unified School District Enrollment and Capacity

SUSD has a new school planned, Crossroads Elementary, which will be located in Riverbank and will serve all of the SUSD students from the Riverbank Planning Area. Crossroads Elementary is expected to be ready to open at the end of the 2006–07 school year; it will have a capacity of approximately 600–700 as do other SUSD elementary schools.[25]

SUSD serves 961 students from the City of Riverbank as of the end of the 2004–05 school year.[26] Table 4.14-3 displays the 2004–05 enrollment and capacity of the SUSD schools that commonly serve Riverbank. Stockard Coffee and Sylvan Elementary Schools have the same capacity and the same number of classrooms but there are 282 more students at Stockard Coffee (which is at 111.9 percent capacity) than there are at Sylvan Elementary. All of the sections of Riverbank that are in SUSD are within Stockard Coffee's enrollment boundaries, and the overcrowding at Stockard Coffee has led to placement of Riverbank students at Sylvan or other elementary schools in the District. The new Crossroads Elementary School will alleviate this problem. Elizabeth Ustach Middle School is even more over-capacity than is Stockard Coffee, at 129.2 percent.

[23] *School Facility Needs Analysis*, Riverbank United School District, February 2000
[24] Coy Bryant, Riverbank Unified School District. Personal Correspondence, June 8, 2005.
[25] Paul Speed, Sylvan Union School District. Personal Correspondence. July 18, 2005.
[26] Paul Speed, Sylvan Union School District. Personal Correspondence, June 3, 2005.

Table 4.14-3 Enrollment and Capacity of SUSD Schools Serving Riverbank[27]			
School	2004–2005 Enrollment	Capacity[28]	Enrollment Percentage of Capacity
Stockard Coffee Elementary	783	700	111.9%
Sylvan Elementary	501	700	71.6%
Elizabeth Ustach Middle	1,550	1,200	129.2%

Table 4.14-4 shows the classroom and staff numbers for the SUSD schools that serve the Riverbank Planning Area. SUSD has a District standard of 20 students per classroom for kindergarten through third grade, and 30 students per classroom for other grades.[29]

Table 4.14-4 Facilities of SUSD Schools Serving Riverbank			
School	Classrooms	Professional Staff	Classified Staff
Stockard Coffee Elementary	26	41	20
Sylvan Elementary	26	35	12
Elizabeth Ustach Middle	46	77	34

Modesto City Schools Enrollment and Capacity

FBHS is currently almost at capacity, as is shown in Table 4.14-5. A new high school, James Enochs High School (JEHS), serves the entire section of the City of Riverbank that lies within the MCS service area, as well as the Riverbank Planning Area west of the City to Coffee Road.

Table 4.14-5 Enrollment and Capacity for MCS Schools Serving Plan Area			
School	2004-2005 Enrollment[30]	Capacity[31]	Percentage Capacity
Fred C. Beyer High	3,133	3,150	99.46%

Eventually, MCS plans to build another new high school, Gregori High School, which will be located north of Salida and will serve all of the Planning Area west of Oakdale Road. Upon the opening of Gregori High School, FBHS will once again serve the areas of the City and the Planning Area located between Oakdale and Skittone Roads.

Table 4.14-6 shows the projected enrollments of the three high schools for the 2009–10 school year. After the new schools are operational, FBHS will operate below capacity; GDHS will operate close to capacity but will not

[27] California Department of Education Dataquest, www.ed-data.k12.ca.us.
[28] Paul Speed, Sylvan Union School District. Personal Correspondence, July 18, 2005.
[29] Paul Speed, Sylvan Union School District. Personal Correspondence, June 3, 2005.
[30] California Department of Education EdData, www.ed-data.k12.ca.us
[31] High School Boundaries map, Six School Plan 2009-10, Modesto City Schools.

include any Riverbank students due to changes in enrollment boundaries, except for any students who will have already started to attend GDHS and who will continue to attend there after the boundaries change.

As of June 9, 2005, there were 403 City of Riverbank students from SUSD (plus eight from RUSD) at FBHS for a total of 411 City of Riverbank students at FBHS. Approximately 40 City of Riverbank students from the SUSD (plus nine from RUSD) attend other MCS high schools for a total of approximately 441 Riverbank students at MCS schools.[32]

Table 4.14-6
Projected MCS Enrollments after James C. Enochs High School Opens[33]

School	2009–2010 Enrollment	Capacity	Percentage Capacity
Fred C. Beyer High	2471	3090	78.44%
Grace M. Davis High	2873	2880	99.76%
James C. Enochs High	2260	2506	90.18%

FBHS and GDHS have similar numbers of staff and classrooms, as shows in Table 4.14-7. MCS's high school service standard is a maximum of 30 students per classroom.[34]

Table 4.14-7
Staff and Classrooms of MCS Schools Serving Riverbank[35]

School	Classrooms	Professional Staff	Classified Staff
Fred C. Beyer High	105	130	66

Important School Issues

Riverbank faces challenges with community identity and social cohesion due to how the City lies within the boundaries of three separate school districts, and the Planning Area lies within the service area boundaries of four separate school districts. This issue is exacerbated by the fact that many of the newer sections of Riverbank in the Crossroads Specific Plan area lie mainly within the SUSD and MCS service areas, while the relatively older sections of the City lie within the RUSD service area. The houses in the SUSD and MCS service areas in Riverbank tend to be larger than those in the RUSD service areas, as well as newer. Median household incomes, as tracked by the U.S. Census Bureau tend to be higher for areas of Riverbank in the SUSD and MCS service areas relative to RUSD. The merger of the RUSD and SUSD Districts would bring Riverbank much closer to a common identity and to a condition of better social cohesion. Under this scenario, the issue of high school attendance would still need to be resolved as SUSD students attend MCS high schools, while RUSD has a high school of its own.

Build out of the proposed General Plan would increase demand for school facilities. Additional staff, equipment and facilities would also be required to maintain or exceed the current school service standards. The proposed Planning Area would result in approximately 10,698 additional housing units, 4,400 of which would be low-density residential (41.1 percent); 4,468 medium-density residential (41.7 percent); 932 high-density residential

[32] Connie Nissen, Modesto City Schools. Personal Correspondence, June 15, 2005.
[33] High School Boundaries map, Six School Plan, Modesto City Schools.
[34] Connie Nissen, Modesto City Schools. Personal Correspondence, June 15, 2005.
[35] California Department of Education Dataquest, www.ed-data.k12.ca.us

(9 percent); 170 neighborhood commercial/mixed use (1.5 percent); 482.3 of infill opportunity area (4 percent); and 245 clustered rural residential (2.7 percent).

For the most part, Riverbank schools are operating near or over capacity, with portable classrooms being used at many schools. Based on the growth projected in the General Plan, it can be assumed that new school facilities would need to be constructed within both districts. The actual location of new and expanded facilities would depend on where growth occurs in the City limits and Planning Area; schools would probably be located in residential areas, in proximity to the student populations they serve.

The proposed General Plan includes policies and actions to provide sufficient educational facilities to meet the demands of existing and new development. The following goals and policies from the Public Services and Facilities Element address potential impacts to schools:

Goal PUBLIC-9: School Facilities That Serve Existing and Future Needs and Complement Our Neighborhoods

- Policy PUBLIC-9.1: New developments shall provide impact fees, land dedication, school construction, special taxes, and/or other means to the satisfaction of affected school districts to ensure levels of service, in accordance with State law.

- Policy PUBLIC-9.2: The City will circulate development application material to the appropriate school district representatives in association with CEQA and project review and incorporate school district comments into City actions on such development projects.

- Policy PUBLIC-9.3: The City will work with local school districts in long-range land use planning to allow planning for school facilities for servicing new growth.

- Policy PUBLIC-9.4: The City will work with local school districts to take advantage of joint-use opportunities that could benefit the City, especially for park and recreation facilities that could be used by schoolchildren during the school day and the community in the evening, on weekends, and during school breaks.

- Policy PUBLIC-9.5: The City will ensure that areas around school sites are designed to allow easy pedestrian and bicycle access from surrounding neighborhoods. New developments shall demonstrate to the satisfaction of the City that there are safe routes to and from school sites from surrounding planned neighborhoods prior to approval.

Goal PUBLIC-20: Plan for the costs of new school facilities when planning for specific new residential development.

- Policy PUBLIC-20.1: It shall be the policy of the city to require to the extent legally permissible the full mitigation of school impacts resulting from new residential development within the boundaries of the city.

Goal PUBLIC-21: Construct new public schools to meet the needs of residential growth.

- Policy PUBLIC-21.1: It shall be the policy of the City to take all legally permissible steps to ensure the full mitigation of impacts of new development on school facilities.

The proposed General Plan also outlines land use policies to ensure adequacy of public services and facilities to support planned build-out. The following goal and policies from the Land Use Element also address potential impacts schools:

Goal LAND-2: Balanced and diverse uses of land

- Policy LAND 2-3: Approved specific plans that include proposed parks, schools, and other civic uses should locate those uses in neighborhood centers when feasible.

Goal LAND-3: Development Patterns that Encourage Alternatives to Vehicular Travel

- Policy LAND-3.1: Higher-activity land uses, such as places of worship, parks, civic buildings, apartments, schools, and shops should be located in "neighborhood centers" whenever possible rather than focused along major roadways. Such neighborhood centers should be small in scale, but sized according to the surrounding neighborhood. Neighborhood centers will provide 360-degree access from the surrounding neighborhood (as opposed to the 180-degree access provided by arterial-focused activity areas). Neighborhood centers should be pedestrian-friendly, including the use of shared and/or on-street parking instead of individual surface parking lots to accommodate parking demand, wherever possible.

- Policy LAND-3.2: The City will coordinate with relevant school districts to ensure that schools are located and designed as to provide safe and convenient pedestrian and bicycle options for students from areas within the surrounding neighborhood.

Goal LAND-5: Full range of public services and facilities for all areas of the community

- Policy LAND-5.1: The City will maintain public services and facilities in the existing developed City and make improvements as necessary to maintain a consistent Citywide level of service.

- Policy LAND-5.3: Approved projects, plans, and subdivisions in new growth areas will set aside, in areas convenient and safe for all travel modes, adequate land for parks and schools; or, in-lieu of parkland and school property dedication, approved projects, plans, and subdivisions in new growth areas will participate in joint funding and siting of such facilities.

- Policy LAND-5.5: Approved projects, plans, and subdivisions in new growth areas will set aside adequate land for, and shall otherwise accommodate public infrastructure and service needs consistent with General Plan policy.

Although build-out of the General Plan would increase enrollment within the school districts that are near or over capacity, goals and policies identified in the proposed General Plan are intended to address impacts related to the projected population growth for Riverbank. In addition, new development occurring under buildout of the General Plan would be required to pay appropriate impact fees. Therefore, potentially significant impacts that may result from increased enrollment in schools are addressed by these goals and policies, and implementation of the goals and policies would reduce impacts to a **less-than-significant** level.

Mitigation Measures: No mitigation measures required.

IMPACT 4.14-4 *Result in substantial adverse impacts associated with library resources. The proposed General Plan update includes goals and policies that would ensure that future build-out would provide the City of Riverbank with sufficient library resources. This would be a less-than-significant impact.*

General Plan policies establish land capacity to accommodate substantial new development within the Planning Area. The proposed Planning Area would result in approximately 10,698 additional housing units, 4,400 of which would be low-density residential (41.1 percent); 4,468 medium-density residential (41.7 percent); 932 high-density residential (9 percent); 170 neighborhood commercial/mixed use (1.5 percent); 482.3 of infill opportunity area (4 percent); and 245 clustered rural residential (2.7 percent).

Residential development anticipated to occur pursuant to General Plan policy will result in demand for library resources. The City's General Plan is intended to achieve a steady and orderly growth rate that allows for the adequate provision of services and community facilities. To support this goal as it relates to library resources, the proposed General Plan outlines policies to ensure the provision of adequate library resources. The following goal and policies from the Public Services and Facilities Element address potential impacts to library resources:

Goal Public-10: Public Library Facilities Adequate to Accommodate Existing and Future Needs

- Policy PUBLIC-10.1: The City will develop additional library facilities, whether through expansion of existing facilities or new facilities, as feasible, and assist the library administration to secure State and federal funds for facilities and services.

- Policy PUBLIC-10.2: The City will coordinate with applicable library service providers to accommodate the development of new library facilities in conjunction with new development areas.

- Policy PUBLIC-10.3: The City's goal is to have 0.5 square feet of public library facilities per capita within the City. The City will plan and budget and coordinate with service providers with this service standard as a goal.

The proposed General Plan also outlines land use policies to ensure adequacy of public services and facilities to support planned build-out. The following goal and policies from the Land Use Element also address potential impacts to library resources:

Goal LAND-5: Full range of public services and facilities for all areas of the community

- Policy LAND-5.1: The City will maintain public services and facilities in the existing developed City and make improvements as necessary to maintain a consistent Citywide level of service.

- Policy LAND-5.5: Approved projects, plans, and subdivisions in new growth areas will set aside adequate land for, and shall otherwise accommodate public infrastructure and service needs consistent with General Plan policy.

The policies implemented in the General Plan are intended to address impacts related to the projected population growth for Riverbank included in the General Plan. Therefore, potentially significant impacts that may result from increased demand for library resources are addressed by these goals and policies and would be reduced to a **less-than-significant** level by their implementation.

Mitigation Measures: No mitigation measures required.

IMPACT 4.14-5 *Result in substantial adverse impacts associated with the provision of parks and recreation services. The proposed General Plan update includes goals and policies that would ensure that future build-out would provide the City of Riverbank with sufficient parks and recreation services. This would be a less-than-significant impact.*

The City's current service standard (prior to the current General Plan update) is to have one acre of park for every 58 single-family dwelling units and one acre of park per 80 multi-family dwelling units.[36] This is calculated by using the aforementioned standard of five acres per 1,000 residents and an estimated figure of 3.44 persons per household.

[36] JD Hightower, City of Riverbank Community Development Department. Personal Correspondence, June 17, 2005.

To measure whether Riverbank is below, at, or above parkland capacity according to its own standard, one must calculate the approximate number of multi-family and single-family dwelling units in the city. Multi-family uses comprise six percent of the City's housing stock, so the remaining 94 percent is comprised of single-family units. There are 5,473 households in single family dwelling units (including households in mobile homes) and 362 houses in multi-family dwelling units in Riverbank according to California Department of Finance 2005 estimates. According to the above standard, Riverbank should have 94.4 acres of parkland for its current number of single-family households and 4.6 acres of parkland for its current number of multi-family households for a total of 99.0 acres of parkland. Even without any new population growth, Riverbank needs 11.5 new acres of park to be operating within capacity according to its current standard. The 11 acres where development of a sports park is planned will bring the City to 98.5 acres, and the two aforementioned 10-acre parcels, if developed as parkland, would bring the City up to a total of 118.5 acres. More parkland acquisition will have to continue to occur and the currently undeveloped parkland must be developed in order to keep up with new population growth in order to increase capacity and keep the City within its service standard.

Reservable park facilities operated by this department were booked through the summer of 2005 as of June 6, 2005,[37] suggesting that the service standard is correct in concluding that Riverbank's current population level results in too much demand on current parkland. The existing community center, scout lodge, and swimming pool are all currently operating at capacity according to Sue Fitzpatrick, Director of Recreation and Park Development.

New development under the proposed General Plan would increase the demand for parks and recreational facilities. However, goals and policies are included in the proposed General Plan that would address and ameliorate parks and recreational services.

Goal PUBLIC-11: Develop a Diversified Park System in a Variety of Scales and Environments to Meet Existing and Future Needs

- Policy PUBLIC-11.1: New developments shall set aside land and dedicate improved parkland according to City standards at a minimum rate of five acres per 1,000 residents. Landscaped areas along streets or other rights-of-way without trails, or other park and recreational facilities do not count toward this standard. Other open spaces without park facilities do not count toward the five-acre parkland minimum, although this land may be required to meet open space or landscaping requirements of the City's applicable development codes. For small projects, in cases of financial hardship, or where the required facility would serve areas outside the proposed project or plan, the City may allow participation in an in-lieu fee program to provide improved parkland. The distribution of parkland shall be as follows:

  Community Parks: Minimum of 1.5 acres per 1,000 residents. Minimum of 15 acres in size. Specific design and facilities are as directed by the City based on population density, demographic structure, community preferences, use levels and other criteria.

  Neighborhood Parks: Minimum of 1.5 acres per thousand residents. Minimum of 5 acres in size. Maximum of ½ mile from all proposed residences. Specific design and facilities are as directed by the City based on population density, demographic structure, community preferences, use levels and other criteria.

  Playgrounds, plazas, tot lots, linear parks, recreation trails, and other similar parklands may count for up to 1.5 acre per thousand of the 5-acre standard. Maximum of ¼ mile from all proposed residences. There is no minimum size. Specific design and facilities are as directed by the City based on population density, demographic structure, community preferences, use levels and other criteria.

- Policy PUBLIC-11.2: The City of Riverbank will maintain park in-lieu fees at a level adequate to provide parks in a ratio of acres to population, as established by this element.

[37] Sue Fitzpatrick, City of Riverbank Recreation Department. Personal Correspondence, June 6, 2005.

- Policy PUBLIC-11.3: The City will maintain and improve existing parks and develop new parks to serve existing developed portions of the City, as feasible.

- Policy PUBLIC-11.4: The City will encourage the use of greenways and natural open space areas for certain compatible recreational opportunities, such as pedestrian pathways, while preserving important ecological habitats.

The proposed General Plan also outlines land use policies to ensure adequacy of public services and facilities to support planned build-out. The following goal and policies from the Land Use Element also address potential impacts to parks:

Goal LAND-5: Full range of public services and facilities for all areas of the community

- Policy LAND-5.1: The City will maintain public services and facilities in the existing developed City and make improvements as necessary to maintain a consistent Citywide level of service.

- Policy LAND-5.5: Approved projects, plans, and subdivisions in new growth areas will set aside adequate land for, and shall otherwise accommodate public infrastructure and service needs consistent with General Plan policy.

If additional acres in parkland are not provided, there could be a significant impact associated with a shortage of park and open space facilities and the substantial deterioration of existing facilities from overuse, since new residents would be forced to use existing facilities.

The specific environmental impact of constructing new individual park or recreation facilities cannot be determined at this programmatic level of analysis. Development and operation of park facilities may result in potentially significant impacts that are addressed through plans, policies and mitigation measures identified in other sections of this EIR. However, specific park and recreational expansion or improvement projects have been identified in certain areas of the City, many have been included in the City's CIP, of which additional project specific environmental analysis would be completed prior to their development.

Although build-out of the General Plan would increase demand for parkland, goals and policies identified in the proposed General Plan are intended to address impacts related to the projected population growth for Riverbank. Therefore, potentially significant impacts that may result from increased demand and usage of parks are addressed by these goals and policies, and implementation of the goals and policies would reduce impacts to a **less-than-significant** level.

Mitigation Measures: No mitigation measures required.

4.15 TRAFFIC AND TRANSPORTATION

4.15.1 INTRODUCTION

This section assesses the transportation related impacts of implementation of the Riverbank General Plan. Where potentially significant impacts are identified, all feasible mitigation measures are identified.

4.15.2 ENVIRONMENTAL SETTING

ROADWAYS

The Riverbank General Plan update (GPU) Circulation Element describes a system of arterial and collector streets to serve the community. Riverbank is linked to the balance of Stanislaus County and the rest of Northern California via several key roadways which also circulate residents through the community as described below:

State Highway 108 (Patterson Road) is the transportation backbone of the community. Highway 108 extends west from Riverbank to McHenry Avenue, which in turn extends north across the San Joaquin River to Escalon and San Joaquin County, and runs south to Modesto. To the east, SR 108 and Patterson Road link Riverbank with Oakdale and Tuolumne County.

Roadway access in the Riverbank Planning Area also occurs via several Stanislaus County roads. Claribel Road is an east-west arterial street that links the community with Kiernan Avenue at McHenry Avenue. Kiernan Avenue continues westerly from McHenry Avenue to Highway 99. Claribel Road also continues easterly past Riverbank to south Oakdale.

To the north, 1st Street extends north from downtown Riverbank across the San Joaquin River as Sante Fe Drive to Escalon.

Several rural roads that are designated as arterials in the current General Plan extend south to connect Riverbank with the eastern end of the city of Modesto. Coffee Road, Oakdale Road, Roselle Avenue, and Claus Road are Stanislaus County roads that are anticipated to handle more vehicle traffic as the region continues outward urban development from existing cities.

In a hierarchical roadway system, collector streets are used to link the arterial street system with local neighborhoods and industrial / commercial areas. The current Riverbank General Plan designates the following streets as collectors: Morrill Road, Crawford Road, Almondwood Place, Estelle Avenue, Topeka Avenue, Stanislaus Avenue, Sante Fe Avenue, Ward Avenue, California Avenue, Kentucky Avenue, Van Dusen Avenue, Oakdale Road north of SR 108, Jackson Avenue, 1st Street south of SR 108, Terminal Road, and 8th Street.

Levels of Service

To assess the quality of existing traffic conditions, Levels of Service were calculated at Planning Area intersections and roadway segments. “Level of Service” (LOS) is a qualitative measure of traffic operating conditions whereby a letter grade “A” through “F”, corresponding to progressively worsening operating conditions, is assigned to an intersection or roadway segment. Table 4.15-1 presents criteria associated with each LOS grade, consistent with methodologies as used for other recent traffic analyses conducted in the area.

Both local agencies and Caltrans adopt minimum LOS standards for the streets and highways under their control. The City of Riverbank has historically used LOS C as the long-range planning standard for the community. The City of Modesto General Plan identifies LOS D as the minimum standard in that community, but the Modesto GPU EIR identifies various locations where it will not be possible to maintain LOS D as the community grows. Stanislaus

County identifies LOS C as the minimum standard in rural areas, but accepts LOS D in urban areas and in community plan areas. The City of Oakdale uses LOS D as their minimum Level of Service standard.

Table 4.15-1
Level of Service Definitions

Level of Service	Signalized Intersection	Unsignalized Intersection	Roadway (Daily)
"A"	Uncongested operations, all queues clear in a single-signal cycle. Delay ≤ 10.0 sec	Little or no delay. Delay ≤ 10 sec/veh	Completely free flow.
"B"	Uncongested operations, all queues clear in a single cycle. Delay > 10.0 sec and ≤ 20.0 sec	Short traffic delays. Delay > 10 sec/veh and ≤ 15 sec/veh	Free flow, presence of other vehicles noticeable.
"C"	Light congestion, occasional backups on critical approaches. Delay > 20.0 sec and ≤ 35.0 sec	Average traffic delays. Delay > 15 sec/veh and ≤ 25 sec/veh	Ability to maneuver and select operating speed affected.
"D"	Significant congestions of critical approaches but intersection functional. Cars required to wait through more than one cycle during short peaks. No long queues formed. Delay > 35.0 sec and ≤ 55.0 sec	Long traffic delays. Delay > 25 sec/veh and ≤ 35 sec/veh	Unstable flow, speeds and ability to maneuver restricted.
"E"	Severe congestion with some long standing queues on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements. Traffic queue may block nearby intersection(s) upstream of critical approach(es). Delay > 55.0 sec and ≤ 80.0 sec	Very long traffic delays, failure, extreme congestion. Delay > 35 sec/veh and ≤ 50 sec/veh	At or near capacity, flow quite unstable.
"F"	Total breakdown, stop-and-go operation. Delay > 80.0 sec	Intersection blocked by external causes. Delay > 50 sec/veh	Forced flow, breakdown.

Source: 2000 Highway Capacity Manual.

The City, as with many lead agencies throughout the state, has recognized that mitigating traffic congestion to a LOS C standard (light congestion, occasional backups on critical approaches) by adding roadway capacity runs counter to the community's transportation objectives and overall goals for livability and environmental sustainability. The proposed draft GPU identifies LOS D as the minimum operational threshold for intersections and roadway segments. Please refer to the City's Circulation Element for more discussion of the rationale behind the City's decision.

This chapter reports on impacts relative to the existing LOS C standard and the proposed LOS D standard, where appropriate.

Peak-Hour Level of Service at Intersections

The typical focus for traffic impact analysis is the Level of Service occurring at major intersections during peak work commute hours.

Alternative methodologies are available to determine the LOS at intersections with varying types of traffic controls, all of which are based on the 2000 Highway Capacity Manual (HCM). For intersections controlled by traffic signals or roundabouts, the HCM includes procedures to identify the average delay for all motorists using the intersection. LOS at unsignalized intersections which are controlled by side street stop signs are indicative of

the magnitude of the delay incurred by motorists that must yield the right of way at an intersection, although an "overall" LOS is also developed on the average delay to all vehicles.

Level of Service based on Daily Traffic Volume

For long-range land use planning purposes, LOS based on daily traffic volumes for roadway segments (as opposed to intersections) can be an effective tool. Daily traffic volumes can be used as a surrogate for peak-hour intersection analysis. Daily volumes for different roads are used to indicate LOS (see Table 4.15-2). These daily volume thresholds for different LOS are intended to represent daily traffic volumes along roadway segments that would result in peak-hour LOS at typical intersections.

Table 4.15-2
Level of Service Thresholds

Terrain	Pavement Width	Shoulder Width	Level of Service Threshold				
			A	B	C	D	E
Two Lane Collector*			-	-	7,700	11,600	12,900
Two Lane Undivided Urban Arterial*			-	10,200	13,500	14,800	15,700
Four Lane Divided Urban Arterial*			-	22,800	29,500	31,700	33,400
Six Lane Divided Urban Arterial*			-	35,100	45,000	47,900	50,300
Rural Road - two lanes in "Level" terrain (HCS)**	22	0	105 vph	285 vph	510 vph	920 vph	1,965 vph
Two Lane Rural Road (Crossroads SP EIR Mitigation Monitoring Plan)			900 vph	1,050 vph	1,200 vph	1,350 vph	1,500 vph
Equivalent Daily volume			9,000	10,500	12,500	13,500	15,000

Source:
* Florida Department of Transportation (1.6 to 2.5 signals per mile)
** 2000 HCM

The roads in the Riverbank Planning Area range from major urban streets to rural roads. With additional urban development, many of the existing two-lane rural roads may be replaced by urban streets.

There are various ways to evaluate the capacity and LOS of individual roadway segments. The 2000 Highway Capacity Manual identifies methods for calculating capacity and LOS on two-lane rural roads. These procedures account for the effects of physical features and traffic characteristics on average travel speed and delay. The resulting capacities and LOS are expressed in terms of allowable vehicles per hour. As will be evident from the discussions that follow, the practical capacity of two-lane rural roads on level terrain can be quite high, as capacities of up to 2,000 Vehicle Per Hour (VPH) could be physically accommodated. However, traffic flow conditions at "near capacity" levels are very poor and are typically described as "stop and go" or "bumper to bumper" conditions. As shown in Table 4.15-2, the number of vehicles that can be accommodated under satisfactory LOS is much less. Because Riverbank is a relatively flat landscape, this analysis assumes that Planning Area roadways are "level" terrain.

The capacity and LOS thresholds associated with multi-lane urban roads are different from those associated with rural roads. Traffic flow is more closely linked to such factors as the degree of access control and the spacing of signalized intersections. The Stanislaus County Congestion Management Plan (CMP) makes use of thresholds first created by the Florida Department of Transportation. These thresholds specifically account for the thresholds described above and are presented in Table 4.15-2.

A similar approach has been taken in the analysis of other projects in Riverbank. The mitigation monitoring plan for the Crossroads Specific Plan EIR employed generalized planning level LOS thresholds for two-lane roads. This document established 1,200 vph as the limit of LOS C for Oakdale Road, Roselle Road, and Claribel Road, with the LOS ranges presented in Table 4.15-2.

Based on this information, it has been assumed that the LOS thresholds identified from FDOT methodologies represents the best indicator of the quality of traffic flow on the collector and arterial street system.

Existing Peak-Hour Level of Service

Current a.m. and p.m. peak-hour traffic volume data was gathered for the GPU in May of 2005. Traffic count locations are noted in Exhibit 4.15-1, and current peak-hour volumes are shown in Exhibits 4.15-2a and 4.15-2b. This data was used to calculate the LOS presented in Table 4.15-3.

As shown, peak-hour conditions at many locations already exceed the LOS C historic standard for the City, as well as the LOS D standard that is proposed as a part of this General Plan update. Those that exceed LOS D under current conditions include:

All-Way Stop Controlled intersections:

- Oakdale Road / Morrill Road
- Claribel Road / Roselle Road
- Claribel Road / Coffee Road

Intersections Controlled by Side-Street Stops Signs:

- SR 108 / Coffee Road
- SR 108 / Claus Road

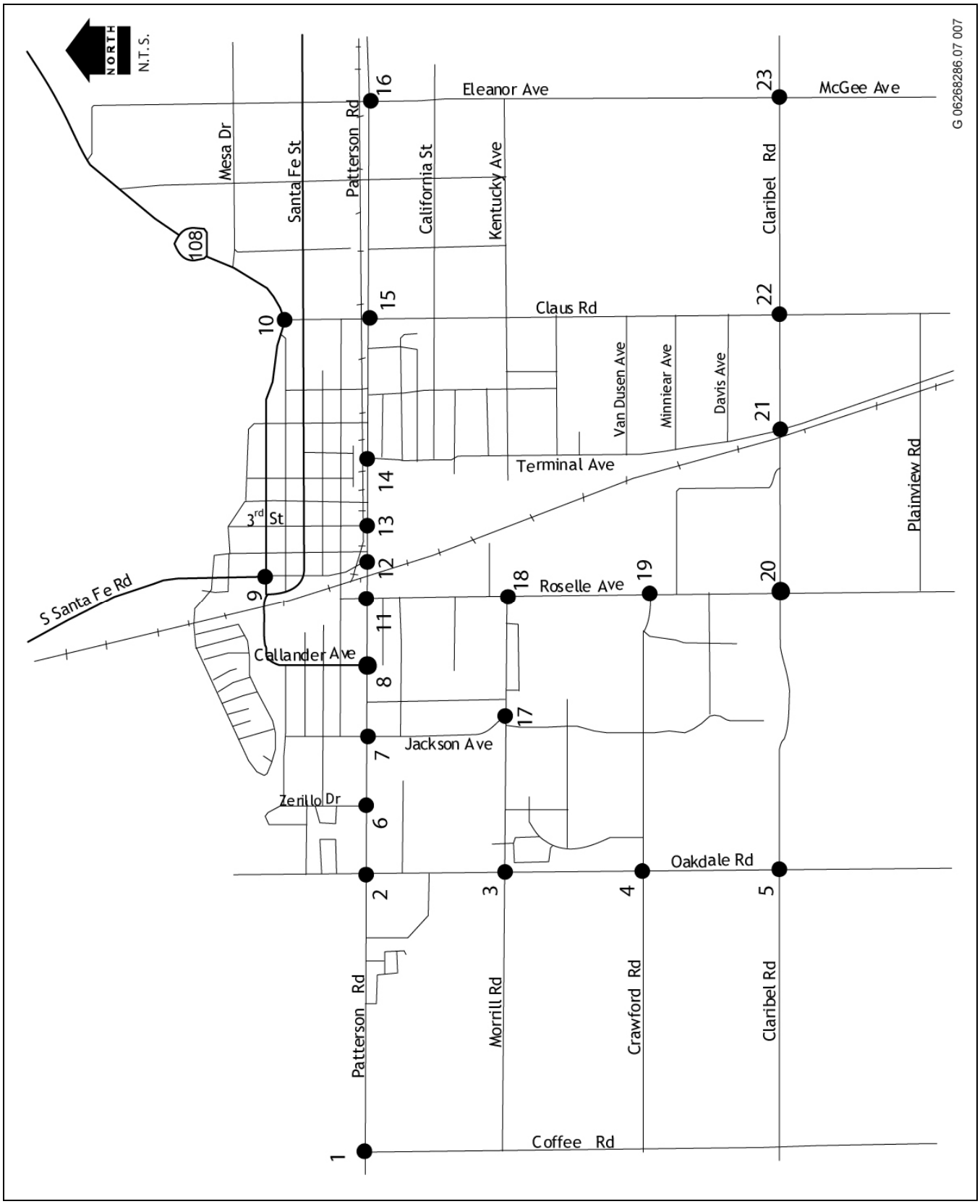
In addition, those that exceed the historic LOS C standard under existing conditions include:

- SR 108 / Oakdale Road (signal)
- SR 108 / 1st Street (signal)
- Patterson Road / 1st Street (stop controlled)

Planned Improvements

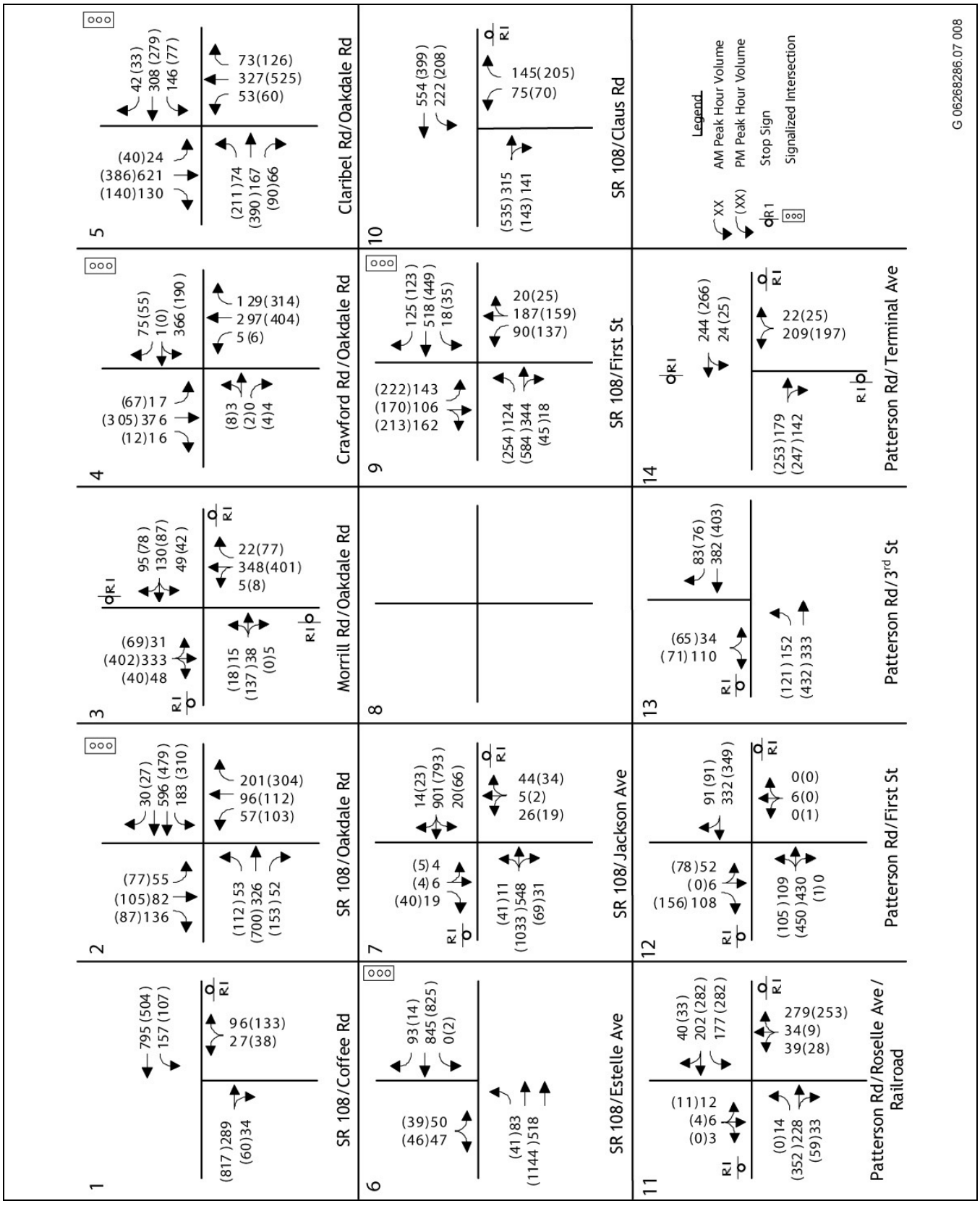
Mechanisms already exist to improve conditions at some intersections to address past deficiencies. The City of Riverbank already collects mitigation fees towards the cost of improvements to major intersections in the City. Fees are being collected towards improvements to the SR 108/ Claus Road, Claribel Road/Roselle Avenue, and Oakdale Road/Morrill Road intersections.

Other improvements are included in the development agreements for large projects, such as those included as a part of the Crossroads Specific Plan. Signalization of the Claribel Road/Coffee Road intersection is included in the City of Modesto Fee Program.



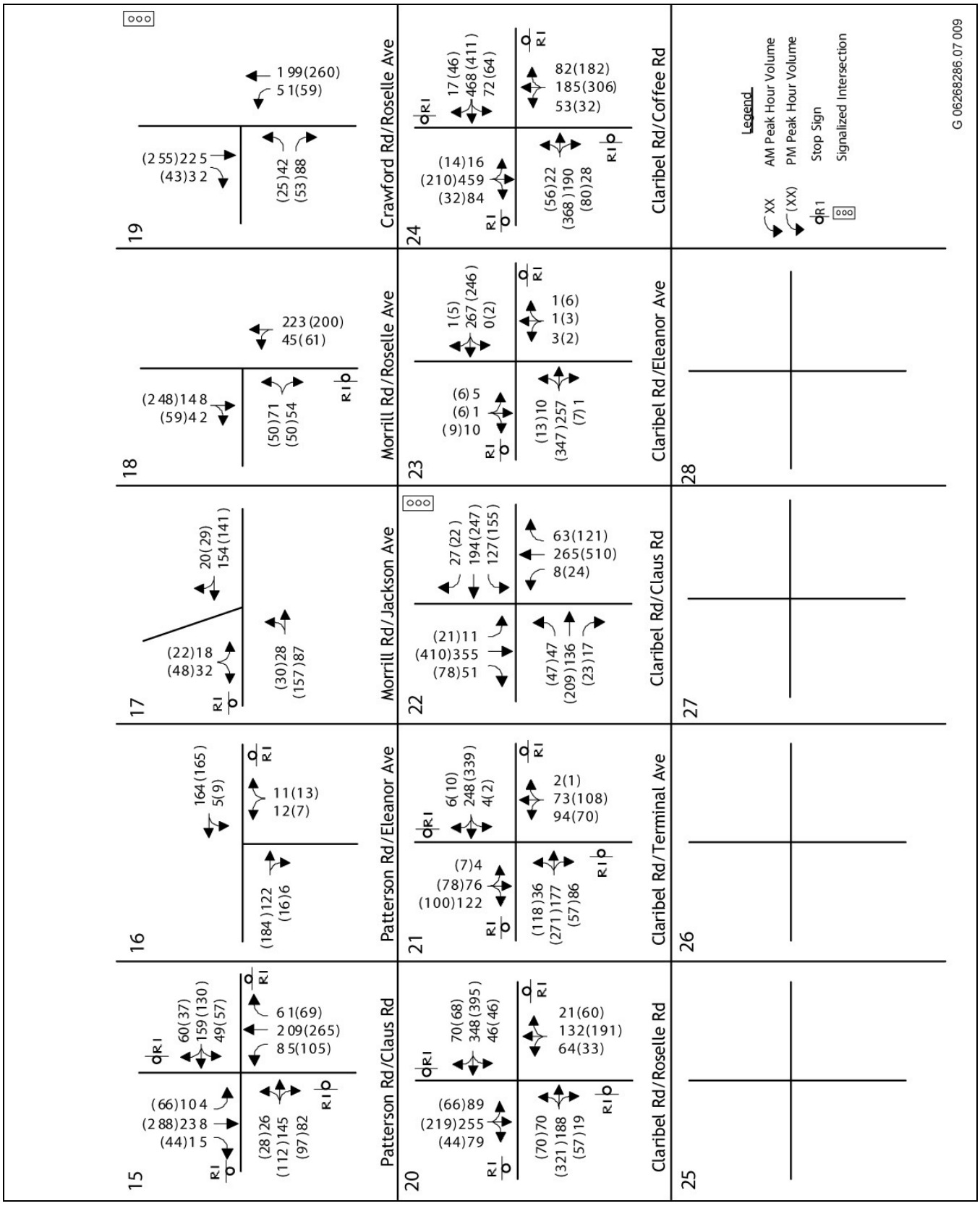
Source: KDAnderson 2007

Study Intersections **Exhibit 4.15-1**



Source: KDAnderson 2007

Existing Traffic Volumes **Exhibit 4.15-2a**



Source: KDAnderson 2007

Existing Traffic Volumes **Exhibit 4.15-2b**

Table 4.15-3
Existing Peak-hour Intersection Levels of Service

Intersection	Control	A.M. Peak Hour		P.M. Peak Hour		Traffic Signal Warranted?
		Average Delay (seconds)	LOS	Average Delay (seconds)	LOS	
SR 108 / Coffee Rd (overall) NB left+right turn	NB Stop	(3.1) 24.6	(A) C	(11.7) 106.5	(B) F	Yes
SR 108 / Oakdale Rd	Signal	24.0	C	38.8	D	-
Oakdale Road / Morrill Rd	All-Way Stop	20.7	C	44.6	E	Yes
Oakdale Road / Claribel Rd	Signal	26.4	C	30.5	C	-
SR 108 / Estelle Drive	Signal	10.7	B	6.8	A	-
SR 108 / Jackson Ave (overall) NB left+right turn	NB/SB Stop	(1.7) 24.6	(A) C	(2.4) 48.2	(A) E	Planned
SR 108 / Callander Rd	Signal	13.0	B	24.2	C	-
SR 108 / 1st Street	Signal	32.5	C	47.4	D	-
SR 108 / Claus Road (overall) NB left+right turn	NB Stop	(8.6) 47.4	(A) E	(11.2) 47.5	(B) E	Yes
Patterson Rd / Roselle Ave (overall) SB left+right turn	NB/SB Stop	(7.9) 42.4	(A) E	(8.4) 123.0	(A) F	No
Patterson Road / 1st Street (overall) SB left+right turn	NB/SB Stop	(4.3) 27.5	(A) D	(5.9) 42.3	(A) D	No
Patterson Road / 3rd St (overall) SB left+right turn	SB Stop	(3.4) 16.0	(A) C	(3.2) 19.4	(A) C	No
Patterson Rd / Terminal Ave	All-Way Stop	12.1	B	17.2	C	No
Patterson Road / Claus Road	All-Way Stop	15.9	C	16.9	C	Planned
Patterson Road / Eleanor Ave (overall) NB Stop	NB Stop	(0.8) 9.9	(A) A	(0.7) 10.1	(A) B	No
Morrill Road / Jackson Ave (overall) SB left+right turn	SB Stop	(2.1) 10.1	(A) B	(2.2) 10.3	(A) B	No
Morrill Road / Roselle Ave (overall) EB left+right turn	EB Stop	(3.3) 12.8	(A) B	(2.8) 13.8	(A) B	No
Roselle Ave / Crawford Rd	Signal	13.6	B	10.5	B	-
Claribel Road / Roselle Ave	All-Way Stop	60.8	F	108.3	F	Yes
Claribel Road / Terminal Ave	All-Way Stop	12.8	B	23.0	C	No
Claribel Road / Claus Road	Signal	19.7	B	22.1	C	-
Claribel Road / Eleanor Ave (overall) NB left+right turn	NB/SB Stop	(0.6) 12.6	(A) B	(0.8) 13.3	(A) B	No
Claribel Road / Coffee Rd	All-way stop	143.6	F	169.0	F	Yes

Traffic Signals identified as “planned” are for installation by the City of Riverbank and / or Caltrans within the next year

Level of Service based on Daily Traffic Volumes

New traffic volume counts were made throughout Riverbank in June 2005 to supplement information from Caltrans regarding SR 108 through Riverbank. The locations of daily traffic volumes on Planning Area roads are presented in Exhibit 4.15-3. The following locations already carry traffic volumes that indicate that the historic LOS C standard and the proposed LOS D standard are being exceeded (Table 4.15-4). These include:

- Claribel Road from McHenry Avenue to Coffee Road
- SR 108 from Coffee Rd to Crane Road
- Oakdale Road from Claribel Road to Mable Avenue

In addition, those that exceed the historic LOS C standard under existing conditions include:

- Claribel Road from Coffee Road to Commercial Access
- Claribel Road from Commercial Access to Oakdale Road
- Crawford Road from Oakdale Road to Antique Rose Way
- 1st Street from High Street to SR 108
- Patterson Road from Roselle Avenue to 1st Street

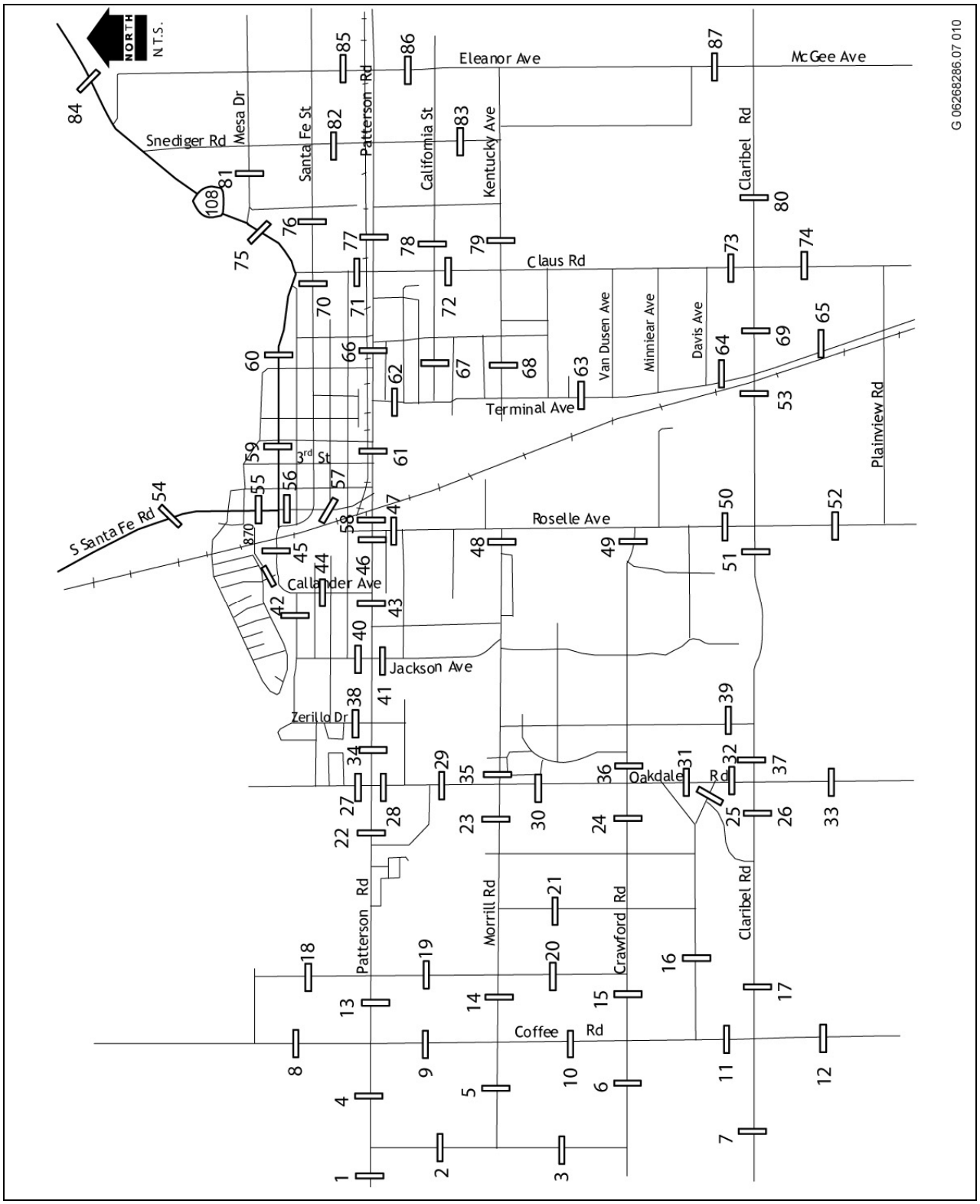
PUBLIC TRANSIT

Stanislaus Regional Transit (StaRT) and the Riverbank-Oakdale Transit Authority (ROTA) are the local transit providers for the Riverbank area. StaRT provides both fixed route and flexible transit services. ROTA provides service between Riverbank and Oakdale.

StaRT Route 60 traverses downtown Riverbank along SR 108 and connects the community with Modesto and Oakdale. This route runs from 6:00 a.m. to 8:00 p.m. on 1 hr and 45 minute headways on weekdays.

Riverbank is also served by StaRT Eastside Runabout. Runabouts are a transit service that combines designated fixed stops (like a fixed route) and curb-to-curb service (like a dial-a-ride). Passengers can catch the service at the designated fixed stops without having to phone ahead and book a ride. However, those passengers can only be dropped off at other designated fixed stops. For those passengers that want curb-to-curb service, it is necessary to call ahead and book a ride. Runabouts are available to the general public. Subscription rides are allowed on a limited basis. For curb-to-curb service, one Personal Care Attendant (PCA) may ride free when accompanying a paying passenger with a disability who needs assistance riding the bus. They must board and de-board at the same stop as the paying passenger. All Runabout buses have space for four wheelchairs.

ROTA Trolley is a fixed-route that operates between Riverbank and Oakdale every 60 minutes. The service will be coordinated with StaRT to allow for through travel to other areas of the County, including Modesto (Modesto Area Express [MAX]). Service hours are Monday through Friday, 6:00 a.m. to 7:00 p.m. and Saturday, 8:00 a.m. to 5:30 p.m.



Source: KDAnderson 2007

Average Daily Traffic Count Location Index **Exhibit 4.15-3**

Table 4.15-4
Daily Traffic Volumes and Associated Levels of Service

#	Street	From	To	Class	Existing		
					Daily Volume	Lanes	LOS
1	SR 108	McHenry Avenue	New Collector	Arterial	21,000	2	F
2	New Collector	SR 108	Morrill Rd	Collector	-	-	-
3	New Collector	Morrill Road	Crawford Road	Collector	-	-	-
4	SR 108	New Collector	Coffee Road	Arterial	21,000	2	F
5	Morrill Road	New Collector	Coffee Road	Collector	-	-	-
6	Crawford Road	New Collector	Coffee Road	Collector	-	-	-
7	Claribel Road	McHenry Avenue	Coffee Road	Arterial	16,271	2	F
8	Coffee Road	New Collector	SR 108	Arterial			
9	Coffee Road	SR 108	Morrill Rd	Arterial	4,242	2	B
10	Coffee Road	Morrill Road	Crawford Rd	Arterial	6,900	2	B
11	Coffee Road	Crawford Road	SR 108	Arterial	6,900	2	B
12	Coffee Road	SR 108	Vella Rd	Arterial	10,290	2	C
13	SR 108	Coffee Road	Hot Springs Lane	Arterial	19,036	2	F
14	Morrill Road	Coffee Road	New Collector	Arterial	2,803	2	C
15	Crawford Road	Coffee Road	New Collector	Collector	329	2	A
16	New EW Collector	Coffee Road	New Collector	Collector	-	-	-
17	Claribel Road	Coffee Road	Commercial Access	Arterial	13,371	2	D
18	New NS Collector	SR 108	New Collector	Collector	-	-	-
19	NS Collector	SR 108	Morrill Rd	Collector	-	-	-
20	NS Collector	Morrill Road	Crawford Rd	Collector	-	-	-
21	NS Collector	Morrill Road	Crawford Rd	Collector	-	-	-
22	SR 108	Hot Springs Lane	Oakdale Rd	Arterial	21,000	2	F
23	Morrill Road	NS Collector	Oakdale Rd	Arterial	2,803	2	C
24	Crawford Road	NS Collector	Oakdale Rd	Arterial	329	2	C
25	EW Collector	NS Collector	Oakdale Rd	Collector	-	-	-
26	Claribel Road	Commercial Access	Oakdale Rd	Arterial	13,731	2	D
27	Oakdale Road	Karen Ahlen	SR 108	Collector	4,006	2	C
28	Oakdale Road	SR 108	Colony Manor	Arterial	12,354	4	B
29	Oakdale Road	Colony Manor	Morrill Rd	Arterial	12,354	2	C
30	Oakdale Road	Morrill Road	Crawford Road	Arterial	10,966	2	C
31	Oakdale Road	Crawford Road	Retail Access	Arterial	15,866	4	B
32	Oakdale Road	Retail Access	Claribel Road	Arterial	15,866	4	B
33	Oakdale Road	Claribel Road	Mable Avenue	Arterial	15,382	2	F
34	SR 108	Oakdale Road	Jackson Avenue	Arterial	26,000	2	F
35	Morrill Road	Oakdale Road	Zellman Court	Collector	6,232	2	C
36	Crawford Road	Oakdale Road	Antique Rose Way	Collector	7,819	2	D
37	Claribel Road	Oakdale Road	Squire Wells Way	Arterial	-	2	-
38	Estelle Avenue	SR 108	Almondwood Ave	Collector	1,967	2	C
39	Squire Wells Way		SR 108	Collector	-	2	-
40	Jackson Avenue	Ross Avenue	SR 108	Collector	2,211	2	C
41	Jackson Avenue	SR 108	Parsley Ave	Collector	1,339	2	C
42	Topeka Avenue	Jackson Avenue	SR 108	Collector	1,191	2	C
43	SR 108	Jackson Avenue	Callander Ave	Arterial	26,000	2	F
44	SR 108 – Callander	Patterson Road	Prestwick Drive	Arterial	19,000	2	F
45	**SR 108 – Atkinson**	Prestwick Dr	1st Street	Arterial	**19,000**	**2**	**F**

Table 4.15-4
Daily Traffic Volumes and Associated Levels of Service

#	Street	From	To	Class	Existing		
					Daily Volume	Lanes	LOS
46	Patterson Road	Callander	Roselle Ave	Arterial	8,720	2	B
47	Roselle Avenue	Patterson Road	Ward	Arterial	6,000	2	B
48	Morrill Road	Carnwood Drive	Roselle Ave	Collector	2,816	2	C
49	Crawford Road	Prospector Pkwy	Roselle Ave	Collector	2,309	2	C
50	Roselle Avenue	Glow Road	Claribel Rd	Arterial	8,303	2	B
51	Claribel Road	Squire Wells Way	Roselle Ave	Arterial	10,839	2	C
52	Roselle Avenue	Claribel Road	Plainview Rd	Arterial	7,011	2	C
53	Claribel Road	Roselle Avenue	Terminal Ave	Arterial	10,780	2	C
54	Sante Fe Road	Henry Road	Myers Rd	Arterial	11,548	2	C
55	**1st Street**	High Street	SR 108	Arterial	**14,780**	**2**	**D**
56	1st Street	SR 108	Topeka St	Arterial	6,650	2	B
57	1st Street	Topeka Street	Patterson Rd	Arterial	-		
58	**Patterson Road**	Roselle Avenue	1st Street	Arterial	**14,264**	**2**	**D**
59	**SR 108**	1st Street	8th Street	Arterial	**21,000**	**2**	**F**
60	**SR 108**	5th Street	Claus Road	Arterial	**20,500**	**2**	**F**
61	Patterson Road	1st Street	Terminal Avenue	Arterial			
62	Terminal Avenue	Paterson Road	Iowa Ave	Collector	6,517	2	C
63	Terminal Avenue	Reich Lane	Van Dusen Ave	Collector	4,850	2	C
64	Terminal Avenue	Davis Avenue	Claribel Rd	Collector	4,827	2	C
65	Terminal Avenue	Claribel Road	Plainview Ave	Collector	3,872	2	C
66	Patterson Road	Terminal Avenue	8th Street	Arterial	6,735	2	B
67	California Street	Terminal Avenue	8th Street	Collector	1,050	2	C
68	Kentucky Avenue	Terminal Avenue	8th Street	Collector	2,190	2	C
69	Claribel Road	Terminal Avenue	Claus Road	Arterial	6,745	2	B
70	Sante Fe Street	8th Street	Claus Road	Collector	1,072	2	C
71	Claus Road	Patterson Road	Sante Fe Street	Arterial	8,279	2	B
72	Claus Road	Patterson Road	Kentucky Ave	Arterial	10,296	2	C
73	Claus Road	Davis Road	Claribel Rd	Arterial	10,217	2	C
74	Claus Road	Claribel Road	Plainview Rd	Arterial	11,452	2	C
75	**SR 108**	Claus Road	Snediger Rd	Arterial	**15,500**	**2**	**E**
76	Sante Fe Street	Claus Road	Central Avenue	Collector	768	2	C
77	Patterson Road	Claus Road	Snediger Road	Arterial	4,713	2	B
78	California Ave	Claus Road	Snediger Road	Collector	-		
79	Kentucky Ave	Claus Road	Snediger Road	Collector	-		
80	Claribel Road	Claus Road	Eleanor Ave	Arterial	8,788	2	B
81	Mesa Drive	SR 108	Eleanor Ave	Collector	-		
82	Snediger Road	SR 108	Patterson Rd	Collector	-		
83	Snediger Road	Patterson Road	Kentucky Ave	Collector	-		
84	**SR 108**	Snediger Road	Langworth Road	Arterial	**15,500**	**2**	**E**
85	Eleanor Avenue	SR 108	Patterson Road	Collector	-		
86	Eleanor Avenue	Patterson Road	Kentucky Ave	Collector	-		
87	Eleanor Avenue	Kentucky Avenue	Claribel Rd	Collector	505	2	C

4.15.3 ENVIRONMENTAL IMPACTS

ANALYSIS METHODOLOGY

To evaluate the impacts of implementing the City of Riverbank General Plan, it was necessary to identify and quantify the land uses expected to develop over the life of the General Plan, identify the amount of vehicular traffic accompanying that development, assign traffic to the planned circulation system, and determine resulting LOS. It was also necessary to identify though traffic on regional routes that was not related to development in Riverbank and include these traffic volumes in LOS calculations, where appropriate.

As noted, Riverbank historically had used a LOS C standard to assess traffic congestion. As many communities have done lately, Riverbank has elected to relax the traffic congestion standard. There are many reasons for doing this, but in general, the LOS C standard results in an overbuilding of roadways. This overbuilding of roadways to provide freely flowing vehicular traffic during the one or two peak demand hours per day was at the expense of other community objectives. The Draft GPU identifies LOS "D" as the minimum operational threshold for intersections and roadway segments.

Land Use

The amount of residential and non-residential land use that could be developed under the new General Plan has been identified.

This land use data has been used to make estimates of daily vehicular trip generation resulting from development under the Plan. As shown, using employment density factors and trip generation rates provided by the Stanislaus County Association of Governments (StanCOG) traffic model, buildout of the General Plan could generate 192,095 additional daily automobile trips.

Travel Demand Forecasting Model

The City of Riverbank lies within the area included in the Stanislaus County Council of Governments (StanCOG) Regional Travel Demand Forecasting Model. This tool is regularly maintained by StanCOG staff and is the primary source of future traffic volume projections for state highways, county roads, and major city streets in Stanislaus County outside of the City of Modesto. Land uses envisioned under the existing Riverbank General Plan (prior to the current update) are included in StanCOG's baseline Year 2030 traffic model.

Regional models, however, are intended to provide information for major facilities and typically lack the detail to provide accurate forecasts at the collector street level. Thus, to provide forecasts for the Riverbank General Plan update, it was necessary to first modify the structure of the model's roadway link network and Traffic Analysis Zones (TAZs). Those streets anticipated under the updated General Plan (as conceptually represented on the Circulation Diagram) were added to the model as new links, and the available system of TAZs was disaggregated to provide greater detail and to model traffic on the new street system in a more accurate manner. These model changes and future land use quantities were added to year 2030 traffic model, and daily traffic volume projections were made for the proposed General Plan update (Table 4.15-5).

Daily Traffic Volume Forecasts / Levels of Service

Table 4.15-6 lists the projected daily traffic volumes on major streets in Riverbank under current conditions, for the year 2030 under the existing Riverbank General Plan (no update), and for the Year 2030 under the General Plan update. The number of lanes described as a part of the General Plan Circulation Element are used in calculating future LOS.

Table 4.15-5 Projected Trip Generation			
Land Use	Proposed General Plan Buildout		
	Total New Units	Trips per unit	Total Daily Trips
Residential – Dwellings			
Single Family	10,050	9.6	96,480
Multiple Family	650	6.6	4,290
Total Residential	10,700	-	100,770
Non-Residential – Acres			
Regional Retail	94 acres	330	35,720
Industrial/Business Park	383 acres	73	27,960
Mixed Use (Retail – Office)	97 acres	285	27,645
		Total Non-Residential	91,325
		Total	192,095

Outside the Riverbank Planning Area

Development under the General Plan update will add traffic to the portions of various streets and highways located outside of Riverbank's Planning Area. Historically, each city in Stanislaus County has been primarily responsible for implementing roadway improvements within its sphere, while "inter-city" fees have been collected as part of the County's Public Facilities Fee (PFF) program in order to fund improvements outside of each sphere. Table 4.15-7 shows the level of traffic added along key roadway segments outside Riverbank's Planning Area.

Tivoli Specific Plan

The traffic forecasts used to support this General Plan update make use of generalized land use estimates for areas outside of the Riverbank Planning Area. These land use assumptions were originally developed by StanCOG. These assumptions have been used by various jurisdictions for traffic impact analysis on a variety of projects. As the City drafted the General Plan update and this EIR, various development projects continue to be proposed in Stanislaus County. Theoretically, the land use assumptions driving the StanCOG model would need to be updated with these proposals to the extent they are not reflected. The only project that would appreciably affect the Riverbank General Plan traffic forecasts would be the Tivoli Specific Plan in the City of Modesto. This approved project located is located Oakdale Road south of the Pelandale-Claratina Expressway. The Tivoli Specific Plan anticipates large-scale retail commercial development in an area that StanCOG assumed would be primarily residential. To be certain that the Tivoli Specific Plan land uses do not affect the forecasts reflected in this EIR, revised traffic model runs were prepared. As shown in Table 4.15-8, when updated Tivoli Specific Plan land uses are modeled, this does not substantially alter any traffic volumes expected within the Riverbank Planning Area. Long-term traffic volumes on Oakdale Road, Claribel Road, Roselle Avenue and Coffee Road are not noticeably different.

Table 4.15-6
Projected Daily Traffic Volumes and Associated Levels of Service

#	Street	From	To	Class	Existing			Buildout of Existing GP			Draft GPU		
					Daily Volume	Lanes	LOS	Daily Volume	Lanes	LOS	Daily Volume	Lanes	LOS
1	SR 108	McHenry Avenue	New Collector	Arterial	21,000	2	F	18,400	4	B	**30,600**	**4**	**D**
2	New Collector	SR 108	Morrill Road	Collector	-	-	-	-	-	-	1,400	2	C
3	New Collector	Morrill Road	Crawford Road	Collector	-	-	-	-	-	-	1,000	2	C
4	SR 108	New Collector	Coffee Road	Arterial	21,000	2	F	18,400	4	B	29,200	4	C
5	Morrill Road	New Collector	Coffee Road	Collector	-	-	-	-	-	-	2,000	2	B
6	Crawford Rd	New Collector	Coffee Road	Collector	-	-	-	-	-	-	1,000	2	B
7	Claribel Rd	McHenry Avenue	Coffee Road	Arterial	16,271	2	F	**49,650**	**4**	**F**	**52,500**	**4**	**F**
8	Coffee Rd	New Collector	SR 108	Arterial							15,950	4	B
9	Coffee Rd	SR 108	Morrill Road	Arterial	4,242	2	B	8,500	2	B	25,600	4	C
10	Coffee Rd	Morrill Road	Crawford Road	Arterial	6,900	2	B	11,325	2	C	21,600	4	B
11	Coffee Road	Crawford Road	SR 108	Arterial	6,900	2	B	13,175	2	C	22,600	4	B
12	Coffee Rd	SR 108	Vella Road	Arterial	10,290	2	C	7,715	2	B	10,400	2	C
13	SR 108	Coffee Road	Hot Springs Lane	Arterial	19,036	2	F	17,950	4	B	20,300	4	B
14	Morrill Road	Coffee Road	New Collector	Collector	2,803	2	C	2,050	2	C	**16,000**	**2**	**F**
15	Crawford Road	Coffee Road	New Collector	Collector	329	2	A	3,925	2	C	1,000	2	C
16	New EW Collector	Coffee Road	New Collector	Collector	-	-	-	-	-	-	5,800	2	C
17	Claribel Rd	Coffee Road	Commercial Access	Arterial	13,371	2	D	**47,300**	**4**	**F**	**42,800**	**4**	**F**
18	New NS Collector	SR 108	New Collector	Collector	-	-	-	-	-	-	3,400	2	C
19	NS Collector	SR 108	Morrill Road	Collector	-	-	-	-	-	-	5,700	2	C
20	NS Collector	Morrill Road	Crawford Road	Collector	-	-	-	-	-	-	1,000	2	C
21	NS Collector	Morrill Road	Crawford Road	Collector	-	-	-	-	-	-	2,700	2	C
22	SR 108	Hot Springs Lane	Oakdale Road	Arterial	21,000	2	F	17,950	4	B	15,800	4	B
23	Morrill Road	NS Collector	Oakdale Road	Collector	2,803	2	C	2,050	2	C	**19,400**	**2**	**F**

Table 4.15-6
Projected Daily Traffic Volumes and Associated Levels of Service

#	Street	From	To	Class	Existing			Buildout of Existing GP			Draft GPU		
					Daily Volume	Lanes	LOS	Daily Volume	Lanes	LOS	Daily Volume	Lanes	LOS
24	Crawford Rd	NS Collector	Oakdale Road	Arterial	329	2	C	3,925	2	B	5,300	2	B
25	EW Collector	NS Collector	Oakdale Road	Collector	-	-	-	-	-	-	**9,500**	**2**	**D**
26	Claribel Rd	Commercial Access	Oakdale Road	Arterial	13,731	2	D	**47,300**	**4**	**F**	**47,750**	**4**	**F**
27	Oakdale Road	Karen Ahlen	SR 108	Collector	4,006	2	C	**8,575**	**2**	**D**	**8,250**	**2**	**D**
28	Oakdale Road	SR 108	Colony Manor	Arterial	12,354	4	B	19,500	4	B	21,500	4	B
29	Oakdale Road	Colony Manor	Morrill Road	Arterial	12,354	2	C	23,150	4	C	24,600	4	C
30	Oakdale Road	Morrill Road	Crawford Road	Arterial	10,966	2	C	28,250	4	C	29,200	4	C
31	Oakdale Rd	Crawford Road	Retail Access	Arterial	15,866	4	B	31,950	4	D	29,000		C
32	Oakdale Road	Retail Access	Claribel Road	Arterial	15,866	4	B	**28,000**	**4**	**C**	**29,900**	**4**	**D**
33	Oakdale Rd	Claribel Road	Mable Avenue	Arterial	15,382	2	F	**33,175**	**2**	**F**	**33,400**	**2**	**F**
34	SR 108	Oakdale Road	Jackson Avenue	Arterial	26,000	2	F				25,800	4	C
35	Morrill Road	Oakdale Road	Zellman Court	Collector	6,232	2	C	3,200	2	C	6,400	2	C
36	Crawford Road	Oakdale Road	Antique Rose Way	Collector	7,819	2	D	4,670	2	C	6,700	2	C
37	Claribel Rd	Oakdale Road	Squire Wells Way	Arterial	-	2	-	**47,100**	**4**	**F**	**49,200**	**4**	**F**
38	Estelle Avenue	SR 108	Almondwood Ave	Collector	1,967	2	C	2,000	2	C	2,000	2	C
39	Squire Wells Way		SR 108	Collector	-	2	-	-			5,000	2	C
40	Jackson Ave	Ross Avenue	SR 108	Collector	2,211	2	C	2,000	2	C	2,000	2	C
41	Jackson Ave	SR 108	Parsley Avenue	Collector	1,339	2	C	1,500	2	C	1,500	2	C
42	Topeka Ave	Jackson Avenue	SR 108	Collector	1,191	2	C	2,050	2	C	2,300	2	C
43	SR 108	Jackson Avenue	Callander Avenue	Arterial	26,000	2	F				26,500	4	B
44	SR 108 – Callander	Patterson Road	Prestwick Drive	Arterial	19,000	2	F	13,500	2	C-D	**14,100**	**2**	**D**
45	SR 108 – Atkinson	Prestwick Drive	1st Street	Arterial	19,000	2	F	**15,050**	**2**	**E**	**15,300**	**2**	**E**
46	Patterson Road	Callander	Roselle Avenue	Arterial	8,720	2	B	12,400	2	C	13,200	4	B

Table 4.15-6
Projected Daily Traffic Volumes and Associated Levels of Service

#	Street	From	To	Class	Existing			Buildout of Existing GP			Draft GPU		
					Daily Volume	Lanes	LOS	Daily Volume	Lanes	LOS	Daily Volume	Lanes	LOS
47	Roselle Ave	Patterson Road	Ward	Arterial	6,000	2	B	6,250	4	B	11.800	4	B
48	Morrill Rd	Carnwood Drive	Roselle Avenue	Collector	2,816	2	C	1,350	2	C	5,200	2	C
49	Crawford Road	Prospector Pkwy	Roselle Avenue	Collector	2,309	2	C	4,450	2	C	5,800	2	C
50	Roselle Ave	Glow Road	Claribel Road	Arterial	8,303	2	B	12,000	4	B	13,500	4	B
51	Claribel Rd	Squire Wells Way	Roselle Avenue	Arterial	10,839	2	C	**44,700**	**4**	**F**	**46,100**	**4**	**F**
52	Roselle Ave	Claribel Road	Plainview Road	Arterial	7,011	2	C	14,200	4	B	17,700	4	B
53	Claribel Road	Roselle Avenue	Terminal Avenue	Arterial	10,780	2	C	**49,250**	**4**	**F**	**51,000**	**4**	**F**
54	Sante Fe Rd	Henry Road	Myers Road	Arterial	11,548	2	C	**14,625**	**2**	**D**	**14,600**	**2**	**D**
55	1st Street	High Street	SR 108	Arterial	14,780	2	D	9,700	2	B	9,200	2	B
56	1st Street	SR 108	Topeka Street	Arterial	6,650	2	B	5,650	2	B	6,000	2	B
57	1st Street	Topeka Street	Paterson Road	Arterial	-			-			9,300	2	B
58	Patterson Rd	Roselle Avenue	1st Street	Arterial	14,264	2	D	17,300	4	B	23,400	4	C
59	SR 108	1st Street	8th Street	Arterial	21,000	2	F	**17,350**	**2**	**F**	**14,900**	**2**	**E**
60	SR 108	5th Street	Claus Road	Arterial	20,500	2	F	**14,000**	**2**	**D**	**14,200**	**2**	**D**
61	Patterson Road	1st Street	Terminal Avenue	Arterial							16,900	4	B
62	Terminal Ave	Paterson Road	Iowa Avenue	Collector	6,517	2	C	3,000	2	C	5,000	2	C
63	Terminal Ave	Reich Lane	Van Dusen Ave	Collector	4,850	2	C	2,700	2	C	6,600	2	C
64	Terminal Ave	Davis Avenue	Claribel Road	Collector	4,827	2	C	2,540	2	C	**11,300**	**2**	**D**
65	Terminal Ave	Claribel Road	Plainview Avenue	Collector	3,872	2	C	4,500	2	C	**8,150**	**2**	**D**
66	Patterson Road	Terminal Avenue	8th Street	Arterial	6,735	2	B	8,100	4	B	12,300	4	B
67	California St	Terminal Avenue	8th Street	Collector	1,050	2	C	2,925	2	C	2,500	2	C
68	Kentucky Ave	Terminal Avenue	8th Street	Collector	2,190	2	C	2,925	2	C	2,500	2	C
69	Claribel Road	Terminal Avenue	Claus Road	Arterial	6,745	2	B	**38,450**	**4**	**F**	**43,800**	**4**	**F**

Table 4.15-6
Projected Daily Traffic Volumes and Associated Levels of Service

#	Street	From	To	Class	Existing			Buildout of Existing GP			Draft GPU		
					Daily Volume	Lanes	LOS	Daily Volume	Lanes	LOS	Daily Volume	Lanes	LOS
70	Sante Fe Street	8th Street	Claus Road	Collector	1,072	2	C	1,000	2	C	1,000	2	C
71	Claus Road	Patterson Road	Sante Fe Street	Arterial	8,279	2	B	18,500	4	B	21,500	4	B
72	Claus Road	Patterson Road	Kentucky Avenue	Arterial	10,296	2	C	18,775	4	B	26,100	4	C
73	Claus Road	Davis Road	Claribel Road	Arterial	10,217	2	C	20,550	4	B	**29,900**	**4**	**D**
74	Claus Road	Claribel Road	Plainview Road	Arterial	11,452	2	C	11,900	2	C	23,050	6	B
75	SR 108	Claus Road	Snediger Road	Arterial	15,500	2	E	**15,000**	**2**	**E**	**18,100**	**2**	**F**
76	Sante Fe Street	Claus Road	Central Avenue	Collector	768	2	C	900	2	C	2,500	2	C
77	Patterson Road	Claus Road	Snediger Road	Arterial	4,713	2	B	11,875	4	B	18,900	4	B
78	California Ave	Claus Road	Snediger Road	Collector	-			-			1,600	2	C
79	Kentucky Ave	Claus Road	Snediger Road	Collector	-			-			2,250	2	C
80	Claribel Road	Claus Road	Eleanor Avenue	Arterial	8,788	2	B	27,900	4	C	29,400	4	C
81	Mesa Drive	SR 108	Eleanor Avenue	collector	-			-			1,100	2	C
82	Snediger Road	SR 108	Patterson Road	Collector	-			-			3,500	2	C
83	Snediger Road	Patterson Road	Kentucky Ave	Collector	-			-			1,500	2	C
84	SR 108	Snediger Rd	Langworth Road	Arterial	15,500	2	E	**16,200**	**2**	**F**	**16,100**	**2**	**F**
85	Eleanor Ave	SR 108	Patterson Road	Collector	-			-			1,100	2	C
86	Eleanor Ave	Patterson Road	Kentucky Ave	Collector	-			-			3,000	2	C
87	Eleanor Ave	Kentucky Ave	Claribel Rd	Collector	505	2	C	10,000	2	D	7,400	2	C

Bold indicates volumes in excess of LOS C within Riverbank's Planning Area

Table 4.15-7
Projected Daily Traffic Volumes and Associated Levels of Service Outside Riverbank Planning Area

Street	From	To	Class	Existing			Old GP			Draft GPU		
				Daily Volume	Lanes	LOS	Daily Volume	Lanes	LOS	Daily Volume	Lanes	LOS
McHenry Avenue	Ladd Road	Patterson Rd (SR 108)	Principal Arterial	-	2	-	18,700	4	A	18,400	4	A
McHenry Ave	Patterson Road	Kiernan Avenue	Principal Arterial	21,000	2-4	B	16,700	4	A	17,700	4	A
McHenry Ave	Kiernan Avenue	Pelandale Ave	Principal Arterial	22,000	4	B	44,400	6	C	45,500	6	D
McHenry Ave	Pelandale Ave	Sylvan Ave	Principal Arterial	22,000	4	B	46,800	6	D	45,100	6	D
McHenry Ave	Sylvan Road	Briggsmore Road	Principal Arterial	41,000	6	C	44,600	6	C	44,800	6	C
Coffee Road	Vella Road	Pelandale Ave	Minor Arterial	4,950	2	C	10,500	2	C	12,300	2	C
Coffee Road	Pelendale Ave	Sylvan Ave	Minor Arterial	15,700	2	E	30,700	4	D	30,100	4	D
Coffee Road	Sylvan Ave	Briggsmore Road	Minor Arterial	28,150	4	C	29,700	4	D	30,200	4	D
Oakdale Road	Pelandale Ave	Sylvan Ave	Principal Arterial	22,650	2	B	31,200	6	B	31,200	6	B
Oakdale Road	Sylvan Avenue	Briggsmore Road	Principal Arterial	37,300	4	F	45,200	6	D	45,300	6	D
Roselle Avenue	Plainview Road	Claribel Road	Minor Arterial	7,190	2	C	19,300	4	B	20,300	4	B
Roselle Avenue	Claribel Road	Sylvan Avenue	Minor Arterial	7,190	2	C	20,700	4	B	31,800	4	D-E
Roselle Avenue	Sylvan Avenue	Briggsmore Road	Minor Arterial	15,450	4	A	9,900	4	B	9,100	4	B
Claus Road	Santa Fe Ave	Sylvan Ave	Express	13,050	2	C	24,750	6	B	34,750	6	C
Claus Road	Sylvan Avenue	Briggsmore Ave	Express	19,300	2	F	28,300	6	B	31,200	6	B
Kiernan Ave	SR 99	Dale Avenue	Principal Arterial	28,000	2	F	38,800	6	C	39,900	6	C
Kiernan Avenue	Dale Avenue	Tully Road	Principal Arterial	28,000	2	F	32,800	6	B	37,000	6	C
Kiernan Avenue	Tully Road	McHenry Ave	Principal Arterial	14,000	2	F	43,350	6	C	43,700	6	C
Claribel Road	Langworth Road	Albers Road	Arterial	-	2	-	29,800	2	F	30,100	2	F
Pelandale Avenue	SR 99	Dale Road	Principal Arterial	30,400	6	B	28,200	6	B	29,800	6	B
Pelendale Avenue	Dale Road	McHenry Avenue	Express	16,250	2		35,000	6	B	35,700	6	C
Pelandale Avenue	McHenry Ave	Oakdale Road	Express	13,900	2		31,000	6	B	30,500	6	B
Claratina Avenue	Oakdale Road	Roselle Avenue	Express	-	-	-	19,900	4	B	23,500	4	C

Table 4.15-8
Projected Daily Traffic Volumes and Associated Levels of Service with Tivoli Specific Plan Land Uses

#	Street	From	To	Class	Existing			Old GP			Draft GPU			Draft GPU + Tivoli		
					Daily Volume	Lanes	LOS	Daily Volume	Lanes	LOS	Daily Volume	Lanes	LOS	Daily Volume	Lanes	LOS
7	Claribel Rd	McHenry Avenue	Coffee Road	Arterial	16,271	2	F	**49,650**	**4**	**F**	**52,500**	**4**	**F**	**52,900**	**4**	**F**
11	Coffee Road	Crawford Road	Claribel Road	Arterial	6,900	2	B	13,175	2	C	22,600	4	B	21,800	4	B
12	Coffee Rd	Claribel Rd	Vella Road	Arterial	10,290	2	C	7,715	2	B	10,400	2	C	10,200	D	C
17	Claribel Rd	Coffee Road	Commercial Access	Arterial	13,371	2	D	**47,300**	**4**	**F**	**42,800**	**4**	**F**	**43,000**	**4**	**F**
24	Crawford Rd	NS Collector	Oakdale Road	Arterial	329	2	C	3,925	2	B	5,300	2	B	5,400	2	B
26	Claribel Rd	Commercial Access	Oakdale Road	Arterial	13,731	2	D	**47,300**	**4**	**F**	**47,750**	**4**	**F**	**47,000**	**4**	**F**
30	Oakdale Road	Morrill Road	Crawford Road	Arterial	10,966	2	C	28,250	4	C	29,200	4	C	29,400	4	C
31	Oakdale Rd	Crawford Road	Retail Access	Arterial	15,866	4	B	31,950	4	D	29,000		C	29,400	4	C
32	Oakdale Road	Retail Access	Claribel Road	Arterial	15,866	4	B	**28,000**	**4**	**C**	**29,900**	**4**	**D**	**29,600**	**4**	**D**
33	Oakdale Rd	Claribel Road	Mable Avenue	Arterial	15,382	2	F	**33,175**	**2**	**F**	**33,400**	**2**	**F**	**33,000**	**2**	**F**
36	Crawford Rd	Oakdale Road	Antique Rose Way	Collector	7,819	2	D	4,670	2	C	6,700	2	C	6,600	2	C
37	Claribel Rd	Oakdale Road	Squire Wells Way	Arterial	-	2	-	**47,100**	**4**	**F**	**49,200**	**4**	**F**	**49,000**	**4**	**F**
50	Roselle Ave	Glow Road	Claribel Road	Arterial	8,303	2	B	12,000	4	B	13,500	4	B	13,500	4	B
51	Claribel Rd	Squire Wells Way	Roselle Avenue	Arterial	10,839	2	C	**44,700**	**4**	**F**	**46,100**	**4**	**F**	**45,900**	**4**	**F**
52	Roselle Ave	Claribel Road	Plainview Road	Arterial	7,011	2	C	14,200	4	B	17,700	4	B	17,450	4	B
53	Claribel Road	Roselle Avenue	Terminal Avenue	Arterial	10,780	2	C	**49,250**	**4**	**F**	**51,000**	**4**	**F**	**51,200**	**4**	**F**
54	Sante Fe Rd	Henry Road	Myers Road	Arterial	11,548	2	C	**14,625**	**2**	**D**	**14,600**	**2**	**D**	**14,575**	**2**	**D**
59	SR 108	1st Street	8th Street	Arterial	21,000	2	F	**17,350**	**2**	**F**	**14,900**	**2**	**E**	**15,300**	**2**	**E**
60	SR 108	5th Street	Claus Road	Arterial	20,500	2	F	**14,000**	**2**	**D**	**14,200**	**2**	**D**	**14,600**	**2**	**D**
64	Terminal Ave	Davis Avenue	Claribel Road	Collector	4,827	2	C	2,540	2	C	**11,300**	**2**	**D**	**11,550**	**2**	**D**
65	Terminal Ave	Claribel Road	Plainview Avenue	Collector	3,872	2	C	4,500	2	C	**8,150**	**2**	**D**	**8,300**	**2**	**D**
66	Patterson Road	Terminal Avenue	8th Street	Arterial	6,735	2	B	8,100	4	B	12,300	4	B	12,150	4	B
69	Claribel Road	Terminal Avenue	Claus Road	Arterial	6,745	2	B	**38,450**	**4**	**F**	**43,800**	**4**	**F**	**44,550**	**4**	**F**
73	Claus Road	Davis Road	Claribel Road	Arterial	10,217	2	C	20,550	4	B	**29,900**	**4**	**D**	**29,950**	**4**	**D**
74	Claus Road	Claribel Road	Plainview Road	Arterial	11,452	2	C	11,900	2	C	23,050	6	B	24,450	6	B
75	SR 108	Claus Road	Snediger Road	Arterial	15,500	2	E	**15,000**	**2**	**E**	**18,100**	**2**	**F**	**18,700**	**2**	**F**
80	Claribel Road	Claus Road	Eleanor Avenue	Arterial	8,788	2	B	27,900	4	C	29,400	4	C	28,700	4	C
84	SR 108	Snediger Rd	Langworth Road	Arterial	15,500	2	E	**16,200**	**2**	**F**	**16,100**	**2**	**F**	**16,550**	**2**	**F**

Bold indicates volumes in excess of LOS C within Riverbank's Planning Area

Peak-Hour Traffic Volumes and Intersection Levels of Service

The impacts of implementing the General Plan update have also been assessed based on a.m. and p.m. peak-hour conditions at key intersections.

Due to the substantial amount of urban development anticipated under the General Plan update, a two-step process was used to establish future intersection turning movements. Two methodologies were employed and the results of each were averaged to identify 2030 forecasts under buildout of the updated Riverbank General Plan.

First, current peak-hour turning movements were interpolated to 2030 volumes using localized growth rates based on comparison of 2005 and modeled 2030 volumes. Using the methodology contained in the Transportation Research Board's (TRB's) NCHRP Report 255, *Highway Traffic Data for Urbanized Area Project Planning and Design* (refer to Appendix). The second approach employed the daily turning movement forecasts created by the regional model. These daily volumes were factored to a.m. and p.m. volumes assuming that 7.0% and 8.5% of the daily traffic occurred in the a.m. and p.m. peak hour, respectively. Assumptions for inbound and outbound directionality were also made based on current travel patterns.

The volumes derived under each approach were averaged, and the resulting peak-hour forecasts are presented in Exhibits 4.15-4a and 4.15-4b.

Levels of Service

Peak-Hour Levels of Service were calculated for study intersections under two scenarios. The first scenario assumes improvements have been made that are consistent with current City of Riverbank policies regarding land developer responsibilities for funding and constructing required improvements, consistent with the current City of Riverbank traffic mitigation fee program. This scenario assumes that in new growth areas, frontage improvements will occur when development proceeds, and that these improvements will be consistent with the General Plan Circulation Element. With regard to the City's fee program, improvements that are of citywide benefit, such as traffic signals or roundabouts at major public road intersections, would be funded via the fee program. For this analysis, it is assumed that signals already in the fee program will be installed and that those locations likely to meet warrants (or roundabouts) will also be included in an updated fee program.

The second scenario identifies those additional improvements that are needed to meet the City of Riverbank's proposed LOS D standard.

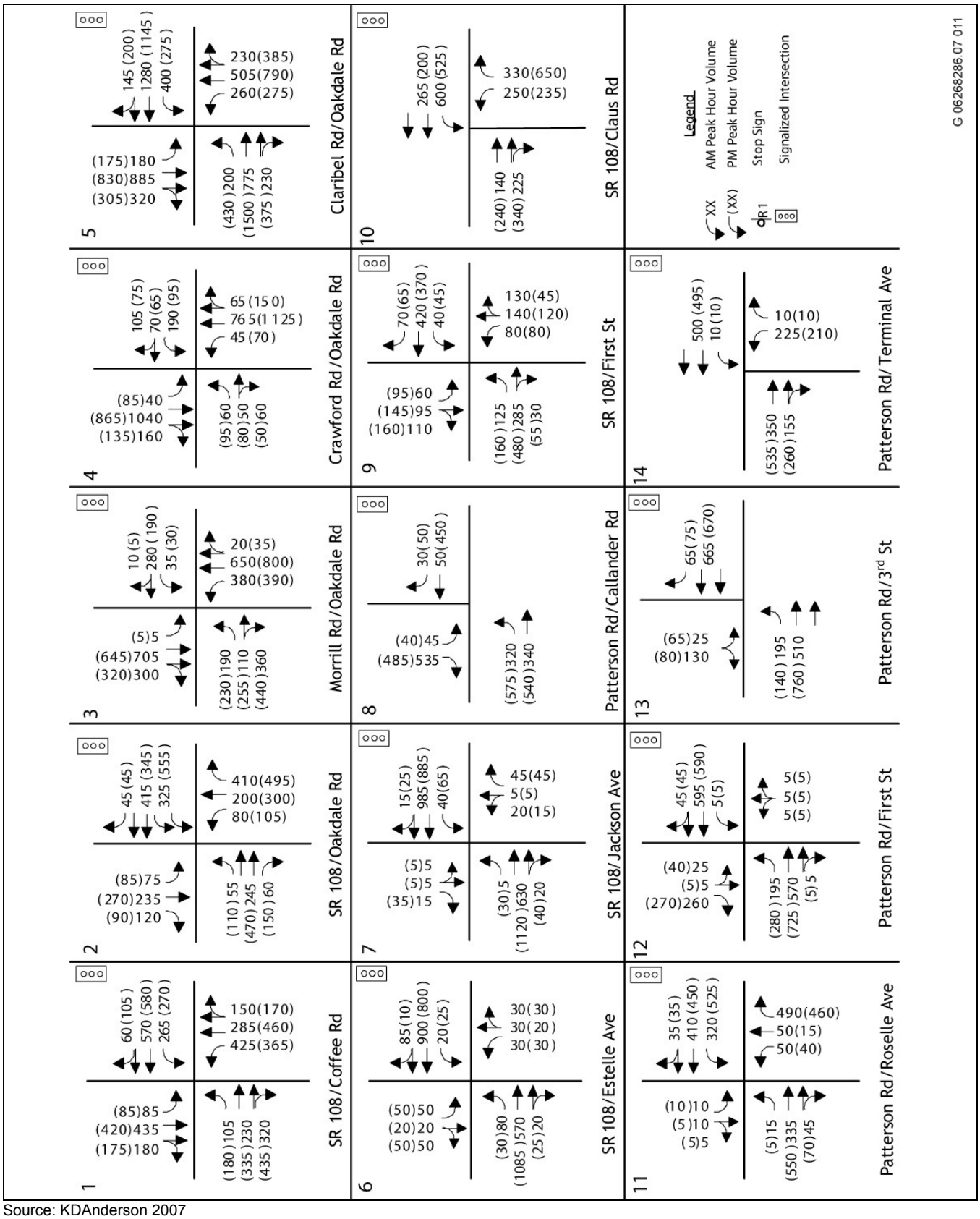
Table 4.15-9 presents resulting Levels of Service during the a.m. and p.m. peak hours under both scenarios.

Traffic Signals

The evaluation of key intersections has noted several locations where traffic signals will be needed to deliver LOS D or better conditions. It is also possible to identify future signalized intersections based on the daily traffic volume warrant thresholds contained in the Manual of Uniform Traffic Control Devices (MUTCD). For this General Plan update and EIR, it is assumed that intersections with daily volumes on all legs totaling more than 24,000 ADT with at least 3,000 ADT on each leg will eventually warrant signalization.

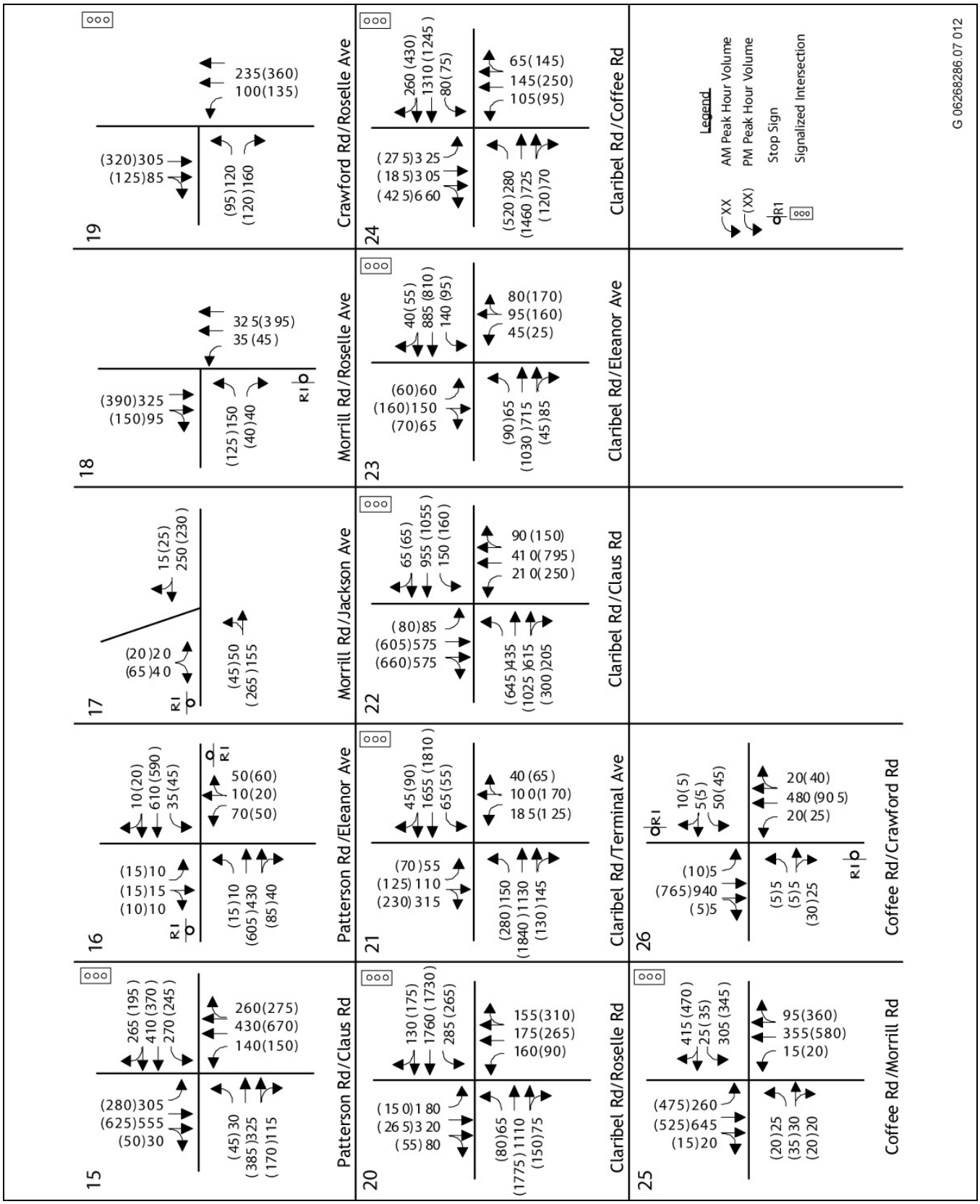
The City will ensure fire department emergency service preemption of traffic signals.

Table 4.15-10 lists the locations of traffic signals that are projected to be needed at General Plan buildout. This list excludes existing signalized intersections.



Source: KDAnderson 2007

General Plan Buildout **Exhibit 4.15-4a**



Source: KDAnderson 2007

General Plan Buildout **Exhibit 4.15-4b**

Table 4.15-9
General Plan Build Out Peak Hour Intersection Levels of Service
With Circulation Element Improvements and Mitigation

Intersection	Control	A.M. Peak Hour				P.M. Peak Hour				Traffic Signal Warranted?
		Circulation Element		Mitigated		Circulation Element		Mitigated		
		Average Delay (seconds)	LOS	Average Delay (seconds)		Average Delay (seconds)	LOS	Average Delay (seconds)	LOS	
SR 108 / Coffee Rd	Signal	52.5	D	28.5	C	57.3	E	30.2	C	Yes
SR 108 / Oakdale Rd	Signal	20.8	C	-	-	24.8	C	-	-	-
Oakdale Road / Morrill Rd	Signal	69.2	E	31.6	C	102.5	F	27.9	C	Yes
Oakdale Road / Crawford Rd	Signal	20.3	C			20.4	C			
Oakdale Road / Claribel Rd	Signal	175.2	F	35.5	D	269.7	F	44.9	D	-
SR 108 / Estelle Drive	Signal	12.7	B			10.1	B			-
SR 108 / Jackson Ave	Signal	5.5	A			6.8	A			
SR 108 / Callander Rd	Signal	21.5	C			22.0	C			-
SR 108 / 1st Street	Signal	26.1	C			28.7	C			-
SR 108 / Claus Road	Signal	21.8	C			24.8	C			Yes
Patterson Rd / Roselle Ave	Signal	17.4	B			17.4	B			Yes
Patterson Road / 1st Street	Signal	18.8	B			19.6	B			Yes
Patterson Road / 3rd Street	Signal	14.7	B			10.7	B			Yes
Patterson Rd / Terminal Ave	Signal	14.0	B			11.3	B			Yes
Patterson Road / Claus Road	Signal	36.5	D			47.6	D			Yes
Patterson Road / Eleanor Ave (overall) NB left+through+right SB left+through+right	NB / SB Stop	(3.7) 26.7 25.5	(A) D D			(4.6) 38.3 37.5	(A) E E			No
Morrill Road / Jackson Ave (overall) SB left+right turn	SB Stop	(2.0) 11.4	(A) C			(2.1) 11.6	(A) B			No

Table 4.15-9
General Plan Build Out Peak Hour Intersection Levels of Service
With Circulation Element Improvements and Mitigation

Intersection	Control	A.M. Peak Hour				P.M. Peak Hour				Traffic Signal Warranted?
		Circulation Element		Mitigated		Circulation Element		Mitigated		
		Average Delay (seconds)	LOS	Average Delay (seconds)		Average Delay (seconds)	LOS	Average Delay (seconds)	LOS	
Morrill Road / Roselle Ave (overall) EB left+right turn	EB Stop	(4.1) 19.2	(A) B			(3.7 23.5	(A) C			No
Roselle Ave / Crawford Rd	Signal	18.4	B			16.7	B			-
Claribel Road / Roselle Ave	Signal	57.1	E	24.3	C	120.6	F	25.0	C	Yes
Claribel Road / Terminal Ave	Signal	98.1	F	24.5	C	110.7	F	22.3	C	No
Claribel Road / Claus Road	Signal	136.2	F	31.3	C	213.8	F	41.6	D	-
Claribel Road / Eleanor Ave	Signal	21.1	C			24.7	C			Yes
Claribel Road / Coffee Rd	Signal	155.7	F	31.7	C	163.0	F	22.3	C	Yes
Coffee Rd / Morrill Road	Signal	26.8	C	20.2	C	82.5	F	27.8	C	Yes
Coffee Rd / Crawford Road (overall) WB Stop	EB/WB Stop	(1.8) 30.4	(A) D			(4.6) 129.7	(A) F			No

Traffic Signals planned for installation by the City of Riverbank and / or Caltrans within the next year

Table 4.15-10 Signalized Intersections at General Plan Buildout	
1	SR 108/Coffee Road
2	Coffee Road/Morrill Road
3	Coffee Road/New Collector
4	Coffee Road/Claribel Road
5	SR 108/New Collector
6	New Collector/Morrill Road
7	New Collector/Morrill Road
8	New Collector/Morrill Road
9	Retail Access/Claribel Road
10	Oakdale Road/Morrill Road
11	Oakdale Road/New Collector
12	Oakdale Road/Retail Access
13	SR 108/Jackson Avenue
14	Patterson Road/Roselle Avenue
15	Roselle Road/Glow Road
16	Roselle Road/Claribel Road
17	Patterson Road/1st Street
18	Patterson Road/3rd Street
19	Patterson Road/Terminal Avenue
20	Patterson Road/Claus Road
21	Claribel Road/Terminal Avenue
22	SR 108/Claus Road
23	Patterson Road/Snediger Road
24	Claus Road/California Avenue
25	Claus Road/Kentucky Avenue
26	Claribel Road/Eleanor Avenue

Alternatives to Signalization

As noted elsewhere in this EIR and throughout the General Plan, the majority of future urban development outside the existing City would occur under the specific plan process, as provided in State law and as directed by the City of Riverbank. It is possible that through the development of one or more specific plans, the City would elect to have installed roundabouts, instead of signalization, to control traffic at various intersections.

Because new growth areas are to occur under the specific plan process, the General Plan land use diagram and policies provide some general policy guidance as to development patterns. Future specific plans are required to be consistent with the General Plan, but may have some revisions to the arrangement of future land uses (as illustrated in the General Plan land use diagram). Similarly, while applying policies throughout the General Plan, specific plans may revise certain aspects of the Circulation Diagram, as presented in the General Plan. Through the specific plan

process, the City may elect to identify certain intersections where roundabouts would be used instead of traffic signalization. While the analysis and mitigation presented in this EIR would appear to emphasize signalization as the City's approach to traffic control, roundabouts can provide similar or improved levels of service with similar traffic volumes. Future environmental analysis of specific plan and other proposals would detail roundabout design and level of service.

4.15.4 SIGNIFICANCE THRESHOLDS

THRESHOLDS OF SIGNIFICANCE

For the purpose of this analysis, the following thresholds of significance have been used to determine whether implementation of the proposed project (the General Plan update) would result in significant traffic and circulation impacts. The impact is considered significant if implementation of the proposed project (the General Plan, in this case) would:

- Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system.
- Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency or the city for designated roads or highways.
- Substantially increase hazards due to a design feature or incompatible uses.
- Result in inadequate emergency access.
- Result in inadequate parking capacity such that a substantial safety hazard would result.
- Conflict with adopted policies, plans, or programs supporting alternative transportation.
- 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.

4.15.5 IMPACTS AND MITIGATION MEASURES

IMPACT ANALYSIS

Following is a descriptive summary of the transportation impacts associated with implementation of the Riverbank General Plan update.

IMPACT 4.15-1 Implementation of the Riverbank General Plan will add vehicle trips to the Planning Area. *This addition in vehicle trips will contribute to LOS F conditions on the Claribel Road corridor, based on LOS estimates derived from future daily traffic volumes. This is a* ***significant and unavoidable*** *impact.*

Development under the Riverbank General Plan, along with other regional growth, will result in daily traffic volumes on Claribel Road that are indicative of LOS F conditions on a four-lane arterial street. While forecast volumes will vary, at some locations, future anticipated traffic volumes would also exceed the current LOS C and proposed General Plan update LOS D threshold for a six-lane arterial roadway. This is considered a **potentially significant** impact.

Based on input from Caltrans, Riverbank, StanCOG, Stanislaus County, the City of Modesto, and the City of Oakdale have formed a Joint Powers Authority (JPA) and are planning a regional controlled access east-west expressway that would roughly follow the Claribel Road corridor in the Riverbank Planning Area. This future expressway would link northern Stanislaus County, Tuolumne County, and SR 99. Preliminary concepts show a route that would connect to SR 99 at the Ladd Road intersection before extending easterly across McHenry

Boulevard, where the route would approximate the current Claribel Road alignment. Moving east through Riverbank, preliminary concepts would be south of and parallel to the existing Claribel Road until the new road crosses the BN&SF railroad and then proceeds northeasterly across the extreme southeastern portion of the Riverbank Planning Area. This not yet programmed. Access to the new route and the level of improvement to major intersections remains to be determined. The design specifications will be coordinated between Caltrans, StanCOG, Stanislaus County, and the cities located along the route.

Based on preliminary concepts, the development of this regional expressway would improve traffic conditions. However, the LOS to be provided on the new facility will be determined jointly by the agencies involved. The design and the LOS to be provided will be based in part on costs, as well as applicable standards. Because the City of Modesto, the City of Oakdale, and Stanislaus County (in urban areas) accept LOS D as the minimum standard, it is likely that the new facility would not be designed to meet the City of Riverbank's historic LOS C standard. Failure to achieve LOS C would be a significant impact under the current Riverbank LOS standard.

In the long term, the development of a new alternative route roughly parallel to the existing Claribel Road corridor may result in traffic volumes through Riverbank Planning Area that achieve City LOS standards (existing and future). While the JPA continues to make progress on the analysis and planning of this new regional expressway, the schedule for fully implementing this project is uncertain. While this future regional expressway would likely mitigate the impacts of General Plan implementation on the current Claribel Road, the City cannot rely on the implementation of this yet-to-be programmed facility in significance characterizations for this EIR.

Until such time as a regional expressway is developed, the City of Riverbank could take steps to maximize the capacity of the current Claribel Road. As an alternative, the City could identify, reserve right-of-way, and collect traffic impact fees for widening Claribel Road to six lanes. However, based on the traffic analysis conducted to support this EIR, this would not provide LOS C, nor would this provide LOS D (the proposed LOS standard) along the Claribel Road corridor.

The City could remove access points or limit access points on the existing Claribel Road alignment in order to help to maximize the capacity of the current road. Developing intersections on the existing Claribel Road alignment with auxiliary turn lanes would also help address peak-hour vehicular traffic demand at key Planning Area intersections along this roadway corridor.

The City could take actions to widen Claribel Road to six lanes in developed and developing areas, but designate the portions of Claribel Road in the Riverbank Planning Area where development has not yet occurred as a four-lane expressway, eliminate further access to Claribel Road, and develop a mechanism for acquiring needed right-of-way and construct a four-lane expressway.

Providing a regional expressway would relieve traffic congestion along the Claribel corridor. Improving the Claribel Road corridor to six lanes, even in the absence of a regional expressway, would help address vehicular congestion along this corridor. Even if six lanes are required to deliver some threshold level of service, the City may elect to pursue alternative transportation improvement strategies, in light of the negative impacts potentially associated with constructing a roadway of this size.

Rather than pursue actions intended to provide LOS C (under the current standard) or D (under the proposed standard) independently, the City has elected to continue with JPA arrangement in coordination with other jurisdictions in the region. Due to these ongoing regional transportation planning efforts, the City considers unilateral action to achieve City LOS standards for the current Claribel Road to be infeasible. Rather, as provided in the General Plan update Circulation Element:

- Implementation Measure CIRC-8: The City will work with surrounding jurisdictions, the County, and StanCOG to develop regional solutions to regional vehicular transportation issues. The City will evaluate and make use of City approved regional traffic modeling tools, and use such tools for impact assessment and traffic mitigation for development projects.

In addition, the City will implement the following mitigation:

Mitigation Measure 4.15-1

- The City will continue to participate with other regional jurisdictions in the Stanislaus County North County Corridor Joint Powers Authority, according to the terms of this Joint Powers arrangement. The Joint Powers Arrangement is intended to result in the planning and implementation of a new regional east-west expressway serving northern Stanislaus County.

Despite Riverbank's ongoing commitment to the regional expressway planning, given the fact that this facility is not yet designed and programmed as of the writing of this document, and given the fact that the LOS to be provided by this facility has not yet been determined, the impact is considered **significant and unavoidable**.

IMPACT 4.15-2 Development anticipated as a part of the Riverbank General Plan update will result in traffic volumes on the SR 108 corridor that exceed the current LOS C standard and the proposed LOS D threshold on the two-lane portions of the highway. *This is a significant and unavoidable impact.*

While high traffic volumes are forecast for Claribel Road, the current SR 108 will remain a major east-west route serving the Riverbank Planning Area. The daily traffic volumes forecast on SR 108 through Riverbank will remain above the existing LOS C threshold on most of those segments of SR 108 that today are two lanes.

The General Plan update establishes that the City will facilitate a more livable, pedestrian-friendly environment along the current SR 108. This environment could be provided in part by narrowing the roadway, reducing surface parking in the vicinity, increasing connectivity and multi-modal access, and through other means. These improvements will become more feasible once an alternative route for SR 108 is created (i.e., the North County Expressway) and once control over access and design standards for the current SR 108 is passed from Caltrans to the City. However, given current east-west travel demand and the uncertain timeframe for a regional expressway, for the purposes of this analysis, the City assumes that SR 108 will continue to be improved as a four-lane road, as new development occurs.

The City will ensure that, with control over this route, additional street crossings of SR 108 will be provided (beyond the limits for a Caltrans facility). The City will ensure that a pedestrian-friendly environment is constructed along the roadway. The City's vision for a more pedestrian friendly environment along this corridor would be furthered with control not only over the land uses here, but also the street standards. As noted in Implementation Measure CIRC-4 of the proposed Circulation Element, the City will develop standards that will consider on equal footing of all locally available forms of travel. Development along Patterson Road will be designed so that once the City has control over this roadway, frequent through crossings can be opened up to better achieve the City's connectivity and access goals.

The area of Patterson Road / SR 108 east of 1st Street to Topeka Street is one area where implementing a four-lane section is likely to prove problematic. Today, the route through this downtown area is a two-lane street, and it would be difficult to widen the road here since businesses are built very close to the right-of-way. If this roadway were not improved to four lanes, this would create a **potentially significant** impact.

Mitigation Measure 4.15-2

- Widen SR 108 to four lanes as new development occurs and include applicable improvements as a part of the City's traffic impact fee program.

With the incorporation of the above mitigation, the impact would be considered less than significant with one exception. The SR 108 segment between 1st Street and Topeka Street, as described above, would exceed the LOS C standard because widening this segment to four lanes is considered infeasible. Development of a regional

expressway would relieve traffic from this corridor. Since the design of a future regional expressway is not known as of the writing of this document, the LOS that would be provided on other east-west roadways is difficult to determine, including this segment of SR 108. Since the North County Regional Expressway is not yet programmed, for the purposes of analysis, the impact for SR 108 between 1st Street and Topeka Street is considered **significant and unavoidable**.

IMPACT 4.15-3 Development anticipated as a part of the Riverbank General Plan update will result in traffic volumes in excess of the historic LOS C threshold, as well as the proposed LOS D standard on Morrill Road west of Oakdale Road. *This is a **significant and unavoidable** impact.*

The General Plan land use and circulation diagrams envision development of the area west of Oakdale Road that would be served by a system of collector streets. For the time being, in deference to certain property owners along Crawford Road, the City has elected to install temporary barriers along Crawford Road, prohibiting through traffic until the time when this area develops at a density corresponding with the urban development anticipated in this portion of the Planning Area. This temporary barrier would be removed, when appropriate, allowing further east-west connectivity. However, with the circulation plan reflected in the proposed General Plan update, much east-west traffic would be funneled onto Morrill Road, and the forecast volumes for Morrill Road west of Oakdale Road would exceed the existing LOS C standard, as well as the proposed LOS D standard for a two-lane road. This is considered a **potentially significant** impact.

There are various options for addressing this issue. First, the Plan could be modified to identify Morrill Road from Coffee Road to Oakdale Road as a four-lane section. This improvement would yield LOS C. Alternatively, the configuration of land uses in the western area of Riverbank could be modified slightly to promote the use of alternative east-west routes.

The City will prepare one or more specific plans as a mechanism for planning new growth in the western portion of the City's Planning Area. The specific plan for the Southwest Riverbank Area could have detailed analysis of refined land uses to identify future traffic volumes along Morrill and other east-west through roadways in the area. Through iterative analysis, the City could distribute the land uses in different ways, with the goal of distributing traffic onto various east-west roadways, and therefore relieving pressure on Morrill Road and achieving the City's level of service standard. The City could also remove the temporary barrier to through traffic on Crawford Road. The volume on Morrill Road could be reduced if additional traffic was accommodated on Crawford Road, although it is unlikely that the diversion of traffic from Morrill Road would deliver LOS C conditions on this collector street.

Mitigation Measure 4.15-3

- Any future specific plans proposed in the western half of the Riverbank Planning Area shall provide analysis of future traffic volumes using refined land use plans and a project-specific level of detail for traffic generation and distribution. A high degree of east-west (as well as north-south) connectivity shall be provided with the goal of achieving the City's prevailing level of service standard using City-approved roadway segment level of service analysis methodology.

- Landowners and developers with property interests described in City specific plans shall fund roadway facilities, according to City direction, including Morrill Road and the other roadways, and shall contribute on a fair-share basis to roadways and intersections outside specific plan areas affected by future specific plan development.

Incorporation of this mitigation measure as a part of specific planning for the western portion of the Riverbank Planning Area can address traffic congestion along Morrill Road and other routes. The traffic analysis prepared for anticipated future specific plans would be based on the more refined land use array proposed therein. This will be more accurate than would this long-term analysis at the General Plan level.

Future specific plans will be required to be consistent with the various relevant policies of the proposed General Plan, including those that deal with accessibility, connectivity, and other elements of transportation. Since Morrill Road is anticipated to be located within planned neighborhoods, policies in the General Plan dictate that walkability, bicycle accessibility, and other quality of life issues are considered, as well as strict traffic engineering standards. It is possible that specific plan analysis would show that Morrill Road would continue to exceed the City's LOS standard, even after providing many alternative through connections, both east-west and north-south. It is possible that the City, after balancing the LOS standard with overall quality of life issues, may keep this roadway segment at two lanes. Therefore, this impact is considered **significant and unavoidable**.

IMPACT 4.15-4 Development under the Riverbank General Plan will result in traffic volumes that necessitate improving Riverbank's streets and intersections in order to provide LOS C, under the current standard, or LOS D, under the proposed standard, or better conditions. *This is a potentially significant impact.*

Implementing the Circulation Element of the General Plan will require the combined resources of new development, the City of Riverbank, and other government agencies. Adjacent development will continue to be directly responsible for implementing the Circulation Element as frontage improvements are made, but there will be locations where roadways need to be improved.

The current General Plan designates LOS C as the minimum threshold. The following streets are expected to operate at LOS D conditions, which would exceed the current GP's LOS C minimum, but would be acceptable under the proposed General Plan update:

- SR 108 (Patterson Road) from McHenry to New Collector Street (segment 1) (see Exhibit 4.15-3 for roadway segment locations). This segment would need to be widened to 6 lanes to achieve LOS C. This level of improvement is possible through an area that is generally undeveloped.

- New East-West Collector from New North-South Collector to Oakdale Road (segment 25). This segment would need to be upgraded to a 2-lane arterial section in order to achieve LOS C. This level of improvement is feasible in this undeveloped area.

- Oakdale Road from Karen Ahlen Drive to SR 108 (segment 27). This segment would need to be upgraded to Arterial standards for access and width to achieve LOS C. Since there is existing development along this segment, it would not be feasible to achieve these standards.

- Oakdale Road from Retail Access to Claribel Road (segment 32). This roadway segment would need to be widened to provide three through lanes in each direction to achieve LOS C. Because the west side of Oakdale Road has not yet been developed, this level of improvement is feasible north of Claribel Road.

- Santa Fe Road from to Henry Road to Meyers Road (segment 54). This segment would need to be widened to 4 lanes to deliver LOS C. This improvement is feasible.

- Terminal Avenue north and south of Claribel Road (segments 65 and 66). This road would need to be widened to 4 lanes to deliver LOS C. It is possible that this level of improvement could be implemented in coordination with long-range plans for the North County Regional Expressway.

- Claus Road from Davis Road to Claribel Road (segment 73) This roadway would need to be widened to provide three though lanes in each direction in order to achieve LOS C. The area on both sides of Claus Road is occupied by industrial development. However, right-of-way could be acquired to widen the road to 6 lanes.

Level of Service projected based on daily traffic volumes, as provided above, is simply a surrogate methodology for determining LOS on a peak-hour basis. Thus, the LOS presented as daily volumes are in fact designed to be representative of afternoon peak-hour conditions. The LOS, then, is not experienced throughout the day, but only

during peak travel times. Traffic volumes on Riverbank's streets will vary throughout the day, with off-peak volumes being substantially lower than the volumes occurring during the afternoon peak hour. For this reason, the City's decision to analyze and plan transportation systems according to a LOS D standard instead of LOS C will not appreciably change traffic congestion as experienced throughout the day.

During the P.M. peak hour, the difference in traffic congestion between LOS C and LOS D is most obvious at major signalized intersections. As noted in Table 4.15-1, the average delays could increase by 10 to 15 seconds per vehicle under LOS D, as compared with LOS C. For a motorist at such an intersection, this would increase the probability of having to wait through more than one signal cycle to clear a given intersection. By definition, motorists often have to wait through more than one signal cycle when an intersection operates at LOS E. At LOS D, there may be infrequent occasions when motorists on selected approaches have to wait through more than one cycle. At LOS C, motorists would nearly always clear the signal in the first cycle.

Building roadways and intersections to the higher vehicular traffic LOS C standard would increase crossing distances for pedestrians and bicyclists. Building roadways and intersections to this higher standard would have higher construction and maintenance costs. For further discussion of the City's decision, please refer to the Circulation Element of the updated General Plan. Although it may be possible to widen roadways to maintain many of the City's roadways to maintain the historic LOS C standard, the City will instead implement the following mitigation measure:

Mitigation Measure 4.15-4

- The City will plan, analyze, and mitigate vehicular transportation using LOS D as the minimum acceptable standard.

With incorporation of the above identified mitigation, the impact is considered **less than significant**.

IMPACT 4.15-5 Development under the Riverbank General Plan will result in traffic volumes that necessitate improving Riverbank's streets in areas where development is unlikely to occur in order to provide LOS C, under the current standard, or LOS D, under the proposed standard, or better conditions. *This is a **potentially significant** impact.*

Implementing the Circulation Element of the General Plan will require the combined resources of new development, the City of Riverbank, and other government agencies. While adjacent development will continue to be directly responsible for implementing the Circulation Element as frontage improvements are made, there will be locations where roadways need to be improved, but new development is unlikely. The precise location of such improvements is not knowable as of the writing of this document. The impact is considered **potentially significant**. Therefore, the City will implement the following mitigation measure:

Mitigation Measure 4.15-5

- The City of Riverbank will update its traffic impact mitigation fee program as part of a Streets Master Plan to identify the locations where improvements are needed and spread those costs among benefiting parties.

With incorporation of the above mitigation, the impact is considered **less than significant**.

IMPACT 4.15-6 Development anticipated as part of the Riverbank General Plan update will add traffic to streets beyond the City's Planning Area*, such as Coffee Road, Oakdale Road, Roselle Avenue, Terminal Avenue, and Claus Road in the area south of Claribel Road, to Claribel Road west and east of Riverbank, and Santa Fe Road and McHenry Avenue north of the City. This is a **potentially significant** impact.*

Along with urban development in other communities, development in Riverbank will add traffic to the portions of various streets and highways located outside of Riverbank's Planning Area. This is considered a **potentially significant** impact.

Forecast traffic volumes on Oakdale Road south of Claribel Road exceed the capacity of the existing two-lane road. Projected volumes on Roselle Avenue exceed the capacity of a two-lane facility, and are indicative of the need for a four-lane roadway. Please refer to Table 4.15-7 for more information.

Historically, each city in Stanislaus County has been primarily responsible for implementing roadway improvements within its Sphere of Influence (SOI), while "inter-city" fees have been collected as part of the County's Public Facilities Fee (PFF) program to fund improvements outside of each SOI. Thus, there has been no historic expectation that development within Modesto or Oakdale will contribute to the cost of improving Riverbank's roads, nor has there been an expectation that development in Riverbank would fund roadway improvements in Oakdale or Modesto.

There are two issues associated with this approach. First, as countywide development has proceeded, the volume of traffic on this regionally important road has increased. It is more difficult under these conditions to ensure minimum LOS. While roads south of Claribel Road may eventually be improved as development occurs in Modesto, there is no guarantee that the City of Modesto will choose to make improvements under a schedule that maintains LOS D or better conditions on these streets. Thus, it is possible that development in Riverbank may contribute to traffic conditions in excess of the LOS D standard in areas outside of the City's Planning Area. This is considered a **significant and unavoidable** impact.

Development decisions in one jurisdiction may have an effect on the nature of the development needed in other communities. In this case, the City of Modesto General Plan already designates the ultimate configuration of the roads south of Claribel Road. Coffee Road and Roselle Avenue are designated four-lane Minor Arterials. Oakdale Road is designated a six-lane Principal Arterial. Claus Road is designated an Expressway. As these ultimate roadways are consistent with the traffic demands forecast in this EIR, development under the draft Riverbank GPU does create a situation where any adjoining community would need to revise any planned circulation systems.

A similar review of the relative impact to San Joaquin County Roads was conducted using the San Joaquin Council of Governments (SJCOG) traffic model. While this model does not replicate future forecasts developed using a StanCOG derived model, the relative difference in forecasts under "without Riverbank General Plan update" and "with Riverbank General Plan update" conditions is a useful measure of the impact of the General Plan update.

Based on the SJCOG traffic model, new growth anticipated under the Riverbank General Plan update could slightly increase traffic volume on the roads with bridges connecting Riverbank with San Joaquin County. At the point where McHenry Avenue leaves Stanislaus County, the Riverbank General Plan update could accommodate growth resulting in an additional 2,080 daily trips (i.e., an increase from 11,580 to 13,660 ADT). This change is relatively low because of the "balance" of residential and non-residential land uses included as a part of Riverbank's General Plan update. At General Plan buildout, the SJCOG model shows a *reduction* of 1,470 daily trips on Santa Fe Road (from 13,100 to 11,630 daily trips) across the river.

As of the writing of this document, there is an ongoing project to improve the McHenry Avenue corridor, including the bridge over the Stanislaus River. This project is being led by San Joaquin County, but the bridge is being jointly funded by Stanislaus County. The project includes roadway widening, bridge improvements, signalization, and other improvements. The project would ultimately widen McHenry Avenue to five lanes.

Because buildout of the Riverbank General Plan update would add trips to McHenry Avenue, potentially in excess of locally applicable LOS standards, and because the City cannot control the timing of improvements to the McHenry Avenue corridor, the impact is considered **significant and unavoidable**.

The City has included an Implementation Strategy dealing with multi-jurisdictional issues as a part of the proposed General Plan update:

- **Implementation Measure CIRC-8:** The City will work with surrounding jurisdictions, the County, and StanCOG to develop regional solutions to regional vehicular transportation issues. The City will evaluate and make use of City approved regional traffic modeling tools, and use such tools for impact assessment and traffic mitigation for development projects.

In addition, the City has elected to implement the following mitigation:

Mitigation Measure 4.15-6

- The City will participate in an areawide roadway mitigation fee program, in coordination with the City of Oakdale, Stanislaus County, the City of Modesto, and other agencies with shared transportation planning issues.

- The City will evaluate inter-city and city-county components of Stanislaus County's public facilities fees and will update the reciprocal fee collection agreement. This agreement would be designed to collect impact fees when development occurs within the City in the amount necessary to fund roadway improvements outside of the City limits, on a pro-rata, or fair-share basis.

It is impossible to know at this point whether such multi-jurisdictional programs would be sufficient to provide LOS according to locally adopted standards along affected roadways. Therefore, despite all feasible mitigation, the impact is considered **significant and unavoidable**.

IMPACT 4.15-7 Development anticipated as a part of the Riverbank General Plan update will result in intersection Levels of Service in excess of the current LOS C standard. *This is a potentially significant impact.*

As noted in Table 4.15-9, the following intersections are likely to require improvements beyond those typically associated with the street sections identified in the Circulation Element, either to achieve LOS C or better conditions or to accommodate peak hour left turn volumes approaching 300 vehicles per hour (vph). Due to the potential for violating the currently adopted LOS C standard, the projected traffic volumes would result in a **potentially significant** impact. The following mitigation is required.

Mitigation Measure 4.15-7

The City will update the Traffic Impact Fee Program to be consistent with the following improvements. Approved specific plans shall provide the following improvements within proposed specific plan areas or shall fund on a pro-rata basis the following improvements, or those shown to achieve prevailing City level of service standards (following adoption of the LOS D standard, for example) and approved by the City following project level traffic impact analysis.

- **SR 108 / Coffee Road**: Add separate right turn lanes on SR 108 and dual northbound left turn lanes. This level of improvement is expected to yield LOS C.

- **Oakdale Road / Morrill Road**: Add a separate eastbound right turn lane and a dual northbound left turn lane. This level of improvement is expected to yield LOS C.

- **Claribel Road / Oakdale Road**: Add separate right turn lanes on all approaches; widen Claribel Road to provide three through lanes in each direction and widen Claribel Road to provide dual left turn lanes in both directions. This level of improvement is expected to yield LOS D on a six-lane Claribel Road. To reduce this impact to a less-than-significant level according to the current LOS standard, it would be necessary to widen

Oakdale Road to provide three through lanes in each direction. With the adoption of the LOS D standard, the impact would be less than significant without the need for a six-lane Oakdale Road.

- **Patterson Road / Claus Road**. Expected improvements are consistent with two lanes in each direction on Claus Road and on Patterson Road, and this level of improvement yields LOS D. To reduce this impact to a less-than-significant level using the current LOS C standard, it would be necessary to add a northbound right turn lane on Claus Road along Riverbank High School. With the adoption of the LOS D standard, the impact would be less than significant without the need for this northbound right turn lane on Claus Road along Riverbank High School.

- **Claribel Road / Roselle Avenue**: Widen Claribel Road to provide three through lanes in each direction and add separate right turn lanes on each approach. This level of improvement is expected to yield LOS C.

- **Claribel Road / Terminal Avenue**: Widen Claribel Road to provide three through lanes in each direction and add separate right turn lanes on the southbound, eastbound, and westbound approaches. This level of improvement is expected to yield LOS C.

- **Claribel Road / Claus Road**: Widen Claribel Road to provide three through lanes in each direction; add separate right turn lanes on each approach and add dual left turn lanes on both Claribel Road approaches. This level of improvement is expected to yield LOS D. To reduce this impact to a less than significant level under the current LOS C threshold it would be necessary to either add a second northbound left turn lane, OR widen Claus Road to provide three through lanes in each direction. With the adoption of the LOS D standard, the impact would be less than significant without the need for the second northbound left turn lane and a six-lane Claus Road.

- **Claribel Road / Coffee Road**: Widen Claribel Road to provide three through lanes in each direction; add separate right turn lanes on each approach and add dual left turn lanes on all approaches. This level of improvement would yield LOS C.

- **Coffee Road / Morrill Road**: Add northbound and westbound right turn lanes. This level of improvement would yield LOS C.

With incorporation of the above mitigation and Mitigation Measure 4.15-5, the impact is considered **less than significant**.

IMPACT 4.15-8 Development anticipated under the Riverbank General Plan update will result in additional automobile and pedestrian traffic across the at-grade BN&SF crossings *on Claribel Road and Patterson Road, which could increase the potential occurrence of accidents at these locations. This is a significant and unavoidable impact.*

The volume of automobile traffic across the BNSF Railroad is forecast to increase substantially in the future. The traffic volume forecast for Claribel Road is clearly indicative of the need for a grade separation, and the volume forecast at the Patterson Road crossing is indicative of the need to widen Patterson Road to four lanes across the railroad.

The feasibility of a grade separation on Claribel Road is linked to plans for a regional expressway approximately along this corridor. While the regional expressway is preliminarily expected to include a grade separation across the BN&SF, an appreciable traffic volume will remain on the current Claribel Road alignment, even after such a future expressway is implemented. As noted previously, the schedule for implementing the expressway is uncertain, but is likely to be a long-term set of improvements. The existing Claribel Road alignment is likely to carry traffic volumes that will require widening the crossing before the expressway is built.

The City of Riverbank and other affected agencies will need to consider the level of improvement needed at the existing Claribel Road crossing. Construction of a grade separation on the current alignment is one option. Construction of a state-of-the-art at-grade crossing as Claribel Road is incrementally widened is another option.

The extent of existing development at the Patterson Road crossing precludes development of a grade separation at that location. Construction of a state-of-the-art at-grade crossing as Patterson Road is widened to four lanes will be required.

The impact is considered **potentially significant**.

Mitigation Measure 4.15-8

- The City will proactively coordinate with BN&SF Railroad and the PUC to identify applicable strategies and funding for improved at-grade crossings or new grade separation.

- The City will pursue realignment of Terminal Avenue, where determined necessary, to provide proper spacing relative to the railroad and cross streets.

Because the regional expressway planning is uncertain and the feasibility of installing state-of-the-art grade crossings or grade separation at existing grade crossings in the City is uncertain, and because increased traffic attributable to the General Plan update could potentially lead to an increase in the number of traffic accidents along the railroad, this impact is considered **significant and unavoidable**.

IMPACT 4.15-9 Development anticipated as a part of the Riverbank General Plan update will result in increased traffic volumes on existing local and collector streets with adjacent homes. *The impact is less than significant.*

As the community of Riverbank grows, the volume of traffic on most roads in the community will increase. Streets such as Morrill Road which are designated as collectors but which have fronting homes will carry increasing traffic volumes. While the forecast traffic volumes on existing streets are unlikely to reach the LOS D threshold, it is likely that current residents will perceive the "quality of life" impacts associated with increased traffic through neighborhoods.

Noise impacts are evaluated in detail in the Noise section of this EIR (4.12). This EIR evaluates adverse physical environmental impacts, as required under CEQA. Increased traffic volumes below LOS standards and below levels that would exceed significance thresholds for air quality, noise, or other impact areas represent a **less-than-significant** impact for the purposes of this EIR. Nonetheless, the following mitigation is recommended.

Mitigation Measure 4.15-9

- Because the General Plan must deal with both new growth areas and the existing developed area of the community, the City of Riverbank will need to establish guidelines for permissible traffic volumes on streets with fronting development. These guidelines may either be part of the specific plan process or as part of the City's street improvement standards.

IMPACT 4.15-10 Development under the Riverbank General Plan will result in increased traffic at new commercial areas and traffic conditions in excess of the minimum LOS D standard may result. *This is a less-than-significant impact.*

The General Plan update Land Use Diagram identifies the location of commercial development areas where access will be an important issue. While it is beyond the scope of a general plan to design the access to individual parcels, it is important to identify the design parameters that will need to be considered as plans for development

of these areas proceeds through the specific plan process. This information is provided in the material that follows.

Northwest corner of Oakdale Road / Claribel Road Intersection

The General Plan update designates a 94 ± acre site for community commercial development. Areas with this designation are anticipated to be developed for retail, employment, and/or commercial services. These areas are located along major roadways on the periphery of planned and existing neighborhoods. The maximum FAR is 0.3. Access to this site is constrained by the need to facilitate regional circulation via both Claribel Road and Oakdale Road and by the location of existing intersections on Oakdale Road. The site in question has approximately ½ mile of frontage along the north side of Claribel Road and ¼ mile of frontage long Oakdale Road.

The level of access permitted to Claribel Road is an issue that will affect Riverbank and its neighbors. The City of Modesto General Plan identifies Claribel Road as a limited access expressway, and under the policies of that city, access to Claribel Road is limited to a single mid-block right-turn only connection midway between Oakdale Road and Coffee Road.

While the exact nature of the Claribel Road access will need to be determined as part of future anticipated specific plan processing, it is important to note that the volume of traffic at such an access is dependent on the level of access available via other routes. The General Plan update requires, and the General Plan update EIR traffic analysis assumes that the commercial site will be linked to adjoining neighborhoods to the north by multiple collector road canal crossings, as well as full access to Oakdale Road. However, with that level of access, the connection to Claribel Road is anticipated to handle 18,000 vehicles per day. The General Plan update EIR traffic analysis assumes one signalized access only on Claribel Road located on the west side of this commercial site, and that this would be the only signalized connection between Oakdale Road and Coffee Road.

Access to Oakdale Road will use opportunities created by the access to the existing retail center on the east side of Oakdale Road. That center has a signalized access on Oakdale Road approximately 600 feet north of Claribel Road. This intersection is approximately 2,000 feet south of the Crawford Road signal. While the design of access to the future retail site will need to be confirmed as part of the specific plan process, the General Plan update EIR traffic analysis assumes that it will be necessary to develop signalized access onto Oakdale Road opposite the existing signal and at another location midway between that signal and the Crawford Road intersection.

Northwest corner of Roselle Avenue / Claribel Road and Northeast corner of Roselle Avenue / Claribel Road

The General Plan update Land Use Diagram establishes the Mixed Use (MU) land use designation for these sites. This designation includes neighborhood-scale retail uses, offices, personal and commercial services, and similar land uses. This is the primary category for Riverbank to accommodate neighborhood serving retail, services, offices, and similar needs during the buildout of this General Plan. As such, this land use classification is anticipated to be mainly non-residential. However, the Mixed Use designation also explicitly allows for higher-density residential development in a vertical or horizontal mixed-use setting. The exact nature of access in this area will need to be confirmed. Creative site planning and access strategies might be required to provide adequate access to these sites while avoiding access onto Claribel Road. While direct access via Claribel Road may be convenient to certain travelers, there is no reason to believe that restricting access to Roselle Avenue would create substantial hazards or create exceedance of local level of service standards.

City review of access associated with site planning for these sites, which is routine, and implementation of street improvement standards, which is also routinely required, the impact is considered **less than significant**.

Mitigation Measures: No mitigation is required.

IMPACT 4.15-11 Development under the Riverbank General Plan could increase safety hazards if improperly planned and designed. *This is a less-than-significant impact.*

Please see discussion of at-grade railroad crossings above.

The City, through its roadway design standards, can directly influence the level of safety on public roadways. The proposed General Plan has policies in the Circulation Element to ensure safety for all available local modes of travel. The Circulation Element also has an implementation strategy for the City to update its street standards to be consistent with the proposed General Plan update. Example policies are listed below.

Goal CIRC-1: Riverbank's Circulation Network Provides Convenience and Choice Among all Modes of Transportation

- Policy CIRC-1.9: In new and existing developed areas, the City will invest in a convenient, well-maintained, and safe system of pedestrian and bicycle paths that connect residences with shopping centers, public buildings, parks, places of employment, and schools.

- Policy CIRC-1.15: The City will ensure that the pedestrian network is safe, accessible, attractive and efficient, running largely along public spaces (including streets and open spaces) fronted by houses, and avoids uses that generate major breaks in surveillance on routes to and from public transport and other routes used at night.

Goal CIRC-2: The City's Urban Development Pattern Supports all Locally Available Modes of Transportation

- Policy CIRC-2.6: The City will pursue in the existing developed area and require in new growth areas pedestrian amenities, such as street furniture, shade trees, pedestrian lighting, water fountains, and pedestrian oriented signage.

Goal CIRC-4: Move Freight and Passengers Efficiently

- Policy CIRC-4.1: The City will work with relevant public agencies and the railroad to appropriately regulate the movement of truck traffic and hazardous materials throughout the City.

- Policy CIRC-4.2: The City will enforce weight limits as a means to safely regulate truck traffic in noise sensitive areas, such as residential neighborhoods and near schools and hospitals.

- Policy CIRC-4.3: The City will ensure that signage indicating weight limits is clearly posted throughout the City.

- Policy CIRC-4.4: The City will support the development and implementation of a quick-response emergency services program for railroad corridors and continue to support the County's Hazardous Materials Team.

- Policy CIRC-4.5: The City will coordinate with rail transportation operators, such as BN&SF and Amtrak, to ensure safe and reliable rail transportation in and through the Planning Area.

- Policy CIRC-4.6: The City will limit, with a maximum weight limits, truck traffic to appropriate routes. Truck routes include Highway 108 through the City (Patterson Road, Callander Avenue, and Atchison Street), Roselle Avenue, First Street in the downtown area, Claus Road, Claribel Road, Snedigar Avenue, and Coffee Road. Areas of the aforementioned listed streets not within the City limits will be formally designated by the City upon any annexation that may occur in the future. Although Claribel Road may not be fully within City limits, it is likely that this would be a major roadway serving the County at some point in the future and

appropriate for truck traffic. The City will designate, post signage, and otherwise restrict truck traffic from using other streets, with an emphasis on streets that are primarily residential. Trucks may go by direct route to and from restricted streets, where required for the purpose of making pickups and deliveries of goods, but are otherwise restricted to truck routes.

Policies in the proposed General Plan update show that the City will emphasize safety for all travel modes as a part of updates to the street standards and implementation of the General Plan. The proposed General Plan update does not include any design features or incompatibilities that would create a safety issue. Therefore, the impact is **less than significant**.

Mitigation Measures: No mitigation is required.

IMPACT 4.15-12 Development under the Riverbank General Plan could result in inadequate emergency access if improperly planned and designed. *This is a potentially significant impact.*

Emergency vehicle access can be inhibited by dead-end roadways, streets that lack connectivity, and other factors. If new growth is not properly managed to ensure adequate emergency access, this could result in a **potentially significant** impact.

The proposed General Plan update does not include urban development of any inherently inaccessible areas. The proposed General Plan also has explicit connectivity requirements and other requirements for emergency access. With implementation of General Plan policies, including those that require appropriate emergency access meeting City and Stanislaus Consolidated Fire Protection District standards, impacts can be mitigated.

With high levels of connectivity guaranteed by the General Plan, future land uses will be accessible from a variety of locations. Examples of these goals and policies are presented below.

Goal CIRC-1: Riverbank's Circulation Network Provides Convenience and Choice Among all Modes of Transportation

- Policy CIRC-1.1: Approved plans, projects, and subdivision requests in new growth areas shall include the construction or pro-rata funding of transportation infrastructure that includes a connected and integrated system of bicycle facilities and pedestrian facilities, designed to comply with the Americans with Disabilities Act.

- Policy CIRC-1.2: Approved plans, projects, and subdivision requests in new growth areas shall provide a fully connected network of smaller roadways that provide many alternative routes between each point of origin and destination.

- Policy CIRC-1.3: Approved projects, plans, and subdivision requests in new growth areas shall arrange streets in an interconnected block pattern, so that pedestrians, bicyclists, and drivers are not forced onto arterial streets for inter- or intra-neighborhood travel. This approach will also ensure safe and efficient movement of emergency responders.

- Policy CIRC-1.4: Approved projects, plans, and subdivision requests with an internal street network shall provide an internal connectivity index of 1.4 or higher. The connectivity index is calculated by dividing the total number of road segments the number of nodes. Nodes are intersections plus cul-de-sacs. Roadway segments are between intersections. Cul-de-sacs are prohibited except where physical constraints make any other roadway solution impossible. The City may require higher levels of connectivity, beyond this standard, and will review plans and projects to take advantage of opportunities to provide more connectivity.

- Policy CIRC-1.5: Approved projects, plans, and subdivision requests shall connect with adjacent roadways and stubbed roads and shall provide frequent stubbed roadways in coordination with future planned development areas. Plans and projects shall connect to adjacent planned development areas and adjacent roadways at a minimum of 600-foot intervals. This minimum interval does not apply to development areas that are adjacent to existing or planned future limited-access highways, freeways, or expressways.

- Policy CIRC-1.6: Approved projects, plans, and subdivision requests shall provide a roadway network such that driving distance from any dwelling to the nearest collector street is a maximum of 2,000 feet and no more than three turning movements at intersections are required in order to travel from any home to a collector street.

- Policy CIRC-1.7: The City will ensure frequent street and trail connections between new residential developments and established neighborhoods, between downtown and surrounding neighborhoods, across the railroad, across the river, and between other important origin and destination points.

- Policy CIRC-1.8: City street improvement standards and the street classification system will reflect the need to accommodate the full range of locally available travel modes.

The Safety Element includes policies to ensure appropriate emergency access, as well:

- Policy SAFE-1.1: The City will ensure that approved development projects and public investments are consistent with the information provided in the Stanislaus County Multi-Jurisdictional Hazard Mitigation Plan.

- Policy SAFE-1.2: The City will continue to enforce State of California Building Standards Commission uniform codes, such as the California Building Code and California Fire Code with adopted Fire District amendments.

- Policy SAFE-1.3: The City will encourage the retrofitting of older buildings to current safety standards, and require compliance to recommendations of the fire and law enforcement service providers and the State Building Standards Commission uniform codes in coordination with major remodeling or additions.

- Policy SAFE-1.4: The City will require set backs, ignition resistant building materials, or other measures to reduce exposure to potential wildfires in areas designated for natural open space preservation, in coordination with California Department of Forestry and Fire Protection recommendations and Maintenance of Defensible Space Measures, as appropriate.

- Policy SAFE-1.8: The City will require that hazardous materials are used, stored, transported, and disposed in a safe manner and in compliance with local, State, and federal safety standards.

- Policy SAFE-2.1: The City will require development of, and maintain a road system that provides adequate connectivity and access for emergency equipment.

- Policy SAFE-2.2: The City will consult with fire protection service providers in reviewing development proposals. Development proposals will include City conditions that respond to concerns of fire protection service providers.

- Policy SAFE-2.3: New developments will provide fire flow as required in the Public Facilities and Services Element of the General Plan and relevant City Master Plans.

- Policy SAFE-2.4: The City will improve fire flow in existing developed areas of the City, as feasible, to meet standards presented in the Public Facilities and Services Element of the General Plan and relevant City Master Plans.

- Policy SAFE-2.5: The City will coordinate with the County Office of Emergency Services to identify evacuation routes and operational plans to be used in case of dam failure, flood disaster, and wildfire for any new growth areas in addition to any updates required to serve the existing developed City.

With the various policies included as a part of the General Plan update, implementation of the Plan would have a **less-than-significant** impact.

Mitigation Measures: No additional mitigation is required.

IMPACT 4.15-13 Development under the Riverbank General Plan would result in additional homes and destinations. Some travel would occur by private vehicle. The General Plan would increase the local parking demand. *To the extent that this is not met with enough parking supply to avoid a safety hazard, this could create an impact. There is no impact.*

The City has parking standards adopted as a part of the Municipal Code that specify the amounts of off-street parking that are required for each proposed land use type. The proposed General Plan update includes goals and policies relating to parking. The primary objective of such policies is to provide adequate parking while also ensuring that excessive surface parking does not create impediments to quality of life in Riverbank. Examples of relevant policies include the following.

Goal Circ-2: The City's Urban Development Pattern Supports all Locally Available Modes of Transportation

- Policy CIRC-2.2: The City will not allow large, unbroken surface parking lots, which unnecessarily inhibit travel on foot and by bicycle. Please refer also to Community Character and Design Element policies that address the location and nature of surface parking.

- Policy CIRC-2.3: Approved projects, plans, and subdivisions shall provide shade trees in parking areas in a ratio of at least one tree for every four parking spaces. These trees shall be dispersed throughout the parking area.

- Policy CIRC-2.5: The City will be flexible in parking requirements or eliminate off-street parking requirements for redevelopment, infill, and multi-family projects by allowing cooperative shared use of parking between properties with different parking demand peaking periods, utilization of on-street parking spaces to meet parking requirements, allowing parking reductions for projects located in walkable areas with improvements that accommodate alternative forms of travel, and allowing parking reductions for multi-family development to reflect the trip generation characteristics of this type of development.

The proposed General Plan update also includes an Implementation Measure to develop and implement a parking master plan. The Master Plan will include strategies and implementation measures for addressing the City's parking supply and parking requirements and design standards. The plan will include strategies to optimize the parking supply.

Future development will be required to comply with General Plan policy regarding travel safety, including the design and location of parking such that a safety hazard does not result. There is no change in the parking standards of Riverbank included as a part of the General Plan. There is no reason to believe that any action accommodated under the General Plan would result in parking supply that is so inadequate as to cause a safety hazard. There is **no impact**.

Mitigation Measures: No mitigation is required.

IMPACT 4.15-14 The Riverbank General Plan would accommodate construction of a variety of land uses. The Riverbank General Plan would accommodate travel by private vehicle. If this development is not properly designed, this could conflict with policies, plans, or programs supporting alternative transportation. *There is no adverse impact.*

The Riverbank General Plan itself is the relevant source of policies, plans, and programs supporting "alternative" transportation. "Alternative" transportation modes are normally thought of as being secondary to vehicular transportation. This typically includes walking, bicycling, and public transit. The proposed General Plan instead accommodates each locally available mode on equal footing. Examples of relevant goals and policies are provided below.

Goal CIRC-1: Riverbank's Circulation Network Provides Convenience and Choice Among all Modes of Transportation

- Policy CIRC-1.1: Approved plans, projects, and subdivision requests in new growth areas shall include the construction or pro-rata funding of transportation infrastructure that includes a connected and integrated system of bicycle facilities and pedestrian facilities, designed to comply with the Americans with Disabilities Act.

- Policy CIRC-1.2: Approved plans, projects, and subdivision requests in new growth areas shall provide a fully connected network of smaller roadways that provide many alternatives between each point of origin and destination.

- Policy CIRC-1.3: Approved projects, plans, and subdivision requests in new growth areas shall arrange streets in an interconnected block pattern, so that pedestrians, bicyclists, and drivers are not forced onto arterial streets for inter- or intra-neighborhood travel. This approach will also ensure safe and efficient movement of fire emergency vehicles.

- Policy CIRC-1.4: Approved projects, plans, and subdivision requests with an internal street network shall provide an internal connectivity index of 1.4 or higher. The connectivity index is calculated by dividing the total number of road segments the number of nodes. Nodes are intersections plus cul-de-sacs. Roadway segments are between intersections. Cul-de-sacs are prohibited except where physical constraints make any other roadway solution impossible. The City may require higher levels of connectivity, beyond this standard, and will review plans and projects to take advantage of opportunities to provide more connectivity.

- Policy CIRC-1.5: Approved projects, plans, and subdivision requests shall connect with adjacent roadways and stubbed roads and shall provide frequent stubbed roadways in coordination with future planned development areas. Plans and projects shall connect to adjacent planned development areas and adjacent roadways at a minimum of 600-foot intervals. This minimum interval does not include development areas that are adjacent to existing or planned future limited-access highways, freeways, or expressways.

- Policy CIRC-1.6: Approved projects, plans, and subdivision requests shall provide a roadway network such that driving distance from any dwelling to the nearest collector street is a maximum of 2,000 feet and no more than three turning movements at intersections are required in order to travel from any home to a collector street.

- Policy CIRC-1.7: The City will ensure frequent street and trail connections between new residential developments and established neighborhoods, between downtown and surrounding neighborhoods, across the railroad, across the river, and between other important origin and destination points.

- Policy CIRC-1.8: City street improvement standards and the street classification system will reflect the need to accommodate the full range of locally available travel modes.

- Policy CIRC-1.9: In new and existing developed areas, the City will invest in a convenient, well-maintained, and safe system of pedestrian and bicycle paths that connect residences with shopping centers, public buildings, parks, places of employment, and schools.

- Policy CIRC-1.10: The City will incorporate pedestrian and bicycle improvement projects into the City's Capital Improvements Program.

- Policy CIRC-1.11: The City's level of service standards will balance the need to provide convenient vehicular travelways during peak hours of demand with other community goals, such as the desire to accommodate pedestrian and bicycle access.

- Policy CIRC-1.12: The City will use Level of Service D as the goal for roadway segments, as measured on a daily basis. The City's goal for peak-hour intersection level of service is LOS D. The City may elect to exceed of these standards in favor of other community planning and environmental goals and policies.

- Policy CIRC-1.13: City environmental documents and associated mitigation programs will explicitly consider compact development, mixing of land uses, affordable housing, and other pedestrian, bicycle, and transit oriented design elements that generate fewer vehicle trips. Such approved plans, projects, and subdivision requests will have a correspondingly lower contribution toward any roadway or intersection improvement mitigation measures required in City environmental documents.

- Policy CIRC-1.14: The City will ensure provision of signage and secure storage facilities in appropriate locations for bicycles.

- Policy CIRC-1.15: The City will ensure that the pedestrian network is safe, accessible, attractive and efficient, running largely along public spaces (including streets and open spaces) fronted by houses, and avoids uses that generate major breaks in surveillance on routes to and from public transport and other routes used at night.

Goal CIRC-2: The City's Urban Development Pattern Supports all Locally Available Modes of Transportation

- Policy CIRC-2.1: Approved plans, projects, and subdivision requests in new growth areas will provide an appropriate balance of higher-activity land uses, such as schools, parks, retail and commercial services, small offices, civic uses, apartments, in accessible neighborhood centers. Higher-activity land uses shall not be focused in a linear pattern along large roadways.

- Policy CIRC-2.2: The City will not allow large, unbroken surface parking lots, which unnecessarily inhibit travel on foot and by bicycle. Please refer also to Community Character and Design Element policies that address the location and nature of surface parking.

- Policy CIRC-2.3: Approved projects, plans, and subdivisions shall provide shade trees in parking areas at a ratio of at least one tree for every four parking spaces. These trees shall be dispersed throughout the parking area.

- Policy CIRC-2.4: The City will ensure that redevelopment and revitalization efforts in the existing City are designed to accommodate and encourage pedestrian and bicycle travel, as well as public transit options, as such options become more widely available.

- Policy CIRC-2.5: The City will be flexible in parking requirements or eliminate off-street parking requirements for redevelopment, infill, and multi-family projects by allowing cooperative shared use of parking between properties with different parking demand peaking periods, utilization of on-street parking spaces to meet parking requirements, allowing parking reductions for projects located in walkable areas with

improvements that accommodate alternative forms of travel, and allowing parking reductions for multi-family development to reflect the trip generation characteristics of this type of development.

- The City will pursue in the existing developed area, and require in new growth areas pedestrian amenities, such as street furniture, shade trees, pedestrian lighting, water fountains, and pedestrian-oriented signage.

Goal CIRC-3: Increase the Availability and use of Transit

- Policy CIRC-3.1: The City will coordinate planning efforts and project entitlements with the Riverbank Oakdale Transit Agency, the Stanislaus Area Regional Transit District (START), and any future providers serving Riverbank to enhance and expand transit services throughout the City and surrounding region.

- Policy CIRC-3.2: The City will promote the development, improvement, expansion, and increased ridership of transit within the City, including the development of new transit agencies and new forms of transit, as they become available.

- Policy CIRC-3.3: Approved plans, projects, and subdivision requests will accommodate transit facilities consistent with transit agency planning.

- Policy CIRC-3.4: When transit stops are required in existing developed portions of Riverbank or new growth areas, the City will ensure that stops are safe, convenient, comfortable, well maintained, and complementary to the urban design in the surrounding vicinity.

- Policy CIRC-3.5: The City will coordinate with local and regional transit providers in developing transit plans that link important origin and destination points affecting Riverbank residents and businesses.

- Policy CIRC-3.6: The City will support and provide incentives to encourage local businesses and transit providers to develop transit incentive programs.

The proposed Riverbank General Plan update has beneficial impacts relative to existing goals and policies in the pre-update General Plan for "alternative" transportation. The various aspects of a land use array that supports walking, bicycling, and transit, roadway requirements, parking, and other direct and indirect elements are all addressed by the proposed General Plan update. The existing (pre-update) General Plan does not as adequately address all relevant aspects. There is **no adverse impact**.

Mitigation Measures: No mitigation is required.

IMPACT 4.15-15 The Riverbank General Plan would accommodate construction of a variety of land uses in the eastern portion of the Planning Area near an existing small airport. *If General Plan implementation created changes in air travel patterns or substantial conflicts with flight patterns or airport safety, there could be an impact. There is no adverse impact.*

The Peterson Airport is a privately owned airport located at 5800 Langworth Road in the City of Oakdale. The airport is located approximately three miles southeast of downtown Riverbank and approximately 0.5 mile east of the eastern edge of the Riverbank Planning Area. See the Hazards section of this EIR (4.9) for more information. The landing strip runs from east to west, and the landing approach is from the southwest.

The Stanislaus County Comprehensive Airport Land Use Plan (CLUP) (1978, as amended 2004) describes safety compatibility standards for privately owned airports in Stanislaus County. Airport operation hazards include: incompatible land uses, power transmission lines, wildlife hazards (e.g., bird strikes), and tall structures that penetrate the imaginary surfaces surrounding an airport. The term "imaginary surfaces," established by Federal Aviation Administration (FAA) regulations (14 CFR 77), refers to heights above which any object or structure is

considered by the FAA to constitute a hazard to aircraft navigation, and thus a hazard to both aircraft and people and structures on the ground.

The airport houses one single-engine aircraft and operates a single asphalt landing strip that that runs from east to west, and the landing approach is generally from the southwest. The Stanislaus County CLUP describes safety compatibility standards for privately owned airports in Stanislaus County. Airport operation hazards could include: incompatible land uses, power transmission lines, wildlife hazards (e.g., bird strikes), and tall structures that penetrate the imaginary surfaces surrounding an airport. Any development adjacent to the Peterson Airport would be required to adhere to the Stanislaus County CLUP standards and FAA regulations (14 CFR 77).

Implementation of the proposed General Plan could locate development within the vicinity of a private airstrip, potentially resulting in a safety hazard for people residing or working in the area. This development would not include any tall structures or substantial wildlife preservation areas that could create problems for this small airport.

The General Plan would not change air traffic patterns or cause substantial safety hazards associated with the Peterson Airport. The impact is considered **less than significant**.

Mitigation Measures: No mitigation is required.

4.16 PUBLIC UTILITIES

This section provides a description of existing water, wastewater, solid waste, and storm drainage facilities in Riverbank. It examines whether implementation of the General Plan would: require the construction of infrastructure related to water supply, wastewater treatment, stormwater drainage facilities that could result in environmental impacts; exceed the projected water supply; or generate substantial volumes of solid waste that cannot be accommodated by current or planned landfills. Much of the information on water supply and infrastructure, wastewater and sewer demand and infrastructure needs, and storm drainage is based on a series of studies and reports prepared by Nolte Associates for the City of Riverbank in 2006 and 2007. These documents include:

- City of Riverbank Water Supply Study and Updated Water Master Plan. November 2007.
- City of Riverbank 2007 Sewer Collection System Master Plan – Volumes 1 and 2. November 2007.
- City of Riverbank Storm Drain System Master Plan – Volumes 1 and 2. November 2007.
- City of Riverbank SB 610 Water Supply Assessment Report. November 2007.
- City of Riverbank Wastewater Treatment Plant. Technical Memorandum, Proposed Long Term Facility Improvements. October 2004.

The conclusions from these technical documents are referenced in this EIR. The assumptions used in these analyses are consistent with the buildout assumptions for the General Plan update used throughout this EIR. These listed documents are available for review at the City of Riverbank Community Development Department and are hereby incorporated by reference into this EIR. Analysis provided in this section is also based on review of agency documents and consultation with necessary local public services providers. Please refer to the Hydrology and Water Quality section of this EIR (Section 4.10) for a discussion of water quality impacts, including those having to do with stormwater runoff.

4.16.1 ENVIRONMENTAL SETTING

The City of Riverbank (City) population, currently about 22,000 people, is on the rise (March 2007). As described in detail in the proposed Land Use Element of the General Plan, buildout of the proposed General Plan update could result in more than 10,000 new housing units, more than 30,000 new residents, and more than 3 million square feet of new non-residential building space.

WATER

Existing Supply and Distribution

Water service is provided by the City of Riverbank Public Works Department Water Division, which also operates, maintains, and repairs the City's water distribution system. The Riverbank water system serves areas within the City limits of Riverbank, as well as areas outside the existing City limits including the following: areas along Santa Fe Street east of the city; Terminal Road south to Claribel Road; Claus Road south to Davis Avenue; and Davis, Van Dusen, and Minnear Avenues between Claus Road and Terminal Road. The system does not yet serve areas along Claribel Road at the edge of the corporate limits or areas east of Claus Road, except along Santa Fe Street.[1] (See Exhibit 4.16-1.) The water service area within the City limits is approximately 2,470 acres, with the City's sphere of influence incorporating an additional 1,150 acres.

1 City of Riverbank Water Lines map

Currently, groundwater from the Modesto Groundwater Basin serves as the principal source of potable water for the city. The City supplies potable water through a pressurized distribution system comprised of eight wells with two pumps, two one-million-gallon storage tanks with booster stations, and over 44 miles of pipeline from 8 to 12 inches in diameter. There are also several miles of 4-inch and 6-inch diameter pipelines. (Nolte 2007a).

As mentioned above, the City has eight water wells that supply all water used in the City system, which includes new Well No. 9 (Prospector) constructed by the Crossroads residential development. The City is in the process of constructing a ninth well, Well No. 10, which will be located in the northwest portion of the Crossroads commercial development near Oakdale Road. A tenth well, Well No. 11, is under design and will be located on the south side of Santa Fe Street, east of Central Avenue in rural northeastern Riverbank. Both Well No. 10 and Well No. 11 will have a pumping capacity of approximately 1,700 gpm (depending on groundwater levels). The locations of existing and planned water supply wells and tanks are shown in Exhibit 4.16-2. (Nolte 2007a)

The total well field production for 2006 was approximately 1.59 billion gallons. The average day use for 2006 was 4.36 million gallons (MG). The historic maximum water usage month occurred in July 2006 and is summarized in Table 4.16.1 with daily totals for each well. The peak day usage was July 19, 2006 at 8.82 MG. This peak day usage was met by all eight wells operating 18.9 of the 24 hours that day.

Table 4.16-1
City of Riverbank Water Supply Study and Updated Master Plan Existing Groundwater Wells

Well Number	Location	Year Drilled	Casing Depth (ft)	Pump Capacity (gpm)	Motor Size (hp)	Notes
1	2nd Street	1949	--	--	--	Abandoned
2	8th Street	1956	240	660	40	Operates with VFD[a]
3	Jackson	1965	420	625	60	Operates with VFD[a]
4	Pioneer	1972	436	900	100	Operates with VFD[a]
5	River Heights	1978	385	900	75	--
6	Whorton	1981	560	1,000	100	Operates with VFD[a]
7	Crossroads	1990	Unknown	1,200	100	--
8	Novi	2001	260	1,200	100	--
9	Prospector	2004	392	1,300	100	Operates with VFD[a]

[a]VFD = Variable Frequency Drive
Source: Nolte 2007a

In 2005, there were a total of 6,180 water connections. The number of water connections increased by 251, or 4.1%, from October 2005 to October 2006. This follows an increase of 784 water connections in the period October 2004 to October 2005. The well production records showed an increase of 4.8% in water consumed from 2005 to 2006. (Nolte 2007a)

Currently, the City has two above-ground storage tanks totaling 2.0 MG. Each of these aboveground storage tanks has a pumping station consisting of three booster pumps, each capable of delivering 1,000 gpm. In accordance with the Water Master Plan criteria (Nolte 2007a), the minimum capacity of booster pumping should be equal to the difference in peak hour demands versus the maximum day demand. The number of booster pump stations required for each buildout area is based on the assumption that one booster pump is out of service for each station. As shown, a total of four new booster pump stations will be necessary at buildout conditions. (Nolte 2007a)

Groundwater quality in the area is good enough that the City can provide water that meets State and federal requirements without purification treatment.[2] In general, groundwater in the County east of the San Joaquin River does not have the serious problems that exist in groundwater west of the river. The overall quality of the groundwater in the eastern County is good, although groundwater pumping around Modesto, improperly sealed wells, and past dairy farm practices has contributed to increasing concentrations of certain chemicals, including chloride, nitrate, arsenic, sodium, calcium, magnesium, carbonate, DBCP, bicarbonate, and sulfate. Total dissolved solids (TDS) values in DWR monitoring wells range from 60 to 8,300 mg/l, with a typical range of 200 to 500 mg/l. The Department of Health Services (DHS), which monitors Title 22 water quality standards, reports TDS values in 88 wells in the subbasin ranging from 60 to 860 mg/l, with an average value of 295 mg/l. The secondary MCL for TDS is 500 mg/l.

The City of Riverbank obtains its municipal water supply from seven wells located throughout the City. The latest complete drinking water quality report indicated no violation of any State Title 22 drinking water standards from well water samples set by State and federal agencies (City of Riverbank 2003). This includes both secondary standards, which apply to the taste, odor or appearance of drinking water, as well as primary standards set to protect human health.

A recent assessment of the vulnerability of the City's drinking water sources to contamination was conducted in December 2001 (City of Riverbank 2003). The assessment concluded that the water sources are considered most vulnerable to the following activities, not associated with any detected contaminants in the City's water supply: gasoline stations, automotive repair/body shops, high-density housing, and waste dumps/landfills. Although recent water quality analyses indicate that water from the wells is in compliance with State standards, the wells are still considered vulnerable to the aforementioned activities that are located near them.

Total annual water well production data from 2003–2006 for the City of Riverbank is included as Table 4.16-2.

Table 4.16-2
2003-2006 City Water Well Production

Year	Annual Water Well Production (million gallons)	ADD (gpd)
2002	1,230	3,372,000
2003	1,252	3,430,000
2004	1,357	3,719,000
2005	1,520	4,165,000
2006	1,593	4,366,000

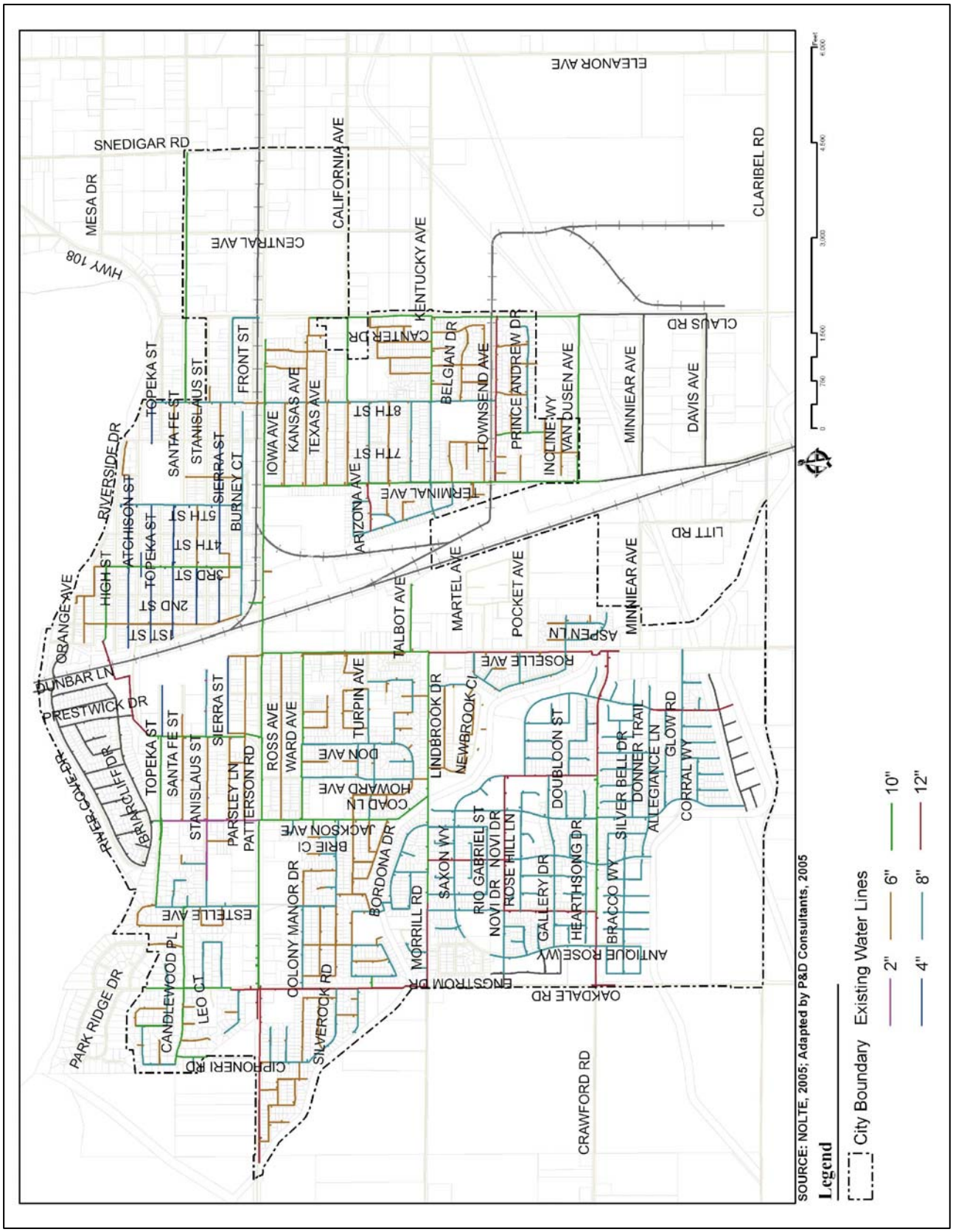
Source: Nolte 2007a

SEWER

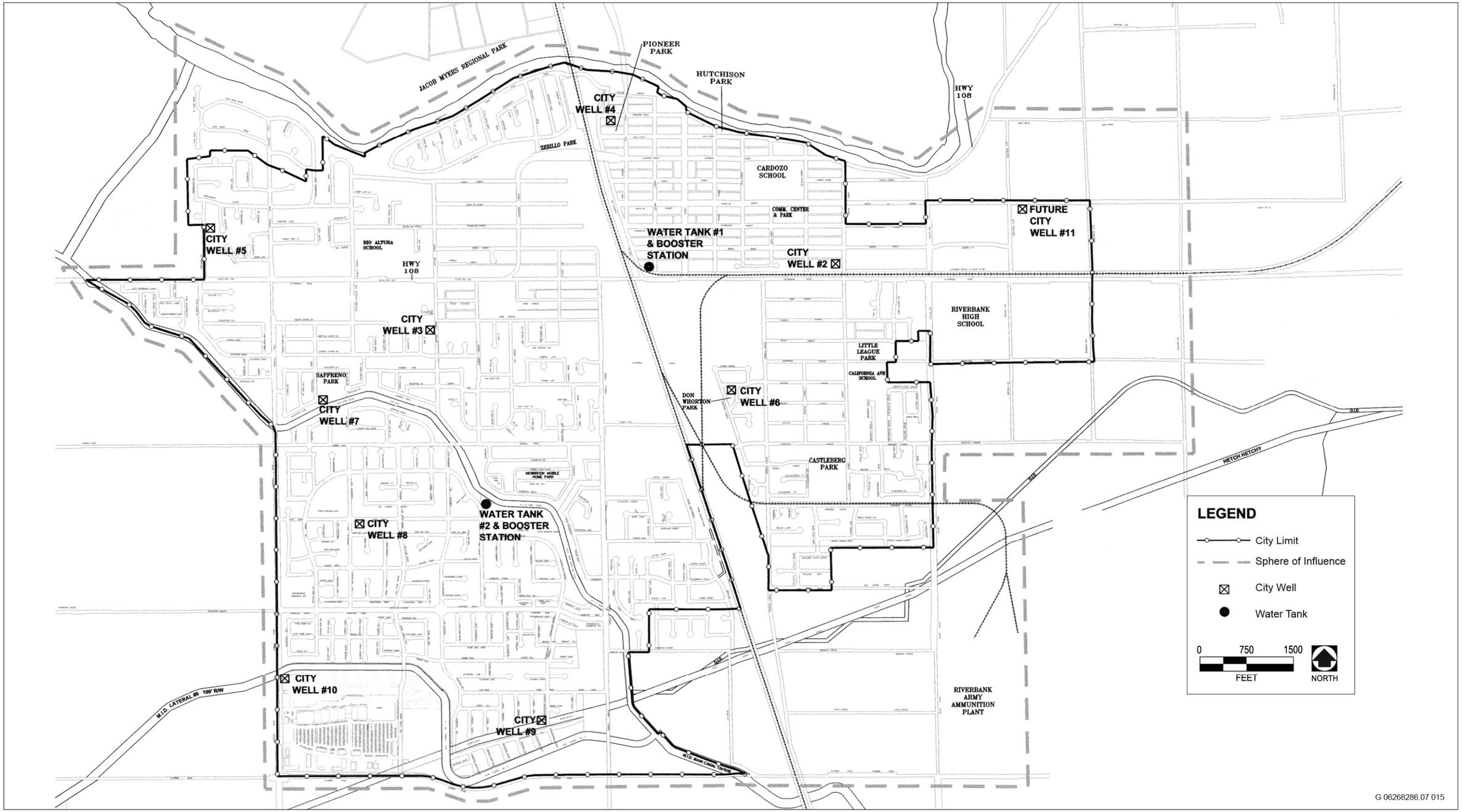
Existing Facilities

The City sewer system consists of 6-inch to 36-inch diameter collection piping, nine lift/pump stations and a wastewater treatment plant (WWTP) located on the north side of the Stanislaus River in San Joaquin County. Table 4.16-3 presents a list of the wastewater pump stations. The collection system serves the existing City, approximately bound by the Stanislaus River, Hetch Hetchy right-of-way, Oakdale Road, and Claus Road. All wastewater is conveyed from the collection system to the WWTP through a 27-inch gravity line located on a

2 *City of Riverbank Water System Study and Master Plan*, Garcia-Davis-Ringler Engineering and City of Riverbank Staff, September 2001.

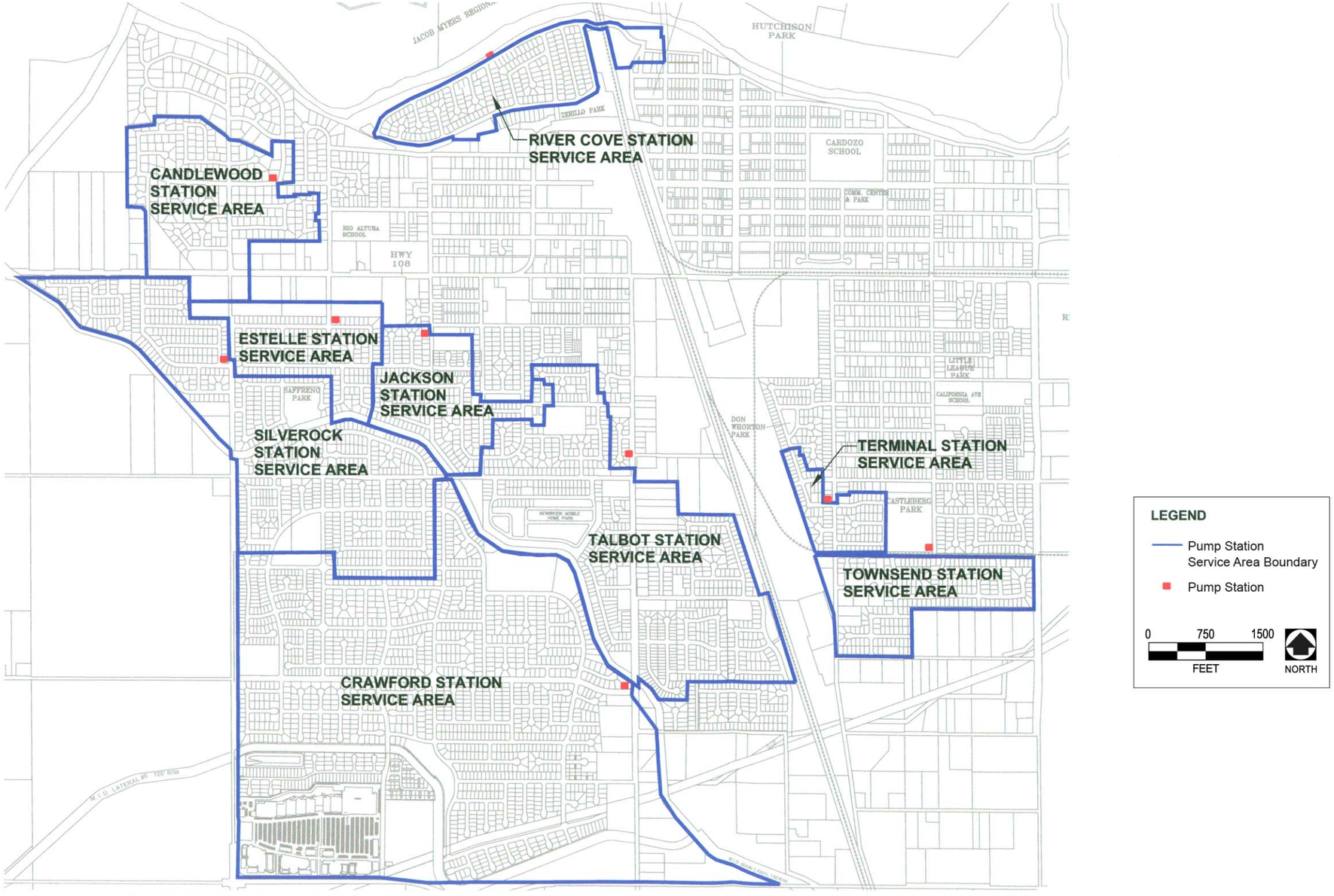


Riverbank Water System Lines **Exhibit 4.16-1**



Riverbank Water Supply Well and Tank Sites

Exhibit 4.16-2



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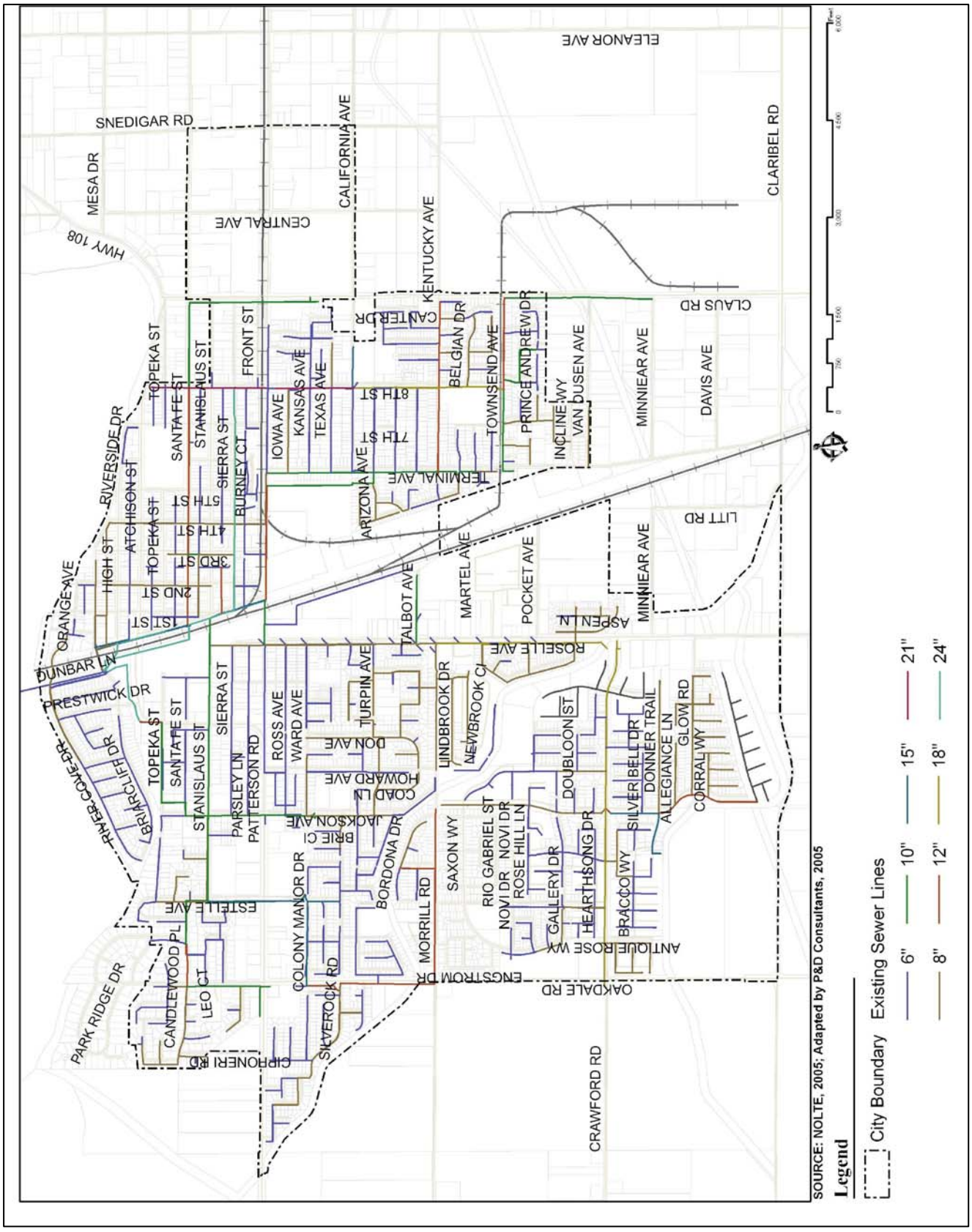
Riverbank Pump Station Service Areas

Exhibit 4.16-3



City Sewer Lines **Exhibit 4.16-4**

trestle over the Stanislaus River. A map of the existing wastewater pump stations is provided in Exhibit 4.16-3, and a map of the existing sewer collection system, depicting gravity sewers 6-inch and larger, is provided in Exhibit 4.16-4. The existing number of sewer connections as of December 2006 in the city is 6,162 (Nolte 2007b). The City Public Works Department Sewer Division repairs and maintains the sewer collection system, including laterals, sewer mains, lift stations, and the Wastewater Treatment Plant (WWTP).

Table 4.16-3
Summary of Wastewater Pump Stations

Station	Location	Number of Pumps	Capacity (gpm)	Horsepower (hp)
Candlewood	Candlewood at Arrowwood	2	500	10
Estelle	Colony Manor at Estelle	2	850	4.7
Jackson	Jackson at Ward	2	700	5
Talbot	Roselle at Talbot	2 1 1	619 1,180.9 840	4.7 12 10
Terminal	Terminal at Virginia	2	250	2
Townsend	Townsend at Eighth	2	250	2.7
River Cove	River Cove Drive	21	481	15
Crawford	Crawford at Roselle	2 1	1,540 3,171	33.5
Silverock	Silverock at Oakdale	2	500	8.5

Source: Nolte 2007b

The WWTP, located north of Riverbank in San Joaquin County, has a peak capacity of 7.9 million gallons per day (mgd). The current WWTP upgrading project provides new lined treatment ponds with the same capacity as the old unlined treatment ponds. Also as part of this upgrade, a new headwork channel, pipelines, and gates are being constructed that will facilitate future plant capacity expansions.[3]

The latest expansion has given the WWTP the capacity to serve the equivalent of 30,000 residents plus the current industrial users, including a major local tomato processing plant (which has closed). The General Plan Update has newly designated the processing plan site as Mixed Use, which allows a variety of retail, residential, and office uses. These uses would result in far less demand for sewer treatment than the processing plant. Without the tomato processing plant, the estimated capacity for the WWTP would accommodate approximately 50,000 people.[4]

The Riverbank sewer system serves all of the City of Riverbank corporate limits area except for areas east of Claus Road and areas along Stanislaus and Sierra streets between Eighth Street and Claus Road. The only area outside the city limits served by the sewer system is around the Riverbank Army Ammunition Plant.[5] Exhibit 4.16-4 shows the City sewer lines throughout Riverbank.

3 Reid Johnson, Nolte Associates Inc. Personal Correspondence, June 24, 2005.
4 Kristina Peralta, Nolte Associates. Personal correspondence. November 7, 2007. Also, Nolte Associates. *City of Riverbank Wastewater Treatment Plant Technical Memorandum*. Proposed Long-Term Facility Improvements. October 2004.
5 City of Riverbank Sewer Lines map. The U.S. Army has decommissioned this ammunition plant and the City is in the process of planning for the site's reuse as of the writing of this document.

Older sewer lines need to be replaced due to capacity and age issues. Those that are part of the City's capital improvement project (CIP) budget for the coming fiscal years through 2008–09 are listed in Table 4.16-4. The Santa Fe Street-Claus Road sewer main flows under Claus Road from just north of the Burlington Northern Santa Fe Railroad to Santa Fe Street, where it turns west and continues to Eighth Street. Information on the area of replacement within this line was not available.

Table 4.16-4
Sewer Lines Designated for Repair or Replacement in CIP Budget 2008-2009[6]

Sewer Line Location	Replace or Enlarge	Area of Task	Fiscal Year
Condray Avenue	Replace	SR-108 to KB Homes	2005-06
Jackson Avenue	Enlarge	Stanislaus to Topeka streets	2005-06
Topeka Street	Enlarge	Jackson Avenue to SR 108	2005-06
Santa Fe Street-Claus Road	Replace	n/a	2006-07

Use Characteristics

The average system-wide usage for Riverbank in 2006 was 1.82 mgd (Nolte 2007b). According to billing records, 90% of water used is from residential connections. Based on the number of residential sewer connections and the total residential wastewater flow, the city yields an average wastewater generation rate of 275 gpd per dwelling unit (du).

Sewer flow projections for buildout within the existing city service area are summarized in Table 4.16-5.

Table 4.16-5
2007 Sewer Collection System Master Plan
Wastewater Generation within Existing City Service Areas at Buildout

Land Use	Gross Area (ac)	Wastewater Generation Factor (gpd/ac)	Average Dry Weather Flow (gpd)
Medium Density Residential	1,558	2,500	2,501,000
Low Density Residential	148	1,500	178,000
Commercial	219	1,200	198,000
Industrial	244	1,500	227,000
Government	80	425	29,000
Parks	69	400	22,000
Total			**3,155,000**

Source: Nolte 2007b

A summary of existing and future sewer flows is provided in Table 4.16-6 below. As indicated in the table, the projected total sewer flow for additional general plan areas is approximately 6,635,000 gpd, which is over three times the existing sewer flows within the existing service area and over double the projected flows of the existing service area at buildout.

6 City of Riverbank Public Works Department CIP Budget.

Table 4.16-6 2007 Sewer Collection System Master Plan Summary of Sewer Flow Projections	
Condition	Average Flow (gpd)[a]
Existing Sewer Flows within City Limits	1,860,000
Future Sewer Flows within City Limits	3,155,000
Future Sewer Flows within City Limits and General Plan	6,635,000
[a] Average Dry Weather Flows Source : Nolte 2007b	

Existing Wastewater Collection and Conveyance

The wastewater from the existing City systems is collected at a point west of the Stanislaus River Bridge and conveyed across the river on a trestle to the headworks of the treatment plant via a 27-inch gravity line.

Central Area Collection System

The City has recently completed the Condray First Street project to install a new 30-inch central trunk line. This included a new 18-inch line extending to Patterson Road to connect to the planned Roselle Avenue force main.

The Crawford Road pump station was constructed with the recent Crossroads development. The pump station was intended to be upgraded to serve the southern portion of the City through a new 14-inch force main in Roselle Avenue.

The Crawford Road pump station appears to be the best plan for serving the designated sewer shed areas. Therefore the associated infrastructure projects should be completed as development proceeds. The City has nine existing wastewater pump stations.

As a part of ongoing master planning, the City is considering a pedestrian bridge to provide access from the City to Jacob Myers Park, which is on the north side of the river and is near the wastewater treatment plant. A new dual use bridge could meet this need and carry a second 30-inch wastewater trunk line to the plant. The old trestle and pipeline is just west of the railroad bridge and could be used for redundant capacity when maintenance is needed on the new pipeline.

Eastside Area Collection System

The City planned for wastewater service to an area on the east side within the City sphere of influence, as described in the previous sewer master plan. Sewer lines were constructed in Sierra Street to California Avenue with excess capacity for the planned areas. The topography of the City generally slopes from east to west; therefore, sewer sheds 9 and 11 should be able to gravity flow into the respective existing sewer lines. Sewer shed 12 is a lower, river bottom area and would need a wastewater pump station to lift flows into trunk sewer lines in Sewer Shed 11.

Westside Area Collection System

Most of the western portion of the Planning Area is outside of the City sphere of influence and was not included in previous master planning for wastewater collection infrastructure. The Riverbank topography generally slopes from east to west and therefore, the western portion of the Planning Area is generally lower and mostly cannot use gravity flow into the existing collection system.

Central and East Side Sewer Sheds and Infrastructure

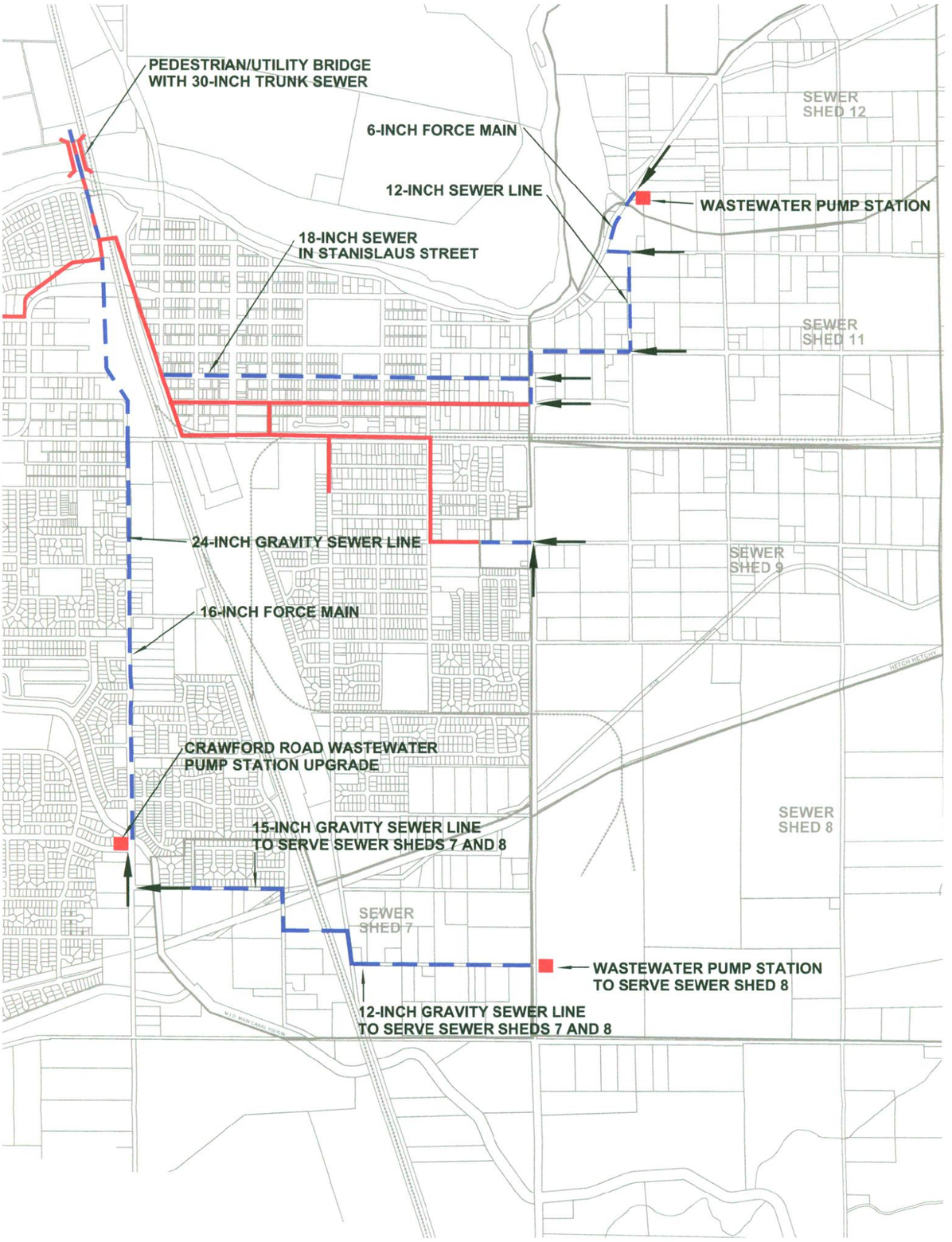


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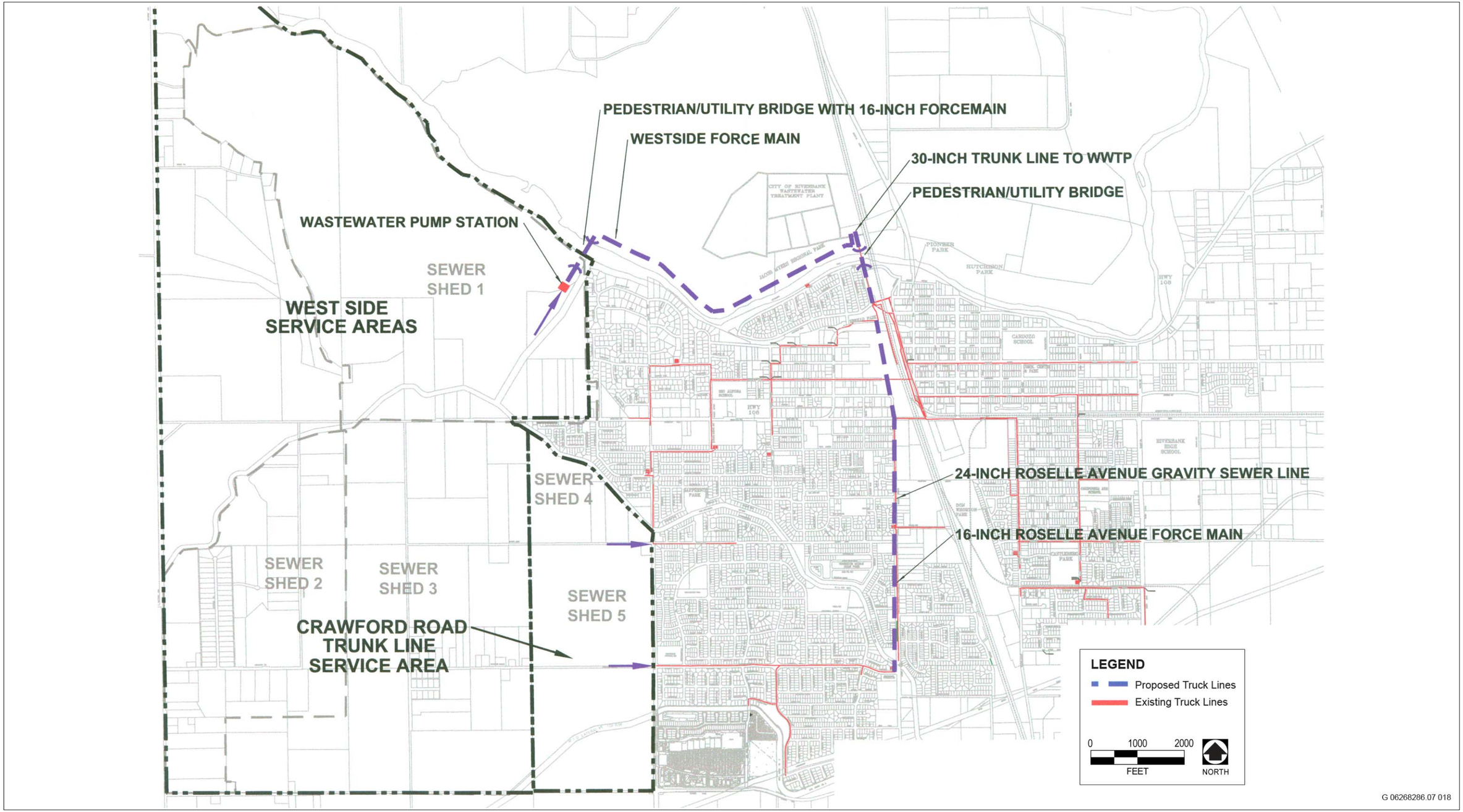
Exhibit 4.16-5a



West Side Sewer Sheds and Infrastructure

Exhibit 4.16-5b

However, a portion of the area on the west side of Oakdale Road was included in the planning for the Crawford Road Pump Station. A sewer line was constructed in Crawford Road to Oakdale Road with limited capacity for a portion of the area (Sewer Shed 5). Exhibit 4.16-5 illustrates the sewer sheds.

The majority of the western portion of the Planning Area (Sewer Sheds 1, 2, and 3) would need a new separate collection system, including conveyance to the treatment plant. While this area is generally flat, it has a slope to the southwest comer which is the furthest point from the treatment plant. The lowest part of the western portion of the Planning Area is the river bottom near the north boundary. A new 16-inch force main could provide conveyance to the WWTP. The new force main could cross the Stanislaus River on a second proposed pedestrian/utility bridge crossing the river from Jacob Meyers Park to north of the planned West Riverbank development (this bridge is further west than the bridge identified above for the 30-inch trunk main).

STORM WATER

As indicated in the Storm Drain System Master Plan (Nolte 2007c), the City storm drain system generally consists of the following facilities: collection piping ranging from 12 inches to 54 inches, four detention basins, six storm water pump stations, seven gravity storm water outfalls to the Stanislaus River, and one outfall to a Modesto Irrigation District (MID) Canal. A map of the existing collection system is provided as Exhibit 4.16-6. (Nolte 2007c)

Typically, storm water is pumped from detention basins within 24-48 hours following a storm event. Storm drainage from industrial areas within the City is typically disposed of on site with the exception of the closed cannery, which may have drained into the sanitary sewer. Storm drainage from the newer commercial/industrial areas is either detained on site or released to the city system after the peak discharge has passed, or is disposed of on site. (Nolte 2007c)

The Storm Drain System Master Plan identified three drainage systems with problem areas. These areas are: (1) Castleberg Basin System including the Townsend Road area, the Virginia Avenue/Terminal Avenue area, 8th Street from the Castleberg Basin pump discharge to the Stanislaus River outfall, and additional areas discharging into the basin; (2) the Candlewood System, including Candlewood Place, connecting storm drains, contributing adjacent areas and the Stanislaus River outfall; and (3) First Street Basin, including areas discharging into the basin and the discharge system. (Nolte 2007c)

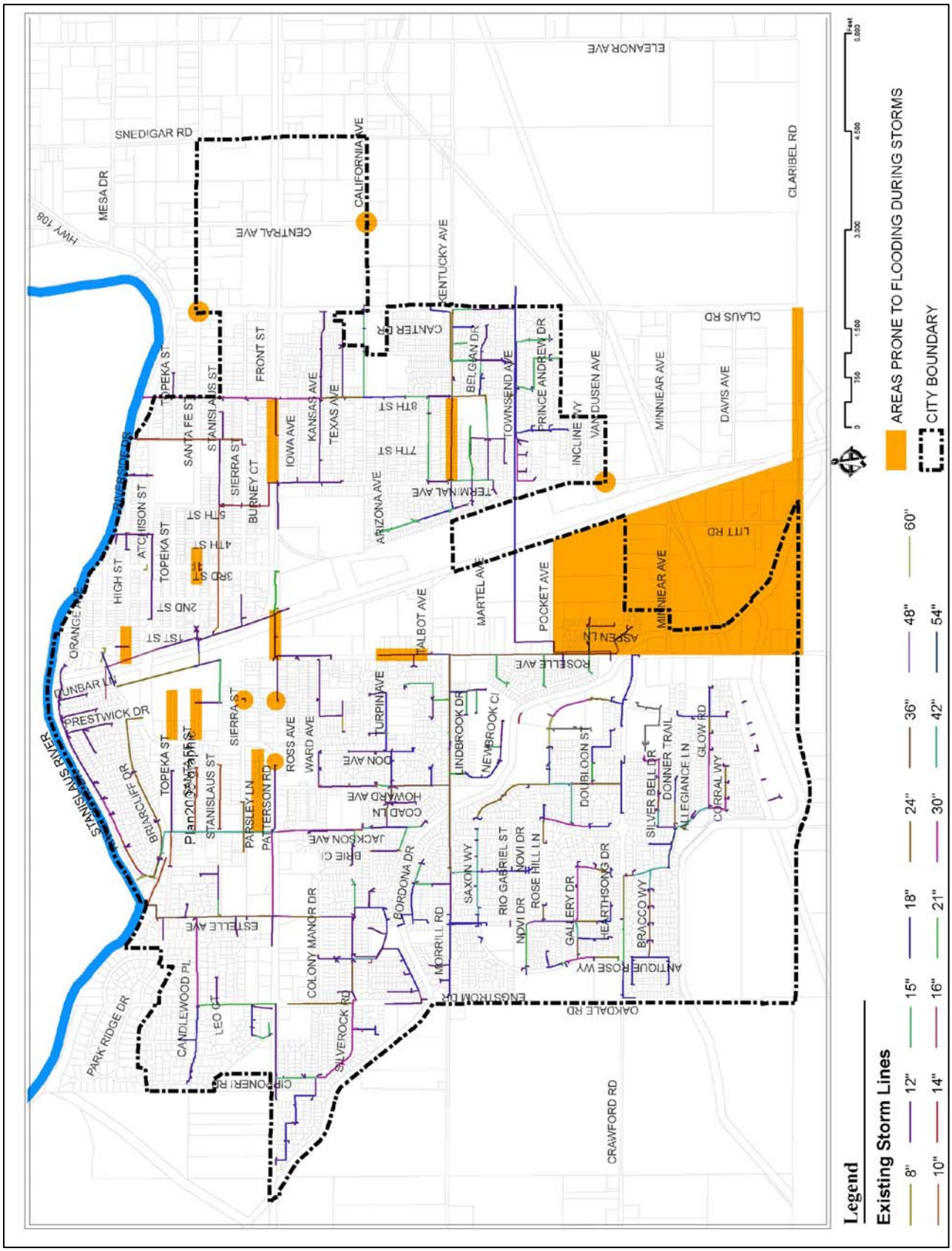
Storm drainage from some areas within the city is reportedly connected to the sanitary sewer collection system. There is approximately 60 acres of development currently draining into the sanitary sewer system.

SOLID WASTE

Riverbank is served by Gilton Solid Waste (GSW). GSW serves approximately 6,000 residences in the City, spending approximately 86 manhours per week serving these customers. GSW serves approximately 700 homes per day per truck (via 10-hour days). Therefore, to serve 6,000 customers it takes 8.57 days per week (85.7 hours). Each driver works 40 hours per week, so at one driver per truck, it takes the equivalent of 2.14 trucks to service the City each week.[7]

Annually, GSW hauls 10,063 tons of waste from Riverbank residential customers, or about 1.68 tons per household. GSW hauls 2,403 tons of waste from commercial sources and 2,553 tons of waste from industrial and construction sources annually in the City.[8] As the franchise waste hauler, Gilton is contractually obligated to accommodate any increase in the need for residential and commercial waste management services.[9]

7 Dennis Shuler, Gilton Solid Waste. Personal Correspondence, June 8, 2005.
8 Dennis Shuler, Gilton Solid Waste. Personal Correspondence, June 2, 2005.
9 Dennis Shuler, Gilton Solid Waste. Personal Correspondence, June 8, 2005.



Riverbank Storm Water Drainage System **Exhibit 4.16-6**

Solid waste hauled by GSW from Riverbank is deposited in two landfills and a waste-to-energy facility. These are the Forward, Inc. landfill in San Joaquin County, the Fink Road Landfill in Stanislaus County (administered by the County Public Works Department), and the Covanta Waste-to-Energy Facility in Stanislaus County (administered by County Department of Environmental Resources).[10] The Covanta Facility was built with an official manufacturer's capacity of 243,000 tons, and the service area is contractually required to send at least this amount to the facility per year. Recently the facility has handled 250–260,000 tons per year.[11] The Fink Road Landfill is currently at approximately 50 percent capacity with a projected closing date of 2023 and an overall capacity of 12 million cubic feet.[12]

Areas outside the Riverbank City limits to the east of are also served by GSW. Bertolotti Disposal serves the areas within the Riverbank Planning Area that are outside of the City limits to the west.[13]

4.12.2 REGULATORY SETTING

The following programs, policies, and regulations direct the development and operation of utilities in the Riverbank Planning Area.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

There are no federal plans, policies, regulations, or laws related to public utilities that are applicable to the proposed General Plan update.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

Senate Bill 610

Senate Bill (SB) 610 (Section 21151.9 of the Public Resources Code and Section 10910 et seq. of the Water Code) requires the preparation of "water supply assessments" (WSA) for large developments (e.g., for projects of 500 or more residential units, 500,000 square feet of retail commercial space, or 250,000 square feet of office commercial space). These assessments, prepared by "public water systems" responsible for service, address whether there are adequate existing or projected water supplies available to serve proposed projects, in addition to urban and agricultural demands and other anticipated development in the service area in which the project is located.

Where a WSA concludes that insufficient supplies are available, the WSA must lay out steps that would be required to obtain the necessary supply. The content requirements for the assessment include, but are not limited to, identification of the existing and future water suppliers and quantification of water demand and supply by source in 5-year increments over a 20-year projection. This information must be provided for average normal, single-dry, and multiple-dry years. The absence of an adequate current water supply does not preclude project approval, but does require a lead agency to address a water supply shortfall in its project approval findings.

Groundwater Management Act

The Groundwater Management Act, Assembly Bill 3030 (AB 3030), signed into law in 1992, provides a systematic procedure for an existing local agency to develop a groundwater management plan. This section of the code provides such an agency with the powers of a water replenishment district to raise revenue to pay for facilities to manage the basin (extraction, recharge, conveyance, quality). In some basins, groundwater is managed under other statutory or juridical authority.

10 Dennis Shuler, Gilton Solid Waste. Personal Correspondence, June 8, 2005.
11 Ron DeLong, Stanislaus County Department of Environmental Resources. Personal Correspondence, June 10, 2005.
12 Ron Grider, Fink Road Landfill. Personal Correspondence, June 16, 2005.
13 Dennis Shuler, Gilton Solid Waste. Personal Correspondence, June 27, 2005.

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) authorizes the United States Environmental Protection Agency (EPA) to set national health-based standards for drinking water, called the National Primary Drinking Water Regulations, to protect against both naturally-occurring and man-made contaminants. These standards set enforceable maximum contaminant levels in drinking water or required ways to treat water to remove contaminants for all water providers in the United States, except private wells serving fewer than 25 people. In California, the State Department of Health Service conducts most enforcement activities. If a water system does not meet standards, it is the water supplier's responsibility to notify its customers.

Urban Water Management Act

The California Urban Water Management Planning Act of 1983 requires that each urban water supplier, providing 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, shall prepare, update and adopt its urban water management plan at least once every five years on or before December 31, in years ending in five and zero. The City of Riverbank is preparing an Urban Water Management Plan as of the writing of this document. The most recently prepared draft version of this document is dated November 2007.

California Integrated Waste Management Act

To minimize the amount of solid waste disposal, the State Legislature passed the California Integrated Waste Management Act (CIWMA) of 1989 (AB 939), effective January 1990. According to the CIWMA, all cities and counties were required to divert 25% of all solid waste from landfill facilities by January 1, 1995, and 50% by January 1, 2000. Each city is required to develop solid waste plans demonstrating integration of the CIWMA plan with the County plan. The plans must promote (in order of priority) source reduction, recycling and composting, and environmentally safe transformation and land disposal.

Building Energy Efficiency Standards

Changes to Title 24 of the California Code of Regulations regarding energy efficiency became effective on October 1, 2005. These new energy efficiency standards were developed in response to the state's energy crisis, as well as AB 970, and intend to improve residential and nonresidential building energy efficiency, minimizing impacts to peak energy usage periods, and reduce impacts on overall state energy needs.

4.16.3 ENVIRONMENTAL IMPACTS

METHOD OF ANALYSIS

Impacts on utilities that would result from the General Plan were identified by comparing existing service capacity and facilities, staffing, and equipment against future demand associated with General Plan update implementation. Utility demand was analyzed at a programmatic level, projecting buildout, according to the General Plan update and most current population and capacity projections created by the City.

THRESHOLDS OF SIGNIFICANCE

For the purpose of this analysis, the following thresholds of significance, based on the State CEQA Guidelines (Appendix G), have been used to determine whether implementation of the General Plan would result in significant utilities impacts. Based on Appendix G of the State CEQA Guidelines, a utilities impact is considered significant if implementation of the proposed project (the General Plan update, for this document) would do any of the following:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;

- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- 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?
- Exceed water supplies available to serve the project from existing entitlements and resources and require new or expanded entitlements;
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it exceeds available capacity to serve the project's projected demand, in addition to the provider's existing commitments;
- Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs; or,
- Fail to comply with federal, state, and local statutes and regulations related to solid waste.

IMPACT ANALYSIS

IMPACT 4.16-1 *Have sufficient water supply available to serve the city at buildout of the proposed General Plan. The City would need to provide an additional 8 million gallons per day of water to meet the projected buildout of the General Plan. Implementation of the proposed infrastructure included in the Updated Water Master Plan would ensure that the City would meet its water demands projected in the proposed General Plan, and this impact would be* ***less than significant.***

According to the November 2007 Water Supply Assessment, the existing water demand within City limits is approximately 4,300,000 gpd (Nolte 2007d). According to the recent Water Supply Assessment, the City would need to provide an additional 8,008,646 gpd of water to meet the average daily demand of the projected buildout of the General Plan (Nolte 2007d).

For future development within existing City limits, the water demand projections are summarized in Table 4.16-7 (the Water Supply Assessment, Nolte 2007d, provides slightly revised but similar figures as presented in the following two tables from the Water Supply Study and Water Master Plan – these are all draft documents as of the writing of this EIR).

Table 4.16-7
Projections of Future Water Demands within City Limits

Type of Land Use	Density (du/ac)	Area (ac)	Water Demand Factor	ADD (gpd)
Medium Density Residential	5.5	234.7	600gpd/du	542,177
Medium Density Residential	6.0	963.5	600 gpd/du	2,428,103
Medium Density Residential	6.5	359.3	600 gpd/du	980,780
Low Density Residential (lot size ≤ 1 ac)	1.5	27.8	1,000 gpd/du	41,687
Low Density Residential (lot size ≤ 1 ac)	2.3	21.1	1,000 gpd/ac	48,482
Low Density Residential (lot size ≤ 1 ac)	-	99.2	1,000 gpd/ac	99,210
Commercial	-	218.8	2,000 gpd/ac	299,489
Industrial	-	243.9	2,000 gpd/ac	303,065
School	-	80.2	2,000 gpd/ac	123,304
Park	-	39.0	2,500 gpd/ac	93,480
Open Space (Future Parks)	-	29.8	2,500 gpd/ac	74,470
Total				**5,034,247**
Total, ac-ft/yr				**5,640**

Source: Nolte 2007a

The updated General Plan presents planned land uses for areas currently outside of the city limits, as well as infill opportunity areas for new growth within the city limits. Approximately 5,707 acres of these additional land uses are envisioned under the General Plan. A detailed summary of future water demand projections for areas within City limits, as well as for the additional areas identified in the General Plan, are shown in Table 4.16-8. As indicated in the table, future water demand at General Plan buildout is projected to be 13,042,893 gpd.

Table 4.16-8
City of Riverbank Projections of Total Future Water Demands for General Plan (2007-2030)

Type of Land Use	Density (du/ac)	Area (ac)	Water Demand Factor	ADD (gpd)
Existing City Water System at Buildout	-	-	-	5,034,247[a]
Agricultural Resource Conservation Area	-	1,220.6	0 gpd/ac	0
Buffer Greenway Open Space	-	399.6	0 gpd/ac	0
Clustered Rural Residential	0.2	1,266.5	1,200 gpd/du	303,953
High Density Residential	18.0	72.8	435 gpd/ac	398,789
Industrial-Business Park	-	263.4	2,000 gpd/ac	368,717
Infill Opportunity Area – Downtown , Non-Residential	-	-	2,000 gpd/ac	19,224
Infill Opportunity Area – Downtown, Residential	0.9	-	435 gpd/ac	81,724
Infill Opportunity Area – West Riverbank, Non-Residential	-	-	2,000 gpd/ac	8.710
Infill Opportunity Area – West Riverbank, Residential	1.6	-	435 gpd/ac	157,568
Low Density Residential	5.0	1,232.1	625 gpd/ac	2,695,171
Medium Density Residential	10.0	655.9	600 gpd/ac	2,754,791
Mixed Use Office Retail Residential, Non-Residential	-	144.2	2,000 gpd/ac	201,862
Mixed Use Office Retail, Residential	18.0	13.7	435 gpd/du	74,876
Multi Use Recreation	-	139.3	2,000 gpd/ac	278,513
Park	-	134.7	2,500 gpd/ac	336,767
School-Civic	-	164.0	2,000 gpd/ac	327,981
Total				**13,042,893**
Total, ac-ft/yr				**14,610**

a From Table UTIL-3
Source: Nolte 2007a

Table 4.16-9 is a summary of the existing and future water demands for the City of Riverbank. As shown in the table below, the buildout of the General Plan Update is projected to triple the existing water demand.

Table 4.16-9 City of Riverbank Summary of Water Demand Projections		
Condition	ADD (gpd)	Annual Demand (ac-ft/year)
Existing Demand within City Limits	4,369,546	4,890
Future Demand within City Limits	5,034,247	5,640
Future Demand within City Limits and General Plan	13,042,893	14,610
Source: Nolte 2007a		

General Plan policy requires compliance with water conservation measures identified in the City's Urban Water Management Plan. The City's Water Supply Assessment estimates that application of identified water conservation measures could reduce the water demand at buildout by 10 to 15%.

Existing City wells 2 through 9 have a total capacity of 7,785 gpm. The planned addition of well 10 (1,500 gpm) in 2008 would increase the total capacity of wells 2 through 10 to 9,285 gpm. Additional wells will be required for central Riverbank to meet reserve capacity requirements and maximum day demand at buildout. East Riverbank and West Riverbank are primarily undeveloped and will require additional wells to meet the demands of future development.

To support this General Plan update, the City has analyzed water supply for single normal, single dry, and multiple dry years for a 20-year period of assessment. For the groundwater basin used for local water supply, the total water demand met through groundwater in 2000 was 206,500 acre feet per year, while groundwater recharge was 310,000 acre feet per year (Nolte 2007d). For each of the conditions listed above, after considering buildout of the General Plan and various other factors, the City would have a groundwater supply reserve of greater than 29,000 acre feet per year (Table 4.16-10).

Table 4.16-10 Comparison of Future Estimated Water Demand and Future Water Supply					
Scenario	2005	2012	2016	2022	2030
	Pre-General Plan Update	Buildout	Single Dry Year	Single Normal Year	Multiple Dry Years
Current Recharge Factors and Total Supply Capability	88,956	78,982	63,180	79,982	47,419
Projected Demand	26,843	21,091	18,982	21,091	17,927
Groundwater Supply Reserve	62,113	57,891	44,198	57,891	29,492
Source: Nolte 2007d.					

The proposed General Plan requires the City to implement the Updated Water Master Plan upon its completion. Furthermore, implementation of the following goals and policies contained in the proposed General Plan would minimize the potential environmental impact associated with increased demand for water supply and distribution systems resulting from buildout.

Goal PUBLIC-2: Adequate Supply of Quality Water to Serve Existing and Future Projected Development Needs

- Policy PUBLIC-2.1: The City will require that water supply, treatment, and delivery meet or exceed local, State, and federal standards.

- Policy PUBLIC-2.2: The City will manage and enhance the City's water supply and facilities to accommodate existing and planned development, as identified in the City's Water Master Plan, Urban Water Management Plan, and Groundwater Source Efficiency Report.

- Policy PUBLIC-2.3: New developments shall incorporate water conservation techniques to reduce water demand in new growth areas, including the use of reclaimed water for landscaping and irrigation.

- Policy PUBLIC-2.4: The City will condition approval of new developments on demonstrating the availability of adequate water supply and infrastructure, including multiple dry years, as addressed in the City's Water Master Plan, Urban Water Management Plan, and Groundwater Source Efficiency Report.

- Policy PUBLIC-2.5: The City will not induce urban development by providing provide water services in areas outside the Planning Area or areas not planned for urban development, such as areas designated for agriculture or open space.

Goal PUBLIC-7: Fire Protection Services, Staffing, and Deployment Adequate to Serve the Needs of Existing and Planned Development

- Policy PUBLIC-7.1: The City will ensure that adequate fire flow pressure is available in relation to structure size, design, requirements for construction, and/or built-in fire protection systems. Maintenance of adequate fire flows includes factors such as adequate storage, system gridding, hydrant spacing, and spacing and sizing of water mains, as specified in the City's Water Master Plan.

- Policy PUBLIC-7.2: For new development, the City will require a minimum fire flow pressure of 1,500 GPM (sustainable for at least two hours) for residential use. For new development, the City will require a minimum fire flow pressure of approximately 3,600 GPM (sustainable for longer periods) for larger residences and for other building types, depending on the particular use and structure characteristics, and in coordination with the fire service provider.

- Policy PUBLIC-7.6: The City will work with property owners in existing developed portions of the City to achieve a minimum fire flow pressure of 1,500 GPM (sustainable for at least two hours) for residential use and approximately 3,600 GPM (sustainable for longer periods) for larger residences and for other building types, depending on the particular use and structure characteristics, and in coordination with the fire service provider.

In addition, regarding fire flows, the Updated Water Master Plan includes modeling to analyze system capacity based on anticipated water demand at buildout of the General Plan. The buildout water model suggested performance criteria less than acceptable during various modeling scenarios. These modeling scenarios and the recommended improvements included in the Updated Water Master Plan (Nolte 2007a) are listed below:

- Industrial – Max Day and Fire Flow at J-B3-10 (dead-end of Stanislaus Street): for this junction node, the residual pressure is less than 0 psi (minimum pressure criteria of 35 psi) and the pipeline velocity is 22.5 ft/sec. The existing 8-inch pipeline, P-B3-10 is not sufficient to convey 3,500 gpm during fire flow requirements. The maximum available fire flow at J-B3-10 is approximately 1,400 gpm. To achieve sufficient fire flows, it is recommended that future developers loop the existing 8-inch pipeline in Stanislaus Street and connect to the existing 6-inch pipeline (P-B3-50) at the end of Sierra Street. Previously the cannery operated from its own well. It is recommended that future developers be required to make the upgrades necessary to achieve adequate pressures and fire flows from the City system.

- Industrial – Max Day and Fire Flow at J-D3-40 (dead-end of Talbot Avenue). At this junction node, the residual pressure is 23.0 psi and the pipeline velocity is 14.5 ft/sec. The existing 10-inch pipeline, P-D3-25, is not sufficient to convey 3,500 gpm during fire flow requirements, which would be needed with the development of surrounding industrial areas. The maximum available fire flow at J-D3-40 is approximately

2,460 gpm. A new 12-inch pipeline connecting the end of P-D3-25 in Talbot Avenue to the existing dead-end in Kentucky Avenue is recommended as part of the Transmission Main Projects (TMP #3).

Aside from the two scenarios listed above, the buildout water model predicts acceptable results for the other average day, max day, and peak hour fire flow scenarios.

Adherence to the above goals and policies would provide the City with the means to implement the required water infrastructure determined in the Updated Water Master Plan, which would ensure that the expansion of additional water storage and distribution infrastructure would occur. For normal and dry years, groundwater supply for Riverbank has been shown to be more than sufficient with substantial supply reserves. The impact is considered **less than significant**.

Mitigation Measures: No mitigation measures required.

IMPACT 4.16-2 Require or result in the construction of new water supply and distribution facilities, or expansion of existing facilities, the construction of which could cause significant environmental effects. *Expansion and extension of water supply and distribution facilities is required for buildout of the General Plan Update. Although Goals and Policies have been identified to reduce impacts, construction of these facilities could result in significant effects to the environment. The impact is considered* ***significant and unavoidable.***

The Updated Water Master Plan (Nolte 2007a) identifies measures for meeting the projected water demand including installation of several groundwater wells, storage tanks, and a grid system of water mains, which would include both existing and new pipelines.

Please refer to the updated Water Supply Study and Water Master Plan, on file with the City of Riverbank Community Development Department.

Proposed General Plan goals, objectives, policies and actions call for the provision of an adequate supply of water; the maintenance of water infrastructure; the coordination between land use planning and water facilities and service; and the promotion of water conservation measures. These goals, objectives, policies and actions, combined with the improvements in the City's Updated Water Master Plan would ensure that the City would have the capacity to meet its future water demands according to the projected buildout of the proposed General Plan.

Goal Public-1: Public Service and Infrastructure Provision to Meet or Exceed Level of Service Standards Consistent With Other Community Goals

- Policy PUBLIC-1.1: The City will coordinate the planning and construction of capital improvements with the timing of urban development within the Planning Area.

- Policy PUBLIC-1.2: New development must pay for the public facilities, services, and infrastructure required to serve the needs of such development based on service standards applied by the City. The mechanisms for such funding will be part of the development approval, or as set forth in any applicable development agreement or specific plan, which, with the approval of the City Council, may provide for alternative financing mechanisms in-lieu of City development fee programs and ordinances. The use of in-lieu fees or in-lieu financing will be reserved for communitywide facilities that serve areas beyond the proposed project or plan. Construction and dedication of facilities will be the method for providing facilities that serve the proposed project or plan area. The City may make exceptions on the basis of financial hardship or small projects or plans, allowing payment of an in-lieu fee.

- Policy PUBLIC-1.3: The City will require that new developments, depending on their size, either: 1) designate lands in appropriate locations, sizes, and free of constraints to accommodate public facilities and

infrastructure needed to serve such development, or 2) pay a fee proportional to the development's cost of acquiring such land at the time acquisition will be required.

- Policy PUBLIC-1.4: The City shall give priority to serving areas within the existing City limits as of the adoption of this General Plan based on current infrastructure and service capacity. New growth proposed outside existing City limits is responsible for providing, or paying a proportionate share of the cost of, public facilities and infrastructure adequate to serve the needs of such development according to the General Plan, a specific plan (if prepared for such development), and/or any infrastructure Master Plan that covers such development through the use of a City-approved development agreement. The use of in-lieu fees or in-lieu financing will be reserved for communitywide facilities that serve areas beyond the proposed project or plan. Construction and dedication of facilities will be the method for providing facilities that serve the proposed project or plan area. The City may make exceptions on the basis of financial hardship or small projects or plans, allowing payment of an in-lieu fee.

- Policy PUBLIC-1.5: The City will upgrade facilities and services that experience deterioration or obsolescence in existing developed areas of the City, as funding permits, to maintain levels of public service established by the City.

- Policy PUBLIC-1.6: The City will require that the methods, materials, and design of infrastructure and utilities achieve the City's environmental, public health and safety, and community character goals and policies, in addition to the City's level of service standards for public services, facilities, and infrastructure.

- Policy PUBLIC-1.7: New developments shall provide compatible utility services in common trenching to minimize the land required and ongoing costs for underground services.

Goal Public-2: Adequate Supply of Quality Water to Serve Existing and Future Projected Development Needs

- Policy PUBLIC-2.1: The City will require that water supply, treatment, and delivery meet or exceed local, State, and federal standards.

- Policy PUBLIC-2.2: The City will manage and enhance the City's water supply and facilities to accommodate existing and planned development, as identified in the City's Water Master Plan, Urban Water Management Plan, and Groundwater Source Efficiency Report.

- Policy PUBLIC-2.3: New developments shall incorporate water conservation techniques to reduce water demand in new growth areas, including the use of reclaimed water for landscaping and irrigation.

- Policy PUBLIC-2.4: The City will condition approval of new developments on demonstrating the availability of adequate water supply and infrastructure, including multiple dry years, as addressed in the City's Water Master Plan, Urban Water Management Plan, and Groundwater Source Efficiency Report.

- Policy PUBLIC-2.5: The City will not induce urban development by providing provide water services in areas outside the Planning Area or areas not planned for urban development, such as areas designated for agriculture or open space.

Adherence to the above goals and policies would provide the City with the means to implement the required water infrastructure determined in the Updated Water Master Plan, which would ensure that the expansion of additional water storage and distribution infrastructure would occur.

Because of the level of urban development anticipated under the General Plan, the construction of additional facilities could generate significant impacts. Although proposed General Plan policy requires infrastructure and facilities to be provided in a way that reduces environmental impacts, the extent of infrastructure required to serve

future demand would create significant impacts. The impacts of infrastructure required to serve General Plan buildout is analyzed along with the direct effects of construction and operation of General Plan land uses throughout this document. The impact is considered **significant and unavoidable**.

IMPACT 4.16-3 *Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board. Proposed wastewater treatment upgrades included in the Updated Sewer Collection System Master Plan are expected to comply with Regional Water Quality Board requirements as well as State standards, and therefore would have a* ***less-than-significant*** *impact.*

The City has an existing WWTP north of the Stanislaus River and the central section of Riverbank.

The City is currently working closely with Central Valley Regional Water Quality Control Board (CVRWQCB) to ensure quality and safety standards are met, in response to a notice of violation of water effluent standards. Currently, the CVRWQCB requirements for the Riverbank WWTP state that the monthly average influent flow of the WWTP must not exceed 4.5 mgd during the three-month tomato-processing season and 1.8 mgd during the remainder of the year. The tomato processing plant located in downtown Riverbank has recently closed, which has effectively opened up capacity for municipal treatment needs. The tomato plant effluent was estimated to be 2.5 mgd and 200 million gallons per year.

Because of the long-term utilization of the WWTP, it is planned to convey all wastewater from the Riverbank General Plan area to the current treatment site. As such, the sewage collection systems for new areas to be served by the City must be designed to convey wastewater to the existing treatment plant. Proposed upgrades included in the Updated Sewer Collection System Master Plan are required to comply with Regional Water Quality Board requirements as well as State standards, and therefore would have a **less-than-significant** impact.

Mitigation Measures: No mitigation measures required.

IMPACT 4.16-4 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. *The City would need to provide an additional 4,774,175 gpd of wastewater treatment capacity to meet the projected buildout of the City's General Plan. Implementation of proposed General Plan policies and City master plans would ensure that the City would have the capacity to meet its wastewater demands according to the projected buildout of the proposed General Plan and would reduce adverse environmental impacts associated with development of this infrastructure. However, construction of wastewater collection and conveyance facilities for urban development of the scope anticipated under the General Plan could have significant impacts. The impact is considered* ***significant and unavoidable****.*

The City would need to provide an additional 4,774,175 gpd of sewer collection capacity in order to meet the proposed buildout of the proposed General Plan.

The existing City WWTP has existing permits, successful operations, and can be upgraded to meet future City needs; however, the Updated Sewer Collection System Master Plan recommended several improvements to the sewer collection systems for each of the three areas of the City: Central Riverbank, East Riverbank, and West Riverbank. These improvements are summarized below.

Key components of the Central Riverbank sewer collection system strategy involve a new crossing of the Stanislaus River (possibly on a proposed pedestrian bridge) and improvements associated with the Crawford Road Pump Station, including a gravity line and force main to be installed in conjunction with an upgrade at the pump station.

The East Riverbank sewer collection system strategy includes shunting flows away from Sierra Avenue by installing an 18-inch gravity line in Stanislaus Street. In terms of eastside sewer sheds, Sewer Sheds 9 and 11

would flow by gravity into the respective existing trunk lines. Sewer Shed 12 is lower and requires installation of a mump station to lift flows into recommended trunk lines in Sewer Shed 11. Sewer Sheds 7 and 8 would flow west to the Crawford Road Pump Station.

Most of the West Riverbank area is outside of the existing City sphere of influence and was not included in previous planning for collection system infrastructure. The Riverbank topography generally slopes from east to west; therefore, the westerly area cannot gravity flow into the existing collection system, and the majority of the West Riverbank will require a separate collection system, including conveyance to the WWTP. The Updated Sewer Collection System Master Plan recommends a pump station on the south side of the river at a point and elevation that facilitates collection from the largest portion of the west side (Sewer Sheds 1, 2, and 3). In addition, the proposed pedestrian bridge could double as a utility crossing for the 16-inch pipeline. Additional improvements include upgrading and routing flows to Crawford Pump Station.

Proposed General Plan goals, objectives, policies and actions call for the provision of an adequate supply of water; the maintenance of water infrastructure; the coordination between land use planning and water facilities and service; and the promotion of water conservation measures. These goals, objectives, policies and actions, combined with the improvements in the City's Updated Sewer Collection System Master Plan would ensure that the City would have the capacity to meet its wastewater demands according to the projected buildout of the proposed General Plan.

Goal Public-1: Public Service and Infrastructure Provision to Meet or Exceed Level of Service Standards Consistent With Other Community Goals

- Policy PUBLIC-1.1: The City will coordinate the planning and construction of capital improvements with the timing of urban development within the Planning Area.

- Policy PUBLIC-1.2: New development must pay for the public facilities, services, and infrastructure required to serve the needs of such development based on service standards applied by the City. The mechanisms for such funding will be part of the development approval, or as set forth in any applicable development agreement or specific plan, which, with the approval of the City Council, may provide for alternative financing mechanisms in-lieu of City development fee programs and ordinances. The use of in-lieu fees or in-lieu financing will be reserved for communitywide facilities that serve areas beyond the proposed project or plan. Construction and dedication of facilities will be the method for providing facilities that serve the proposed project or plan area. The City may make exceptions on the basis of financial hardship or small projects or plans, allowing payment of an in-lieu fee.

- Policy PUBLIC-1.3: The City will require that new developments, depending on their size, either: 1) designate lands in appropriate locations, sizes, and free of constraints to accommodate public facilities and infrastructure needed to serve such development, or 2) pay a fee proportional to the development's cost of acquiring such land at the time acquisition will be required.

- Policy PUBLIC-1.4: The City shall give priority to serving areas within the existing City limits as of the adoption of this General Plan based on current infrastructure and service capacity. New growth proposed outside existing City limits is responsible for providing, or paying a proportionate share of the cost of, public facilities and infrastructure adequate to serve the needs of such development according to the General Plan, a specific plan (if prepared for such development), and/or any infrastructure Master Plan that covers such development through the use of a City-approved development agreement. The use of in-lieu fees or in-lieu financing will be reserved for communitywide facilities that serve areas beyond the proposed project or plan. Construction and dedication of facilities will be the method for providing facilities that serve the proposed project or plan area. The City may make exceptions on the basis of financial hardship or small projects or plans, allowing payment of an in-lieu fee.

- Policy PUBLIC-1.5: The City will upgrade facilities and services that experience deterioration or obsolescence in existing developed areas of the City, as funding permits, to maintain levels of public service established by the City.

- Policy PUBLIC-1.6: The City will require that the methods, materials, and design of infrastructure and utilities achieve the City's environmental, public health and safety, and community character goals and policies, in addition to the City's level of service standards for public services, facilities, and infrastructure.

- Policy PUBLIC-1.7: New developments shall provide compatible utility services in common trenching to minimize the land required and ongoing costs for underground services.

Goal Public-3: Adequate Wastewater Service to Meet Existing and Future Projected Development Determined In the General Plan

- Policy PUBLIC-3.1: The City will require that wastewater collection, conveyance, and treatment facilities to meet or exceed local, State, and federal standards.

- Policy PUBLIC-3.2: The City will identify and utilize, as feasible, best environmental practices and technologies for wastewater collection, conveyance, and treatment.

- Policy PUBLIC-3.3: The City will not induce urban growth by providing wastewater facilities to areas outside the Planning Area or areas not planned for urban development, such as areas designated for agriculture or open space.

Adherence to the above goals and policies would provide the City with the means to implement the required wastewater infrastructure determined in the Updated Sewer Collection System Master Plan, which would ensure that the expansion and improvements to infrastructure would occur. Because of the level of urban development anticipated under the General Plan, the construction of additional facilities could generate significant impacts. The impacts of infrastructure required to serve General Plan buildout is analyzed along with the direct effects of construction and operation of General Plan land uses throughout this document. The impact is considered **significant and unavoidable**.

IMPACT 4.16-5 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. *The City would need to provide stormwater collection, conveyance, treatment (if appropriate), detention/retention, and disposal facilities (as appropriate) to accommodate additional stormwater runoff generated by urban development anticipated under the General Plan. Implementation of proposed General Plan policies and the City's Stormwater Master Plan will ensure the City has adequate facilities to handle additional runoff. However, based on the scale of development anticipated under the General Plan update, it is possible that construction and installation of required infrastructure, such as drainage infrastructure require to serve General Plan buildout could, itself, have significant impacts. The impact is considered* ***significant and unavoidable.***

Development under the General Plan has the potential to cause significant impacts by increasing stormwater runoff associated with construction activities and increasing impermeable surfaces, thereby placing greater demands on the stormwater handling system. Runoff from developed surfaces, building roofs, parking lots and roads also contain impurities and has the potential to increase flooding.

The Storm Drain System Master Plan (Nolte 2007c) indicates that storm drainage from specific problem areas is reportedly connected into the sanitary sewer collection system. It appears that there is still approximately 60 acres of development draining into the sanitary sewer system. The Storm Drain System Master Plan identified three drainage systems with problem areas. These areas are: (1) Castleberg Basin System including the Townsend Road

area, the Virginia Avenue/Terminal Avenue area, 8th Street from the Castleberg Basin pump discharge to the Stanislaus River outfall, and additional areas discharging into the basin; (2) the Candlewood System, including Candlewood Place, connecting storm drains, contributing adjacent areas and the Stanislaus River outfall; and (3) First Street Basin, including areas discharging into the basin and the discharge system. (Nolte 2007c)

Following is a synopsis from the City's Storm Drain System Mater Plan, including explanation of the city's existing drainage infrastructure within the areas determined to have notable deficiencies and that which require further analysis and provides recommendations for their improvement in order to serve the growth projected in the General Plan update:

Castleberg System

The Storm Drain System Master Plan indicates that no additional drainage areas should be connected to the Castleberg Basin because it is only able to operate effectively with the current basin configuration and pump capacity. Pumps at Castleberg Park Pump Station must remain operational at all times to maintain the water basin operating depth below 3.0 feet to maintain the operation of the Virginia Avenue and Townsend Road area storm drains. The pipes upstream of the basin operate at design capacities when the basin depth does not exceed 3.0 feet. (Nolte 2007c)

The Eight Street system influences operations of the Castleberg basin and also impacts operation of systems upstream of the basin, which affects overland flow to downstream areas. This system does not currently have capacity to receive any additional flows. However, tract maps have been approved and storm drainage pipelines stubbed-out to expand the Castleberg Basin service to include the adjoining Van Dusen area to the south. This accelerates the need for improvements to Eighth Street storm drainage system. (Nolte 2007c)

Storm Drain Master Plan Recommendations:

- **Interim Capacity Increase.** Obsolete agricultural drainage facilities, which are no longer needed to collect and dispose of irrigation tailwater, should be turned over to the City and connected to the storm drain pipeline to give additional interim discharge capacity to the Castleberg system. (Nolte 2007c)

- **Further Study of Eighth Street System.** A critical system for the city, the Eight Street system provides conveyance for a large portion of the city and an outfall for the Calstleberg Park Basin. Surcharging of this system occurs even in small storm events, which may force runoff into an overland release pattern. Further study of this system would provide a better understanding of the system and the overland release patters and would provide alternatives for improving the system. (Nolte 2007c)

- **Eighth Street System Design and Construction.** The design shall utilize the most effective and feasible option identified in the recommended Eighth Street Study. (Nolte 2007c)

Candlewood System

The system on Candlewood Avenue conveys runoff to the Stanislaus River, near the northerly limit of the City. This system has a free outfall to the Stanislaus River. City staff has observed failure of the Candlewood Avenue system at its westerly end, near Woodhaven Place. (Nolte 2007c)

The two main issues contributing to this system's problems are the overall ground slope along Candlwood Place and the detrimental influence of multiple storm drain system interconnections from areas outside the modeled portion of the system. (Nolte 2007c)

Storm Drain Master Plan Recommendations:

- **Replace the existing 15 inch outfall with an appropriate size pipe.** (Nolte 2007c)

- **Perform a detailed analysis of the storm drain system** to identify alternatives for controlling the flows into the Castlewood system. (Nolte 2007c)

First Street Basin

The First Street Basin is a non-dual-use basin located adjacent to First Street between Topeka Street and Sierra Street. Residential areas primarily contribute to the basin. Currently, in order to prevent flooding in the downtown area, the pump station discharging runoff from the basin is manually turned off when the flow in the downstream systems has receded. (Nolte 2007c)

This basin requires a discharge that operates at all times during a storm without constraints. This means the capacity in a downstream system is needed to drain the First Street Basin, while downstream areas remain unaffected. (Nolte 2007)

Storm Drain Master Plan Recommendations:

- **Provide basin maintenance** including the side slopes and bottom to minimize surface erosion, continuously ponding water, and undesirable vegetation. (Nolte 2007c)

- **Downstream system analysis** to determine alternatives for providing a posistie, consistent outflow system for this basin. (Nolte 2007c)

- **Analysis of Basin Operations** to determine the potential to more efficiently and fully utilize the capacity of the basin. (Nolte 2007c)

Proposed General Plan goals, objectives, policies and actions call for the provision of an adequate drainage infrastructure, in order to protect public safety, preserve natural resources, and prevent erosion and flood potential. Instituting the goals, objectives, policies and actions included in the General Plan, as well as the improvements determined to be necessary in the City's Draft Storm Drain System Master Plan would ensure that the City would have the capacity to meet its storm water drainage demands through expansion of the City's existing drainage infrastructure, according to the projected buildout of the proposed General Plan. The General Plan includes the following goal and policies related to storm drainage:

Goal Public-4: Storm Drainage Systems That Protect Public Safety, Preserve Natural Resources, and Prevent Erosion and Flood Potential

- Policy PUBLIC-4.1: The City will maintain and improve, as necessary, existing public storm basins and flood control facilities, as identified in the Stormwater Master Plan.

- Policy PUBLIC-4.2: The City will coordinate with County and Regional agencies, as well as the railroad, in the maintenance and improvement of storm drainage facilities to protect the City's residents, property, and structures from flood hazards.

- Policy PUBLIC-4.3: The City will consider a variety of means for floodplain management, depending on the context, which may include development, improvement, and maintenance of structural flood control facilities; land use policy and zoning to prohibit incompatible urban development within the floodplain; erosion control techniques; set backs from flood-prone areas; and other measures, as circumstances dictate.

- Policy PUBLIC-4.4: The City will identify areas, such as wetlands, low-lying natural runoff areas, and pervious surfaces and percolation ponds, for natural storm water collection and filtration, in concert with the City's existing and future drainage infrastructure, to help reduce the amount of runoff and encourage groundwater recharge.

- Policy PUBLIC-4.5: The City will encourage and/or require the use of open, vegetated swales, stormwater cascades, and small wetland ponds instead of pipes and vaults, as a part of urban development proposed outside current City limits to mitigate stormwater impacts.

- Policy PUBLIC-4.6: The City will enforce a no-net-runoff policy for areas proposed for development outside the current City limits.

- Policy PUBLIC-4.7: The City will encourage the use of pervious pavement, landscaping, and other measures that reduce the quantity and improve the quality of stormwater runoff as existing developed areas of the City are redeveloped.

Because of the level of urban development anticipated under the General Plan, the construction of additional facilities could generate significant impacts. The impacts of infrastructure required to serve General Plan buildout is analyzed along with the direct effects of construction and operation of General Plan land uses throughout this document. The impact is considered **significant and unavoidable**.

IMPACT 4.16-6 Be served by a landfill with sufficient permitted capacity to accommodate the project's sold waste disposal needs. *Since the GSW site is currently at 50% capacity, and projected to be open until 2023, at which point the City's franchised waste hauler would be required to accommodate any increase in the need for residential and commercial waste management services; this impact would be less-than-significant.*

As mentioned above, Riverbank is served by Gilton Solid Waste (GSW), which serves approximately 6,000 residences in the City. Solid waste hauled by GSW from Riverbank is deposited in the Forward, Inc. landfill in San Joaquin County, the Fink Road Landfill in Stanislaus County, and the Covanta Waste-to-Energy Facility in Stanislaus County.[14]

The GSW site is currently at 50% capacity and is projected to be open until 2023; therefore, the City's solid waste disposal needs would be effectively met through the majority of the General Plan planning period. However, the planning period extends to the year 2025, at which point (i.e., all years beyond 2023) GSW would be required to accommodate any increase in the need for residential and commercial waste management services.[41]

The California Integrated Waste Management Act requires that jurisdictions maintain a 50% or better diversion rate for solid waste. The City implements this requirement through the City's franchised Solid Waste Management Services. Per the agreements between the City and the franchised trash disposal companies, each franchisee is responsible for meeting the minimum recycling diversion rate of 50% on a quarterly basis. Future development is required to comply with the applicable solid waste franchise's recycling system, and thus, would meet the City's and California's solid waste diversion regulations.

Furthermore, implementation of the following goal and policies contained in the proposed General Plan would ensure that sufficient landfill capacity is provided throughout the City that would accommodate the buildout of the General Plan.

14 Dennis Shuler, Gilton Solid Waste. Personal Correspondence, June 8, 2005.

Goal PUBLIC-5: Adequate Capacity for Solid Waste Disposal

- Policy PUBLIC-5.1: The City will approve new developments only if adequate capacity exists to accommodate solid waste demand, including processing, recycling, transportation, and disposal.

- Policy PUBLIC-5.2: The City will encourage provision of recycling and conservation service and public education to reduce the amount of solid waste at the landfill.

The combination of these policies and actions outlined in the proposed General Plan would ensure that the city complies with applicable regulations related to the disposal and reduction of solid waste, and in general reduces the amount of solid waste it disposes of into GSW. Therefore, implementation of the proposed General Plan Goals and Policies, as well as compliance with the California Integrated Waste Management Act, is anticipated to result in a **less-than-significant** impact related to solid waste.

Mitigation Measures: No mitigation measures required.