

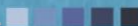


# City of Willows



# EXISTING CONDITIONS REPORT 2020

De Novo Planning Group



A Land Use Planning, Design, and Environmental Firm



City of Willows General Plan Existing Conditions Report

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## INTRODUCTION

The Willows General Plan identifies the community’s vision for the future and provides a framework to guide decisions on growth, development, and conservation of open space and resources in a manner consistent with the quality of life desired by residents, businesses, and local elected officials.

This Existing Conditions Report prepared for the General Plan Update provides an overview of the city’s physical, environmental, economic, and demographic setting, as of 2019.

City staff, the General Plan Update consultant (De Novo Planning Group), and its subconsultants have worked together to ensure that this is an accurate and reliable source of information. This document is intended to serve as a comprehensive reference document for community members, policymakers, staff, and the consultant team throughout the General Plan Update process.

The Willow’s General Plan Update is a multi-year process that will include a comprehensive update of the General Plan, which sets a vision for the future of the City, goals and strategies to achieve the City’s vision, and an Environmental Impact Report (EIR), which investigates the possible impacts of the General Plan Update policy changes to the surrounding physical environment. This Existing Conditions Report document provides information about these components and establishes the existing setting for the EIR.

This chapter provides a brief background summary of Willows, summarizes the contents of this Existing Conditions Report, and provides an overview of the General Plan Update.

## BACKGROUND

Willows is located in Glenn County in the northern Sacramento Valley and the eastern foothills and mountains of the Coast Range, approximately 80 miles north of the City of Sacramento. The land within the county surrounding Willows has remained predominantly agricultural due to its alluvial soil, mild climate, and access to water resources.

## EXISTING CONDITIONS REPORT CONTENTS

To prepare a meaningful General Plan, existing conditions must be understood and documented. The Existing Conditions Report identifies development patterns, natural resources, socioeconomic conditions, and environmental conditions in Willows and the county, and identifies the regulatory environment for each topic. This report will be a resource for the City Council, Planning Commission, staff, and the De Novo Planning Group team for the General Plan Update and EIR. The Existing Conditions Report makes use of maps, graphics, and user-friendly non-technical terms to help make it accessible to the general public.

The Existing Conditions Report provides background data and will serve as a technical framework, while the General Plan will focus on goals, policies, and implementation actions. The information collected for the Existing Conditions Report will also be used as the basis for the “existing setting” sections of the General Plan EIR.

The following topic areas are addressed in the Existing Conditions Report:

### 1.0 LAND USE AND SOCIOECONOMICS

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The Land Use and Socioeconomics chapter addresses land use and demographics, including issues related to land use patterns, housing and demographics, economic development, and market conditions. The information in this chapter provides both an historical and current perspective on land use and is intended

to assist the General Plan Update process by providing both historical context and a baseline of existing land use information to be used when formulating and considering amendments to the city's current land use pattern or when considering alternate growth and land use scenarios for Willows.

The economic development and setting section contains information about employment characteristics, sales and spending, and economic trends and conditions. This section discusses the current economic base, and local employment conditions. This section identifies the employment and industry sectors present in the Willows and the county, jobs by employment and industry sector, and employment trends, and also identifies local and regional real-estate market conditions.

## 2.0 TRANSPORTATION AND CIRCULATION

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The Circulation chapter describes the circulation network serving the city. The section describes the existing physical and operational characteristics affecting the transportation system in the City of Willows. A review of the regulatory setting is followed by an overview of travel behavior in the City; descriptions of the roadway system, pedestrian, bicycle, and transit facilities; collision analysis; vehicle operations on the roadway network; and rail, goods movement, and aviation in Willows.

## 3.0 COMMUNITY SERVICES AND FACILITIES

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The Community Services and Facilities chapter describes the existing conditions and regulatory context regarding community services, including water, wastewater, drainage and flood control, education, public safety services, schools, and parks and recreational resources within the city. These facilities and services provide a framework that supports growth and development in the city. This chapter describes existing service levels, and available resources.

## 4.0 HAZARDS, SAFETY, AND NOISE

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The Hazards, Safety, and Noise chapter includes a listing of key significant issues that will ultimately guide the preparation of the Safety and Noise Elements of the General Plan. This chapter provides a summary of the existing setting and conditions associated with natural and man-made hazards that may pose a danger to city residents, employees, and visitors including: dangers from hazardous materials including hazardous materials sites (i.e., landfills, superfund sites, pipelines and sites with the potential for chemical spills); fire hazards; aircraft hazards; and major inclement weather conditions. Known hazardous conditions listed in available State and County databases are also described.

The noise section includes descriptions of the characteristics of sound and noise and a description of transportation, stationary, and construction noise sources within the city. A description of the noise monitoring survey results, tabularized noise exposure contours, and an existing conditions description that explains local traffic and stationary noise sources are included.

Noise measurement locations were selected to quantify noise levels along major roadways, near significant stationary noise sources, in developed areas, and in other areas that may be problematic. Based on the results of the noise monitoring and the traffic data, noise data associated with major roadways have been quantified and tabulated, using the U.S. Federal Highway Traffic Noise Prediction Model. Noise levels associated with stationary and railroad sources were identified in tabular format, and background noise levels within the community are quantified. A summary of the regulatory framework related to noise, including Federal, State, and City laws, ordinances, plans, policies, and standards is also provided.

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## 5.0 CONSERVATION AND NATURAL RESOURCES

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The Conservation and Natural Resources chapter discusses conservation issues related to cultural and historic preservation, air quality, greenhouse gases, biological resources, geologic and mineral resources, hydrology and water quality, and visual resources in and around Willows. This chapter also discusses open space as it relates to the preservation of natural resources as part of the biological resources discussion, and the managed production of surface water and groundwater resources as part of the hydrology discussion. Federal, State, and local regulations that pertain to each of these topics are also described.

## 6.0 ENVIRONMENTAL JUSTICE

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The Environmental Justice chapter analyzes the potential for Disadvantaged Communities (DACs) within Willows, and addresses a wide range of topics related to Environmental Justice issue areas.

### GENERAL PLAN OVERVIEW

State law requires every city and county in California to prepare and maintain a planning document called a general plan. A general plan is a “constitution” or “blueprint” for the future physical development of a county or city. All future planning decisions and project approvals must be consistent with the general plan, including, but not limited to: specific plans, subdivisions, public works projects, and zoning decisions.

A general plan has four defining features:

**General.** As the name implies, a general plan provides general guidance for future land use, transportation, infrastructure, environmental, and resource decisions.

**Long-Range.** A general plan provides guidance on achieving a long-range vision of the future for a city or county. To reach this envisioned future, the general plan includes goals, policies, and implementation programs that address both near-term and long-term needs. The Willows General Plan Update will look ahead approximately 20 years, to the year 2040.

**Integrated and Coherent.** The goals, policies, and implementation programs in a general plan must present a comprehensive, unified program for development and resource conservation. A general plan uses a consistent set of assumptions and projections to assess future demands for housing, employment, public services, and infrastructure. A general plan has a coherent set of policies and implementation programs that enables citizens to understand the vision of the general plan, and enables landowners, businesses, and industry to be more certain about how future planning decisions will be made and implemented.

**Comprehensive.** A general plan covers a wide range of social, economic, infrastructure, and natural resource issues. There are seven mandatory elements: land use, circulation, housing, conservation, open space, safety, and noise. State law allows local governments to organize and format their general plans however they desire, as long as the required topics or elements are addressed. The Willows General Plan is expected to address the following topics:

- **Land Use:** Establishes land use patterns and densities, and ensures that there are opportunities for growth to meet future needs, while protecting the city’s lands and resources.
- **Transportation:** Guides decisions for how people of all ages and abilities can safely and efficiently get around the community— including by car, bike, walking, and transit. It will also consider new transportation technology and trends.

- **Noise:** Provides measures to manage the effect of sound in the community, protecting the health and welfare of the community by promoting development and activities that are compatible with noise level criteria.
- **Safety:** Addresses natural and man-made safety hazards such as fires, flooding, seismic safety and geologic hazards, hazardous materials, aircraft, noise, and emergency operations and preparedness.
- **Conservation and Open Space:** Provides measures to protect and improve the city's natural, historic, cultural, and biological resources. Addresses the topic of local and regional parks, recreation and open space, including trails and scenic vistas.
- **Housing:** Not part of the current work program for the General Plan Update. Generally housing elements are updated every 5-8 years per HCD guidelines.

## **USING THE GENERAL PLAN**

The General Plan is used by the City Council, Planning Commission, and City staff on a regular basis to make decisions with direct and indirect land use implications. It also provides a framework for inter-jurisdictional coordination of planning efforts among officials and staff of the City and other government agencies such as Glenn County, State and Federal agencies, and area jurisdictions.

The General Plan is the basis for a variety of regulatory mechanisms and administrative procedures. California planning law requires consistency between the General Plan and its implementation programs. Implementation programs and regulatory systems of the General Plan include zoning and subdivision ordinances, capital improvement programs, specific plans, environmental impact procedures, and building and housing codes.

Over time, the city's population, demographics, and economy will change, its goals will be redefined, and the physical environment in which its residents live and work will be altered. In order for the General Plan to be a useful document, it must be monitored and periodically revised to respond to and reflect changing conditions and needs.

The General Plan should also be user-friendly. To this end, the Willows General Plan Update will be divided into several primary documents: the Existing Conditions Report, and the Goals and Policies document.

As described above, this Existing Conditions Report provides a summary of a range of conditions in Willows as they exist in 2019, and provides the baseline framework for the development of the General Plan Update's goals, policies, and implementation programs.

The Goals and Policies document, which will be developed in coordination with City staff, decision-makers, and the public, is the essence of the General Plan. It contains the goals and policies that will guide future decisions within Willows. It also identifies a full set of implementation programs that will ensure the goals and policies in the General Plan are carried out.

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# Chapter 1

## Land Use and Socioeconomics



This chapter addresses land use, including issues related to the current General Plan, existing land use patterns, local planning context, and community character. The information in this chapter provides a current perspective on land use in Willows and is intended to assist the General Plan update process by providing a baseline of existing land use information to be used when formulating and considering amendments to the City's current land use pattern.

This Chapter includes the following topics:

- 1.1 Land Use
- 1.2 Population, Housing, and Demographics
- 1.3 Economic Setting
- 1.4 Real Estate Market Conditions





## 1.0 LAND USE AND SOCIOECONOMICS

This chapter examines the land use and development patterns in Willows, the City’s demographics and housing profile, and regional economic characteristics, and estate market conditions. The information and analysis is intended to inform the General Plan Update process by providing both historical context and a baseline of existing land use, demographic, and housing development information. This chapter includes the following sections:

- 1.1 Land Use
- 1.2 Regional Population, Housing, and Demographics
- 1.3 Regional Economic Setting and Market Conditions
- 1.4 Real Estate market Conditions

### 1.1 LAND USE

This section describes land use and development patterns in Willows and identifies the regulatory framework associated with land use. Existing land use conditions, including land uses by General Plan designation and assessed land uses, are described. This chapter provides an overview of existing land use patterns, types and location of development in Willows.

#### KEY TERMS

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**City Limits:** The city limits include the area within a city’s corporate boundary, over which the city exercises land use authority and provides public services.

**Sphere of Influence:** A Sphere of Influence (SOI) is the probable physical boundary and service area of a local agency, as adopted by a Local Agency Formation Commission (LAFCO). An SOI includes both incorporated and unincorporated areas within which a city or special district will have primary responsibility for the provision of public facilities and services.

**Urban Limit Lines (ULL):** Urban limit lines have been established by the County to direct urban growth towards cities and unincorporated communities, and away from agricultural open space. These ULL lines represent those areas where growth can be accommodated because urban services and infrastructure sufficient to serve development is either available or can be made available within the planning period, however, there is no obligation on the part of the city to plan for or to serve the area.

**Planning Area:** For the purposes of the Willows General Plan Update, the Planning Area is defined as all lands within the Willows City Limits, SOI, and ULL.

Figure 1.1-1 shows the General Plan’s Planning Areas.

## REGULATORY FRAMEWORK

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The regulatory framework discussion describes laws and regulations that guide land use decisions. Adopted plans that pertain to the City are also described.

### *STATE*

#### **California General Plan Law**

Government Code Section 65300 requires that each county and city adopt a General Plan “for the physical development of the county or city, and any land outside its boundaries which bears relation to its planning.”

The General Plan is a comprehensive long-term plan for the physical development of the county or city and is considered a "blueprint" for development. The General Plan provides a statement of the community’s development, economic, circulation, and environmental goals and includes diagrams and text setting forth objectives, standards, policies, and programs. The General Plan must contain seven State-mandated elements: Land Use, Open Space, Conservation, Housing, Circulation, Noise, and Safety. It may also contain any other elements that the City wishes to include. The land use element designates the general location and intensity of designated land uses to accommodate housing, business, industry, open space, education, public buildings and grounds, recreation areas, and other land uses.

The 2017 General Plan Guidelines, established by the Governor’s Office of Planning and Research (OPR) to assist local agencies in the preparation of their general plans, further describe the mandatory land use element as a guide to planners, the general public, and decision makers prescribing the ultimate pattern of development for the city. The General Plan Guidelines include resources, data, tools, and model policies to help cities and counties update their general plans.

#### **California Environmental Quality Act**

The California Environmental Quality Act (CEQA) was developed to protect the quality of the environment and the health and safety of persons from adverse environmental effects. Discretionary projects are required to be reviewed consistent with the requirements of CEQA to determine if there is potential for the project to cause a significant adverse effect on the environment. Depending on the type of project and its potential effects, technical traffic, noise, air quality, biological resources, and geotechnical reports may be needed. If potential adverse effects can be mitigated, a mitigated negative declaration is required. If potentially adverse effects cannot be mitigated, an environmental impact report is required. These documents have mandated content requirements and public review times. Preparation of CEQA documents can be costly and, despite maximum time limits set forth in the Public Resources Code, can extend the processing time of a project by a year or longer.

#### **Subdivision Code**

A subdivision is any division of land for the purpose of sale, lease or finance. The State of California Subdivision Map Act (Government Code § 66410) regulates subdivisions throughout the state. The goals of the Subdivision Map Act are as follows:

- To encourage orderly community development by providing for the regulation and control of the design and improvement of a subdivision with proper consideration of its relationship to adjoining areas.

- To ensure that areas within the subdivision that are dedicated for public purposes will be properly improved by the subdivider so that they will not become an undue burden on the community.
- To protect the public and individual transferees from fraud and exploitation.

The Map Act allows some flexibility in the processing of subdivisions. The City of Willows controls this process through the subdivision regulations in the Municipal Code (Title 17 Subdivisions).

### *LOCAL*

## **Willows General Plan – Policy Document**

The City’s current General Plan was originally adopted in 1974 as the “Glenn County And Cities Of Orland Willows Unit Of The Tri-County Area Planning Council General Plan” with Elements updated in 1981 (Land Use, Open Space Conservation and circulation) and the City’s 2014-2019 Housing Element adopted in January of 2015. The City of Willows current General Plan Land Use Element was adopted July 9, 1996 with revisions in years 2000 and 2010. The City’s Housing Element was adopted in 2015 which covers the 2014-2019 Housing Element cycle. Land uses in Willows have been developed based on the Land Use Map, and goals, policies, and objectives established by the General Plan. The General Plan includes a broad goal policy framework that guides land use and planning decisions within Willows. Primary Goals, Objectives, Policies and Implementation Measures of the Land Use Element are included below:

**DPS-1 Development:** This plan is based on a concept that new growth should be accommodated and planned for. This plan does not seek to restrain growth, but to identify those areas most suitable for future development that are consistent with the desires and needs of the community.

**Goal:** Accommodate and plan for new growth.

**Objective:** During the life of this plan, maintain flexibility and responsiveness to the changing conditions and opportunities for development.

**Policy:** The City should only approve development proposals that are consistent with this plan.

**Implementation Measure:** Maintain sufficient land use designations for new development in the general plan diagram.

**DPS-2 Compatible Land Uses:** Compatibility between land uses is a hallmark of good planning. Maintaining the viability of existing uses, while accommodating new uses, requires that careful consideration be given to the potential impact a new use may have on an existing use.

**Goal:** Compatibility between land uses.

**Objective:** Maintain the viability of existing agricultural operations, residential neighborhoods, commercial sites, and industrial areas.

**Policy:** The City should only approve development proposals that would be compatible with existing uses.

**Implementation Measure:** New land use designations in the general plan diagram should be compatible with existing uses.

**DPS-3 Compact City Form:** Urban sprawl and scattered development create problems that can adversely impact local community character, open space, infrastructure, and public services. Maintaining a compact city form helps to preserve the community's identity and ensures that infrastructure and public services will continue to meet the needs of the community. The rural atmosphere of the community is protected when leap-frog development is discouraged and undue conversion of open space is prevented.

**Goal:** A compact city form.

**Objective:** Infill development on vacant land within the city limits and development of land immediately adjacent to the city and within the sphere of influence.

**Policy:** The City will encourage infill development within the City limits, and should discourage sprawl, leap-frog development and undue conversion of open space.

**Implementation Measure:** Maintain sufficient land use designations in the general plan diagram to accommodate new growth within the city limits and the sphere of influence.

**DPS-4 Community Services, Facilities, and Infrastructure.** Community services, facilities, and infrastructure play an integral role in community development. A major function of the City is to ensure that services, facilities, and infrastructure are maintained at appropriate levels to serve the community and to provide for expansion of these services to meet the needs of new development. An equally important task of the City leadership is to make sure that new development does not exceed existing services, and that adequate revenue is available for expansions or upgrades to serve new development.

**Goal:** Adequate community services, facilities, and infrastructure.

**Objective:** Maintain existing services, facilities, and infrastructure, and provide for expansion, extension, or upgrades to meet the needs of new development without adversely impacting existing levels of service or the revenues required to provide them.

**Policy:** Before approving a development proposal, the City should determine through the California Environmental Quality Act (CEQA) process that a proposed project will not adversely impact existing community services, facilities, and infrastructure. The City Council should determine that revenues are, or will be, available to maintain and/or expand, extend, or upgrade services related to new development.

**Implementation Measure:** The City should establish a program to determine the need for new public services, facilities, and infrastructure. The program should be coordinated with the designations for future development illustrated in the general plan diagram and should establish development review guidelines to ensure adequate funding.

**DPS-5 Wastewater Treatment Capacity Reserve:** Wastewater treatment capacity is a primary factor to consider when assessing the ability of a community to accommodate growth. In the City of Willows, a concerted effort has been undertaken to maintain a reserve wastewater treatment capacity. This reserve capacity is intended to allow the City to be flexible and responsive to development, without putting undue stress on the system.

**Goal:** Adequate reserve of wastewater treatment capacity.

**Objective:** Hold 25 percent of wastewater treatment capacity in reserve.

**Policy:** Any development that will utilize any portion of that 25 percent reserve capacity shall be evaluated by the Planning Commission and the City Council to determine if the project's benefit to the community is significant enough to justify the use of the reserve. The City Council will determine what steps must be taken to restore the reserve capacity. If the City Council indicates that the project does not provide significant benefit to the community, the project will be required to mitigate its impact to the City's wastewater treatment capacity.

**Implementation Measure:** The City Public Works Department should provide periodic reports on the status of the City's wastewater treatment capacity.

**DPS-6 Hazards:** Protecting the safety of the citizens of the City is of primary importance. Natural and human-made hazards can present undue risks to the health, safety, property, and the welfare of the community if not planned for properly.

**Goal:** Plan for hazards.

**Objective:** Identify hazards relevant to community, and required by law, that present undue risks to the public health, safety, property, and welfare of the community.

**Policy:** The City should consider the implication of hazards and direct development away from hazard areas or require mitigation measures which reduce the hazard to an acceptable level.

**Implementation Measure:** Identify hazard areas in the Opportunities and Constraints section of the land use element consistent with the statutory requirements for identifying flood-prone areas, and where feasible and relevant, other areas of hazards. Identify mitigation measures which will reduce hazard risks to an acceptable level.

**DPS-7 Natural Amenities:** Respecting the natural amenities of the City helps to maintain a sense of community and serves to protect the rural atmosphere.

**Goal:** Protect natural features and amenities of the City.

**Objective:** Protect existing trees and other natural features.

**Policy:** The City should consider the impact of a proposed development on natural features and amenities, and where feasible, require that natural features be preserved and/or enhanced.

**Implementation Measure:** Proposed development projects should be required to incorporate natural features, such as existing trees, into the design of the projects, and where appropriate, add new trees.

**DPS-8 Economic Vitality:** Maintaining a strong economic base ensures continued economic vitality, job creation and retention, and a fiscally sound local government.

**Goal:** A strong local economy.

**Objective:** Create and retain jobs, continue business development and expansion, and maintain a sound fiscal base for the City.

**Policy:** The City will continue to encourage business development consistent with the objective of retaining and creating jobs, and maintaining a sound fiscal base.

**Implementation Measure:** There should be sufficient land designated for commercial and industrial uses on the land use diagram to provide for future business development opportunities.

**DPS-9 Housing:** A major function of the land element is to ensure that there are adequate housing opportunities for existing and future residents of the community. The land use element serves this function by designating future residential land uses. To this end the residential land use designations of this plan provide for a variety of residential development opportunities in both type and cost.

**Goal:** Adequate housing opportunities for existing and future residents.

**Objective:** A variety of residential development opportunities in both type and cost.

**Policy:** The City Council and Planning Commission should evaluate residential development proposals based on their ability to provide housing opportunities consistent with this plan and the Housing Element.

**Implementation Measure:** Sufficient residential land use categories should be included in the plan and designated on the land use diagram to provide adequate residential development opportunities in both type and cost.

## Willows General Plan – Land Use Map

Planned land uses within the city include single and multiple family residential, office and professional, commercial, industrial, public facilities, and conservation lands which are included within specific designations identified by the City’s Land Use Map. Figure 1.1-1 (General Plan Land Use Map) illustrates the City’s current General Plan land use designations and their respective distributions throughout Willows. Table 1.1-1 summarizes the City’s General Plan land use designations, by number of parcels and acreage.

**TABLE 1.1-1: EXISTING WILLOWS GENERAL PLAN LAND USE DESIGNATIONS – CITY LIMITS AND SOI**

<i>LAND USE</i>	<i>TOTAL PLANNING AREA ACREAGE</i>	<i>PARCELS</i>	<i>PERCENT OF AREA</i>
<b><i>Willows City Limits</i></b>			
Commercial/Industrial Combining Use	150.39	16.00	10%
Entryway	24.24	93.00	2%
General Commercial	109.72	223.00	8%
General Industrial	41.18	21.00	3%
Highway Commercial	45.78	36.00	3%
Light Industrial	157.87	31.00	11%
Low Density Residential	591.52	1,613.00	41%
Multiple Family Residential	33.15	63.00	2%
Office and Professional	45.26	145.00	3%
Open Space	0.11	1.00	0.01%
Public Facilities and Services	229.43	63.00	16%
ROW/Canal	27.50	3.00	2%
<b>Total City Limits</b>	<b>1,456.17</b>	<b>2,308.00</b>	

LAND USE	TOTAL PLANNING AREA ACREAGE	PARCELS	PERCENT OF AREA
<b>Willows SOI*</b>			
Agricultural/Residential	84.75	3.00	2%
Business Park	44.13	2.00	1%
Community Commercial	25.15	8.00	1%
General Agriculture	321.09	12.00	9%
Highway and Visitor Service Commercial	15.54	5.00	0%
Industrial	237.07	25.00	7%
Intensive Agriculture	1,683.15	45.00	47%
Multiple Family Residential	24.34	14.00	1%
Public Facilities	285.26	8.00	8%
ROW/Canal	15.18	4.00	0.42%
Rural Residential	240.76	36.00	7%
Service Commercial	116.20	29.00	3%
Single Family Residential	158.46	313.00	4%
Suburban Residential	364.08	227.00	10%
<b>Total SOI</b>	<b>3,615.15</b>	<b>731.00</b>	
<b>Grand Total - City Limits and SOI</b>	<b>5,071.31</b>	<b>3,039.00</b>	

\*NOTE: THE WILLOWS SOI INCLUDES GLENN COUNTY'S LAND USE DESIGNATIONS. SOURCES: GLENN COUNTY, 2019; GIS LAND USE DATA FILE; DE NOVO PLANNING GROUP, 2019.

## Willows General Plan – Land Use Descriptions

A brief description of each of the existing Willows General Plan land use designations is provided below. These descriptions are based on the existing General Plan's land use descriptions. Each land use classification has been defined and its purpose stated. Building intensity standards are also identified. Where the existing General Plan has existing policy guidance related to different use types; those goals, objectives, policies, and implementation measure have also been identified.

### RESIDENTIAL

**Estate Residential.** The Estate Residential designation allows up to 1 unit per acre (1 acre minimum lot size). Development may be served by community sewers and community water service.

**Low-Density Residential.** The Low-Density Residential designation provides for two to six units per acre (6,000 square feet minimum lot size). The Low-Density Residential designation is designed to provide a full range of single-family housing opportunities. In most cases, new Low-Density Residential development will be required to be served by community sewers and water service.

**Medium Density Residential (MDR).** The Medium Density Residential designation allows seven to fifteen units per acre. The Medium Density Residential designation is intended to allow mixed uses of residential types at a medium density. All medium density residential development will be required to be served by community sewer and water service.

**Multi-Family Residential.** The Multi-Family designation allows sixteen to thirty units per acre. The Multi-Family Residential designation is designed to provide the opportunity for development of apartments and condominiums. All multi-family development will be required to be served by community sewer and water service.

### **DPS-17 Residential Development**

**Goal:** New residential development that will contribute to, not detract from, the character of the community.

**Objective:** New residential development that:

- Is compatible with existing land uses.
- Mitigates significant adverse impacts to community facilities/services.
- Is in character and scale with existing neighborhoods.
- Infills on vacant parcels within the City.
- Provides housing opportunities for all segments of the population.
- Is consistent with this plan.

**Policy:** The City should consider the above objectives before approving new residential developments.

**Implementation Measure:** Residential development proposals should be reviewed for consistency with the goals, objectives, policies, and implementation measures of this plan.

### *COMMERCIAL*

In general, all commercial land use categories are allowed a FAR of 1.0; however, zoning regulations require off-street parking and loading space be provided based on the number of square feet of commercial use developed.

There are four commercial land use classifications. Each of these categories serves a specific purpose to accommodate a broad range of commercial activities.

**General Commercial.** The General Commercial designation provides for a variety of general retail businesses including: banks, business offices, food, hardware, variety, department, drug, and clothing stores. Service-related businesses may include barber shops, beauty parlors, laundries, and repair shops. Professional offices and businesses offices are also allowed uses.

**Highway Commercial.** The Highway Commercial designation provides for commercial uses that primarily serve travelers at Interstate 5 access points. Allowed uses include: service stations, restaurants, motels, convenience stores, and offices.

**Office and Professional.** The Office and Professional classification allows administrative, business, and professional offices (for attorneys, dentists, counselors, engineers, etc.) in areas not suited for other commercial uses. High-density residential uses are also allowed in this land use category with a maximum of 30 units per acre. The City's zoning ordinance establishes a standard for lot coverage for Residential-Professional uses that requires 30 percent of the lot be open space.

**Commercial/Industrial Combining Use.** General Commercial uses or Light Industrial uses are allowed in the Commercial/Industrial Combining designated areas.

**Entryway.** The Entryway designation provides for a mix of commercial, office, and residential uses along arterial streets leading to downtown, in which new developments and modifications to existing developments are subject to design guidelines. All permitted and conditional uses are intended to be compatible with residential uses in adjacent districts.



**DPS-18 Commercial Development**

**Goal:** Appropriate commercial development that enhances the economic vitality of the community.

**Objective:** New commercial development that:

- Contributes to, not detracts from, the community.
- Revitalizes the downtown area.
- Meets a specific need for new commercial services

**Policy:** The City should consider the above objectives and should not designate new commercial development sites unless they meet a specific need in the community. The City shall not approve new commercial developments unless they demonstrate that they will not have significant negative impact on the downtown area.

**Implementation Measure:** Maintain existing commercial designations on the land use diagram. The City should establish commercial development review criteria that provides information on the effect a new development may have on the community.

**DPS-19 Office and Professional Development**

**Goal:** Appropriate Office and Professional land use.

**Objective:** Office and Professional land uses that:

- Will continue to meet the needs of the community.
- Is promoted and encouraged in the downtown area.
- Does not pose a significant negative impact to existing single-family neighborhoods.
- Accommodates appropriate multi-family uses.

**Policy:** The City should consider the above objectives when reviewing Office and Professional developments and should encourage this use in the downtown area.

**Implementation Measure:** The Land Use Diagram shall illustrate where Office and Professional uses are allowed.

*INDUSTRIAL*

In general, industrial land use categories are allowed a FAR of 1.0; however, zoning regulations require off-street parking and loading space to be provided based on the number of square feet of commercial use developed.

**Light Industrial.** The Light Industrial designation provides for limited industrial uses, light manufacturing, heavy commercial uses, and large administrative facilities. It is the intent of the designation to limit potential nuisances that could impact adjacent uses.

**General Industrial.** The General industrial designation provides for a full range of manufacturing, industrial and agriculture-related processing, general service, and distribution uses.

### **DPS-20 Industrial Development**

**Goal:** A thriving industrial segment of the City economy.

**Objective:** Industrial Development Should:

- Expand the City's economic base.
- Provide local employment opportunities.
- Be compatible with existing uses.
- Provide buffering between residential uses.
- Be encouraged in the southeast portion of the City.
- Provide on-site and off-site capital facilities necessary to service the development, if necessary.
- Be protected from incompatible uses that would reduce efficiency or opportunity for growth.

**Policy:** The City should continue to encourage industrial development consistent with the above goal and objectives.

**Implementation Measure:** Cooperate with the Chamber of Commerce and the County Economic Development Council to attract and encourage new industrial development within the City.

### *PUBLIC*

**Public Facilities and Services.** The Public Facilities and Services designation provides for existing and future public uses including: schools, parks, government, airports, and other public uses.

### *AGRICULTURE*

**Agriculture.** The agricultural designation provides for 40-acre minimum parcels, with one dwelling unit per parcel. This classification is applied in areas where existing agricultural uses predominate and where residential uses are secondary. Agricultural-related industrial and commercial uses may be allowed consistent with the City zoning ordinance.

### *URBAN RESERVE*

**Urban Reserve.** The Urban Reserve designation indicates where future urban expansion may be appropriate. The intent of this designation is to indicate where urban expansion may be considered if new development opportunities are needed to accommodate growth in the planning area. Existing uses should be of low-density and intensity, so as not to preclude future planning for urban oriented uses.

### *OPEN SPACE*

**Open Space.** The Open Space classification is intended to achieve any one or a combination of the following: 1) preserve agricultural lands, 2) maintain undeveloped lands in a substantially undeveloped state for purposes of conservation of natural resources, 3) provide for urban open space needs, or 4) provide for buffer areas between potentially conflicting land uses or activities. (Definition amended 6/13/00).

## Willows SOI- Glenn County Land Use Descriptions

Parcels located outside of the City Limits, within the SOI, are within the jurisdictional boundaries of Glenn County. As such, land use designations on these parcels are established by the Glenn County General Plan. These existing County-designated land uses are described below.

### General Agriculture:

**Definition and Purpose:** The General Agriculture classification is used to identify those areas where it is desirable to retain agriculture as the primary land use.

**Permitted Uses:** Examples of uses which are considered appropriate under this classification include, but are not limited to: growing and harvesting field crops, grain and hay crops; growing and harvesting fruit and nut trees, vines and vegetables; pasture and grazing land; and animal raising operations.

**Standards for Population Density and Building Intensity:** The minimum parcel size shall be twenty (20) acres. Population density shall not exceed 200 persons per square mile (640 acres) and building intensity shall not exceed one residential unit per twenty (20) acres except that housing for farm labor and senior citizens in excess of the above standard may be permitted subject to permitting procedures established in the Glenn County Zoning Code.

Currently 805 parcels totaling 14,321.36 acres (approximately 1.71% of the unincorporated county and 6.33% of the SOI) are included with the General Plan's General Agriculture Land Use Designation.

### Intensive Agriculture:

**Definition and Purpose:** The Intensive Agriculture classification is used to identify areas suitable for commercial agriculture which provide a major segment of the county's economic base; to protect the agricultural community from encroachment of unrelated agricultural uses which, by their nature, would be injurious to the physical and economic well-being of the agricultural community; to accommodate lands under Williamson Act contracts; to encourage the preservation of agricultural land, both in production and potentially productive, which contain State-designated Important Farmlands or Locally Significant Farmlands.

**Permitted Uses:** Examples of uses which are considered appropriate under this classification include, but are not limited to: growing and harvesting field crops, grain and hay crops; growing and harvesting fruit and nut trees, vines and vegetables; pasture and grazing land; and animal raising operations.

**Standards for Population Density and Building Intensity:** The minimum parcel size shall be forty (40) acres. Population density shall not exceed 100 persons per square mile (640 acres) and building intensity shall not exceed one residential unit per forty (40) acres except that housing for farm labor and senior citizens in excess of the above standard may be permitted subject to permitting procedures established in the Glenn County Zoning Code.

Currently 3,834 parcels totaling 304,743.26 acres (approximately 36.40% of the unincorporated county and 33.19% of the SOI) are included with the General Plan's Intensive Agriculture Land Use Designation.

**Agricultural/Residential:**

Definition and Purpose: The Agriculture/Residential classification is utilized to identify areas suitable for agricultural use and to provide for residential development with a range of densities compatible with a rural character and life-style; to use as a transition from Rural Residential to Intensive Agriculture; and to provide areas for "hobby farms".

Permitted Uses: Examples of uses which are considered appropriate under this classification include, but are not limited to: growing and harvesting field crops, grain and hay crops; growing and harvesting fruit and nut trees, vines and vegetables; pasture and grazing land; domestic livestock farming on a limited scale; single family residential uses; and home occupations.

Standards for Population Density and Building Intensity: The minimum parcel size shall be ten (10) acres. Population density shall not exceed 400 persons per square mile (640 acres) and building intensity shall not exceed one residential unit per ten (10) acres except that housing for senior citizens in excess of the above standard may be permitted, subject to permitted procedures established in the Glenn County Zoning Code.

Currently 21 parcels totaling 510.65 acres (approximately 0.06% of the unincorporated county and 1.67% of the SOI) are included with the General Plan's Agricultural/Residential Land Use Designation.

**Rural Residential:**

Definition and Purpose: The Rural Residential classification is utilized to identify areas suitable for large lot, low density residential use that provide for development which is compatible with a rural character and life-style.

Permitted Uses: Examples of uses which are considered appropriate under this classification include, but are not limited to: single-family residences; agricultural and domestic livestock farming on a limited scale; and home occupations.

Standards for Population Density and Building Intensity: The minimum parcel size shall be five (5) acres. Population density shall not exceed 800 persons per square mile (640 acres) and building intensity shall not exceed one residential unit per five (5) acres except that housing for senior citizens in excess of the above standard may be permitted, subject to the permitting procedures established in the Glenn County Zoning Code.

Currently 767 parcels totaling 4,631.38 acres (approximately 0.55% of the unincorporated county and 4.75% of the SOI) are included with the General Plan's Rural Residential Land Use Designation.

**Suburban Residential:**

Definition and Purpose: The Suburban Residential classification is utilized to identify areas suitable for smaller lots, yet rural in character, and to provide for development that is compatible with subdivisions in a suburban setting.

Permitted Uses: Examples of uses which are considered appropriate under this classification include, but are not limited to: single-family residences; agricultural and domestic livestock farming on a limited scale; and home occupations.

Standards for Population Density and Building Intensity: The minimum parcel size shall be one (1) acre with building intensity not exceeding one residential unit per net acre. In areas containing gravelly soils similar to those found in the West Orland area, the minimum parcel size shall be two (2) acres with building intensity not exceeding one residential unit per two net acres. In addition, housing for senior citizens in excess of the above standard may be permitted, subject to the permitting procedures established in the Glenn County Zoning Code. Population density shall not exceed 4,000 persons per square mile (640 acres), except in gravelly soil areas where population density shall not exceed 2,000 persons per square mile.

Currently 811 parcels totaling 1,945.95 acres (approximately 0.23% of the unincorporated county and 7.18% of the SOI) are included with the General Plan's Suburban Residential Land Use Designation.

### **Single Family Residential:**

Definition and Purpose: The Single Family Residential classification is utilized to provide areas suitable for development of dwelling units intended for occupancy by only one household, and physically independent from other dwelling units or structures.

Permitted Uses: Examples of uses which are considered appropriate under this classification include, but are not limited to: "traditional" single-family detached housing; mobile home subdivisions; mobile home parks; and planned residential developments.

Standards for Population Density and Building Intensity: The minimum parcel size shall be 6,000 square feet. Population density shall not exceed 8,000 persons per square mile (640 acres) and building intensity is limited to one main dwelling unit per parcel and shall not exceed six (6) residential units per net acre except that in areas served by public sewer and water systems with adequate capacity; one second dwelling unit may be permitted subject to the permitting procedures established in the Glenn County Zoning Code. The maximum height of structures shall be thirty feet (30'). The maximum lot coverage shall be forty percent (40%) except in areas with slopes of more than 30 percent (30%), where the maximum lot coverage shall be thirty percent (30%).

Currently 1,219 parcels totaling 650.03 acres (approximately 0.08% of the unincorporated county and 3.12% of the SOI) are included with the General Plan's Single Family Residential Land Use Designation.

### **Multiple Family Residential:**

Definition and Purpose: The Multiple Family Residential classification is utilized to provide for areas suitable for development of structures containing more than one dwelling unit, including duplexes and triplexes.

Permitted Uses: Examples of uses which are considered appropriate under this classification include, but are not limited to: attached housing; apartments; group housing; condominiums; mobile home parks; and planned residential developments.

Standards for Population Density and Building Intensity: The minimum parcel size shall be 6,000 square feet. Population density shall not exceed 16,000 persons per square mile (640 acres) and building intensity may range from eight (8) residential units per net acre to fifteen (15) dwelling units per net acre. The maximum height of structures shall be forty-five feet (45'). The maximum

lot coverage shall be forty percent (40%) for single story buildings; thirty-five percent (35 %) for two story buildings; and thirty percent (30%) for three story buildings.

Currently 94 parcels totaling 85.12 acres (approximately 0.01% of the unincorporated county and 0.48% of the SOI) are included with the General Plan’s Multiple Family Residential Land Use Designation.

**Service Commercial:**

**Definition and Purpose:** The purpose of the Service Commercial classification is to provide areas suitable for heavier commercial uses involving outdoor storage, display and work activity.

**Permitted Uses:** Examples of uses which are considered appropriate under this classification include, but are not limited to: automotive-related or heavy equipment services and sales; lumber yards; machine shops; trucking terminals/ printing/publishing facilities; and warehousing. The Service Commercial classification may be used in agriculturally-designated areas where it provides an area for agricultural equipment sales and services; wholesale commodities sales; and other agricultural-related service and commercial uses.

**Standards for Population Density and Building Intensity:** Areas designated as Service Commercial shall not be utilized for permanent residences. The minimum parcel size shall be 12,500 square feet. Structures shall not cover more than seventy five percent (75%) of the site or be higher than thirty-five feet (35'), unless developed as part of a Planned Development. Outdoor storage shall be screened and generally shall not exceed fifty percent (50%) of the gross floor area.

Currently 122 parcels totaling 537.09 acres (approximately 0.06% of the unincorporated county and 2.29% of the SOI) are included with the General Plan’s Service Commercial Land Use Designation.

**Community Commercial:**

**Definition and Purpose:** The Community Commercial classification provides for a full range of commercial retail and service establishments. Community Commercial areas should satisfy a variety of personal needs as well as those of other nearby businesses.

**Permitted Uses:** Examples of uses which are considered appropriate under this classification include, but are not limited to: gasoline service stations; hardware stores; eating and drinking establishments; food and beverage sales; public buildings; general merchandise stores; professional offices; and finance offices. Community Commercial uses also include agricultural supply and commodities sales; veterinary services; and other agricultural-related services.

**Standards for Population Density and Building Intensity:** Areas designated as Community Commercial shall not be utilized for permanent residences. The minimum parcel size shall be 8,000 square feet. Structures shall not cover more than fifty percent (50%) of the site or be higher than thirty-five feet (35').

Currently 88 parcels totaling 71.29 acres (approximately 0.01% of the unincorporated county and 0.50% of the SOI) are included with the General Plan’s Community Commercial Land Use Designation.

**Highway and Visitor Service Commercial:**

**Definition and Purpose:** The purpose of the Highway and Visitor Service Commercial classification is to provide sites to serve the commercial needs of travelers and visitors to the county.

**Permitted Uses:** Examples of uses which are considered appropriate under this classification include, but are not limited to: travel-related services such as gasoline service stations, truck stops, food and beverage sales, eating and drinking establishments and lodging located along major streets, major collectors, and major highways for travelers. Resort development is appropriate under this designation, as are other types of development that would attract visitors to the county.

**Standards for Population Density and Building Intensity:** Areas designated as Highway and Visitor Service Commercial shall not be utilized for permanent residences except for those units required for caretaker and/ or employee housing incidental to hotel or motel uses. The minimum parcel size shall be 8,000 square feet. Structures shall not cover more than fifty percent (50%) of the site or be higher than thirty feet (30'), unless developed as part of a Planned Development.

Currently 43 parcels totaling 728.46 acres (approximately 0.09% of the unincorporated county and 0.31% of the SOI) are included with the General Plan's Highway and Visitor Service Commercial Land Use Designation.

**Business Park:**

**Definition and Purpose:** The purpose of the Business Park classification is to strengthen and enhance industrial and business development potential by designating areas where adequate infrastructure can be provided to support new industries or the relocation of industries, and a "workplace use" environment can be provided.

**Permitted Uses:** Examples of uses which are considered appropriate under this classification include, but are not limited to: offices; research and development parks; light industrial parks; warehousing; health clubs and gymnasiums; small proprietary industries; "incubator" businesses and industries; and incidental retail uses.

**Standards for Population Density and Building Intensity:** Areas designated as Business Park shall not be used for permanent residential uses. The minimum parcel size shall one (1) acre. Structures shall not cover more than thirty percent (30%) of the site or be higher than forty-five feet (45').

Currently 13 parcels totaling 171.46 acres (approximately 0.02% of the unincorporated county and 0.87% of the SOI) are included with the General Plan's Business Park Land Use Designation.

**Industrial:**

**Definition and Purpose:** The purpose of the Industrial classification is to provide for a range of manufacturing operations; the processing of natural resources; and the processing of agricultural products. The intent is to encourage appropriate industrial/manufacturing development that will be compatible with adjacent land uses and will not create adverse environmental impacts.

Permitted Uses: Examples of uses which are be considered appropriate under this classification include, but are not limited to: light manufacturing uses; uses permitted in the Service Commercial category; fabrication shops; large warehouses; equipment storage yards; distribution sales; batch plants; lumber mills; auto wrecking, salvage and junk yards; fuel tank farms; and energy facilities.

Standards for Population Density and Building Intensity: Areas designated as Industrial shall not be utilized for permanent residences. The minimum parcel size shall be 10,000 square feet. Structures shall not cover more than seventy-five percent (75%) of the site or be higher than forty-five feet (45'), unless developed as part of a Planned Development. Outdoor storage shall be completely screened and shall not exceed one hundred percent (100%) of the gross floor area of all structures.

Currently 177 parcels totaling 1,602.86 acres (approximately 0.19% of the unincorporated county and 4.67% of the SOI) are included with the General Plan’s Industrial Land Use Designation.

**Public Facilities:**

Definition and Purpose: The purpose of the Public Facilities classification is to provide areas for development of public facilities to meet public needs.

Permitted Uses: Examples of uses which are considered appropriate under this classification include, but are not limited to: institutional, academic, governmental and community services, either publicly-owned or operated by non-profit organizations, such as fire stations, parks and community centers.

Standards for Population Density and Building Intensity: Areas designated as Public Facilities shall not be utilized for permanent residences. The minimum parcel size shall be 6,000 square feet. Structures shall not cover more than fifty to seventy-five percent (50 to 75%) of the site or be higher than forty-five feet (45').

Currently 14 parcels totaling 701.61 acres (approximately 0.08% of the unincorporated county and 5.63% of the SOI) are included with the General Plan’s Public Facilities Land Use Designation.

**Willows Zoning Ordinance - Municipal Code**

Title 18 of the Municipal Code includes is the City’s Zoning Ordinance. The Zoning Ordinance carries out the policies of the General Plan by classifying and regulating the uses of land and structures within the incorporated City, consistent with the General Plan. The Zoning Ordinance is adopted to protect and promote the public health, safety, comfort, convenience, prosperity, and general welfare of residents and businesses.

Zoning Designations have been established to implement the intent of the General Plan’s Land Use Designations and Land Use Map. The following zoning designations are included in the Willows Municipal Code (*Title 18 ZONING*). As shown on Table 1.1-2, a zoning consistency matrix has been developed that reflects the appropriate zoning classifications which meet the intent of the land use designations. This matrix is to be utilized when considering zoning reclassification proposals. The Zoning Code may further define the uses which are permitted within each classification.



R-1	Single-Family Residential District
R-2	Two-Family Residential District
R-3	High Density Residential District
R-P	Multiple Residence-Professional Office District
E	Entryway District
CC	Central Commercial District
CG	General Commercial District
CH	Highway Commercial District
ML	Light Industrial District
MH	Heavy Industrial District
OS	Open Space District
AG	Agriculture General District
PF	Public Facilities District

**TABLE 1.1-2 WILLOWS LAND USE CLASSIFICATIONS AND ZONING CONSISTENCY MATRIX.**

GENERAL PLAN LAND USE CLASSIFICATIONS	ZONING DESIGNATIONS
Low-Density Residential	R-1, R-2
Multi-Family Residential	R-2, R-3, R-P
General Commercial	CC, CG
Highway Commercial	CH
Commercial Industrial Combining Use	CC, CG, ML
Office and Professional	R-3, R-P
Light Industrial	CG, ML, MH
General Industrial	MH
Public Facilities and Services	OS, PF
Agriculture	OA, AG
Open Space	AG
Urban Reserve	OA, AG
Entryway	E

SOURCE: WILLOWS GENERAL PLAN LAND USE ELEMENT TABLE 8-1, AND TITLE 18 ZONING CODE 2019.

### Local Agency Formation Commission of Glenn County

In 1963, the State Legislature created a local agency formation commission (LAFCO) for each county, with the authority to regulate local agency boundary changes. Subsequently, the State has expanded the authority of a LAFCO. The goals of the LAFCO include preserving agricultural and open space land resources and providing for efficient delivery of services. The Glenn County LAFCO has authority over land use decisions in Glenn County affecting local agency boundaries. Its authority extends to the incorporated cities, including annexation of County lands into a city, and special districts within the County. LAFCO has the authority to review and approve or disapprove the following:

- Annexations to or detachments from cities or districts.
- Formation or dissolution of districts.

- Incorporation or disincorporation of cities.
- Consolidation or reorganization of cities or districts.
- Establishment of subsidiary districts.
- Development of, and amendments to, Spheres of Influence. The Sphere of Influence (SOI) is the probable physical boundary and service area of each local government agency. This may extend beyond the current service area of the agency.
- Extensions of service beyond an agency's jurisdictional boundaries.
- Provision of new or different services by districts.
- Proposals that extend service into previously unserved territory in unincorporated areas.

In addition, the Glenn County LAFCO conducts Municipal Service Reviews (MSRs) for services within its jurisdiction. An MSR typically includes a review of existing municipal services provided by a local agency or district and its infrastructure needs and deficiencies. It also evaluates financing constraints and opportunities, management efficiencies, opportunities for rate restructuring and shared facilities, local accountability and governance, and other issues.

Legislation, including Assembly Bill 1555 and Senate Bill 244, has been enacted to encourage the identification and annexation of islands, which are unincorporated areas substantially surrounded by a city or cities.

### **Airport Land Use Commission Law (Public Utilities Code §21670 et seq.)**

The law, passed in 1967, authorized the creation of Airport Land Use Commissions (ALUC) in California. Per the Public Utilities Code, the purpose of an ALUC is to protect *public health, safety, and welfare by encouraging orderly expansion of airports and the adoption of land use measures that minimizes exposure to excessive noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses* (§21670). Furthermore, each ALUC must prepare an Airport Land Use Compatibility Plan (ALUCP). Each ALUCP, which must be based on a twenty-year planning horizon, should focus on broadly defined noise and safety impacts.

The Glenn County Airport Land Use Commission is established according the Chapter 22.10 of the Glenn County Code which was adopted by the Glenn County Board of Supervisors in 1985 (Ordinance No. 830).

The seven-member Glenn County Airport Land Use Commission ensures compatible land uses in the vicinity of all airport facilities. The Airport Land Use Commission review plans, regulations, & other actions of local agencies & airport operators.

The Land Use Commission oversees the Orland and Willows Airport Comprehensive Land Use Plans. The overall goal for the Orland and Willows Airport Comprehensive Land Use Plans is to provide for the orderly growth of the Airport facilities and from the areas surrounding the airports, to safeguard the general welfare of the inhabitants within the vicinity of the airport and the public in general.

The Glenn County Willows Airport is located within the Willows SOI, immediately east of I-5. This airport is described in greater detail in Chapter 4.0 of this report.

## EXISTING SETTING

### Land Use Patterns

When discussing land use, it is important to distinguish between planned land uses and existing land uses. The General Plan land use designations identify the long-term planned use of land, but may not present a complete picture of existing land uses. The Glenn County Assessor's office maintains a database of existing (assessed) land uses on individual parcels, including an estimated number of dwelling units and related improvements such as non-residential building square footage. This information is used as the basis for property tax assessments and is summarized in Table 1.1-3 and depicted on Figure 1.1-2. It is noted, however, that information available from the Assessor's office may be incomplete or out-of-date. For example, the California Department of Finance and the U.S. Census ACS estimate over 2,400 housing units within the Willows City Limits, while the Assessor's office estimates approximately 2,100 housing units. For more detailed information related to housing units, and industry sector square footage see sections 1.2 through 1.3, which includes information related to population, housing, and demographics, as well as regional economic, and real estate market conditions.

**TABLE 1.1-3: ASSESSED LAND USES – WILLOWS**

ASSESSOR LAND USE CODE*	RESIDENTIAL UNITS	NON-RESSQ FT	ACRES (GIS)	% OF AREA
<i>WILLOWS CITY LIMITS</i>				
Agricultural	0	0	173.81	11.9%
Commercial	0	1,023,109	208.48	14.3%
Governmental	0	62,876	7.47	0.5%
Institutional	0	89,059	17.72	1.2%
Professional	0	40,741	4.62	0.3%
Recreational	0	3,648	0.65	0.0%
Residential	2,097	-	480.29	33.0%
Exempt/ROW/No Match	0	0	563.13	39%
<b>City Limits Total</b>	<b>2,097</b>	<b>1,219,433</b>	<b>1,456.17</b>	<b>100.0%</b>
<i>WILLOWS SOI</i>				
Agricultural	0	8,916	2,323.27	64.3%
Commercial	0	125,748	88.23	2.4%
Industrial	0	-	6.95	0.2%
Institutional	0	17,295	6.01	0.2%
Residential	545	0	540.74	15.0%
Exempt/ROW/No Match	0	0	649.96	18.0%
<b>SOI Total</b>	<b>545</b>	<b>151,959</b>	<b>3,615.15</b>	<b>100.0%</b>
<b>Grand Total</b>	<b>2,642</b>	<b>1,371,392</b>	<b>5,071.31</b>	<b>100.0%</b>

NOTE: \* ASSESSED USES INCLUDE THE ASSESSORS "PRIMARY" USE CODE CATEGORIES. IN SOME CASES PRIMARY USES MAY DIFFER FROM USE DESCRIPTIONS AND SECONDARY USES IDENTIFIED BY THE ASSESSOR, THEREFORE UNIT COUNTS AND SQUARE FOOTAGES LISTED MAY DIFFER FROM ACTUAL CONDITIONS.

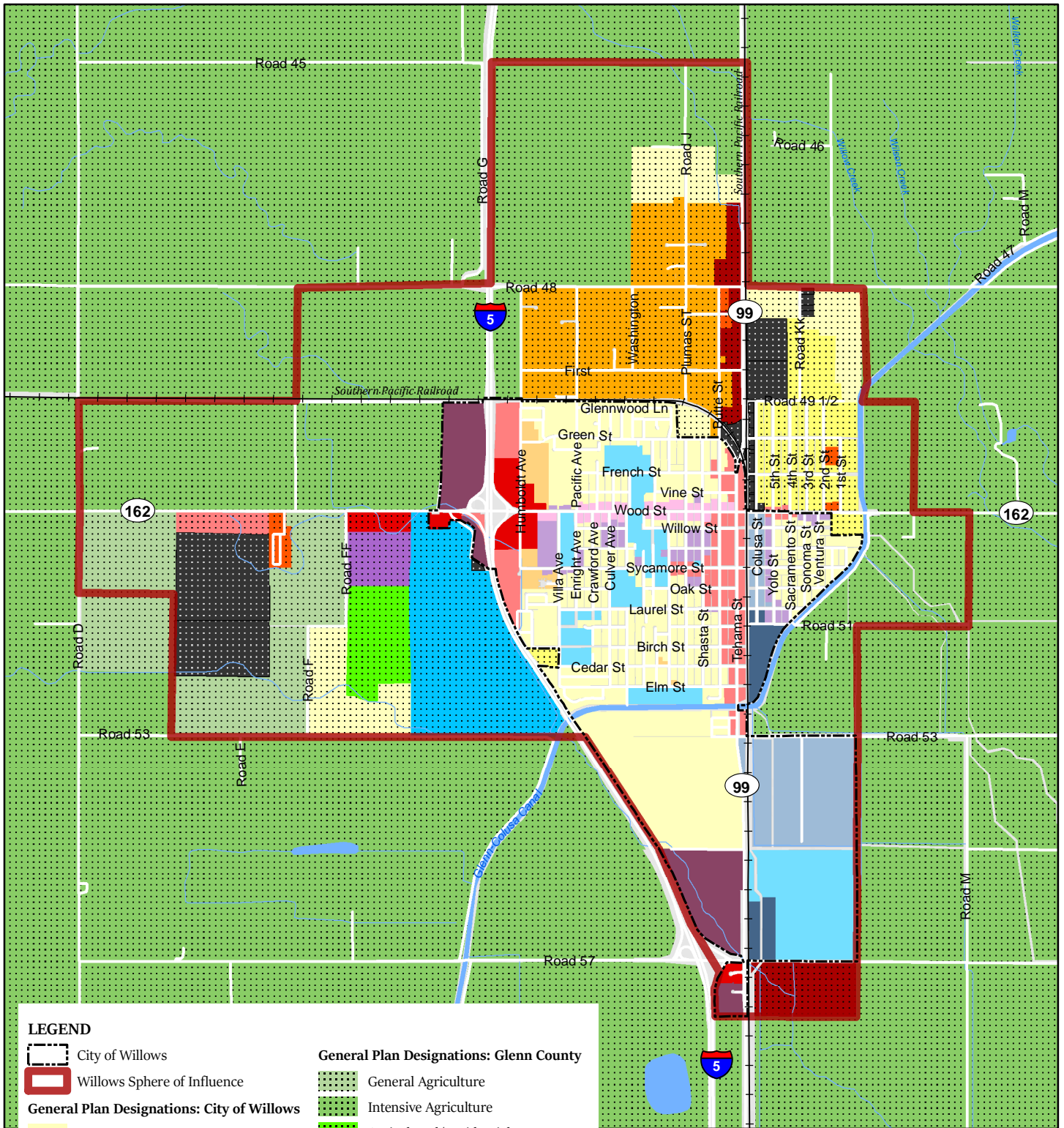
SOURCE: GLENN COUNTY ASSESSOR'S OFFICE, 2019; DE NOVO PLANNING GROUP, 2019.

Existing assessed uses refer to the existing built environment and site uses, which may be different from the land use or zoning designations applied to land for planning purposes. Existing uses are based on data provided by the County Assessor. As shown in Table 1.1-9 and Figure 1.1-2 the majority of assessed land acreage (33 Percent) within the City of Willows city limits is associated with residential land uses. Other major land uses within Willows include commercial uses (14.3 percent), and agricultural uses (11.9 percent). Within the unincorporated portions within the Willows SOI (64.3 percent) of lands are for agricultural purposes and approximately 15 percent are currently residential uses.

## REFERENCES

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- City of Willows. 2010. Willows General Plan– Land Use Element Adopted July 9<sup>th</sup> 1996, revised 2000, and 2010.
- City of Willows. 2015. Willows General Plan 2014 – 2019 Housing Element 2015.
- Glenn County. 2015. Glenn County General Plan 2014 – 2019 Housing Element Adoption Draft March 2015.
- Willows Municipal Code. Title 18 Unified Development Code (Zoning). Current through Ordinance 745-19, July 9, 2019.
- Glenn County. 2019. Parcel Data provided by the County Assessor’s Office.
- California Department of Finance. 2019. Table E-5, Population and Housing Estimates for Cities, Counties and the State, January 1, 2010-2019, with 2010 Benchmark.
- U.S. Department of Housing and Urban Development, CHAS, 2011-2015.



**LEGEND**

- City of Willows
- Willows Sphere of Influence

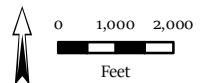
**General Plan Designations: City of Willows**

- Low Density Residential
- Multiple Family Residential
- General Commercial
- Highway Commercial
- Commercial/Industrial Combining Use
- General Industrial
- Light Industrial
- Entryway
- Office and Professional
- Open Space
- Public Facilities and Services

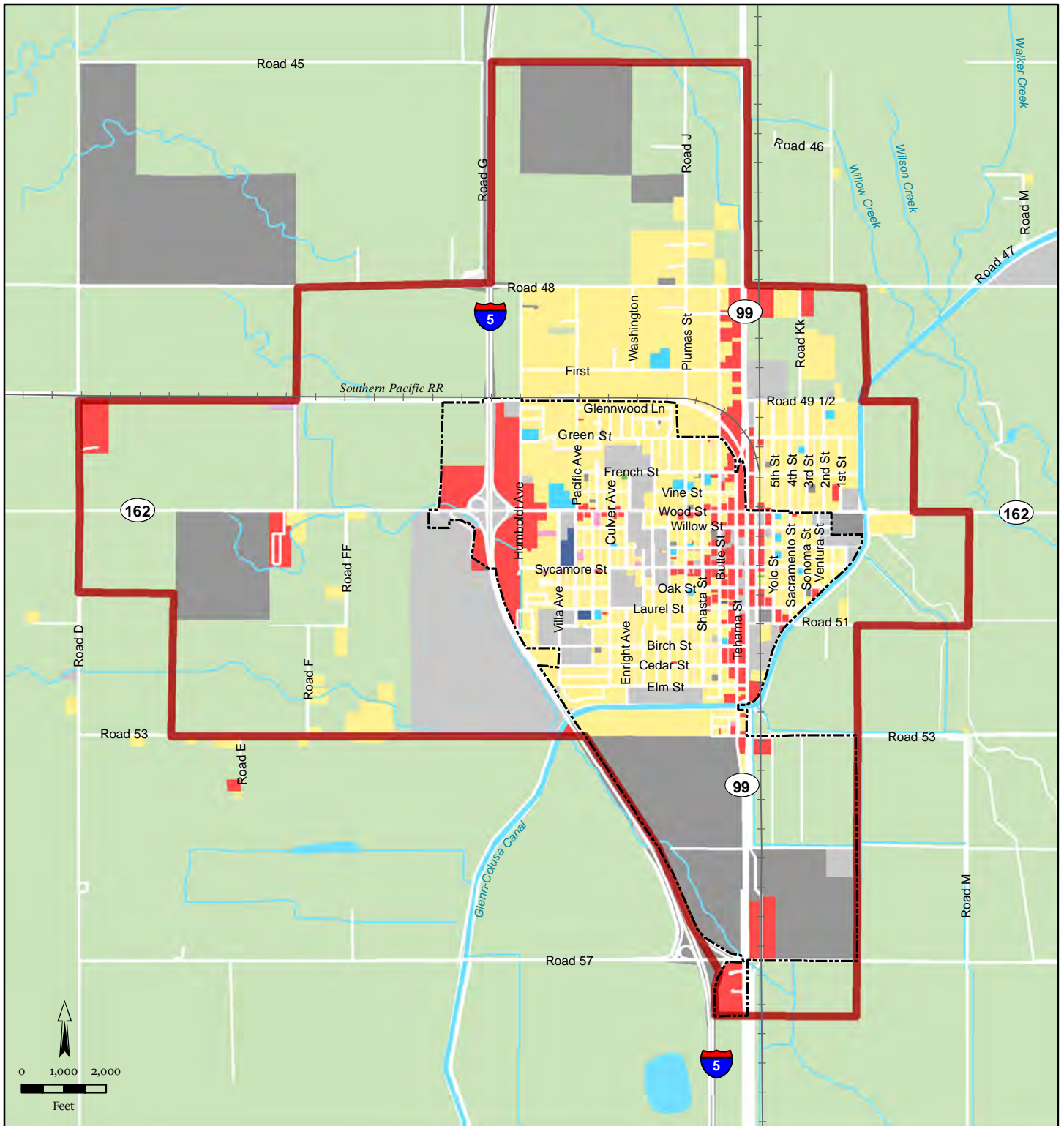
**General Plan Designations: Glenn County**

- General Agriculture
- Intensive Agriculture
- Agricultural/Residential
- Industrial
- Public Facilities
- Business Park
- Community Commercial
- Highway/Visitor Service Commercial
- Service Commercial
- Rural Residential
- Single Family Residential
- Suburban Residential
- Multiple Family Residential

COUNTY OF GLENN, CALIFORNIA  
**FIGURE 1.1-1. GENERAL PLAN MAP  
 CITY OF WILLOWS**



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Sources: Glenn County; CalAtlas. Map date: May 22, 2019. Revised January 13, 2020.

LEGEND

- City of Willows
- Willows Sphere of Influence

Assessed Land Use

- |              |               |                  |
|--------------|---------------|------------------|
| Agricultural | Governmental  | Undefined        |
| Residential  | Institutional | Exempt           |
| Commercial   | Industrial    | No Assessor Data |
| Professional | Recreational  | ROW/Canal        |

CITY OF WILLOWS

FIGURE 1.1-2. ASSESSED LAND USES

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## 1.2 POPULATION HOUSING AND DEMOGRAPHICS

This section summarizes the regional demographics and housing profile and specifically identifies trends where possible. To provide greater context for regional conditions, this analysis also reports conditions within the county, the four-county region and the state as a whole. The four-county comparison region, in this case, consists of Butte, Colusa, Glenn, and Tehama counties.

The analysis primarily utilizes data from Esri Business Analyst (a private economic and demographic data vendor) and the U.S. Census Bureau, including both the 2010 Census and 2012-2017 five-year American Community Survey (ACS) estimates. Where appropriate, data is also provided from a variety of other data sources, including the California Employment Development Department (EDD), and California Department of Finance (DoF), among others.

More additional information regarding population and housing, including population and household characteristics and a housing needs assessment, is provided in the Willows General Plan Housing Element.

### REGULATORY FRAMEWORK

The regulatory framework discussion describes laws and regulations that guide land use decisions. Adopted plans that pertain to the City are also described.

#### *STATE*

#### **California General Plan Law**

Government Code Section 65300 requires that each county and city adopt a General Plan, as described in Section 1.1.

Housing element law (Government Code Sections 65580 through 65589.8) requires local governments to adopt a Housing Element that addresses existing and projected housing needs, including their share of the regional housing need. A Housing Element must include an analysis of existing and projected housing needs, identification of governmental and non-governmental constraints to the provision of housing, an inventory of sites appropriate to accommodate the City's housing needs, identification of resources available to assist with meeting housing needs, a review of the effectiveness of the previous Housing Element, and a plan to address the identified housing needs and constraints.

#### *LOCAL AND REGIONAL*

#### **Regional Housing Needs Plan**

California General Plan law requires each City and County to have land zoned to accommodate a fair share of the regional housing need. The share is known as the Regional Housing Needs Allocation (RHNA). The determination of the local share of regional housing needs is assigned by the California Department of Housing and Community Development, Division of Housing Policy Development. Regional Housing Needs Allocation numbers are separated into four income categories: very low, low, moderate, and above moderate income levels. A "fair share" policy adjustment of 20% was applied to the city income categories to move city percentages closer to county percentages. The County is responsible for 45% of the total allocation while the City of Orland has 31% of the total and the City of Willows has 24%. The Countywide RHNA for 2014-2019 is summarized in Table 1.2-1.

**TABLE 1.2-1: REGIONAL HOUSING NEEDS ALLOCATION**

<i>INCOME CATEGORY</i>	<i>CITY OF WILLOWS</i>	<i>CITY OF ORLAND</i>	<i>UNINCORPORATED GLENN COUNTY</i>	<i>TOTAL</i>
Extremely Low/ Very low (<30-50% of AMI)*	15	20	25	60
Low (51-80% of AMI)	11	10	19	40
Moderate (81-120% of AMI)	11	14	25	50
Above Moderate (over 120% of AMI)	26	36	48	110
<b>Total</b>	<b>63</b>	<b>80</b>	<b>117</b>	<b>260</b>

*NOTES: \* (AMI) AREA MEDIAN INCOME*

*SOURCE: WILLOWS 2014-2019 HOUSING ELEMENT UPDATE*

The City is not required to ensure that adequate development to accommodate the RHNA occurs; however, the City must facilitate housing production by ensuring that land is available and that unnecessary development constraints have been removed. The City's Housing Element, adopted in 2015, provides for the accommodation of the 2014-2019 RHNA that has been assigned to the City of Willows.

## EXISTING SETTING

The following section presents historical population, household, and housing characteristics and trends in Willows and the comparison geographies. The analysis draws primarily on data from the 2010 decennial U.S. Census, and the 2013-2017 five-year American Community Survey (ACS), as well as the Comprehensive Housing Affordability Strategy (CHAS) dataset published by the U.S. Department of Housing and Urban Development (HUD) and population and household estimates reported by the California Department of Finance (DOF).

### Housing and Population Overview

There has been very little to no population or household growth in Willows since 2010. A total of approximately 6,282 people currently live within Willows. The available demographic data indicate that Willows residents are predominantly non-Hispanic White, with Hispanic households making up the largest minority ethnic and racial cohort. The population is also aging. The data show that as the last of the Baby Boomer generation approach retirement age, the cohort is beginning to decrease in size. Conversely, the bulk of the Millennial and Z generations are aging out of childhood and are entering the working age population. While the share of family households residing in Willows in 2010 was already higher than the statewide average, the share of family households in Willows has only increased as the Millennial Generation begins to start families. These trends all have important implications for land use and public service provision (e.g., EMS and K-12 schooling), as well as workforce and economic development.

Reflecting its rural character, the housing market in Willows is generally oriented towards the detached single-family ownership market. Most housing in Willows was built prior to 1980. With a functional vacancy rate of less than one percent between 2013 and 2017, Willows faces a constrained housing market similar to what is being experienced throughout the state. As such, approximately 39 percent of households in Willows are currently overpaying for housing (i.e., paying more than 30 percent of income for housing). Housing cost burdens are generally higher for renter households. As might be expected, housing cost burdens are also higher for households at lower income levels, as those households have fewer resources with which to offset rising costs.

## Population, Household, and Housing Characteristics

As shown in Table 1.2-2, the U.S. Census Bureau and the Department of Finance (DOF) both estimate the total population of Willows at around 6,282 people. These sources also agree that the county is currently home to around 2,500 households. The available data indicate that Willows experienced relatively little population or household growth between 2010 and 2017. The four-county region, by comparison, experienced somewhat modest growth over this period. The statewide population grew much more quickly, indicating that both Willows and the region are growing much more slowly than the state as a whole. Additionally, 2019 DOF estimated 29,132 total population within the county (including incorporated areas) with 14,513 residing within the unincorporated areas of the county (Willows and Orland).

**TABLE 1.2-2: POPULATION AND HOUSEHOLDS**

	Decennial Census 2010	2013-2017 ACS	2013-2017 %		2017 DOF	DOF %	
			Change 2010- 2017	Avg. Annual Change		Change 2010- 2017	Avg. Annual Change
<b>Population</b>							
Willows	6,166	6,055	-1.8%	0.3%	6,258	1.5%	0.2%
Unincorporated County	14,665	14,348	-2.2%	-0.3%	14,820	1.1%	0.2%
Countywide	28,122	27,935	-0.7%	-0.1%	28,730	2.2%	0.3%
Four-County Region	333,004	337,868	1.5%	0.2%	341,132	2.4%	0.3%
State of California	37,253,956	38,982,847	4.6%	0.7%	39,500,973	6.0%	0.8%
			%			%	
<b>Households</b>							
Willows	2,587	2,405	-7.0%	-1.0%	2,457	-5.0%	-0.7%
Unincorporated County	5,112	5,298	3.6%	0.5%	5,200	1.7%	0.2%
Countywide	9,800	9,936	1.4%	0.2%	10,064	2.7%	0.4%
Four-County Region	128,241	126,862	-1.1%	-0.2%	132,116	3.0%	0.4%
State of California	12,577,498	12,888,128	2.5%	0.3%	13,053,295	3.8%	0.5%

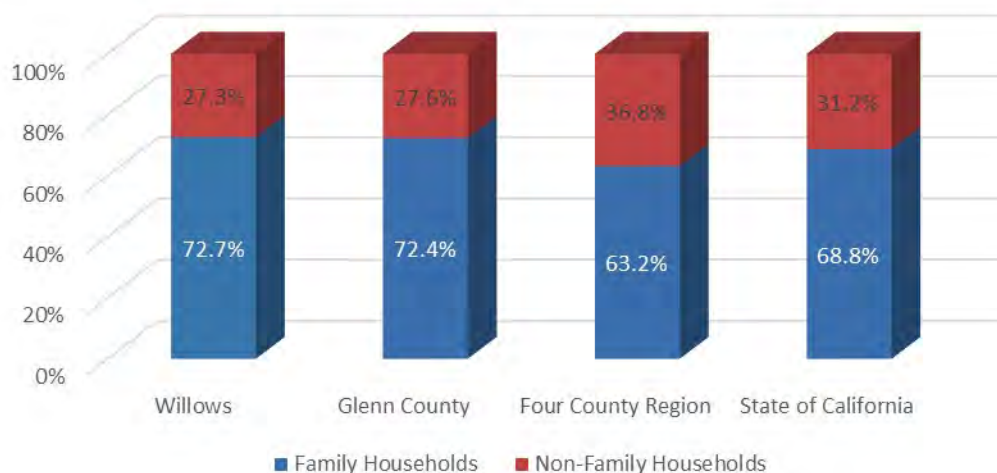
NOTE: THE FOUR-COUNTY REGION CONSISTS OF BUTTE, COLUSA, GLENN, AND TEHAMA COUNTIES.

SOURCES: DEPARTMENT OF FINANCE (DOF), TABLE E-5, 2019; U.S. CENSUS BUREAU, DECENNIAL CENSUS 2010, P1, P18, P42, ACS 2013-2017 5-YEAR SAMPLING PERIOD, B01003, S1101, B26001; BAE, 2019.

## Household Composition

As illustrated in Chart 1.2-1, more than 70 percent of all households in Willows are families. This is constant across the County as a whole. While family households also represent the dominant household type in both the four-county region and the state as a whole, the share of family households in Willows is still somewhat higher than in these comparison areas by between four and nine percentage points.

**Chart 1.2-1: Household Composition, 2013-2017**



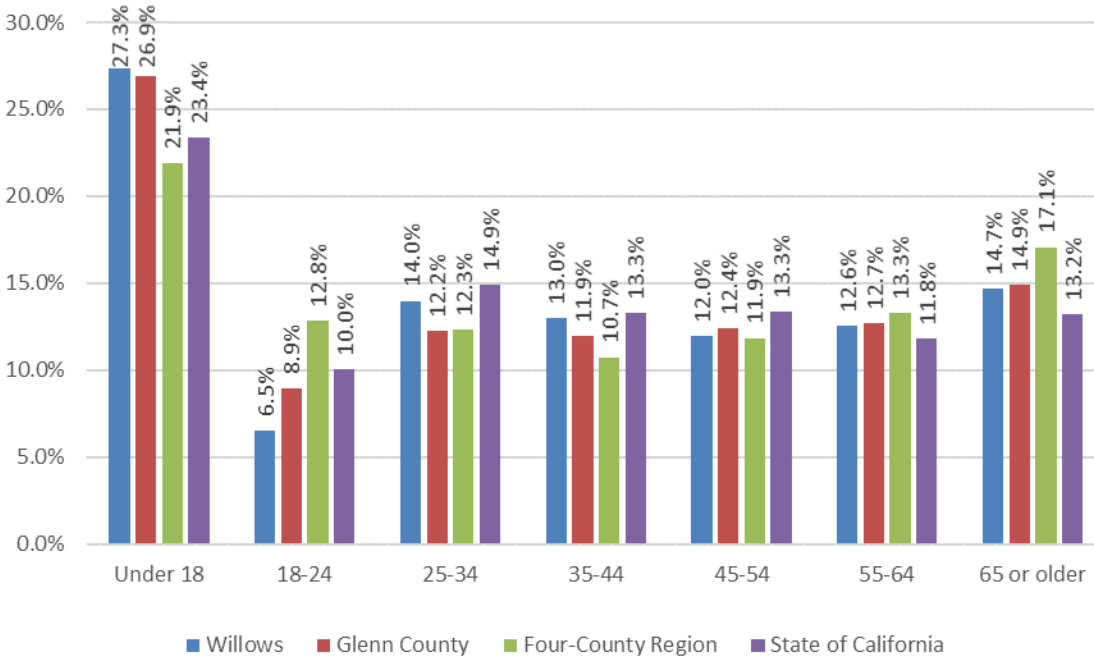
SOURCES: U.S. CENSUS BUREAU, ACS 2013-2017 5-YEAR SAMPLING PERIOD, S1101; BAE, 2019.

### Resident Age Distribution

The median age of Willows residents is around 37 years of age. This is generally consistent with the median age in the four-county region and the state as a whole. As shown in Chart 1.2-2, Willows has a higher proportion of children under the age of 18, which likely contributes to the lower median age. Although the median age across all four geographies remained almost unchanged between 2010 and 2017, the distribution of residents by age indicates a general aging of the existing population.

Comparison between the available data for Willows and Glenn County as a whole indicate that Willows has a much higher share of residents under the age of 45, compared to the unincorporated areas. The data indicate that residents under the age of 45 account for nearly 60 percent of the population in Willows, compared to only 53 percent in the unincorporated area. Conversely, the unincorporated area has much higher shares of older households, particularly those in the 55 to 64 and 65 and over age categories.

As the Baby Boomers age, many residents in this age group are likely to begin experiencing an increased need for certain municipal services, such as EMS. The needs of this population may also have impacts on the accessibility of public facilities and demand for new types of housing. However, along with growth of the older generation, the aging of the population also means that the Millennials are actively aging out of childhood. This corresponds to an expansion of the working age population, which has important implications for workforce and economic development, housing, and public service provision (e.g., schools).

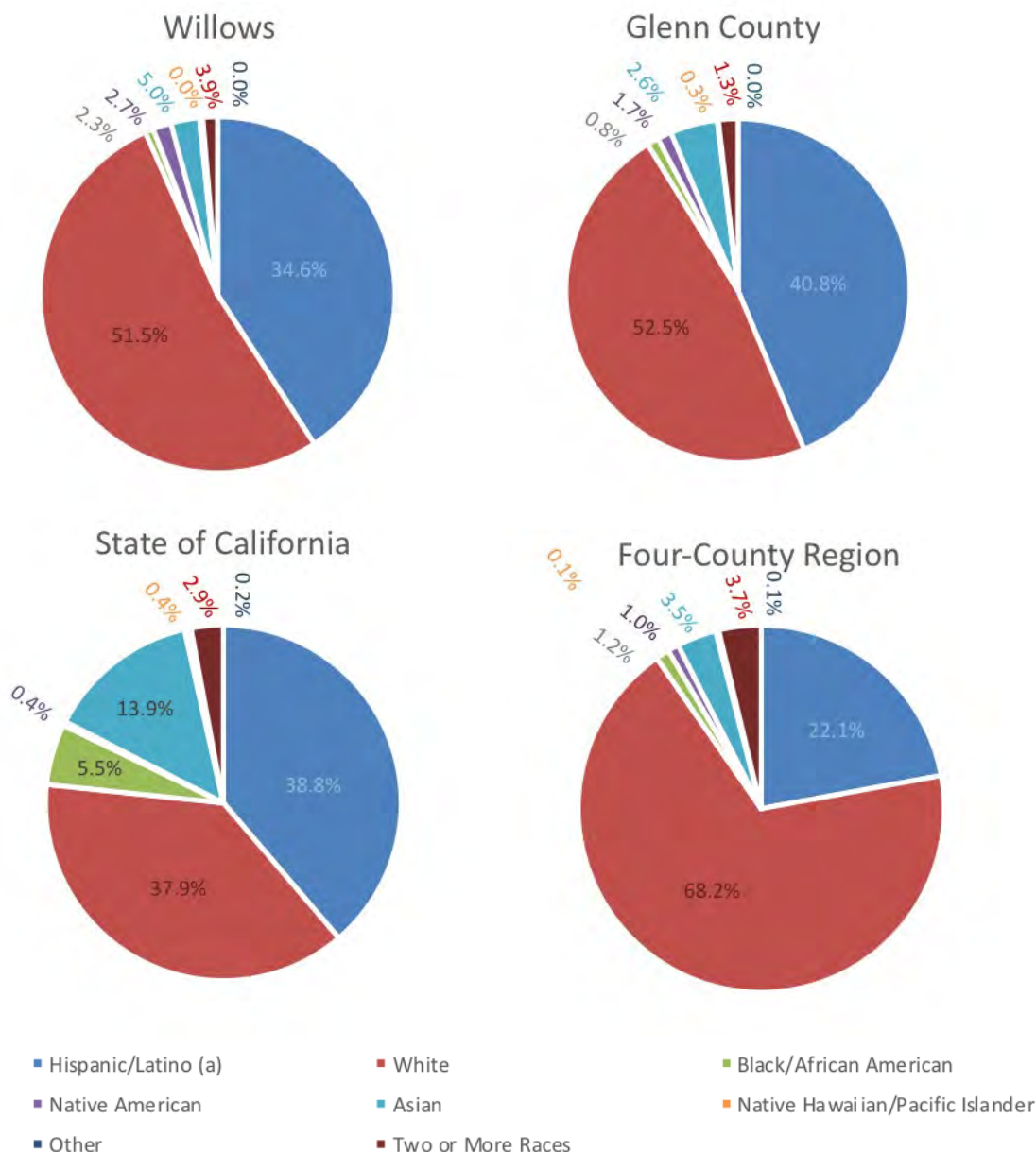
**Chart 1.2-2: Resident Age Distribution, 2013-2017**

SOURCES: U.S. CENSUS BUREAU, ACS 2013-2017 5-YEAR SAMPLING PERIOD, S0101; BAE, 2019.

## Race and Ethnicity

Willows, Glenn County and the four-county region are less diverse than the state as a whole; though Willows is also somewhat more diverse than the four-county region. The data included in Chart 1.2-3 show that while minority residents (i.e., anybody other than non-Hispanic White) account for a little over 62 percent of the statewide population, they account for around 49 percent of the population in Willows, 47 percent of the population in Glenn County as a whole, and 32 percent of the population in the four-county region. The largest minority group in all four study areas is Hispanic and Latino residents. The next largest minority groups generally include Asian, Native American, and African American residents, as well as those of who identify with two or more races.

**Chart 1.2-3: Resident Population by Race and Ethnicity, 2013-2017**

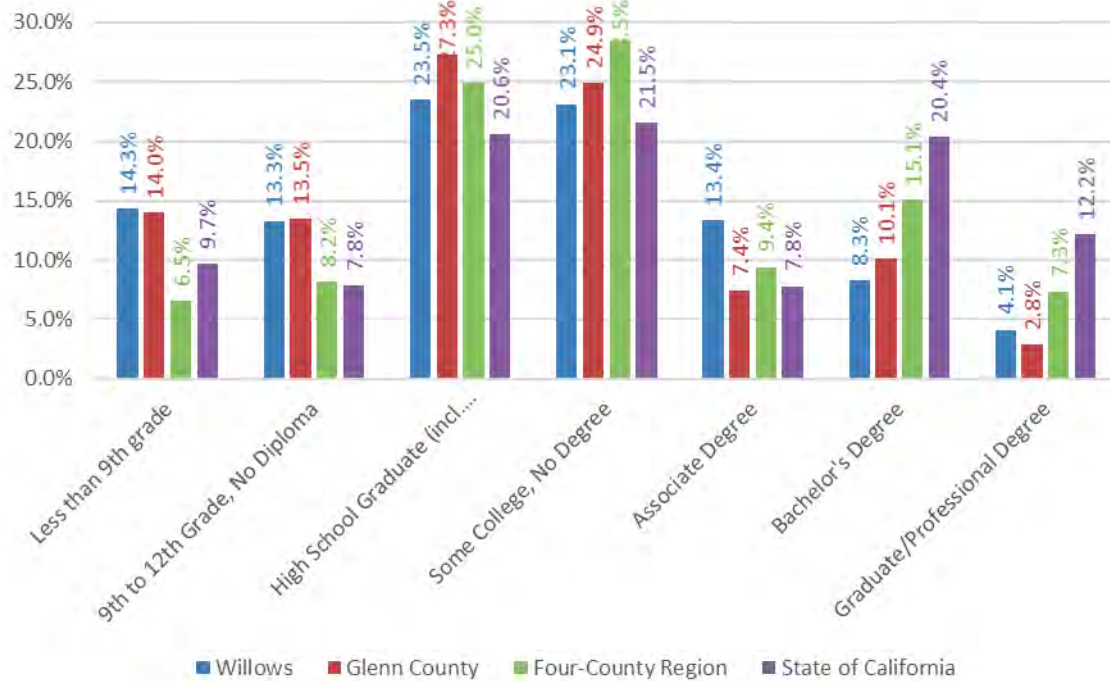


SOURCES: U.S. CENSUS BUREAU, ACS 2013-2017 5-YEAR SAMPLING PERIOD, B03002; BAE, 2019.

### Educational Attainment

As shown in Chart 1.2-4, residents of Willows have lower levels of educational attainment compared to the regional and statewide averages. For example, the Census Bureau estimates that just over 70 percent of residents age 25 and over in Willows have earned a High School diploma or higher. This is compared to 85 percent in the four-county region and 82 percent statewide. Willows also has a lower share of residents with post-secondary degrees. For example, only 12.4 percent of Willows residents have earned a Bachelor’s degree or higher, compared to 22 percent in the four-county region and 33 percent statewide.

**Chart 1.2-4: Educational Attainment, Population Age 25 and Over, 2013-2017**

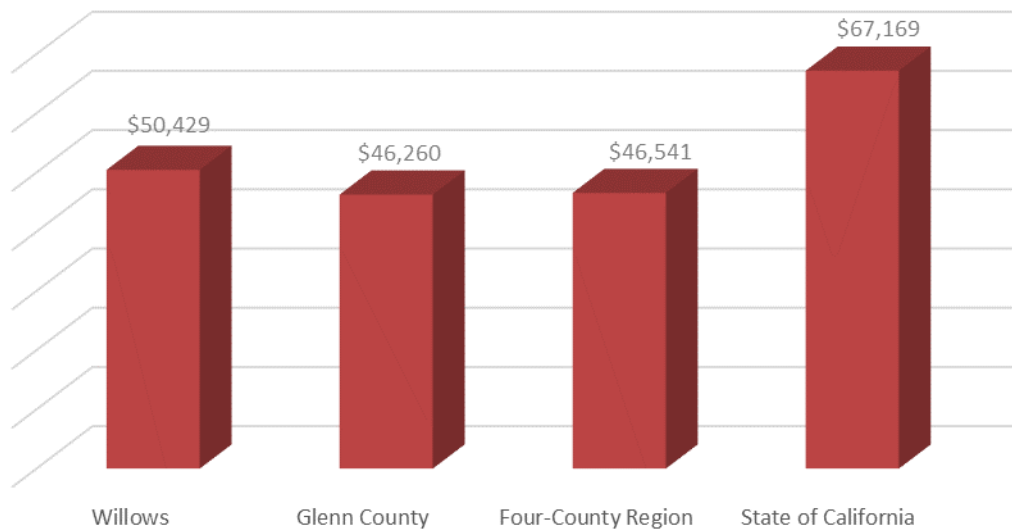


SOURCES: U.S. CENSUS BUREAU, 2013-2017 5-YEAR SAMPLING PERIOD, S1501; BAE, 2019

### Household Income Distribution

As illustrated in Chart 1.2-5, the median incomes for households living in Willows is slightly higher than Glenn County, and the four-county region, at just over \$50,000 per year. This is equal to around 75 percent of the statewide median household income of \$67,169 per year.

**Chart 1.2-5: Median Household Income, 2013-2017**



NOTE:

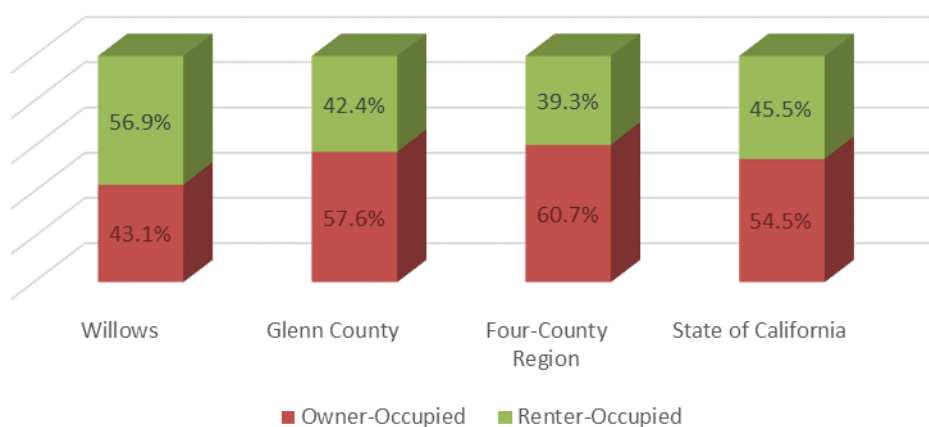
(A) MEDIAN HOUSEHOLD AND PER CAPITA INCOME WERE CALCULATED INDEPENDENTLY FOR THE TWO CUSTOM GEOGRAPHIES INCLUDING THE INCORPORATED CITIES AND THE FOUR-COUNTY REGION.

SOURCES: U.S. CENSUS BUREAU, 2013-2017 5-YEAR SAMPLING PERIOD, DP-03; BAE, 2019.

### Housing Tenure

Households in Willows are less likely to own their homes compared to the statewide counterparts, with roughly 43 percent of households in Willows, 57 percent in Glenn County, and 55 percent of households in the State owning their own home. Within Willows, households are more likely to rent their homes with approximately 57 percent of households renting their own home compared to 42 percent in Glenn County and 46 percent statewide.

**Chart 1.2-6: Household Tenure, 2013-2017**



SOURCES: U.S. CENSUS BUREAU, ACS 2013-2017 5-YEAR SAMPLING PERIOD, B25003; BAE, 2019.

### Housing Unit Types

Consistent with its rural character, detached single-family homes account for a larger share of the housing stock in Willows, Glenn County, and the four-county region, compared to the State of California. Detached single-family homes account for around 62 percent in Willows, 73 percent countywide, 68 percent in the four-county region, and 65 percent statewide. After single family homes, multifamily two units are the second most prominent housing type in Willows, accounting for around 20 percent of housing unit types. Comparatively, these types of units only account for around 2.5 percent of all housing units statewide. Table 1.2-3 shows that multifamily housing accounts for relatively larger proportions of the housing stock in Willows (35%) than Glenn County and the four-county region, which are approximately 14 and 18 percent respectively.



**TABLE 1.2-3: HOUSING UNIT TYPES (2013-2017 U.S. CENSUS BUREAU 5 YEAR ESTIMATES)**

Units in Structure	2013-2017 (a)							
	Willows		Countywide <sup>(b)</sup>		Four-County Region		State of California	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Single-Family Detached	1,488	61.9%	8,030	73.3%	93,993	65.1%	8,131,716	58.1%
Single-Family Attached	44	1.8%	247	2.3%	4,432	3.1%	978,110	7.0%
Multifamily 2 Units	165	19.9%	258	2.4%	2,929	2.0%	343,548	2.5%
Multifamily 3-19 Units	290	12.0%	1,076	9.8%	17,180	11.9%	2,362,092	16.9%
Multifamily 20-49 Units	23	1.0%	137	1.2%	2,216	1.5%	684,497	4.9%
Multifamily 50+	57	2.4%	73	0.7%	3,313	2.3%	962,670	6.9%
Mobile Home/Other <sup>(c)</sup>	0	0.0%	1,141	10.4%	20,367	14.1%	533,666	3.8%
<b>Total, All Types</b>	<b>2,405</b>	<b>100%</b>	<b>10,962</b>	<b>100%</b>	<b>144,430</b>	<b>100%</b>	<b>13,996,299</b>	<b>100%</b>
<b>Single Family Housing Units</b>	<b>1,532</b>		<b>8,277</b>		<b>98,425</b>		<b>9,109,826</b>	
% of Single Family	64.7%		75.5%		68.1%		65.1%	
<b>Multifamily Housing Units</b>	<b>849</b>		<b>1,544</b>		<b>25,638</b>		<b>4,352,807</b>	
% of Multifamily	35.3%		14.1%		17.8%		31.1%	

NOTES: (A) DUE TO THE SMALL TOTAL POPULATION IN GLENN COUNTY, THE MOST RECENT ACS DATA ARE ONLY AVAILABLE FOR THE FIVE-YEAR STUDY PERIOD BETWEEN 2013 AND 2017.<sup>1</sup> PLEASE NOTE THAT THE CONDITIONS REPORTED ARE BASED ON SAMPLE DATA COLLECTED OVER A FIVE-YEAR PERIOD AND THEREFORE REPRESENT MULTIYEAR AVERAGES.

(B) COUNTYWIDE INCLUDE INCORPORATED AND UNINCORPORATED AREAS WITH THE COUNTY BOUNDARY (C) INCLUDES BOATS, RVs, VANS, OR ANY OTHER NON-TRADITIONAL RESIDENCES.

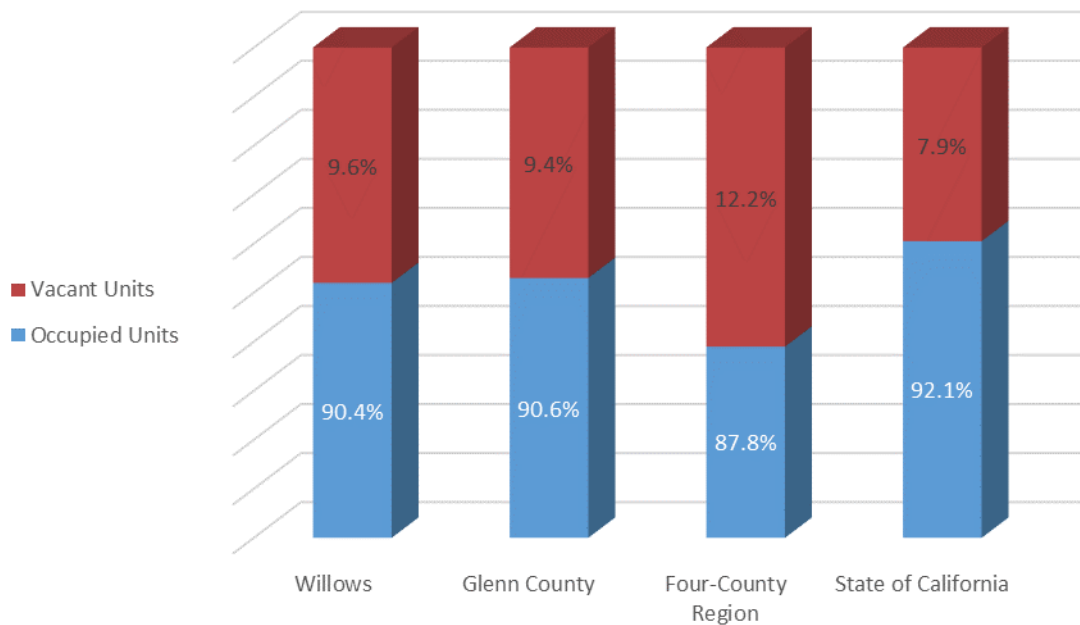
SOURCES: U.S. CENSUS BUREAU, 2013-2017 5-YEAR SAMPLING PERIOD, B25024; BAE, 2019.

## Housing Occupancy and Vacancy

Chart 1.2-7 illustrates the average residential vacancy between 2013 and 2017 for the four comparison geographies. According to the ACS, the residential vacancy rate in Willows is comparable to the county rate, while the vacancy rates for the four-county region are somewhat higher. For example, the residential vacancy rate in Willows is estimated at an average of 9.6 percent between 2013 and 2017. This is compared to 9.4 percent countywide. This indicates that residential vacancy in Willows is likely to be quite high (i.e., upwards of 10 percent). The majority of the vacant units in Willows fall into the categories of seasonal vacancy and “other vacant.” Seasonal vacancy includes vacation homes and other similar units, but can also often include informal tourist units, such as those rented out using AirBnB. The largest concentration of vacant units is in the “other vacant” category, which includes units that would normally be occupied year-round, but which are vacant for other reasons, such as being vacant for repairs, they are being held for settlement of an estate, etc. When considering only those categories of vacancy that represent units that are available for occupancy (i.e., units being actively listed for rent or sale), the functional vacancy rates in Willows are less than one percent. Please note that these estimates do not capture the increased housing demand experienced in the region due to the displacement of households impacted by the Camp Fire in September of 2018.

<sup>1</sup> The minimum population required by the U.S. Census Bureau for inclusion in the one-year ACS is 65,000 people.

**Chart 1.2-7: Residential Vacancy Rate, 2013-2017**



SOURCES: U.S. CENSUS BUREAU, 2013-2017 5-YEAR SAMPLING PERIOD, B25004; BAE, 2019.

### Age of Housing Stock

Housing built using traditional wood framing is generally considered to be at risk for deteriorating condition after approximately 30 years from the date of construction. Around 76 percent of housing in Willows was built prior to 1980, which is a much larger proportion than the average in the four-county region and the state. As one of the County’s oldest settlements, Willows has a higher concentration of older homes compared to unincorporated Glenn County. However, Willows also has slightly more newly built units than unincorporated Glenn County, with around 1.4 percent of the housing stock having been built after 2010, compared to only 0.5 percent in the unincorporated County, three percent countywide, and two percent in the four-county region and the state as a whole. Table 1.2-4 below shows housing units by year built.

**TABLE 1.2-4: HOUSING UNITS BY YEAR BUILT (2013-2017 U.S. CENSUS BUREAU 5 YEAR ESTIMATES)**

Year Built	Willows		Countywide <sup>A</sup>		Four-County Region		State of California	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1939 or Earlier	238	8.2%	1,063	9.7%	11,605	8.0%	1,296,670	9.3%
1940-1949	325	8.4%	884	8.1%	7,559	5.2%	852,988	6.1%
1950-1959	594	19.7%	1,872	17.1%	14,669	10.2%	1,906,691	13.6%
1960-1969	210	10.1%	1,264	11.5%	16,223	11.2%	1,876,273	13.4%
1970-1979	456	19.0%	1,830	16.7%	29,667	20.5%	2,496,506	17.8%
1980-1989	263	14.6%	1,426	13.0%	24,451	16.9%	2,137,731	15.3%
1990-1999	145	7.5%	1,241	11.3%	18,524	12.8%	1,527,242	10.9%
2000-2009	140	6.4%	1,054	9.6%	18,543	12.8%	1,615,173	11.5%
2010-2013	20	5.4%	287	2.6%	2,380	1.6%	203,659	1.5%
2014 or Later	14	0.6%	41	0.4%	809	0.6%	83,366	0.6%
<b>Total, Housing Units</b>	<b>2,405</b>	<b>100%</b>	<b>10,962</b>	<b>100%</b>	<b>144,430</b>	<b>100%</b>	<b>13,996,299</b>	<b>100%</b>
<b>Built before 1980</b>	<b>1,823</b>	<b>75.8%</b>	<b>6,913</b>	<b>63.1%</b>	<b>79,723</b>	<b>55.2%</b>	<b>8,429,128</b>	<b>60.2%</b>
<b>Built after 2010</b>	<b>34</b>	<b>1.4%</b>	<b>328</b>	<b>3.0%</b>	<b>3,189</b>	<b>2.2%</b>	<b>287,025</b>	<b>2.1%</b>
<b>Median Year Built</b>	<b>1972</b>		<b>1972</b>		<b>1977</b>		<b>1974</b>	

(A) COUNTYWIDE INCLUDE INCORPORATED AND UNINCORPORATED AREAS WITH THE COUNTY BOUNDARY.

SOURCES: U.S. CENSUS BUREAU, ACS 2013-2017 5-YEAR SAMPLING PERIOD, B25034; BAE, 2019.

### Housing Costs as Percent of Income

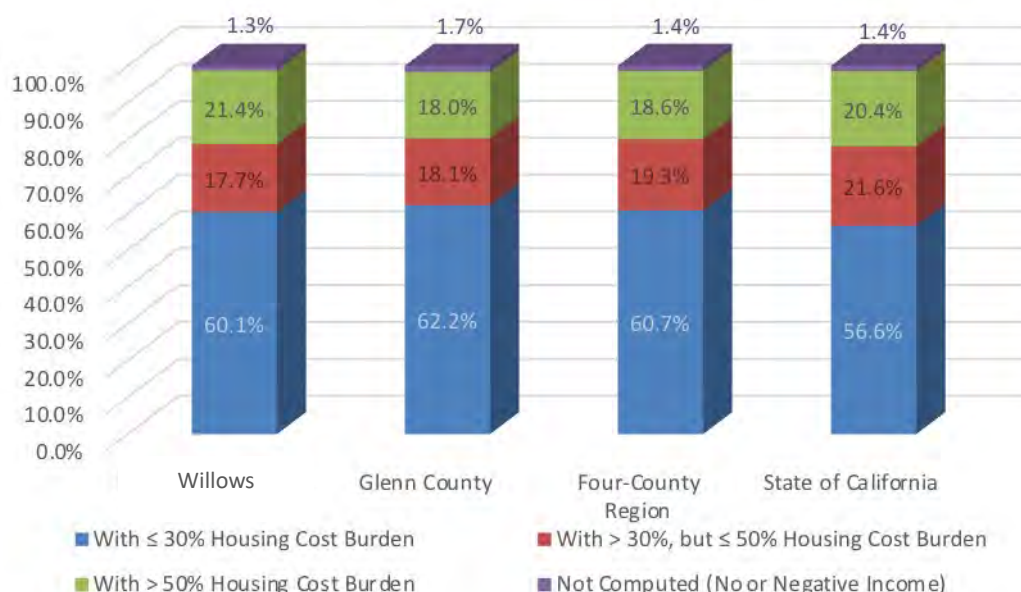
Table 1.2-5 and Chart 1.2-8 present information on the number and percent of households that overpay for housing in the four comparison geographies by tenure. The data was collected from the 2011-2015 CHAS data set, which is a special tabulation of the 2011-2015 ACS Five-Year estimates prepared by the U.S. Census Bureau on behalf of the Department of Housing and Urban Development (HUD). The data should be interpreted with caution, as the data are based on Five-Year ACS estimates covering the 2011-2015 time-period, while other data presented in this report reflect data from the 2013-2017 time-period. Also, since the data are based on multi-year surveys, individual estimates may not sum to totals due to rounding.

HUD estimates monthly housing cost burdens as a share of the HUD Adjusted Median Family Income (HMFI). Households are considered to have an excessive housing cost burden when housing costs exceeds 30 percent of HMFI. Households are considered to have a severe housing cost burden when monthly housing costs exceed 50 percent of HMFI. For owner households, housing costs are assumed to include mortgage, principal, interest, property taxes, and insurance (PITI), but do not include utility charges. For renter households, housing costs include monthly rent, plus a utility allowance.

The data provided in Table 1.2-5 indicate that households in Willows have a lower prevalence of excessive cost burdens than the statewide average. For example, an average of approximately 42 percent of all households statewide experienced excessive or severe housing cost burdens between 2011 and 2015, the most recent period for which data are available. Households throughout Willows, by comparison, experienced excessive housing cost burdens at a rate of around 39 percent.

Across all geographies, excessive housing costs are more prevalent among renter households than owner households. The data also shows that households at lower income levels are more likely to experience excessive or severe housing cost burdens, regardless of geography or tenure.

**Chart 1.2-8: Households Experiencing an Excessive Cost Burden, 2011-2015**



SOURCES: U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT, CHAS, 2011-2015; BAE, 2019.

**TABLE 1.2-5: HOUSING COST BURDEN BY TENURE, HUD 2011-2015**

Total Households, All Income Levels	Renter-Occupied Units		Owner-Occupied Units		All Occupied Units	
	Number	Percent	Number	Percent	Number	Percent
<b>Willows</b>	<b>1,330</b>	<b>100%</b>	<b>840</b>	<b>100%</b>	<b>2,170</b>	<b>100%</b>
With 30 Housing Cost Burden	730	60.1%	575	70.6%	1,305	60.1%
With 30 , but 50 Housing Cost Burden	185	17.7%	200	17.4%	385	17.7%
With > 50% Housing Cost Burden	400	21.4%	65	11.4%	465	21.4%
Not Computed (No or Negative Income)	25	1.2%	0	0.6%	25	1.2%
<b>Countywide</b>	<b>3,640</b>	<b>100%</b>	<b>5,855</b>	<b>100%</b>	<b>9,495</b>	<b>100%</b>
With 30 Housing Cost Burden	1,935	53.2%	3,970	67.7%	5,905	62.2%
With 30 , but 50 Housing Cost Burden	752	20.7%	970	16.5%	1,722	18.1%
With > 50% Housing Cost Burden	850	23.4%	863	14.7%	1,713	18.0%
Not Computed (No or Negative Income)	100	2.7%	60	1.0%	160	1.7%
<b>Four-County Region</b>	<b>49,255</b>	<b>100%</b>	<b>76,225</b>	<b>100%</b>	<b>125,480</b>	<b>100%</b>
With 30 Housing Cost Burden	22,415	45.5%	53,770	70.5%	76,185	60.7%
With 30 , but 50 Housing Cost Burden	11,719	23.8%	12,555	16.5%	24,274	19.3%
With > 50% Housing Cost Burden	14,054	28.5%	9,257	12.1%	23,311	18.6%
Not Computed (No or Negative Income)	1,094	2.2%	679	0.9%	1,773	1.4%

Total Households, All Income Levels	Renter-Occupied Units		Owner-Occupied Units		All Occupied Units	
	Number	Percent	Number	Percent	Number	Percent
<b>State of California</b>	<b>5,808,625</b>	<b>100%</b>	<b>6,909,175</b>	<b>100%</b>	<b>12,717,800</b>	<b>100%</b>
With 30 Housing Cost Burden	2,665,090	45.9%	4,528,970	65.6%	7,194,060	56.6%
With 30 , but 50 Housing Cost Burden	1,421,190	24.5%	1,320,305	19.1%	2,741,495	21.6%
With > 50% Housing Cost Burden	1,596,080	27.5%	1,002,640	14.5%	2,598,720	20.4%
Not Computed (No or Negative Income)	126,260	2.2%	57,250	0.8%	183,510	1.4%

SOURCES: U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT, CHAS, 2011-2015; BAE, 2019.

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U.S. Census Bureau, ACS 2013-2017 5-year sampling period, table S1101.

U.S. Census Bureau, ACS 2013-2017 5-year sampling period, table B03002.

Sources: U.S. Census Bureau, 2013-2017 5-year sampling period, table S1501.

Sources: U.S. Census Bureau, 2013-2017 5-year sampling period, table DP-03.

Sources: U.S. Census Bureau, ACS 2013-2017 5-year sampling period, table B25003.

Sources: U.S. Census Bureau, ACS 2006-2010 and 2013-2017 5-year sampling period, table B25024.

Sources: U.S. Census Bureau, 2013-2017 5-year sampling period, table B25004.

Sources: U.S. Census Bureau, ACS 2013-2017 5-year sampling period, table B25034.

Sources: U.S. Department of Housing and Urban Development, CHAS, 2011-2015.

### 1.3 ECONOMIC CONDITIONS

This section summarizes current economic conditions and trends in Willows, Glenn County, the four-county region, and the State of California. The analysis draws on a variety of sources, including data published by the California Employment Development Department (EDD), the ACS administered by the U.S. Census Bureau, as well as the Census Transportation Planning Package (CTPP). As discussed previously, ACS data should be interpreted with caution due to issues related to sample size and data reliability.

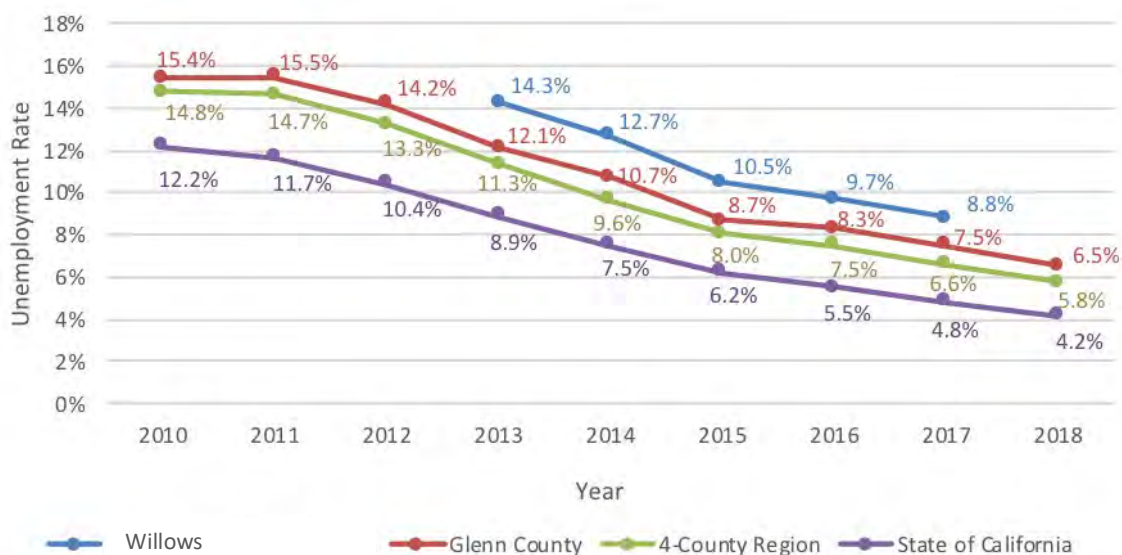
#### EXISTING SETTING

##### Resident Employment Status

Current estimates from the EDD indicate that there are approximately 2,510 employed residents in Willows. The data also indicates that the total labor force in Willows is approximately 2,640 residents, meaning approximately 130 or 4.9% of residents are unemployed.

As illustrated in Chart 1.3-1, the unemployment rate in Willows decreased dramatically from a high of approximately 14.3 percent in 2013, to approximately 8.8 percent in 2017. This generally corresponds with the regional and statewide trend; though unemployment in the City remains elevated compared to the state as a whole. Unemployment in the City is also somewhat elevated compared to the four-county region. Despite the fact that the majority of the county’s new employed residents are concentrated in the incorporated cities like Willows, the City also features an average unemployment rate that is somewhat higher than the countywide average. This may likely be due to the higher concentration of workers in the city.

**Chart 1.3-1: Unemployment Rate, 2010 to 2017**



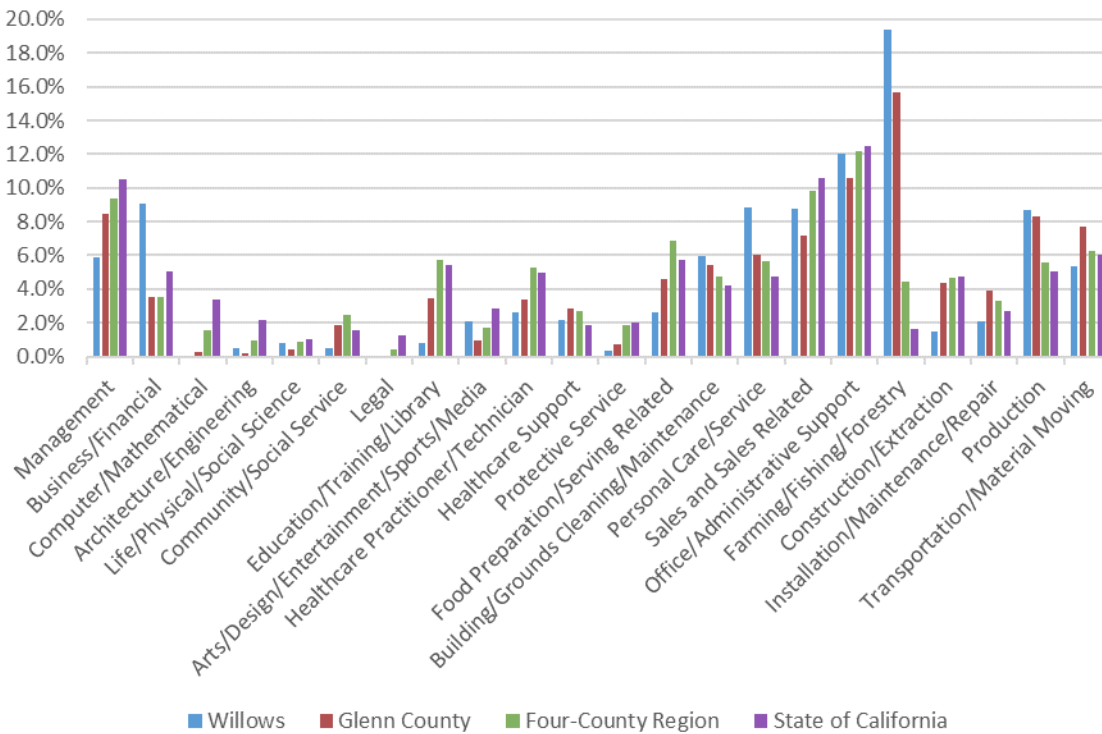
NOTE: (A) THE EDD DID NOT REPORT LABOR FORCE STATISTICS FOR INCORPORATED CITIES PRIOR TO 2013.

SOURCES: CALIFORNIA EMPLOYMENT DEVELOPMENT DEPARTMENT; LOCAL AREA UNEMPLOYMENT STATISTICS (LAUS), 2019; BAE, 2019.

### Resident Employment by Occupation

As illustrated in Chart 1.3-2, employed Willows residents are most likely to be employed in Farming, Fishing, and Forestry occupations. The share of the city’s workforce employed in this one sector is more than 16 percentage points higher than in the four-county region and 18 percentage points higher than for the state as a whole. Willows also has above average concentrations of employed residents working in Production occupations; Transportation and Material Moving occupations; and Installation, Maintenance, and Repair occupations. These tend to be relatively higher skill, moderately high paying occupational categories. Although Willows may generally show the same overall occupational concentrations as unincorporated Glenn County, Willows also has above average concentrations of employed residents working in Personal Care and Service occupations; Building, Grounds Cleaning, and Maintenance occupations, Healthcare Support occupations; and Community and Social Service occupations. These additional occupational categories tend to be low to intermediately skilled, with low to moderate wage levels.

**Chart 1.3-2: Employed Residents by Occupation, 2013-2017**



SOURCES: U.S. CENSUS BUREAU, ACS 2006-2010 AND 2013-2017 5-YEAR SAMPLING PERIOD, S2401; BAE, 2019.

### Jobs by Industry

In total, the City of Willows contains approximately 2,191 total jobs. As shown in Table 1.3-1, jobs broken down by industry, it is evident that Agriculture, forestry, fishing and hunting, and mining is by far the largest industry of employment within the City, accounting for 633 jobs, or 28.9 percent of all jobs. Willows also contains a significant amount of jobs in Educational services, and health care and social assistance (335 jobs; 15.3 percent), Public Administration (243 jobs; 11.1 percent), and Manufacturing (223 jobs; 10.2 percent). Relative to the distribution of jobs by industry in Glenn County, Willows contains a significantly smaller share of jobs in Construction and Retail trade. These industries are likely

to increase as a result of population growth, as both construction and retail trade are predominantly resident-serving.

**TABLE 1.3-1: JOBS BY INDUSTRY**

<b>Industry</b>	<b>Willows</b>		<b>Glenn County</b>	
	<b>Number</b>	<b>Percent</b>	<b>Number</b>	<b>Percent</b>
Agriculture, forestry, fishing and hunting, and mining	633	28.9%	2,532	23.5%
Construction	12	0.5%	498	4.6%
Manufacturing	223	10.2%	873	8.1%
Wholesale trade	35	1.6%	135	1.3%
Retail trade	195	8.9%	1,345	12.5%
Transportation and warehousing, and utilities	93	4.2%	519	4.8%
Information	27	1.2%	47	0.4%
Finance and insurance, and real estate and rental and leasing	23	1.0%	213	2.0%
Professional, scientific, and management, and administrative and waste management services	110	5.0%	496	4.6%
Educational services, and health care and social assistance	335	15.3%	1,991	18.5%
Arts, entertainment, and recreation, and accommodation and food services	172	7.9%	889	8.3%
Other services, except public administration	90	4.1%	608	5.6%
Publication Administration	243	11.1%	629	5.8%
<b>Total Employment</b>	<b>2,191</b>	<b>100%</b>	<b>10,775</b>	<b>100%</b>

SOURCES: U.S. CENSUS BUREAU, 2013-2017 ACS.

### **Agricultural Industry**

The agriculture industry not only represents Willows' largest employment sector, but also represents the region's primary export industry. Otherwise known as a "basic sector," industries such as agriculture generate economic growth through the export of goods outside of the area, which in turn results in a net injection of dollars into the community which are then circulated in what is known as the "multiplier effect." Anecdotal evidence also indicates that agriculture has also been the basis for much of the county's industrial development, which has primarily been oriented toward the processing of agricultural commodities and by-products into various value-added products.

As shown in Table 1.3-2, Glenn County's total agricultural and forest production value was \$834.7 million in 2017, which is a 27 percent increase over the estimated 2010 farmgate value. Valued at nearly \$484.2 million, fruit and nut crops account for more than half of Glenn County's total agricultural production, followed by field crops at \$165.2 million. Since 2010, the value of fruit and nut crops has increased around 78 percent. Though they account for a much smaller proportion of the County's overall production value, the value of livestock, poultry, and apiary products increased around 90 percent since 2010. The value of the County's vegetable production also increased dramatically between 2010 and 2017. This is primarily explained by the introduction of processing tomato cultivation and a significant increase in cultivated acreage from only 29 acres in 2010 to 1,785 acres in 2017.



**TABLE 1.3-2: TOTAL VALUE OF AGRICULTURAL AND FOREST PRODUCTION, GLENN COUNTY, 2010 AND 2017**

Agricultural Products	2010 (a)	2017	Absolute	Percent
	Total Value (\$2017)	Total Value	Change	Change
Field Crops	\$245,743,884	\$165,221,000	-\$80,522,884	-33%
Fruit and Nut Crops	\$271,991,772	\$484,205,000	\$212,213,228	78%
Livestock and Poultry Products	\$67,219,100	\$59,835,000	-\$7,384,100	-11%
Livestock and Poultry	\$21,440,485	\$40,557,000	\$19,116,515	89%
Seed Crops	\$27,781,254	\$41,177,000	\$13,395,746	48%
Apiary Products	\$16,128,137	\$30,605,000	\$14,476,863	90%
Nursery Products	\$5,182,638	\$7,006,000	\$1,823,362	35%
Vegetable Crops	\$213,096	\$6,026,000	\$5,812,904	2728%
<b>Subtotal, Ag Production</b>	<b>\$655,700,365</b>	<b>\$834,632,000</b>	<b>\$178,931,635</b>	<b>27%</b>
<b>Forest Products</b>				
	2010 (a)	2017	Absolute	Percent
			Change	Change
Timber	\$0	\$11,000	\$11,000	n.a.
Firewood	\$118,129	\$39,000	-\$79,129	-67%
Christmas Trees	\$39,956	n.a.	n.a.	n.a.
<b>Subtotal, Forest Production</b>	<b>\$158,664</b>	<b>\$50,000</b>	<b>-\$108,664</b>	<b>-68%</b>
<b>Total, All Crop Types</b>	<b>\$655,859,029</b>	<b>\$834,682,000</b>	<b>\$178,822,971</b>	<b>27%</b>

NOTE: (A) INFLATION ADJUSTED USING CPI-ALL URBAN CONSUMERS AND ALL ITEMS, NOT SEASONALLY ADJUSTED, IN CALIFORNIA WITH AN ADJUSTMENT FACTOR OF 1.16.

SOURCES: GLENN COUNTY, ANNUAL CROP & LIVESTOCK REPORT, 2010, 2017; BAE, 2019.

Glenn County's top ten leading agricultural commodities as shown in Table 1.3-3 include almonds, rice, walnuts, dairy milk, and table olives. Almonds account for 26 percent of the county's total production value, followed by walnuts at 22 percent, and rice at 15 percent.

**TABLE 1.3-3: TOP TEN LEADING COMMODITIES, GLENN COUNTY, 2010 AND 2017**

Leading Commodities	2010	Leading Commodities	2017
Rice, Paddy	\$165,762,000	Almond	\$217,120,000
Almonds	\$104,397,000	Walnut	\$184,737,000
Walnuts	\$70,224,000	Rice	\$125,507,000
Dairy, Total Milk	\$57,398,000	Dairy, Total Milk	\$59,692,000
Olives, Table and Oil	\$24,705,000	Olives, Table	\$32,872,000
Prunes	\$21,580,000	Vine Seeds	\$31,532,000
Cattle and Calves	\$17,617,000	Apiary Products	\$30,605,000
Corn	\$14,325,000	Dairy Cattle	\$21,700,000
Apiary	\$13,926,000	Prune	\$20,224,000
Hay, Alfalfa	\$9,702,000	Beef Cattle	\$14,452,000

SOURCES: GLENN COUNTY, ANNUAL CROP & LIVESTOCK REPORT, 2010, 2017; BAE, 2019.

### Agriculture-Related Industries

With agriculture as the city's main economic driver, Willows and Glenn County are well positioned to continue to attract value-added agriculture-related industries which utilize local crops and inputs. These types of industries typically provide important benefits to the local economy in terms of wages and the number of direct and indirect jobs created. Recently the area attracted several notable and innovative businesses, such as CalAg to the west of Willows. CalAg, was able to capitalize on the abundance of

Sacramento Valley rice growers within a 15- to 25-mile radius to establish the world's first commercial-scale producer of rice straw-based medium density fiber board (MDF).<sup>2</sup>

**Logistics and Distribution:** Willows' location as a mid-point between Portland and Los Angeles, in concert with Willows' relatively low industrial land costs, and the federal government's newly enacted limits for commercial driving could work as a locational advantage for certain types of logistics users. While other locations in and around the Bay Area, such as Tracy and Stockton, are generally more attractive in terms of warehousing and last-mile distribution<sup>3</sup> due to their deep labor pools and proximity to major port facilities, one industrial broker interviewed for this analysis reported growing interest in the county for cross-dock facilities. These include short-term warehousing facilities, where incoming cargo is unloaded from semi-trucks or railroad cars and redistributed to other transport vehicles with little or no long-term storage space required.

## Major Employers

Table 1.3-4 lists the largest employers in Willows. The County of Glenn is one of the largest employers, with nine County offices making the list. Reinforcing Willows role as an agricultural hub, some of the city's largest employers are either directly or indirectly related to agriculture. For example, two of the city's largest employers, Rumiano Cheese Factory, Sierra Nevada Cheese Factory, are agricultural processors and/or manufacturers. The Glenn-Colusa Irrigation District, which is the largest irrigation district in the Sacramento Valley, also makes the list. Another of the city's largest employers are in the education and early childhood development field, while two more companies are in the medical field, including Glenn Medical Center and Sun Bridge Center of Willows. The Walmart Supercenter in Willows is also a major employer. Johns Manville which manufactures insulation and commercial roofing materials, is Willows' largest employer and is also the only employer to make the list of the region's largest employers.

**TABLE 1.3-4: MAJOR EMPLOYERS, WILLOWS, 2019**

<i>Willows</i>			
<i>Employer Name</i>	<i>Location</i>	<i># of Employees</i>	<i>Industry</i>
Child Protective Svc	Willows	100-249	County Government-Social/Human Resources
Glen County Mental Health	Willows	50-99	Government Offices-County
Glenn County Emergency Svc	Willows	100-249	County Government-Public Order & Safety
Glenn County Health & Welfare	Willows	100-249	County Government-Public Health Programs
Glenn County Human Resource	Willows	100-249	Government Offices-County
Glenn County Office-Emergency	Willows	50-99	Government Offices-County
Glenn County Planning & Pubc	Willows	50-99	Government Offices-County
Glenn County Sheriffs Civil Dv	Willows	100-249	Sheriff
Glenn Medical Ctr	Willows	100-249	Physicians & Surgeons
Glenn Medical Ctr	Willows	100-249	Hospitals
Glenn-Colusa Irrigation Dist	Willows	50-99	Irrigation Companies
Johns Manville	Willows	250-499	Building Materials-Manufacturers
Murdock Elementary School	Willows	50-99	Schools
Rumiano Cheese Factory	Willows	100-249	Cheese Processors
Sierra Nevada Cheese Co	Willows	100-249	Cheese
Sun Bridge Ctr of Willows	Willows	50-99	Nursing & Convalescent Homes
Walmart Supercenter	Willows	100-249	Department Stores

SOURCES: EDD, 2019; BAE, 2019.

<sup>2</sup> CalPlant I. (2018). This Fall, CalPlant I Will Introduce the Long-Awaited CalAg MDF, the Composite Panel of the 21<sup>st</sup> Century. Accessed May 13, 2019. Available at: <https://calplant1.com/>

<sup>3</sup> Last mile distribution is defined as the movement of goods from a transportation hub to the final delivery destination.

## Commute Flow

Based on commute flow data from the Longitudinal Employer-Household Dynamics database, shown in Table 1.3-5, the largest share of employed Willows residents stay within Glenn County for work. More specifically, approximately 71.2 percent of Willows residents work in various regional locations, the majority of which travel to Chico for employment. Only 694 employed Willows residents also work in the City, accounting for 26.5 percent of all residents. The second largest share of employed residents travel to various Butte County locations, accounting for approximately 8.5 percent of residents, including the Cities of Chico and Oroville. Another 2.3 percent travel to Shasta County, the majority of which work specifically within the City of Redding, while 2.0 percent work in Tehama County. As is evident from the data, while 26.5 percent of residents remain within Willows for work.

**TABLE 1.3-5: COMMUTE FLOW, 2017**

RESIDENTS BY PLACE OF WORK			WORKERS BY PLACE OF RESIDENCE		
PLACE OF WORK	EMPLOYED RESIDENTS		PLACE OF RESIDENCE	WORKERS	
	NUMBER	PERCENT		NUMBER	PERCENT
<b>Glenn County</b>	<b>754</b>	<b>28.8%</b>	<b>Glenn County</b>	<b>391</b>	<b>31.7%</b>
Willows	694	26.5%	Willows	694	24.6%
Orland	60	2.3%	Orland	241	8.6%
			Hamilton City	25	0.9%
<b>Tehama County</b>	<b>34</b>	<b>2.0%</b>	<b>Tehama County</b>	<b>44</b>	<b>3.2%</b>
Red Bluff	34	2.0%	Red Bluff	37	1.3%
			Corning	54	1.9%
<b>Shasta County</b>	<b>60</b>	<b>2.3%</b>	<b>Shasta County</b>	<b>23</b>	<b>1.0%</b>
Redding	60	2.3%	Redding	28	1.0%
<b>Colusa County</b>	<b>34</b>	<b>1.3%</b>	<b>Sutter County</b>	<b>25</b>	<b>1.4%</b>
Williams	34	1.3%	Yuba	39	1.4%
<b>Butte County</b>	<b>221</b>	<b>8.5%</b>	<b>Butte County</b>	<b>115</b>	<b>11.0%</b>
Chico	196	7.5%	Chico	291	10.3%
Oroville	25	1.0%	Oroville	21	0.7%
<b>Sacramento County</b>	<b>15</b>	<b>2.5%</b>			
Sacramento	66	2.5%			
<b>Placer County</b>	<b>25</b>	<b>1.0%</b>			
Roseville	25	1.0%			
<b>Yolo County</b>	<b>31</b>	<b>1.2%</b>			
Woodland	31	1.2%			
<b>All Other Places</b>	<b>1,396</b>	<b>53.3%</b>	<b>All Other Places</b>	<b>1,355</b>	<b>48.1%</b>
<b>Total</b>	<b>2,621</b>	<b>100%</b>	<b>Total</b>	<b>2,818</b>	<b>100%</b>
<b>Live and Work in Willows</b>	<b>694</b>	<b>26.5%</b>	<b>Live and Work in Willows</b>	<b>694</b>	<b>24.6%</b>
<b>Live in Willows but Work Elsewhere</b>	<b>1,927</b>	<b>73.5%</b>	<b>Work in Willows but Live Elsewhere</b>	<b>2,124</b>	<b>75.4%</b>

Sources: U.S. Census Bureau, Longitudinal Employer-Household Dynamics via OnTheMap; BAE, 2017.

The second data column presented above in Table 1.3-3 shows the place of residence for individuals that work in Willows. As seen in the table, roughly 31.7 percent of Willows workers live in Glenn County, the largest share of which live in the neighboring Cities of Orland and Hamilton City. As noted above, approximately 694 Willows workers also live within the City, accounting for 24.6 percent of all Willows workers. Butte County is home to the second largest share of Willows workers, accounting for

roughly 11.0 percent of workers within the City, the largest portion of whom reside in Chico. A smaller but significant portion of Willows workers live in Tehama County, accounting for 3.2 percent of workers.

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Employment Development Department (EDD), Employment by Industry Data, 2019

Glenn County, Annual Crop & Livestock Report, 2010, 2017.

U.S. Census Bureau, ACS 2006-2010 and 2013-2017, 5-year sampling period, tables S0804, B08007

U.S. Census Bureau, Census Transportation Planning Products Program (CTPP) 2012-2016 5-year sampling period.

## 1.4 REAL ESTATE MARKET CONDITIONS

This section summarizes the current real estate market conditions and trends in Willows. The following sections summarized current real estate market conditions in the City of Willows and Glenn County. The analysis draws on data from a number of sources, including housing characteristics from the U.S. Census Bureau.

### EXISTING SETTING

**Impacts of the Camp Fire.** On November 8, 2018, a downed power line near Camp Creek in Butte County ignited the most destructive fire in California history, known today as the Camp Fire. The fire destroyed much of the community of Concow and the Town of Paradise, burning more than 150,000 acres, destroying more than 18,800 structures, and displacing nearly 50,000 people. The impacts of this displacement have been significant, both for the evacuees themselves, as well as for the communities that host them. Interviews with local real estate brokers indicate that hotels in Willows have been at or near full capacity since the fire, roughly six months ago (at the time of this writing). Willows home prices and rental rates have also been directly impacted. However, local officials and economists anticipate that the social and economic impacts associated with the influx of Camp Fire evacuees into Willows will be temporary. Cleanup is underway in Paradise and some residents have begun to return home. Other evacuees have sought permanent resettlement, some in Butte County, some in Glenn County, some outside of the region altogether. It is unclear exactly what the near-term impacts of this influx of population will be, or how long those impacts will be sustained. To the extent possible, the remainder of this analysis acknowledges that the current real estate market conditions observed in Willows reflect not only the underlying fundamentals of the Willows economy, but also the near-term impacts associated with hosting a large number of displaced persons.

### Residential Real Estate Market - For-Sale Residential Market Conditions

As seen in Table 1.4-1, home prices immediately following the Recession were just above \$250,000 in 2009, which steadily fell to a low of \$171,100 in 2015. Similarly, home prices over the same time period dropped from roughly \$244,800 to \$204,400 in Glenn County. As housing and economic conditions have improved, sale prices within both the City and County have increased at fairly stable rates. As of 2017, the median sale price of units within the City of Willows was approximately \$191,200, still well below the 2009 median sale price of \$251,100. The same is true for Glenn County, where the 2017 median sale price was roughly \$214,600, still below the 2009 peak median sale price of \$244,800.

**TABLE 1.4-1: HOME SALE PRICE TRENDS, 2009 TO 2017**

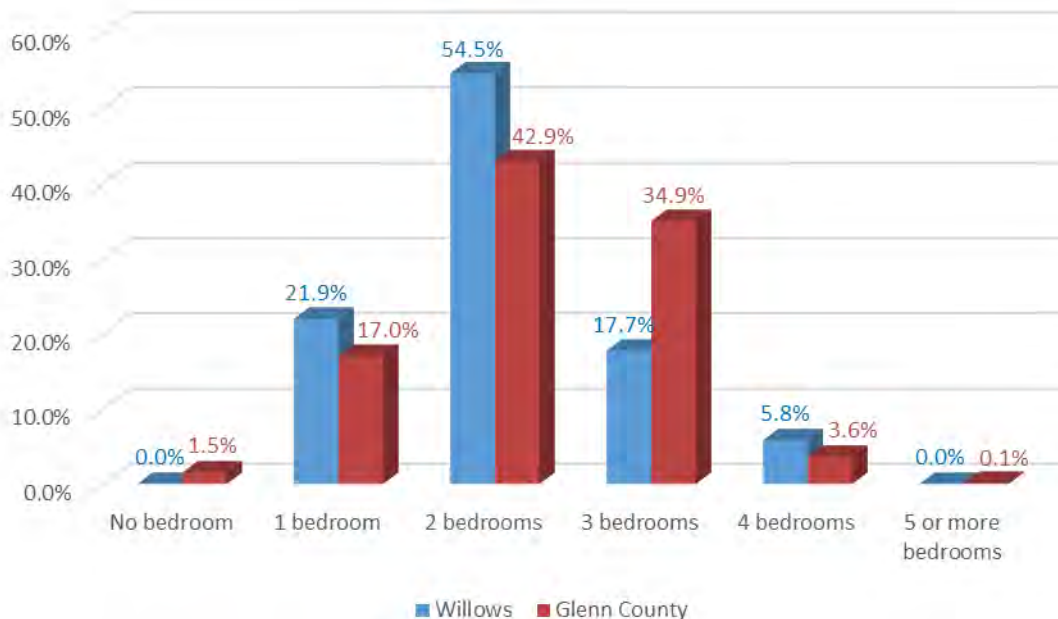
YEAR	CITY OF WILLOWS		GLENN COUNTY	
	MEDIAN SALE PRICE	YR-TO-YR % CHANGE	MEDIAN SALE PRICE	YR-TO-YR % CHANGE
2009	\$251,100	--	\$244,800	--
2010	\$242,800	-3.3%	\$244,200	-0.2%
2011	\$226,900	-6.5%	\$233,800	-4.3%
2012	\$214,500	-5.5%	\$222,300	-4.9%
2013	\$189,100	-11.8%	\$217,700	2.1%
2014	\$175,200	-7.4%	\$214,600	-1.4%
2015	\$171,100	-2.3%	\$204,400	4.8%
2016	\$190,600	11.4%	\$215,800	5.6%
2017	\$191,200	0.3%	\$214,600	-0.6%

Sources: U.S. Census Bureau, American Community Survey 2013-2017 5-Year Sample Data.

### Rental Units by Size

As seen in Chart 1.4-1, the largest group of Willows renters occupies 1 or 2 bedroom rental units.

**CHART 1.4-1: RENTAL UNITS BY NUMBER OF BEDROOMS, 2017**



SOURCES: U.S. CENSUS BUREAU, 2013-2017 5-YEAR SAMPLING PERIOD, B25042; BAE, 2019.

### Rental Rates

City of Willows renters typically pay lower monthly rents relative to Glenn County renters. As seen in Table 1.4-4, the median gross rent in Willows was roughly \$759, compared to \$775 countywide. While roughly 50.9 percent of County renters pay less than \$1,000 for rent, the same rental rate accounts for 56.4 percent of Willows renters. These renters account for the largest share of Willows renters, with an additional 24.9 percent paying \$1,000 or more in monthly rent and 16.1 percent paying less than \$500.

**TABLE 1.4-2: GROSS RENT, 2017**

RENT	CITY OF WILLOWS		GLENN COUNTY	
	NUMBER	PERCENT	NUMBER	PERCENT
Less than \$500	205	16.1%	695	16.5%
\$500-\$999	720	56.4%	2,145	50.9%
\$1,000 to \$1,499	291	22.8%	929	22.1%
\$1,500 to \$1,999	27	2.1%	63	1.5%
\$2,000 to \$2,499	0	0.0%	2	0.0%
\$2,500 or More	0	0.0%	24	0.6%
<b>Total, Renters</b>	<b>1,276</b>	<b>100%</b>	<b>4,212</b>	<b>100%</b>
<b>Median Rent</b>	<b>\$759</b>		<b>\$775</b>	

Sources: U.S. Census Bureau, American Community Survey 2013-2017 5-Year Sample Data, Tables B25063 & B25064; BAE, 2017.

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# Chapter 2

## Transportation and Circulation



This chapter describes the regulatory framework and existing transportation conditions in the City of Willows. A discussion of pertinent federal, state, regional, and local regulations and plans is presented first. This is followed by a discussion of transportation facilities in Willows that accommodate pedestrians, bicycles, transit, freight, and automobiles, plus an assessment of commute trip patterns, roadway operations, and collisions.

This Chapter includes the following topics:

- **Regulatory Framework: Federal, State, and local regulations and plans.**
- **Existing Setting: Transportation Facilities and Roadway Operations**



## 2.0 TRANSPORTATION AND CIRCULATION

The following section describes the existing physical and operational characteristics affecting the transportation system in the City of Willows. A review of the regulatory setting is followed by an overview of travel behavior in the City; descriptions of the roadway system, pedestrian, bicycle, and transit facilities; collision analysis; vehicle operations on the roadway network; and rail, goods movement, and aviation in the City. Full-page figures are located at the end of the chapter.

### REGULATORY FRAMEWORK

This section describes transportation policies, laws, and regulations that would apply to the Circulation Element of the proposed General Plan Update.

#### *FEDERAL REGULATIONS*

There are thousands of Federal laws and regulations related to goods movement, homeland security, street maintenance, traffic safety, and transportation funding. The following legislation established the framework for transportation planning at the federal level: Fixing America's Surface Transportation (FAST) Act approved in 2015.

Federal regulations relating to the Americans with Disabilities Act (ADA), Title VI, and Environmental Justice also relate to transit service.

#### *STATE REGULATIONS*

Caltrans is responsible for planning, designing, constructing, operating, and maintaining all state-owned roadways in the City of Willows. Federal highway standards are implemented in California by Caltrans. Any improvements or modifications to the state highway system in the City of Willows must be approved by Caltrans.

### **State of California Transportation Concept Reports**

Caltrans prepares a Transportation Concept Report (TCR) for each of its facilities. The TCR is a long-term planning document that each Caltrans district prepares for every state highway or portion thereof in its jurisdiction. The TCR usually represents the first step in Caltrans' long-range corridor planning process. The purpose of a TCR is to determine how a highway will be developed and managed so that it delivers the targeted level of service (LOS) and quality of operations that are feasible to attain over a 20-year period. These are indicated in the "route concept." In addition to the 20-year route concept level, the TCR includes an "ultimate concept," which is the ultimate goal for the route beyond the 20-year planning horizon. The concept LOS for I-5 and SR 162 are outlined below.

#### INTERSTATE 5 (I-5)

I-5 in the City of Willows has a route concept level of LOS D. The 20-year concept and ultimate facility remains a four-lane freeway.

#### STATE ROUTE 162 (SR 162)

SR 162 in the City of Willows has a concept level of LOS D. The 20-year concept and ultimate facility is a four-lane conventional highway.

Since 2005, the State of California has adopted the following pieces of legislation with major implications for transportation planning, in addition to an executive order issued by the Office of the Governor:

- Executive Order S-03-05 (2005): Establishes state agency climate action team, and directs GHG emission reductions as priority.
- AB 32 (2006): Required California Air Resources Board (CARB) to identify sector-specific measures to reduce GHG emissions.
- SB 97 (2007): Required Office of Planning & Research (OPR) to adopt CEQA greenhouse gas (GHG)/climate change guidelines.
- AB 1358 (2008): Required the legislative body of a city or county, upon revision of the circulation element of their general plan (after January 1, 2011), to identify how the jurisdiction will provide for the routine accommodation of all users of the roadway (i.e., complete streets) including motorists, pedestrians, bicyclists, individuals with disabilities, seniors, and users of public transportation.
- SB 226 (2011): Required Office of Planning & Research (OPR) to modify the CEQA Guidelines to set forth a streamlined review process for infill projects.
- SB 743 (2013): Requires the California Governor’s Office of Planning and Research (OPR) to develop new CEQA guidelines that address traffic metrics under CEQA. As stated in the legislation, upon adoption of the new guidelines, “automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the environment pursuant to this division, except in locations specifically identified in the guidelines, if any.” OPR submitted updated CEQA Guidelines to the State Natural Resources Agency for formal rulemaking to implement SB 743, and the proposed changes were certified by the State Natural Resources Agency in December 2018. The guidelines indicate that vehicle miles traveled (VMT) be the primary metric used to identify transportation impacts and local agencies will have an adoption grace period until July 1, 2020. Caltrans issued interim guidance on incorporating SB 743 into its policies and procedures in Local Development – Intergovernmental Review Program. The high-level interim guidance document for District staff refocuses Caltrans’ attention on local development project’s VMT, appropriate transportation demand measures (TDM), and determining how to address multimodal operational issues.

### *LOCAL REGULATIONS AND PLANS*

#### **Glenn County General Plan Circulation Element**

The Circulation Element of the 1993 Glenn County General Plan contains goals and policies related to the County’s roadway network. The County is currently in the process of updating its General Plan.

#### **Glenn County Transportation Commission Regional Transportation Plan**

The 2015 Glenn County Regional Transportation Plan (RTP) (2015) is a long-range planning document for identifying and programming roadway improvements throughout Glenn County. The RTP guides transportation investments in the County involving local, state, and federal funding with a twenty-year horizon. Transportation projects are categorized as Tier 1 and Tier 2. Tier 1 improvements represent short-range projects that are fully fundable from anticipated revenue sources and will normally be programmed

during the first 10 years of the RTP. Tier 2 improvements presents long-range projects that are included on the “unfunded” list of projects and are planned for programming in the 11-20 year time frame.

### **Glenn County Active Transportation Plan – June 2019**

Walking and bicycling are most common for short trips. Because of the rural nature of Glenn County, the Glenn County Active Transportation Plan (ATP, 2019) focuses on improving walking and bicycling within the three largest communities of Orland, Willows, and Hamilton City, as they represent the highest concentrations of people and destinations. The ATP is an important tool guiding the development of a balanced transportation system that is pedestrian and bicycle friendly and encourages residents to use these modes of transportation. It provides a set of recommended infrastructure improvements and studies paired with education, encouragement, enforcement, and evaluation programs.

## **EXISTING SETTING**

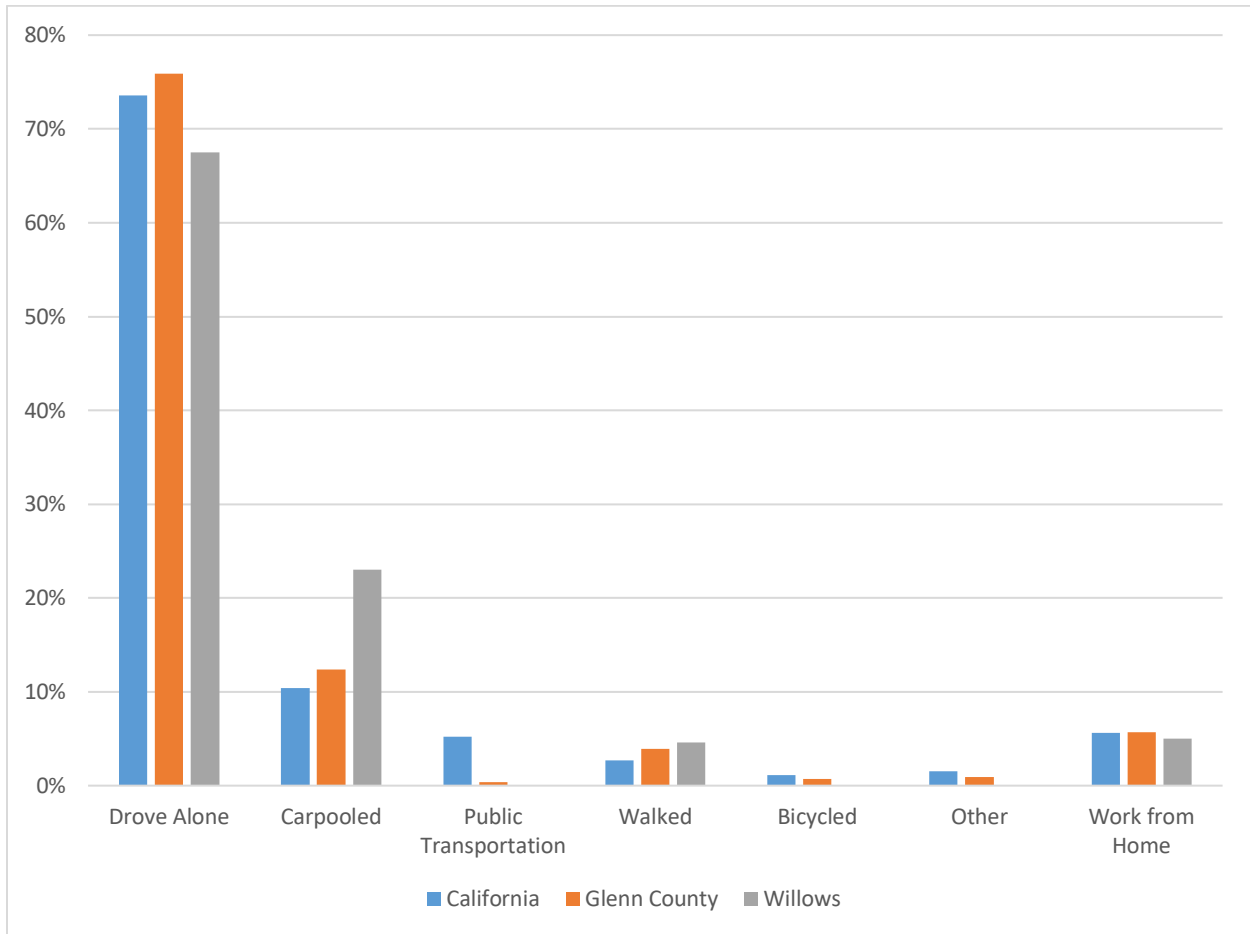
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The purpose of this section is to present the existing transportation conditions in the City of Willows.

### **City of Willows Resident and Worker Travel Behavior**

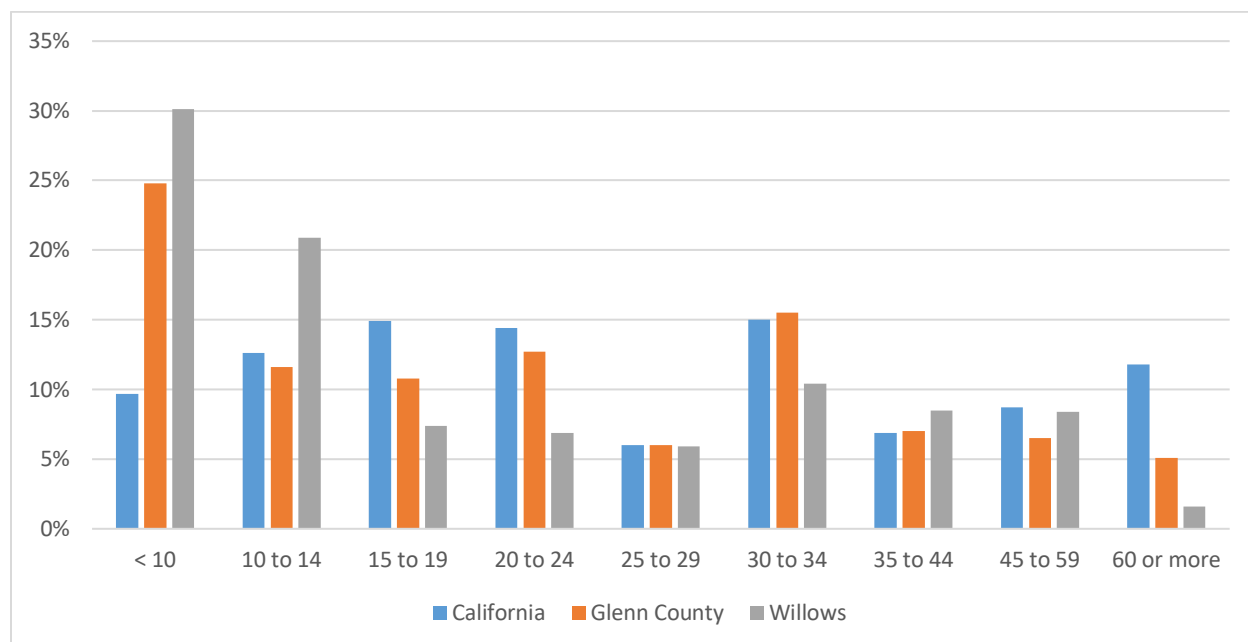
According to the US Census Bureau, 2013-2017 American Community Survey, residents of Willows commute by automobile (drive alone or in carpool) to get to work, including 68 percent who drove alone and 23 percent who carpoled. Chart 2.0-1 shows a comparison of the mode shares of residents and workers for the five years ending in 2017. The share of commuters driving to work is higher in Willows (about 91 percent) compared to Glenn County (88 percent) and California (about 84 percent). However, the share of Willows commuters that carpool is nearly double the share across Glenn County and is more than double the share across California. In Willows, no residents use public transportation to get to work, but they are more likely to walk to work (5 percent) than in the County more broadly (4 percent) and the state as a whole (3 percent). No residents reported bicycling or taking a taxi to work. Trips to school, shopping trips, and social and recreational trips tend to be shorter than trips to work, and are more likely to be made by walking or bicycling. It is therefore likely that Willows residents make more walking and bicycling trips than Census data indicates. Five percent of Willows residents work at home, or slightly less than across the County and the state.

**CHART 2.0-1: METHOD OF TRANSPORTATION TO WORK**



SOURCE: AMERICAN COMMUNITY SURVEY, CENSUS BUREAU, 2013-2017.

According to the US Census Bureau, 2013-2017 American Community Survey, about 65 percent of Willows residents traveled less than 25 minutes to work, with a median travel time of 19 minutes. By comparison, across Glenn County only 60 percent of commuters travel less than 25 minutes to work, with a median travel time of 24 minutes. Across California as a whole, only 52 percent of commuters travel less than 25 minutes to work, with a median travel time of about 29 minutes.

**CHART 2.0-2: TRAVEL TIME TO WORK (IN MINUTES)**

SOURCE: AMERICAN COMMUNITY SURVEY, CENSUS BUREAU, 2013-2017.

## Vehicle Miles Traveled

A common indicator used to quantify the amount of motor vehicle use in a specified area is Vehicle Miles Traveled (VMT). One VMT is defined as any type of motor vehicle being driven one mile. VMT is typically reported for an average weekday. Many factors affect VMT, including the average distance residents commute to work, school, and shopping, as well as the proportion of trips that are made by non-automobile modes. Areas that have a diverse land use mix and ample facilities for non-automobile modes, including transit, tend to generate lower VMT than auto-oriented rural areas where residents live at a distance from work, school, and other amenities.

The City of Willows does not maintain a travel demand model, so VMT was estimated using a sample of travel behavior provided in the California Household Travel Survey (2012, CHTS). Table 2.0-1 shows total VMT per capita, as well as by trip purpose. Home-based other and non-home based VMT may include travel to school, medical and other facilities, as well as for shopping, entertainment, and recreation. Home-based other trips originate at the traveler's home, while non-home based trips imply that one or more stops were made before the trip commenced; in other words, the trip did not originate at the traveler's home.

Total VMT per capita in the City of Willows is 13.4, including 1.6 for home-based other trips, 7.7 for home-based work trips, and 4.5 for non-home based trips. With the exception of home-based work trips, these numbers are lower in Willows than in Glenn County and are generally lower than in California as a whole.

Using CHTS for VMT has its limitations. This data source may overstate some VMT by including travel by Willows residents that actually occurs outside of the City limits. At the same time, it may underestimate travel by non-residents that travel within Willows. Finally, the data may not reflect travel behavior as it exists today, because a more recent household travel survey is not yet available.

**TABLE 2.0-1: VMT PER CAPITA**

GEOGRAPHY	TOTAL	HOME-BASED OTHER	HOME-BASED WORK	NON-HOME BASED
California	15.1	5.8	5.1	4.2
Glenn County	17.8	6.5	6.1	5.3
City of Willows	13.4	1.6	7.7	4.5

*SOURCE: CALIFORNIA HOUSEHOLD TRAVEL SURVEY (2010-2012).*

## Roadway System

This section describes the physical characteristics of the roadway network in Willows. Figure 2.0-1 shows the functional classifications of the roadway network in Willows.

### STATE HIGHWAYS

#### **Interstate-5**

I-5 is a major 4-lane freeway that extends 796 miles in California, 127 miles through Sacramento, Yolo, Colusa, and Glenn Counties with 18 segments of road. Segments 16 and 17 run through the City of Willows. Daily traffic volumes on I-5 in Glenn County range from approximately 25,500 vehicle trips per day during normal months up to 42,000 or more during peak months.

#### **State Route 162**

Segments 2 and 3 of SR 162 run east-west through the City of Willows, with four lanes through most of the City. Daily traffic volumes for all these two segments range from approximately 2,600 to 11,000 vehicles per day.

### ARTERIALS

#### **Tehama Street**

County Road 99W is a two-lane, north-south roadway that extends through Glenn County and is known as Tehama Street in the City of Willows. It includes a center left-turn lane between Biggs-Willows Road and Sycamore Street and from Eureka Street to County Road 58, it is designated a Principal Arterial.

#### **North Humboldt Avenue**

North Humboldt Avenue is a two-lane, north-south roadway. It includes a center left-turn lane for part of the segment between Green Street and Biggs-Willows Road. Between Green Street and Sycamore Street it is designated a Minor Arterial.

#### **North Villa Avenue**

North Villa Avenue is a two-lane, north-south roadway. It includes parking on both sides of the street between Wood Street and Sycamore Street, where it is designated a Minor Arterial.

#### **Lassen Street**

Lassen Street is a two-lane, north-south roadway. It includes parking on both sides of the street between Wood Street and Elm Street, where it is designated a Minor Arterial.

#### **Sycamore Street**

Sycamore Street is a two-lane, east-west roadway. It includes parking on both sides of the street between Villa Avenue and Tehama Street, where it is designated a Minor Arterial.



### **Laurel Street**

Laurel Street is a two-lane, east-west roadway. It includes parking on both sides of the street between South Villa Avenue and South Tehama Avenue, where it is designated a Minor Arterial.

### **Pedestrian Facilities**

Below are descriptions of pedestrian facilities and summaries of their implementation in Willows.

*SIDEWALKS* form the backbone of the pedestrian transportation network. They improve safety and comfort for people walking and support daily physical activity, improve public safety, and contribute to community character.

Many sidewalk gaps currently exist at the periphery of Willows.

*CURB RAMPS* are necessary for people who use wheelchairs or other mobility devices, as they allow access to sidewalks and crosswalks. Ramps are also helpful to people pushing strollers, or who may have difficulty stepping onto a raised curb. The Americans with Disabilities Act (ADA) requires the installation of curb ramps with all sidewalk projects, whether new construction or retrofits. Curb ramps should ideally be placed at each end of the crosswalk (perpendicular to curb ramps), although in some circumstances diagonal curb ramps may be acceptable.

Curb ramps are provided at some intersections in Willows, largely in areas with more recently constructed sidewalks. Most locations lack curb ramps, including many marked crosswalks.

Crosswalks are a legal extension of the sidewalk and are not required to be marked. However, marked crosswalks alert drivers of a pedestrian crossing point and increase yielding to pedestrians, in addition to providing guidance for pedestrians and delineating their path of travel.

Marked crosswalks are present at few intersections in Willows. Some intersections have only one marked crosswalk, while others are marked on all legs.

The Glenn County Active Transportation Plan is currently in draft form. Developed through a series of community workshops, the draft Plan proposes sidewalk gap closures and curb ramps, curb extensions, high visibility crosswalks, and other pedestrian infrastructure improvements throughout Willows.

### **Bicycle Facilities**

Below are descriptions of bikeways and their classifications.

*CLASS I SHARED USE PATHS* provide a completely separated right-of-way for the exclusive use of bicycles, pedestrians, and other non-motorized modes. Cross-flows are minimal.

There are currently no Class I paths in Willows.

*CLASS II BIKE LANES* are dedicated on-street lanes for bicyclists. Some may have painted buffers on one or both sides to provide space between bicyclists and moving traffic or parking cars.

There is currently one short segment of Class II bicycle lanes in Willows on SR 162, west of I-5, as shown in Figure 2.

*CLASS III BIKE ROUTES* are routes where the travel lane is shared by drivers and bicyclists. They are most suited for roadways with low traffic speeds and volumes, such as quiet residential streets. Some routes,

called bicycle boulevards, may be enhanced with curb extensions, neighborhood traffic circles, or other traffic calming treatments to improve comfort for bicycling.

There are currently no Class III routes in Willows.

*CLASS IV SEPARATED BIKEWAYS* are on-street bicycle facilities that include some kind of physical protection from vehicle traffic. This separation might include a curb, on-street parking, flexible bollards, or concrete planters. Class IV bikeways may provide for one-way or two-way travel on each side of the roadway.

There are currently no Class IV bikeways in Willows.

The Glenn County Active Transportation Plan, currently in draft form, proposes bicycle facility improvements in Willows.

### **Transit Service and Facilities**

The primary transit service in Willows is Glenn Ride, which provides seven round trips every weekday and three round trips on Saturday from Willows to Chico with service to Artois, Orland, and Hamilton City. Glenn Ride buses are equipped with accessible lifts and bicycle racks. While Glenn Ride is a fixed route transit service, users may also request deviations up to  $\frac{3}{4}$  of a mile to drop them closer to their final destination.

Additional transportation assistance is provided to eligible residents through Dial-A-Ride and Volunteer Medical Transport. Seniors 60 years of age or older and those on Permanent Disability, or low income are eligible for Transit Service Cards to use these services.

### **Safety**

The most recent 5-years history of collisions in Willows was obtained from the Transportation Injury Mapping System (TIMS) that is drawn from the California Highway Patrol's Statewide Integrated Traffic Records System (SWITRS). The most recent and complete information available is from January 1, 2011 to December 31, 2015. Note that TIMS data only includes collisions involving injuries. It does not include property damage-only collisions. Table 2.0-3 shows the number of collisions by severity and Figure 2.0-3 maps these collisions by location.

**TABLE 2.0-3: COLLISIONS BY SEVERITY, 2011-2015**

<i>COLLISION SEVERITY</i>	<i>COUNT</i>	<i>PERCENT</i>
Fatal	0	0%
Injury (Severe)	2	4%
Injury (Other Visible)	17	36%
Injury (Complaint of Pain)	28	60%
<b>Total*</b>	<b>47</b>	<b>100%</b>

SOURCE: TRANSPORTATION INJURY MAPPING SYSTEM (TIMS), SAFE TRANSPORTATION RESEARCH AND EDUCATION CENTER, UNIVERSITY OF CALIFORNIA, BERKELEY. 2019

\*DOES NOT INCLUDE PROPERTY DAMAGE ONLY COLLISIONS.

Table 2.0-4 summarizes the total and percentage of collisions by type between 2011 and 2015. Over half of the collisions that took place in Willows between 2011 and 2015 were broadside collisions. These types of collisions are likely to occur when through-moving vehicles collide with turning vehicles, including vehicles making left turns, u-turns, and entering the roadway from a driveway.

**TABLE 2.0-4: COLLISIONS BY TYPE, 2011-2015**

<i>COLLISION SEVERITY</i>	<i>COUNT</i>	<i>PERCENT</i>
Broadside	25	53%
Rear End	7	15%
Head-On	6	13%
Vehicle/Pedestrian	4	9%
Sideswipe	2	4%
<b>Total*</b>	<b>47</b>	<b>100%</b>

SOURCE: TRANSPORTATION INJURY MAPPING SYSTEM (TIMS), SAFE TRANSPORTATION RESEARCH AND EDUCATION CENTER, UNIVERSITY OF CALIFORNIA, BERKELEY. 2019

\*DOES NOT INCLUDE PROPERTY DAMAGE ONLY COLLISIONS.

### Roadway Segment Level of Service

Level of Service (LOS) is used to describe traffic operations on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, LOS A represents free flow conditions and LOS F represents forced flow or breakdown conditions. The various levels of service and their corresponding operating descriptions for roadway segments are described in Table 2.0-5.

**TABLE 2.0-5: ROADWAY SEGMENT LEVEL OF SERVICE CRITERIA**

<i>LOS</i>	<i>DESCRIPTION</i>
A	Motorists experience high operating speeds and little difficulty in passing. Platoons of three or more vehicles are rare.
B	Passing demand and passing capacity are balanced. Platooning becomes noticeable.
C	Most vehicles travel in platoons. Speeds are noticeably curtailed.
D	Platooning increases significantly. Passing demand is high, but passing capacity approaches zero.
E	Demand is approaching capacity. Passing is virtually impossible, and speeds are seriously curtailed.
F	Unstable operating conditions in which demand flow in one or both directions exceeds the segment’s capacity and heavy congestion exists.

*SOURCE: HIGHWAY CAPACITY MANUAL, TRANSPORTATION RESEARCH BOARD, 2010.*

**STUDY SEGMENTS**

As shown in Figure 2.0-4, the following eight roadway segments were identified to include those most critical to the City’s local circulation system, its connectivity to the regional transportation network, and those that are representative of local conditions across the City’s roadway network.

1. Wood Street (SR 162/Biggs-Willows Road) between Washington Street and Murdock Avenue
2. County Road 57 between Road D and Interstate 5 Southbound Ramps
3. North Tehama Street (Road 99W) between French Street and Wood Street (SR 162/Biggs-Willows Road)
4. North Tehama Street (Road 99W) between Wood Street (SR 162/Biggs-Willows Road) and Willow Street
5. Road 99W between Road M and County Road 57
6. Road 99W between County Road 57 and South Court
7. Wood Street (SR 162/Biggs-Willows Road) between North Tehama Street (Road 99W) and North Colusa Street
8. County Road 57 between Road 99W and Road M

**LEVEL OF SERVICE METHODOLOGY**

Twenty-four hour vehicle counts were collected at two of these locations (#1 and #3) in May 2019. Average daily traffic volumes at the other six locations were estimated from peak hour volumes reported at nearby intersections in a 2014 traffic impact study, the most recent available in Willows.<sup>1</sup> The roadway segment study locations were classified according to function and volumes compared to the level of service thresholds shown in Table 2.0-7.

<sup>1</sup> Willows Gateway Center – Traffic Impact Study, Traffic Works, 2014.

**TABLE 2.0-6: MAXIMUM DAILY VOLUME THRESHOLDS FOR HIGHWAY SEGMENTS**

CLASSIFICATION	LOS				
	A	B	C	D	E
4-Lane Major Freeway	25,400	41,600	58,400	71,000	79,200
2-Lane, Class I Highway	1,200	3,700	7,600	13,600	21,000
2-Lane, Class II Highway	1,700	4,100	8,200	16,600	21,200
Rural Principal Arterial (2 lane)	2,600	5,900	10,300	16,900	20,200
Rural Minor Arterial (2 lane)	1,200	3,300	6,400	11,000	15,500
Urban Arterial (4 lane)	18,000	21,000	24,000	27,000	30,000
Urban Arterial (2 lane)	9,000	10,500	12,000	13,500	15,000
Urban Major Collector (2 lane)	7,620	8,890	10,160	11,430	12,700
Urban Minor Collector (2 lane)	4,800	5,600	6,400	7,200	8,000
Rural Major Collector (2 lane)	1,300	3,900	7,500	12,600	16,900
Rural Minor Collector (2 lane)	1,000	3,000	5,500	8,750	11,200
Urban Local Road	2,700	3,150	3,600	4,050	4,500
Rural Local Road	600	2,000	3,500	4,900	5,500

SOURCE: GLENN COUNTY 2015 REGIONAL TRANSPORTATION PLAN.

Table 2.0-7 includes each study segment, its classification for purposes of determining current level of service, and average daily traffic (ADT) volumes. As shown, all study segments currently operate at LOS A or B.

**TABLE 2.0-7: ROADWAY SEGMENT LEVEL OF SERVICE**

ID	ROAD NAME	FROM	TO	LANES	CLASSIFICATION	ADT	LOS
1	Wood Street (SR 162/Biggs-Willows Rd)	Washington Street	Murdock Avenue	4	Urban Arterial (4 lane)	10,644	A
2	County Road 57	Road D	I-5 SB Ramps	2	2-Lane, Class I Highway	291	A
3	N Tehama (Highway 99W)	French Street	SR 162 (Biggs-Willows)	2	Urban Arterial (2 lane)	5,361	A
4	N Tehama	SR 162 (Biggs-Willows)	W Willow St	2	Urban Arterial (2 lane)	5,029	A
5	Highway 99W	Road M	County Road 57	2	2-Lane, Class I Highway	1,720	B
6	Highway 99W	County Road 57	South Ct	2	2-Lane, Class I Highway	1,911	B
7	Wood Street (SR 162/Biggs-Willows Rd)	N Tehama St	N Colusa St	2	Urban Arterial (2 lane)	5,966	A
8	County Road 57	Highway 99W	Road M	2	2-Lane, Class I Highway	641	A

SOURCE: FEHR & PEERS, 2019

## **Heavy Rail and Goods Movement**

California Northern Pacific Railroad Company (CFNR) provides freight service through Glenn County. The CFNR Mainline tracks traverse the County parallel to I-5 and just east of Old Highway 99, running through the Cities of Willows and Orland. A small east-west branch line in Willows runs north of SR 162 connecting to the Johns Manville manufacturing facility on County Road 48. According to Federal Railroad Administration records, there are 23 locations where the CFNR lines cross public and private roads at-grade in Willows. About half of these crossings are unmarked, while the other half have railroad crossing advance warning signs. Only the crossing of the John Manville branch line and I-5 is grade-separated.

Trucking is another major means of transportation for goods produced in the County. Truck traffic accounts for a considerable portion of traffic on highways in Glenn County. On Interstate-5 truck traffic may account for as much as 28 percent of Average Annual Daily Traffic (AADT). For SR 32, SR 45, and SR 162, truck traffic accounts for approximately 5-20 percent of total AADT in some segments. Maintaining safe and efficient roadways for the movement of goods is an important issue in Glenn County where agriculture and industrial services make up a large portion of the local economy.

## **Aviation**

Glenn County owns and operates the Willows-Glenn County Airport in the City of Willows.

The Willows-Glenn County Airport is located west of the City of Willows. The airport has two asphalt runways. The primary runway 16-34 is 100' x 4125'. It has an Airport Reference Code of B-II and pavement strength of 90,000 pounds. The secondary runway 13-31 is 100' x 3788'. It has an Airport Reference Code of A-I and a pavement strength of 38,000 pounds. A full length parallel taxiway connects the primary runway to the airport's building area. Runway 16-34 is a non-precision instrument runway with four published approaches. The lowest minimum visibility approach is one mile.

While many flight operations out of the Willows-Glenn County Airport are agricultural-related (given the County's high production of rice and other agricultural products), other flight activities also include business, recreational, emergency, flight training, and law enforcement. The FAA 5010 Master Record reports 29,500 annual operations, 39 single engine aircraft, one jet, and two helicopters. At the center of the building area are 45 hangars of various sizes and conditions. Some are proposed for construction improvements in the Aviation CIP list of projects.

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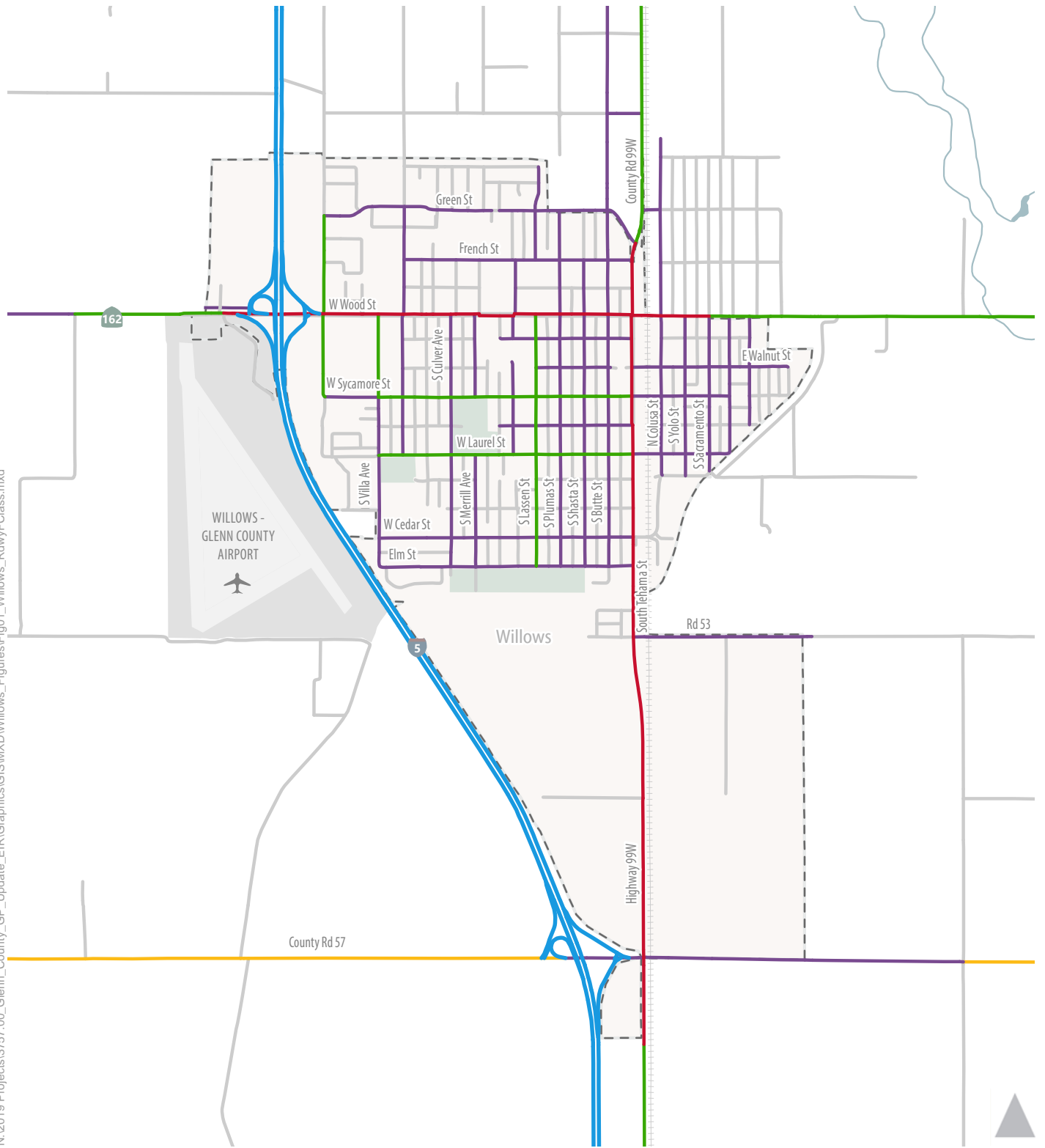
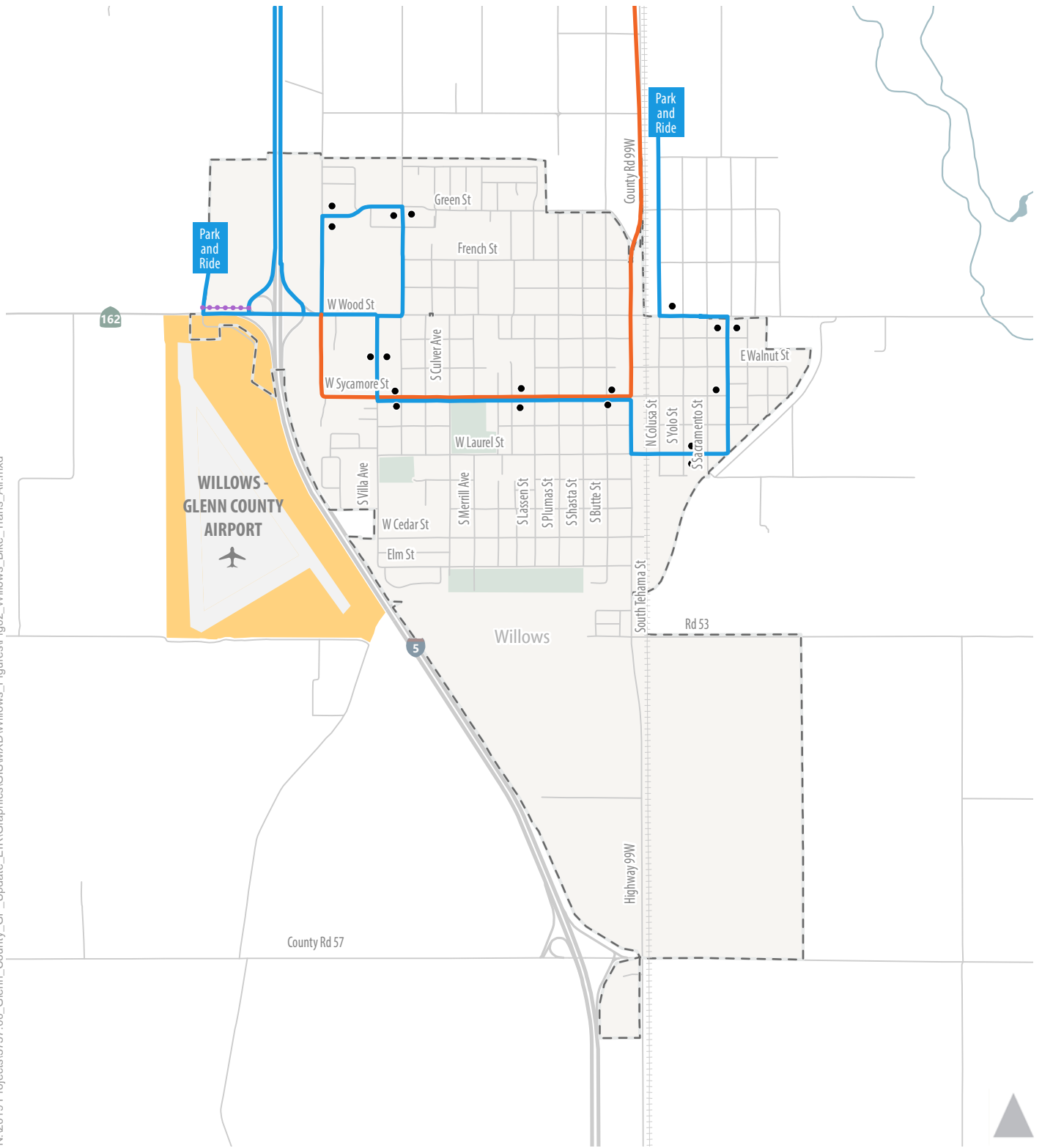


Figure 2.0-1  
Willows Roadway System and Functional Classification

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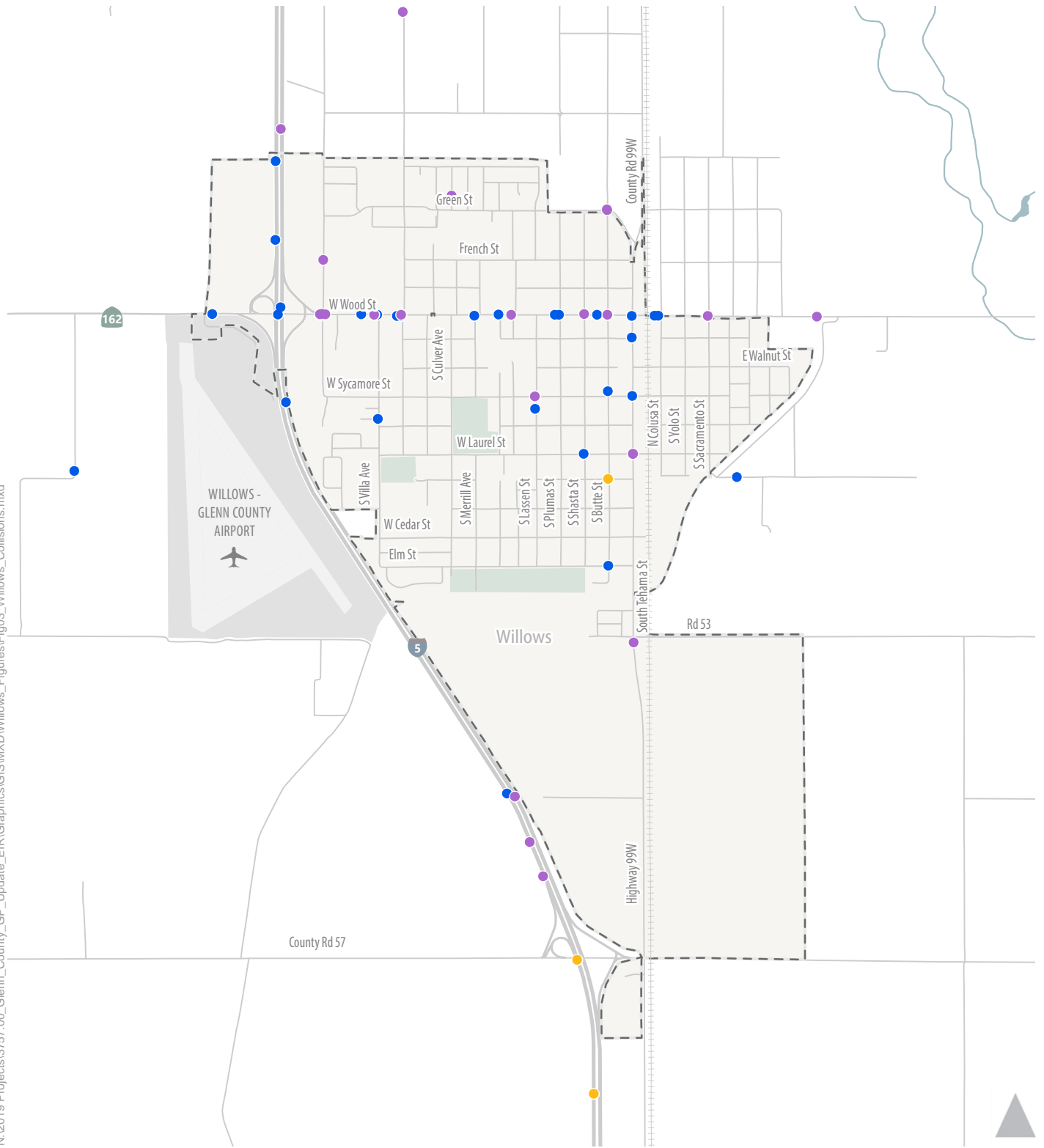


- Bus Stop
- Bike Facilities
- Airport Boundary
- GlennRide
- Class II Bike Lane
- Bus Route
- Express Route



Figure 2.0-2  
Bikeways, Transit Service, and Airports

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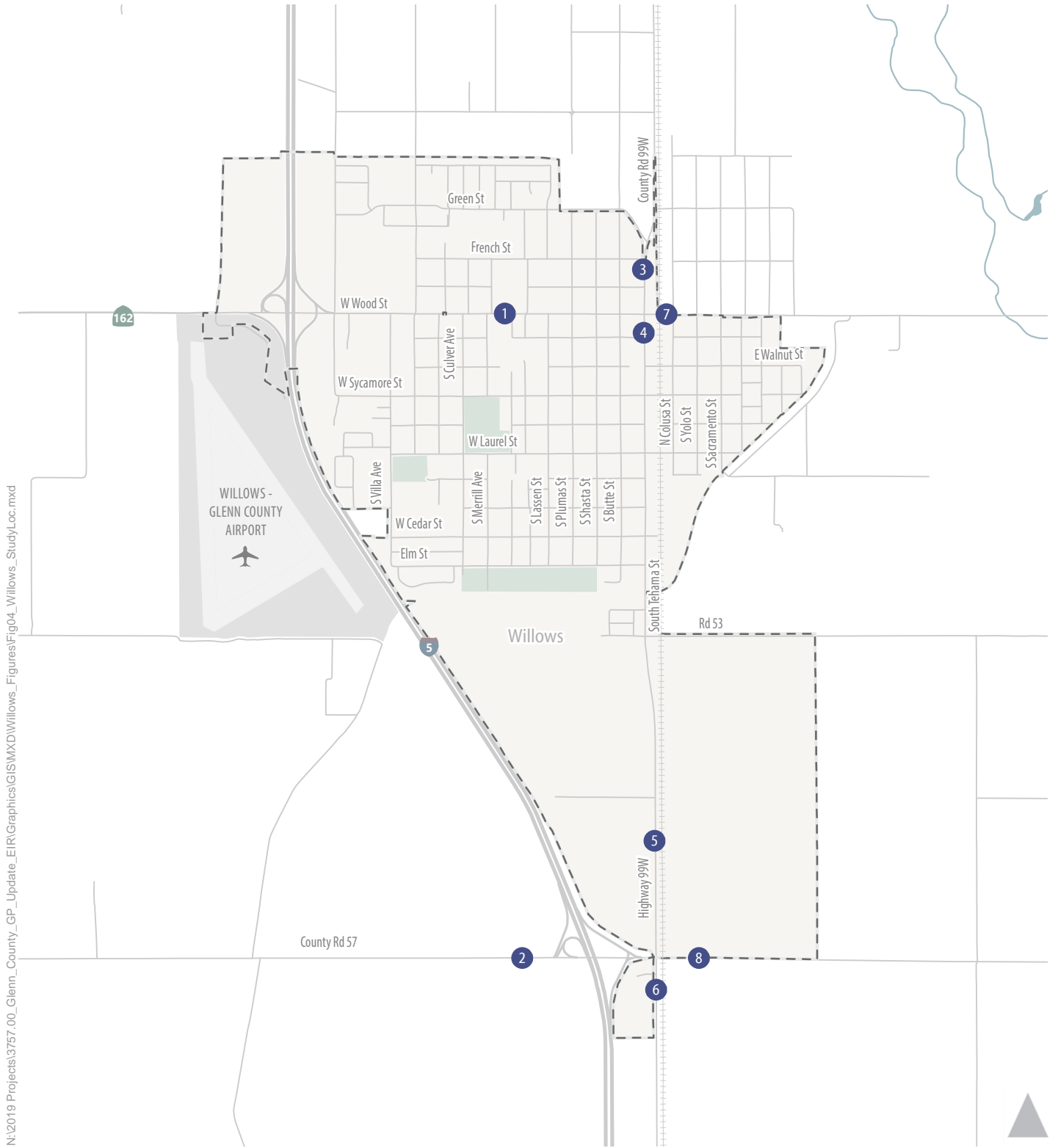
Collision Severity

- Fatal
- Injury (Severe)
- Injury (Other Visible)
- Injury (Complaint of Pain)



Figure 2.0-3  
Collisions in Willows, 2011-2015

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1 Study Location



Figure 2.0-4  
Roadway Network and Study Locations

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# Chapter 3

## Community Services & Facilities



This Chapter addresses utilities and community services within the City of Willows. Utility services include the provision of water services, wastewater (sewer) services, stormwater and drainage, solid waste disposal, electricity, and natural gas. Community services include fire protection, law enforcement, parks and recreation, schools, libraries, and other public facilities.

This Chapter includes the following topics:

- 3.1 Water Services
- 3.2 Wastewater
- 3.3 Stormwater and Drainage
- 3.4 Solid Waste
- 3.5 Electricity and Natural Gas
- 3.6 Public Safety Services
- 3.7 Park and Recreation
- 3.8 Schools, Libraries and Other Public Facilities





## 3.0 COMMUNITY SERVICES AND FACILITIES

The community services and facilities within the City and surrounding areas are an important part to ensuring a community's safety and quality of life. In an effort to identify and understand the key community services and facilities of the city, this chapter is divided into the following sections:

- 3.1 Water Services
- 3.2 Wastewater
- 3.3 Stormwater and Drainage
- 3.4 Solid Waste
- 3.5 Electricity and Natural Gas
- 3.6 Public Safety Services
- 3.7 Parks and Recreation
- 3.8 Schools, Libraries and Other Public Facilities

### 3.1 WATER SERVICES

Most residents in Willows receive water service from the California Water Service Company (Cal Water). Cal Water incorporated in 1926 and has provided water service to the Willows community since 1927. Cal Water's service area comprises the majority of Willows and adjacent unincorporated territory in Glenn County. The sole source of water supply for the customers of the Willows District is groundwater.

The City of Willows Water Department owns and operates a very small water system south of the Cal Water District, which serves the property south of Road 53.

## REGULATORY FRAMEWORK

### *STATE*

#### **California Department of Health Services**

The Department of Health Services, Division of Drinking Water and Environmental Management, oversees the Drinking Water Program. The Drinking Water Program regulates public water systems and certifies drinking water treatment and distribution operators. It provides support for small water systems and for improving their technical, managerial, and financial capacity. It provides subsidized funding for water system improvements under the State Revolving Fund ("SRF") and Proposition 50 programs. The Drinking Water Program also oversees water recycling projects, permits water treatment devices, supports and promotes water system security, and oversees the Drinking Water Treatment and Research Fund for MTBE and other oxygenates.

#### **California Code of Regulations**

California Code of Regulations (CCR) Title 22, Chapter 15, Article 20 requires all public water systems to prepare a Consumer Confidence Report for distribution to its customers and to the Department of Health Services. The Consumer Confidence Report provides information regarding the quality of potable water provided by the water system. It includes information on the sources of the water, any detected contaminants in the water, the maximum contaminants levels set by regulation, violations and actions taken to correct them, and opportunities for public participation in decisions that may affect the quality of the water provided.

### **Urban Water Management Planning Act**

The Urban Water Management Planning Act has as its objectives the management of urban water demands and the efficient use of urban water. Under its provisions, every urban water supplier is required to prepare and adopt an urban water management plan. An “urban water supplier” is a public or private water supplier that provides water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. The plan must identify and quantify the existing and planned sources of water available to the supplier, quantify the projected water use for a period of 20 years, and describe the supplier’s water demand management measures. The urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry years. The Department of Water Resources must receive a copy of an adopted urban water management plan.

### **Senate Bill (SB) 610 and Assembly Bill (AB) 901**

The State Legislature passed SB 610 and AB 901 in 2001. Both measures modified the Urban Water Management Planning Act.

SB 610 requires additional information in an urban water management plan if groundwater is identified as a source of water available to an urban water supplier. It also requires that the plan include a description of all water supply projects and programs that may be undertaken to meet total projected water use. SB 610 requires a city or county that determines a project is subject to CEQA to identify any public water system that may supply water to the project and to request identified public water systems to prepare a specified water supply assessment. The assessment must include, among other information, an identification of existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and water received in prior years pursuant to these entitlements, rights and contracts.

AB 901 requires an urban water management plan to include information, to the extent practicable, relating to the quality of existing sources of water available to an urban water supplier over given time periods. AB 901 also requires information on the manner in which water quality affects water management strategies and supply reliability. The bill requires a plan to describe plans to supplement a water source that may not be available at a consistent level of use, to the extent practicable. Additional findings and declarations relating to water quality are required.

### **Senate Bill (SB) 221**

SB 221 adds Government Code Section 66455.3, requiring that the local water agency be sent a copy of any proposed residential subdivision of more than 500 dwelling units within five days of the subdivision application being accepted as complete for processing by the city or county. It also adds Government Code Section 66473.7, establishing detailed requirements for establishing whether a “sufficient water supply” exists to support any proposed residential subdivisions of more than 500 dwellings, including any such subdivision involving a development agreement. When approving a qualifying subdivision tentative map, the city or county must include a condition requiring availability of a sufficient water supply. The applicable public water system must provide proof of availability. If there is no public water system, the city or county must undertake the analysis described in Government Code Section 66473.7. The analysis must include consideration of effects on other users of water and groundwater.

### **Sustainable Groundwater Management Act (SGMA).**

On September 16, 2014, the Governor of California signed into law a three-bill legislative package (Senate Bill 1168, Assembly Bill 1739 and Assembly Bill 1319) that provided a framework for statewide sustainable groundwater management. These laws are collectively known as the Sustainable Groundwater Management Act (SGMA). SGMA defines sustainable groundwater management as the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results.

The law requires all groundwater well users to live under a Groundwater Sustainability Plan developed by Groundwater Sustainability Agencies that must be completed by January 31, 2022. This Plan will require all groundwater well use to be sustainable for all parts of the basins throughout California, and will potentially require meters and records on groundwater use.

Development of the Groundwater Sustainability Plans by Groundwater Sustainability Agencies is currently being developed in Colusa and Glenn Counties. Each groundwater user has the opportunity to help develop these Plans which all users must follow.

#### *LOCAL*

### **Glenn Groundwater Authority**

The Glenn Groundwater Authority (GGA) is a nine-member, multi-agency Joint Powers Authority (JPA) that was formed on June 20, 2017. The GGA is the Groundwater Sustainability Agency (GSA) responsible for implementation of the Sustainable Groundwater Management Act (SGMA) in the Glenn County portion of the Colusa Subbasin (5-21.52). The Board of the GGA is composed of representatives of the following:

*County of Glenn, City of Orland, City of Willows, Glenn-Colusa Irrigation District, Glide Water District, Princeton-Codora-Glenn/Provident Irrigation District (1 seat), Orland-Artois Water District, and Kanawha Water District formed with the primary purpose to comply with and implement SGM*

The Glenn Groundwater Authority was created by forming a Joint Exercise of Powers Agreement, signed by nine local agencies, with the purposes of being a Groundwater Sustainability Agency for the Glenn County portion of the Colusa Subbasin.

### **California Water Service Company 2015 UWMP - Willows.**

Per CWC §10617, only urban water suppliers with 3,000 or more customers or supplying 3,000 or more acre-feet of water annually are required to complete an UWMP. Willows District is presently below both thresholds. However, Cal Water has elected to prepare plans for all the districts it operates regardless of their size because these plans are integral to Cal Water planning initiatives at both the enterprise-level and district-level, as well as important sources of information for broader regional planning efforts.

### ENVIRONMENTAL SETTING

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#### Local Setting

The City of Willows is located in the Sacramento River Hydrologic Region which is primarily an agricultural area.

Groundwater in the Glenn Groundwater Authority (GGA) service area is extracted to serve municipal, domestic, and agricultural beneficial uses. Municipal and domestic water supply demand in the GGA service area is met with groundwater. Agricultural water users within the GGA area that do not have a surface water supply must rely upon groundwater to meet the entire agronomic water demand.

#### Groundwater Basins

The City of Willows is located within the Sacramento Valley Groundwater Basins.

The Sacramento Valley Groundwater Basin covers over 5,900 square miles and 10 counties, and has been divided into 18 subbasins. The California Department of Water Resources defines the following:

“A groundwater basin is defined as an alluvial aquifer or a stacked series of alluvial aquifers with reasonably well-defined features that significantly impede groundwater flow such as rock or sediments with very low permeability or a geologic structure such as a fault.”

“A subbasin is created by dividing a groundwater basin into smaller units using geologic and hydrologic barriers or, more commonly, institutional boundaries. These subbasins are created for the purpose of collecting and analyzing data, managing water resources, and managing adjudicated basins.”

Willows overlies the Sacramento Valley Groundwater Colusa Subbasins. The Colusa Subbasin underlies the majority of the valley portion of Glenn County west of the Sacramento River, and also extends into Colusa, and Yolo Counties. Groundwater basins within Glenn County and the surrounding areas are shown in Figure 3.1-1.

#### Groundwater Formations of the Sacramento Valley Groundwater Basin - Colusa Subbasin

**Water-Bearing Formations.** The Colusa Subbasin aquifer system is composed of continental deposits of late Tertiary to Quaternary age. Quaternary deposits include Holocene stream channel and basin deposits and Pleistocene Modesto and Riverbank formations. The Tertiary deposits consist of the Pliocene Tehama Formation and the Tuscan Formation. Except where noted, the following information is taken from USBR (1960).

**Holocene Stream Channel Deposits.** These deposits consist of unconsolidated gravel, sand, silt, and clay derived from the erosion, reworking, and deposition of adjacent Tehama Formation and Quaternary stream terrace deposits. The thickness varies from 1- to 80-feet (Helley and Harwood 1985). These deposits represent the upper part of the unconfined zone of the aquifer and are moderately-to-highly permeable; however, the thickness and areal extent of the deposits limit the water-bearing capability. **Holocene Basin Deposits.** These deposits are the result of sediment-laden floodwaters that rose above natural levees of streams and rivers and spread across low-lying areas. They consist primarily of silts and clays and may be locally interbedded with stream channel deposits along the Sacramento River. Thickness of the unit ranges up to 150 feet. These deposits have low permeability and generally yield

low quantities of water to wells. The quality of groundwater produced from basin deposits is often poor.

**Pleistocene Modesto and Riverbank Formations.** Terrace deposits include the Modesto Formation (deposited between 14,000 and 42,000 years ago) and the Riverbank Formation (deposited between 130,000 and 450,000 years ago). The Modesto deposits consist of moderately to highly permeable gravels, sands, and silts. Thickness of the formation ranges from less than 10 feet to nearly 200 feet across the valley floor (Helley and Harwood 1985). The Riverbank deposits are the older terrace deposits that occur at a higher topographic level and consist of poorly to highly pervious pebble and small cobble gravels interlensed with reddish clay, sand, and silt. Thickness of the formation ranges from less than 1 foot to over 200 feet depending on location. The formation yields moderate quantities of water to domestic and shallow irrigation wells and also provides water to deeper irrigation wells that have multiple zones of perforation. Generally, the thickness of the formation limits the water-bearing capabilities.

**Pliocene Tehama Formation.** The Tehama Formation is the predominant water-bearing unit within the Colusa Subbasin and reaches a thickness of 2,000 feet (Olmsted and Davis 1961). The formation occurs at depths ranging from a few feet to several hundred feet from the surface. The formation consists of moderately compacted silt, clay, and fine silty sand enclosing lenses of sand and gravel; silt and gravel; and cemented conglomerate. Occasional deep sands and thin gravels constitute a poorly to moderately productive, deep, water-bearing zone.

**Pliocene Tuscan Formation.** The Tuscan Formation occurs in the northern portion of the subbasin at an approximate depth of 400 feet from the surface and may extend to the west to the Greenwood Anticline east of Interstate Highway 5 (DWR 2000). The formation is composed of a series of volcanic mudflows, tuff breccia, tuffaceous sandstone, and volcanic ash layers. The formation is described as four separate but lithologically similar units, A through D (with Unit A being the oldest), which in some areas are separated by layers of thin tuff or ash units (Helley and Harwood 1985).

Units A, B, and C are found within the subbasin. Unit A is the oldest waterbearing unit of the formation and is characterized by the presence of metamorphic clasts within interbedded lahars, volcanic conglomerate, volcanic sandstone, and siltstone. Unit B is composed of a fairly equal distribution of lahars, tuffaceous sandstone, and conglomerate. Unit C consists of massive mudflow or lahar deposits with some interbedded volcanic conglomerate and sandstone. In the subsurface, these low permeability lahars form thick, confining layers for groundwater contained in the more permeable sediments of Unit B.

### **Subareas of the Colusa Subbasin**

**Stony Creek Fan.** The Stony Creek Fan occupies the northern extent of the subbasin and extends from Black Butte Reservoir to the City of Willows, northeast from the City of Willows to the Sacramento River, and north beyond the Tehama County line. The geologic units within the fan area include Holocene alluvial deposits, Pleistocene deposits of the Riverbank and Modesto formations, and Pliocene deposits of the Tehama and Tuscan formations.

Holocene alluvial deposits are observed along Stony Creek to the north and along the Sacramento River to the east. Modesto and Riverbank deposits extend to the east along Stony Creek and south and southeast within several ancestral stream channels (DWR 2000). Older alluviated floodplain and channel deposits reach a thickness of 150 feet at Stony Creek and 110 feet along the Sacramento River.

## 3.0 COMMUNITY SERVICES AND UTILITIES

Thick clays of the upper Tehama Formation underlie the intermediate waterbearing zone of the Stony Creek plain at a depth of 300 feet, rising to a minimum depth of 40 feet on the axis of the Willows anticline. Wells installed 4 miles east of Highway 99W intersect occasional Tehama Formation gravels between 225- and 625-foot depths.

Tuscan Units A, B, and C are believed to extend into the Colusa Subbasin north of the City of Willows. The sediments of the Tuscan Formation interfinger with the sediments of the Tehama Formation in the subsurface (Lydon 1969). The degree of hydraulic conductivity between the Tuscan Formation, the Tehama Formation, and the overlying Stony Creek fan deposits has not been established.

**Willows-to-Williams Plain.** Basin deposits overlie much of the flat alluvial plains in the area between Willows and Williams. Permeabilities of the nearsurface soils are extremely low. Riverbank deposits are observed along the western subbasin boundary north of Maxwell. The interstream areas of the westside creeks contain little gravel and are underlain by a poorly pervious, occasionally alkaline, claypan soil. The Tehama Formation contains little gravel and is not an important water-bearing material in this region.

### Groundwater Storage

Groundwater storage capacity of the Colusa Subbasin was estimated based on estimates of specific yield for the Sacramento Valley as developed in DWR (1978). Estimates of specific yield, determined on a regional basis, were used to obtain a weighted specific yield conforming to the subbasin boundary. The estimated specific yield for the subbasin is 7.1 percent. The estimated storage capacity to a depth of 200 feet is approximately 13,025,887 acre-feet.

### Groundwater Levels

The California Department of Water Resources (DWR) maintains a publicly available on-line database, which includes groundwater level data for the County. DWR's Water Data Library Website can be found at <http://www.wdl.water.ca.gov/>. Wells monitored by DWR and cooperating agencies are identified by the State Well Numbering System. Data can be obtained for specific wells by means of a map interface, by groundwater basin, or by the assigned State Well Numbering System.

Review of hydrographs for long-term comparison of spring-spring groundwater levels indicates a slight decline in groundwater levels associated with the 1976-77 and 1987-94 droughts, followed by recovery to pre-drought conditions of the early 1970's and 1980's. Some wells increased in levels beyond the pre-drought conditions of the 1970's during the wet season of the early 1980's. Generally, groundwater level data show an average seasonal fluctuation of approximate 5-feet for normal and dry years

A hydrograph for Well 21N03W33A004M, an irrigation well located in the Glenn County portion of the Colusa Groundwater Subbasin (5-21.52) has been monitored and reported by DWR and is included in California's Groundwater Update (2013). This well is located in the center of the upper portion of the groundwater subbasin, midway between the cities of Orland and Willows. The land use in the area of the well is predominately agriculture. The well is 750 feet deep and is constructed in the semi-confined to confined portions of the aquifer system. Groundwater levels in this well have been monitored monthly from 1958 to 1995, and three to four times per year since 1995.

The hydrograph shows a decline in groundwater levels during the 1970s, prior to bringing in surface water through the Tehama-Colusa Canal. During the 1980s, groundwater levels increased as a result of the combination of switching from groundwater to surface water use, and because of the wet hydrology associated with the 1982-1984 water years. The decline in groundwater levels in the early 1990s is likely

the result of surface water cutbacks, increased surface water pricing, and limited dry-year water reliability combined with drought conditions, causing many farmers to switch back to groundwater instead of surface water supply.

The most recent decrease in groundwater levels in the early 2000s is likely a result of the recent trend of converting pasture, annual crops, and idle land to permanent orchard crops irrigated with groundwater. Between 2003 and 2009, permanent crops increased 17,000 acres county wide, while an equal amount of field crops, grasses, and idle and pasture land decreased. Changes in irrigation methods have also contributed to the observed declines. Between 2003 and 2009, surface drip and micro-sprinkler irrigation has increased, and methods such as wild flooding, furrow irrigation, and border strip irrigation has decreased. The former methods rely on groundwater and the latter rely on surface water deliveries.

Groundwater is the preferred source of water for micro sprinklers and drips, because surface water, having more suspended particles, tends to plug the equipment. Other side effects of these crop and irrigation changes are the reduced amounts of water being applied via micro or drip sprinklers, which virtually eliminate any applied water that would have percolated down to the groundwater as recharge. During periods of reduced surface water, permanent crops eliminate the possibility of idling the land.

The hydrograph for the well shows that the seasonal fluctuation in groundwater levels can be as much as 70 feet over the period of record beginning in 1965. The lowest groundwater levels were during the drought in the late 1970s. Since 2009 up until 2013, the trend of declining groundwater levels has continued, and for many wells along the west side of the Sacramento Valley, groundwater levels are either at or are approaching an all-time low.

### Groundwater Quality

Calcium-magnesium bicarbonate and magnesium-calcium bicarbonate are the predominant groundwater types in the subbasin. Calcium bicarbonate waters occur locally from Orland to Artois and near Stony Creek. Mixed character waters for different regions of the subbasin occur as follows: sodium bicarbonate waters from Williams-Colusa south to Grimes; magnesium-sodium bicarbonate or sodium-magnesium bicarbonate waters near Williams-Arbuckle area and locally near Zamora; and magnesium bicarbonate waters locally near Dunnigan. Total dissolved solids (TDS) values range from 120- to 1,220-mg/L, averaging 391 mg/L (DWR Bulletin 118).

**Basin Impairments.** High EC, TDS, adjusted sodium absorption ratio (ASAR), nitrate, and manganese impairments occur near Colusa. High TDS and boron occur near Knights Landing. High nitrates occur in Arbuckle, Knights Landing, and Willows. Localized areas have high manganese, fluoride, magnesium, sodium, iron, ASAR, chloride, TDS, ammonia, and phosphorus.

### Countywide Groundwater Infrastructure

According to DWR's 2013 Water Plan Update well completion reports, or well logs, submitted by licensed well drillers to the landowner, the local county department of environmental health, and DWR provide insight into well development from 1977 through 2010. Among other things, well logs commonly identify well location, construction details, borehole geology data, installation date, and type of well use.

Well drillers have been required by law to submit well logs to the State since 1949. California Water Code Section 13751 requires drillers who construct, alter, abandon, or destroy a well, to submit a well completion report (well log) to DWR within 60 days of the completed work. Confidentiality requirements

### 3.0 COMMUNITY SERVICES AND UTILITIES

(California Water Code Section 13752) limit access to the well logs to governmental agencies conducting studies, to the owner of the well, and to persons performing environmental cleanup studies.

Well logs submitted to DWR for wells completed from 1977 to 2010 were used to evaluate the distribution and the uses of groundwater wells in the region<sup>1</sup>.

The number of wells in the Sacramento River region are grouped according to their location by county and according to the six most common well-use types: domestic, irrigation, public supply, industrial, monitoring, and other. Public supply wells include all wells identified on the well log as municipal or public. Wells identified as “other” include a combination of the less-common well types, such as stock wells, test wells, or unidentified wells (no information listed on the well log).

Well-log data listed in Table 3.1-1. As shown in the table, the number of wells installed within Glenn County between 1977 and 2010 is approximately 3,154. The top counties with the most domestic wells within the Sacramento Valley Groundwater Basin are, Shasta 9,252, Tehama 9,472, Butte 11,527, and Sacramento 13,155 wells.

Of the wells developed within Glenn County between 1777-2010 (for which Well Completion Reports have been filed), 1,784 are domestic, 845 are irrigation, 18 are Public Supply, 20 are Industrial, 322 are Monitoring, and 165 wells have unknown or other uses.

**TABLE 3.1-1: WELL LOGS BY USE GLENN COUNTY (1977-2010)**

COUNTY	TOTAL NUMBER OF WELL LOGS BY WELL USE						TOTAL WELL RECORDS
	DOMESTIC	IRRIGATION	PUBLIC SUPPLY	INDUSTRIAL	MONITORING	OTHER	
Glenn	1,784	845	18	20	322	165	3,154

*SOURCE DWR CALIFORNIA'S GROUNDWATER UPDATE 2013*

The Sacramento River region includes 11 planning areas. Table 3.1-2 lists the 2005-2010 average annual total water supply met by groundwater, by planning area and by type of use, and shows the quantity and the percentage of groundwater contribution to the total water supply for the region.

Groundwater use by planning area within the Sacramento River Hydraulic region shows that two of the largest groundwater users in the region, the Butte-Sutter-Yuba Area and Colusa Basin, rely on about 1,007 Thousand Acre Feet (taf) of combined groundwater pumping to meet 21 and 25 percent, respectively, of their total water supply. In terms of volume, the Butte-Sutter-Yuba PA applies 90 percent (508 taf) of the groundwater extracted toward agricultural purposes, while the Colusa Basin uses 96 percent (499 taf) of the groundwater extracted for agricultural purposes.

<sup>1</sup> DWR does not have well logs for all of the wells completed in the region; for some well logs, information regarding well location or use is inaccurate, incomplete, ambiguous, or missing. For these reasons, some well logs could not be used in DWR's evaluation.



**TABLE 3.1-2: PERCENTAGE OF AVERAGE ANNUAL TOTAL WATER SUPPLY MET BY GROUNDWATER - SACRAMENTO RIVER HYDROLOGIC REGION - COLUSA BASIN (2005-2010)**

SACRAMENTO RIVER HYDROLOGIC REGION	AGRICULTURE USE MET BY GROUNDWATER		URBAN USE MET BY GROUNDWATER		MANAGED WETLANDS USE MET BY GROUNDWATER		HYDROLOGIC REGION WATER USE MET WITH GROUNDWATER	
	TAF OF GROUND WATER USED	% OF TOTAL WATER USE*	TAF OF GROUND WATER USED	% OF TOTAL WATER USE*	TAF OF GROUND WATER USED	% OF TOTAL WATER USE*	TAF OF GROUND WATER USED	% OF TOTAL WATER USE*
Shasta - Pit	83.2	25%	11.3	67%	0.0	0%	94.5	26%
Upper Northwest	3.3	35%	0.4	62%	0.0	0%	3.7	37%
Lower Northwest	238.4	51%	47.9	79%	0.0	0%	286.3	55%
Northeast Valley	175.3	57%	41.5	51%	0.0	0%	216.8	56%
Southwest	42.1	81%	5.1	54%	0.0	0%	47.1	77%
Colusa Basin	498.7	26%	14.0	100%	9.2	6%	521.9	25%
Butte - Sutter - Yuba	508.3	21%	47.2	69%	10.9	4%	566.4	21%
Southeast	44.0	13%	23.3	20%	0.0	0%	67.3	15%
Central Basin West	473.0	57%	47.0	65%	0.0	0%	520.0	58%
Sacramento Delta	19.5	4%	4.6	15%	0.0	0%	24.2	4%
Central Basin East	208.5	47%	186.4	43%	0.0	0%	394.9	45%

Source DWR California's Groundwater Update 2013

Notes: \*Percent use is the percentage of the total water supply met by groundwater, by type of use where Total water use = groundwater + surface water + reuse.. taf = thousand acre.

As shown below in Table 3.1-3, within the geographical boundary of Glenn County average annual water use met by groundwater averaged 291.8 taf or approximately 27% of all water use, of which approximately 277.5 taf (95%) was for Agriculture uses.

**TABLE 3.1-3 AVERAGE ANNUAL TOTAL WATER SUPPLY MET BY GROUNDWATER - GLENN COUNTY (2005-2010)**

SACRAMENTO RIVER HYDROLOGIC REGION	AGRICULTURE USE MET BY GROUNDWATER		URBAN USE MET BY GROUNDWATER		MANAGED WETLANDS USE MET BY GROUNDWATER		COUNTYWIDE WATER USE MET WITH GROUNDWATER	
	TAF OF GROUND WATER USED	% OF TOTAL WATER USE*	TAF OF GROUND WATER USED	% OF TOTAL WATER USE*	TAF OF GROUND WATER USED	% OF TOTAL WATER USE*	TAF OF GROUND WATER USED	% OF TOTAL WATER USE*
Glenn	277.5	28%	11.0	100%	3.3	4%	291.8	27%

Source DWR California's Groundwater Update 2013

Notes: \*Percent use is the percentage of the total water supply met by groundwater, by type of use where Total water use = groundwater + surface water + reuse.. taf = thousand acre.

### DOMESTIC WATER SYSTEMS

#### **California Water Service Company (Cal Water) – Willows**

Cal Water is an investor-owned public utility supplying water service to 1.7 million Californians through 435,000 connections. Its 24 separate water systems serve 63 communities from Chico in the North to the Palos Verdes Peninsula in Southern California. California Water Service Group, Cal Water's parent company, is also serving communities in Washington, New Mexico and Hawaii.

Cal Water incorporated in 1926 and has provided water service to the Willows community since 1927. As described in the Districts 2015 Urban Water Management Plan the number of municipal connections in 2015 for the City of Willows was 2,371 service connections.

The City of Willows Water Department owns and operates a very small water system south of the District Cal Water boundary in the southernmost portion of Willows. Additionally, some of the parks within the City are currently served by City owned irrigation wells.

The Cal Water Willows District currently provides groundwater to the Willows service area. The District does not currently have surface water rights to support a conjunctive use. Water delivered by the District comes from local groundwater. The District operates seven groundwater wells, two storage tanks, and 36 miles of pipeline. Water districts are shown in Figure 3.1-2.

#### **Distribution of Services**

The Willows District does not provide water at wholesale. The Cal Water Willows District is an urban retail water supplier, as defined by CWC §10608.12. Cal Water distinguishes among six different customer groups based on the type of use including the following user types:

- Single Family Residential
- Multi-Family Residential
- Commercial
- Industrial
- Government
- Other

#### **Water Uses by Sector**

Actual water use in 2015 by customer category is shown in Table 3.1-4. Total system demand in 2015 was 1,044 AF. District water use in 2015 was strongly affected by the Drought Emergency Regulation adopted by the State Water Resources Control Board in May of 2015 (SWRCB Resolution No. 2015-0032). Among other things, the Drought Emergency Regulation mandated urban retail water suppliers reduce potable water use between June of 2015 and February of 2016 by percentage amounts specified by the State Water Resources Control Board. The Willows District was ordered to reduce potable water use by 28 percent over this period relative to use over the same period in 2013. Between June and December 2015, water use in Willows was 31.2 percent less than water use over the same period in 2013.

**TABLE 3.1-4: RETAIL: DEMANDS FOR POTABLE AND RAW WATER - ACTUAL**

USE TYPE	2015 ACTUAL LEVEL OF WATER DELIVERED VOLUME (AF)
Single Family	638
Multi-Family	73
Commercial	198
Industrial	0
Institutional/Governmental	61
Other	3
Losses	71
Total	1,044

SOURCE: CALIFORNIA WATER SERVICE 2015 URBAN WATER MANAGEMENT PLAN - WILLOWS DISTRICT

Residential customers which account for approximately 85 percent of service connections account for approximately 69 percent of total water deliveries in the Willows District, most of which (638 AF) is associated with single-family water use. Commercial uses in 2015 totaled 198 AF, and institutional/governmental uses accounted for approximately 61 AF. Additionally, 71 AF was attributed to system losses in 2015.

### Water Demands - Projected Potable and Raw Water Uses

Projected water demands in the CalWater-Willows service area by customer category through 2040 are shown in Table 3.1-5. Future demands are estimated as the product of future services and expected water use per service. Future services are based on historical growth rates in the District and planned development. Single- and multi-family residential services were projected in the UWMP in the near-term using existing development plans. For the longer-term, the historical growth rate for the last 10 and 5 years, respectively, were used. No growth in commercial or industrial services were assumed in the forecast. Institutional services are assumed to increase at a quarter percent annually. The projected average annual growth rate in services across all customer categories is approximately one percent. Projected water uses in Table 3.1-5 are predicated on unrestricted demands under normal weather conditions. Demands are assumed to partially rebound by 2020 from 2015 levels.

**TABLE 3.1-5 RETAIL: DEMANDS FOR POTABLE AND RAW WATER - PROJECTED**

USE TYPE	PROJECTED WATER USE (AF)				
	2020	2025	2030	2035	2040
Single Family	1,158	1,257	1,380	1,403	1,418
Multi-Family	139	159	162	166	168
Commercial	241	244	242	241	239
Industrial	0	0	0	0	0
Institutional/Governmental	117	122	123	125	126
Other	7	7	7	7	7
Losses	123	136	150	154	156
Total	1,785	1,924	2,064	2,096	2,115

SOURCE: CALIFORNIA WATER SERVICE 2015 URBAN WATER MANAGEMENT PLAN - WILLOWS DISTRICT

As described in the District's UWMP, the projected supply and demand totals match. As discussed above, groundwater will be used to serve all demand through 2040, and the reasonably available volume of groundwater supply is anticipated to match demands through 2040 in each water year. Water supply and demand patterns change during normal, single dry, and multi dry years. Cal Water has relied

## 3.0 COMMUNITY SERVICES AND UTILITIES

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on the demand modeling described to forecast demands for normal, single dry and multiple dry years. As described in the District's UWMP, it is assumed that Cal Water's groundwater supply for the Willows District will be able to serve those demands.

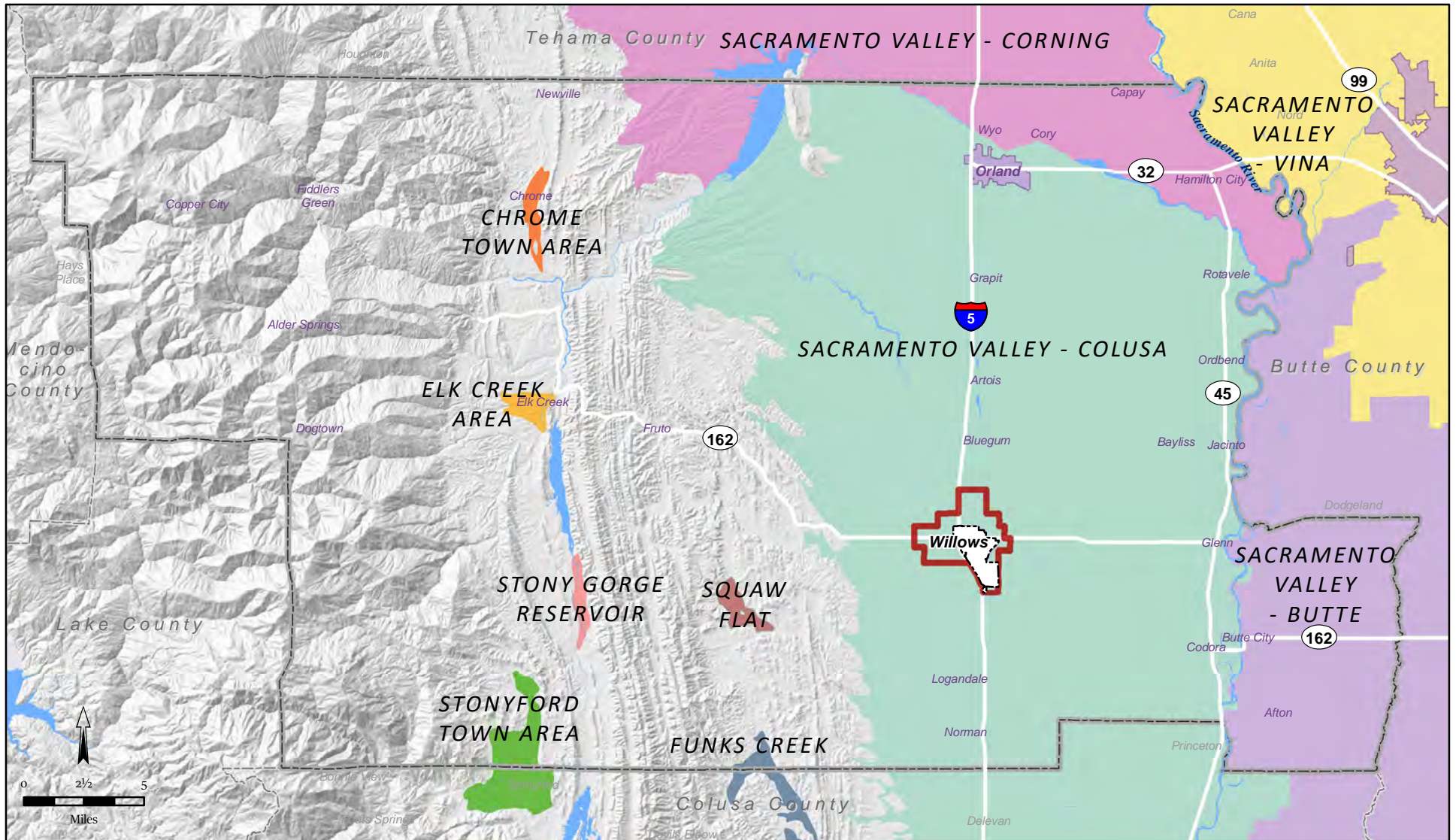
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Sources: DWR, CA\_Bulletin\_118\_Groundwater\_Basins. Map date: July 24, 2019. Revised: January 14, 2020.

**LEGEND**

City of Willows

Willows Sphere of Influence

**Groundwater Basins**

Chrome Town Area

Elk Creek Area

Funks Creek

Sacramento Valley - Butte

Sacramento Valley - Colusa

Sacramento Valley - Corning

Sacramento Valley - Vina

Squaw Flat

Stony Gorge Reservoir

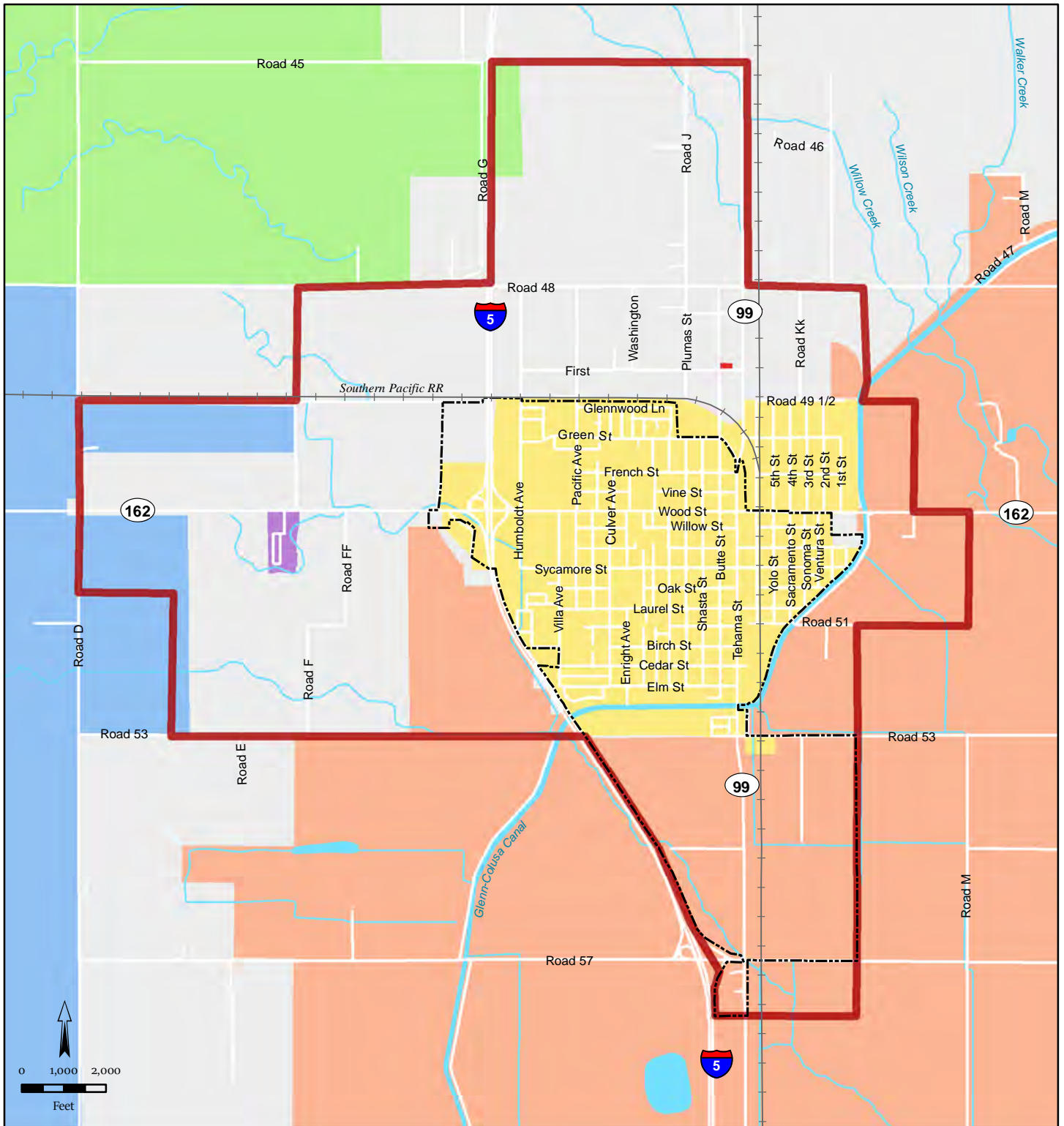
Stonyford Town Area

CITY OF WILLOWS

FIGURE 3.1-1. GROUNDWATER BASINS

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Sources: DWR 103 Water Districts, Groundwater & Regional Planning Office, South Central Regional Office, 8/3/2018. Map date: September 18, 2019. Revised: January 14, 2020.

LEGEND

- City of Willows
- Willows Sphere of Influence

Water Districts

- California Water Service Co - Willows
- Kanawha Water District
- Glenn - Colusa I.D.
- Voyles Trailer Park
- Glide Water District
- Willow Glenn Mobile Home Park

CITY OF WILLOWS  
FIGURE 3.1-2. WATER DISTRICTS

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## 3.2 WASTEWATER

Wastewater in Willows is served by a centralized wastewater disposal system that serves the city as well as the Northeast Willows area adjacent to the city within Glenn County.

### KEY TERMS

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**Effluent:** Effluent is an outflowing of water from a natural body of water, or from a man-made structure. Effluent in the man-made sense is generally considered to be water pollution, such as the outflow from a sewage treatment facility or the wastewater discharge from industrial facilities. In the context of waste water treatment plants, effluent that has been treated is sometimes called secondary effluent, or treated effluent.

**NPDES:** Water pollution degrades surface waters making them unsafe for drinking, fishing, swimming, and other activities. As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or man-made ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters.

**WWTP:** Wastewater treatment plant. Treatment of wastewater may include the following processes: screening to remove large waste items; grit removal to allow sand, gravel, and sediment to settle out; primary sedimentation where sludge can settle out of the wastewater; secondary treatment to substantially degrade the biological content of the sewage; tertiary treatment to raise the quality of the effluent before it is discharged; and, discharge.

### REGULATORY FRAMEWORK

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In California, all wastewater treatment and disposal systems fall under the overall regulatory authority of the State Water Resources Control Board (SWRCB) and the nine California Regional Water Quality Control Boards (RWQCBs), who are charged with the responsibility of protecting beneficial uses of State waters (ground and surface) from a variety of waste discharges, including wastewater from individual and municipal systems. Glenn County falls within the jurisdiction of the Central Valley RWQCB.

The RWQCB's regulatory role often involves the formation and implementation of basic water protection policies. These are reflected in the individual RWQCB's Basin Plan, generally in the form of guidelines, criteria and/or prohibitions related to the siting, design, construction, and maintenance of on-site sewage disposal systems. The SWRCB's role has historically been one of providing overall policy direction, organizational and technical assistance, and a communications link to the State legislature.

The RWQCBs may waive or delegate regulatory authority for on-site sewage disposal systems to Counties, Cities or special districts. Although not mandatory, it is commonly done and has proven to be administratively efficient. In some cases this is accomplished through a Memorandum of Understanding (MOU), whereby the local agency commits to enforcing the Basin Plan requirements or other specified standards that may be more restrictive. The RWQCBs generally elect to retain permitting authority over large and/or commercial or industrial on-site sewage disposal systems, depending on the volume and character of the wastewater. The established protocol for involvement of the RWQCB in permitting and review is established by a routine understanding between the City or County and the RWQCB.

### **Community Systems Regulation**

The RWQCB has direct oversight and permitting responsibility for large-flow systems of greater than 2,500 GPD and community systems, unless the RWQCB chooses to waive that authority and delegate their oversight on a case-by-case basis.

### **Individual On-site Sewage Disposal System Regulations**

Regulation of individual on-site sewage disposal systems occurs at a variety of levels, including by the SWRCB, through the Central Valley RWQCB, and locally the Willows Municipal Code, by the County Environmental Health Department.

Counties typically regulate onsite septic systems via their Environmental Health and/or Building or Planning Departments. In Glenn County and the City of Willows, septic systems are regulated by the Glenn County Department of Environmental Health. Local septic system ordinances often incorporate portions of the Uniform Plumbing Code and other specific requirements.

### **Regional Water Quality Control Board Basin Plan for the Central Valley**

The Central Valley RWQCB has adopted policies and requirements pertaining to on-site sewage disposal systems, commonly referred to as the Basin Plan.

The on-site sewage disposal systems element of the Basin Plan sets forth various objectives, guidelines, general principles and recommendations for the use of on-site sewage disposal systems that cover a variety of topics. Mandatory requirements for the siting and design of on-site sewage disposal systems are reflected in the Basin Plan. Included for all on-site sewage disposal systems are specific criteria related to separation distances to groundwater, setbacks to water features, soil conditions, percolation rates, special design systems, and leachfield replacement area.

### **Assembly Bill 885 (AB 885)**

AB 885 was passed by the California Legislature in September 2000, and mandates the establishment of statewide standards to regulate the placement and use of on-site wastewater treatment systems (OWTS). The SWRCB has been charged with developing this critical set of uniform statewide standards for on-site sewage disposal systems that are required to be incorporated into all RWQCB Basin Plans in the near future. For the past several years the SWRCB has been in the process of developing statewide regulations for on-site wastewater treatment systems per AB 885. The key aspects of the proposed regulations include:

**Site Evaluation Practices.** The proposed regulations will mandate more thorough and consistent soil and site evaluation practices for all new and repair/replacement OWTS for verification of soil depth and groundwater levels. Current practices focus primarily on attaining minimum horizontal setbacks and determination of groundwater separation, not on determination of soil texture, structure or depth. Proposed definitions for soil (especially rock content and weathered bedrock) will require more thorough and extensive soil profile evaluations and stricter interpretations of suitability than under current practices.

**Operation and Maintenance (O&M) Manuals.** The proposed AB 885 regulations require the preparation of an O&M manual for all new and repair/replacement OWTS. This will require that the County adopt regulations or policies mandating the preparation and submission of an O&M manual for all new and repair/replacement OWTS. The County will also have responsibilities for reviewing and maintaining official copies of these documents.

**Septic Tank Risers and Effluent Filters.** Access risers to “near” grade and the use of effluent filters will be required under the proposed regulations. These requirements will apply to new standard systems as well as supplemental treatment systems, and for any tank replacements.

**Supplemental Treatment Systems.** The proposed regulations have minimum vertical separation requirements that will lead to increased use of supplemental treatment systems. Minimum vertical separation is the depth of continuous unsaturated, undisturbed earthen material between the bottom of the dispersal system and the top of the seasonal high groundwater level, impermeable strata, or bedrock.

**Dispersal System Siting and Design Criteria.** The proposed dispersal system siting and design requirements are generally consistent with and/or less restrictive than the current RWQCB Basin Plan. Many of the requirements are structured to allow for more latitude in the use of supplemental treatment to overcome soil depth/suitability constraints for OWTS. Based on the soil definitions in the proposed regulations, there is likely to be an increased need to specify supplemental treatment systems and shallow dispersal designs (including mounds) for sites that may have been permitted for conventional trench designs under current practices.

**Groundwater Quality and Septic Tank Monitoring.** The proposed AB 885 regulations will mandate new groundwater sampling and septic tank inspections requirements for new and existing OWTS. The proposed regulations do not explicitly require the County to enforce this requirement or to collect and maintain any of the results from sampling that is performed. However, as the local agency responsible for implementing the regulations, at a minimum, the County would be obligated to provide some level of oversight for these activities, the details of which would likely have to be specified in the RWQCB MOU or the Conditional Waiver from the SWRCB.

**Record Keeping.** The proposed requirements specify only that system owners maintain copies of the Record Plan and the O&M Manual for the OWTS. The County, as the implementing authority will also be required to collect, review and maintain records of these same items.

### **Sewage Disposal Regulations Willows Municipal Code Title 13 Chapter 13.10.100**

Title 13 Chapter 13.10.100 of the Willows Municipal Code include the following requirements for the use of public sewers:

- (1) Disposal of Wastes. It shall be unlawful for any person to place, deposit, or permit to be deposited in an unsanitary manner upon public or private property within the city, or in any area under the jurisdiction of said city, any human or animal excrement, garbage, or other objectionable waste.
- (2) Treatment of Wastes Required. It shall be unlawful to discharge to any stream or watercourse any sewage, industrial wastes, or other polluted waters, except where suitable treatment has been provided in accordance with provisions of this chapter.
- (3) Unlawful Disposal. Except as herein provided, it shall be unlawful to construct or maintain any privy, privy vault, septic tank, cesspool, seepage pit or other facility intended or used for the disposal of sewage.
- (4) Occupancy Prohibited. No building, industrial facility, or other structure shall be occupied until the owner of the premises has complied with all rules and regulations of city and/or applicable regulations of the county.

## 3.0 COMMUNITY SERVICES AND UTILITIES

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(5) Sewer Required. The owner of any building situated within the city and abutting on any street in which there is now located or may in the future be located a public sewer of the city, is hereby required at his expense to connect said building directly with the proper public sewer in accordance with the provisions of this chapter, within 90 days after date of official notice to do so; provided, that said public sewer is within 200 feet of the nearest point of the property; provided, however, that where territory is annexed to the city upon which existing improvements are located which are served by a satisfactorily operating and maintained septic tank, the owner may continue to dispose of waste to said septic tank so long as it remains in operating condition to the satisfaction of the county health officer or until any additional building or buildings or any division of the property is proposed, at which time connection to the public sewer shall be required. [Ord. 639-93, 10-26-93. Prior code § 17-42].

### ENVIRONMENTAL SETTING

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On-site systems, commonly referred to as septic systems, are useful for handling the wastewater disposal needs of individual dwellings or commercial establishments for which connection to community facilities is not feasible. An on-site system consists of a septic tank that receives wastewater, allows the heavier solids to settle in the tank, and releases the remainder to an attached leach field. The leach field consists of underground perforated parallel lines through which water can seep into the surrounding soil. The solids which settled out of the wastewater in the septic tank must be periodically removed.

Septic tanks work well in areas of low density development where there is sufficient room to separate leach lines from potable water wells and lines. On-site systems are relatively inexpensive, easy to maintain, and contribute to water recharge in the area. However, on-site systems require certain soil conditions, topography, and water table conditions in order to work. If the proper conditions are not present, the leach field can become saturated and groundwater may become contaminated.

#### **City of Willows Wastewater Collection, Treatment, and Disposal**

The City of Willows operates and maintains the sewer system consisting of gravity sewers and pumping stations to collect wastewater from residential and commercial customers. The collected wastewater is discharged to trunk sewers and interceptors owned and operated by the City of Willows and conveyed to the Willows Wastewater Treatment Plant (WWTP) for treatment.

The WWTP is owned and operated by the City and serves the population of Willows and the Northeast Willows Community Services District. The WWTP produces disinfected tertiary recycled water through extended aerated ponds, clarifiers, filtration, chlorine disinfection and dechlorination. There are 2,255 residential connections and 222 commercial/industrial connections.

The City entered into an agreement with Solar Power Partner, LP (SPP) in 2013 to provide solar power at the City's Wastewater Treatment Plant. Under the agreement SPP provided solar array equipment and the City provided the underlying real property for the solar array. The City will purchase the power generated by the array for a period of 20 years from SPP, with an option to take ownership of the array at the end of the 20-year period.

According to the Sewer Master Plan of 2008, the wastewater collection system consists of 29 miles of Vitrified Clay Pipe (VCP) and some Polyvinyl Chloride Pipe (PVC) and Asbestos Cement sewer mains ranging in size from four inches to eighteen inches in diameter with five small-capacity pump stations.

Water entering the collection system through defective cleanouts, joints and pipes, and manhole walls can be attributed to groundwater, commercial/industrial uses and storm runoff. Limited efforts have

been completed to upgrade the system. Thus, infiltration and inflow (I&I) is becoming a problem to the system. Infiltration and inflow are significant in the piping tributaries to the Sycamore Lift Station according to the Sewer Master Plan

The original Wastewater Treatment Plant was constructed in 1948 and later upgraded in 1992. In 2007, the City of Willows completed a major upgrade to the wastewater treatment plant (WWTP) by increasing the treatment capability from secondary to tertiary quality effluent with a rated capacity of 1.2 mgd (million gallons per day). The treatment system includes influent screening, extended aeration (biolac system), activated sludge with two secondary clarifiers, nine continuous backwash sand filters, disinfection with sodium hypochlorite, dechlorination using sodium bisulfite injection, equalization and emergency storage ponds, and sludge storage lagoons. The WWTP currently has a daily dry weather average flow of approximately 0.650 million gallons per day (650,000 gallons per day) from all customers in Willows WWTP service area.

### Other Community Systems

**Northeast Willows CSD.** The community of Northeast Willows within the unincorporated county adjacent to the City of Willows, is served by community systems for wastewater disposal and treatment. The Northeast Willows Community Services District was formed in 1965 and provides for the collection, treatment or disposal of sewage from the district and its inhabitants. However, the District only provides directly for the collection of wastewater, and wastewater treatment is provided by the City of Willows under a Joint Powers Agreement. The City of Willows owns the wastewater collection system within the City and the treatment and disposal system that provides sewerage service to the Northeast Willows CSD. The City provides or can contract for all maintenance, including routine inspection, rodding, balling, flushing, plugging, and the making of minor repairs, excluding replacement and installation of lines and pipes, to the entire sewage collection system, main trunk sewers and facilities. In practice, the City of Willows contract staff provides collection and treatment, maintain and clean the system, and inspect any new connections or upgrades. The CSD includes 300 residential sewer service connections within its service area.

The Northeast CSD wastewater treatment facilities are located at 1600 S. Tehama Street, Willows. The wastewater treatment plant (WWTP) is governed by Waste Discharge Requirement Order No. R5-2006-0009 adopted by the California Regional Water Quality Control Board, Central Valley Region. The WDR Order regulates the discharge of wastewater from the Willows WWTP to Agricultural Drain C and Glenn-Colusa Irrigation District Lateral 26-2, both are tributaries to the Colusa Basin Drain.

There are no waste discharge specifications specifically for the Northeast Willows CSD because the wastewater collected is treated by the City of Willows. The CSD has an agreement with Willows for wastewater treatment at the WWTP for up to 96,000 gallons per day, and the CSD currently sends approximately 48,000 gallons per day to the WWTP. <sup>2</sup>

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<sup>2</sup> Phone Interview with Willows Community Services Director Steve Soeth 11/14/2019

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### 3.3 STORMWATER AND DRAINAGE

The City of Willows Public Works Division is responsible for operating, maintaining, and improving the City's drainage and stormwater infrastructure, and facilities. Key areas of responsibility include the maintaining and improvements to streets, sewer, and storm drains. The City currently does not have an adopted storm drain master plan. For additional information related to flooding see Chapter 4.0 (Hazards, Safety and Noise), Section 4.4 (Flood Hazards).

#### REGULATORY FRAMEWORK

##### *FEDERAL*

#### **Clean Water Act (CWA)**

The Clean Water Act (CWA) regulates the water quality of all discharges into waters of the United States including wetlands, perennial and intermittent stream channels. Section 401, Title 33, Section 1341 of the CWA sets forth water quality certification requirements for "any applicant applying for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters." Section 404, Title 33, Section 1344 of the CWA in part authorizes the U.S. Army Corps of Engineers to:

- Set requirements and standards pertaining to such discharges: subparagraph (e); Issue permits "for the discharge of dredged or fill material into the navigable waters at specified disposal sites": subparagraph (a);
- Specify the disposal sites for such permits: subparagraph (b);
- Deny or restrict the use of specified disposal sites if "the discharge of such materials into such area will have an unacceptable adverse effect on municipal water supplies and fishery areas": subparagraph (c);
- Specify type of and conditions for non-prohibited discharges: subparagraph (f);
- Provide for individual State or interstate compact administration of general permit programs: subparagraphs (g), (h), and (j);
- Withdraw approval of such State or interstate permit programs: subparagraph (i);
- Ensure public availability of permits and permit applications: subparagraph (o);
- Exempt certain Federal or State projects from regulation under this Section: subparagraph (r); and,
- Determine conditions and penalties for violation of permit conditions or limitations: subparagraph (s).
- Section 401 certification is required prior to final issuance of Section 404 permits from the U.S. Army Corps of Engineers.

The California State Water Resources Control Board and RWQCBs enforce State of California statutes that are equivalent to or more stringent than the Federal statutes. RWQCBs are responsible for establishing water quality standards and objectives that protect the beneficial uses of various waters

including the Sacramento River, and other waters in the Planning Area. In the Planning Area, the RWQCB is responsible for protecting surface and groundwater from both point and non-point sources of pollution. Water quality objectives for all of the water bodies within the Planning Area were established by the RWQCB and are listed in its Basin Plan.

### **Federal Emergency Management Agency (FEMA)**

Willows is a participant in the National Flood Insurance Program (NFIP), a Federal program administered by FEMA. Participants in the NFIP must satisfy certain mandated floodplain management criteria. The National Flood Insurance Act of 1968 has adopted as a desired level of protection, an expectation that developments should be protected from floodwater damage of the Intermediate Regional Flood (IRF). The IRF is defined as a flood that has an average frequency of occurrence on the order of once in 100 years, although such a flood may occur in any given year. Communities are occasionally audited by the Department of Water Resources to insure the proper implementation of FEMA floodplain management regulations.

### **National Pollutant Discharge Elimination System (NPDES)**

National Pollutant Discharge Elimination System (NPDES) permits are required for discharges to navigable waters of the United States, which includes any discharge to surface waters, including lakes, rivers, streams, bays, oceans, dry stream beds, wetlands, and storm sewers that are tributary to any surface water body. NPDES permits are issued under the Federal Clean Water Act, Title IV, Permits and Licenses, Section 402 (33 USC 466 et seq.).

The RWQCB issues these permits in lieu of direct issuance by the Environmental Protection Agency, subject to review and approval by the EPA Regional Administrator (EPA Region 9). The terms of these NPDES permits implement pertinent provisions of the Federal Clean Water Act and the Act's implementing regulations, including pre-treatment, sludge management, effluent limitations for specific industries, and anti-degradation. In general, the discharge of pollutants is to be eliminated or reduced as much as practicable so as to achieve the Clean Water Act's goal of "fishable and swimmable" navigable (surface) waters. Technically, all NPDES permits issued by the RWQCB are also Waste Discharge Requirements issued under the authority of the CWA.

These NPDES permits regulate discharges from publicly owned treatment works, industrial discharges, stormwater runoff, dewatering operations, and groundwater cleanup discharges. NPDES permits are issued for five years or less, and therefore must be updated regularly. To expedite the permit issuance process, the RWQCB has adopted several general NPDES permits, each of which regulates numerous discharges of similar types of wastes. The SWRCB has issued general permits for stormwater runoff from construction sites statewide. Stormwater discharges from industrial and construction activities can be covered under these general permits, which are administered jointly by the SWRCB and RWQCB.

### *STATE*

### **Department of Water Resources**

The Department of Water Resources' (DWR) major responsibilities include preparing and updating the California Water Plan to guide development and management of the State's water resources, planning, designing, constructing, operating, and maintaining the State Water Resources Development System, protecting and restoring the Sacramento-San Joaquin Delta, regulating dams, providing flood protection, assisting in emergency management to safeguard life and property, educating the public, and serving local water needs by providing technical assistance. In addition, the DWR cooperates with local agencies

on water resources investigations; supports watershed and river restoration programs; encourages water conservation; explores conjunctive use of ground and surface water; facilitates voluntary water transfers; and, when needed, operates a State drought water bank.

### **California Water Code**

California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Division 7 of the California Water Code) (Porter-Cologne Act). The Porter-Cologne Act grants the SWRCB and each of the RWQCBs power to protect water quality, and is the primary vehicle for implementation of California's responsibilities under the Federal Clean Water Act. The Porter-Cologne Act grants the SWRCB and the RWQCBs authority and responsibility to adopt plans and policies, to regulate discharges to surface and groundwater, to regulate waste disposal sites, and to require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substance, sewage, or oil or petroleum product.

Each RWQCB must formulate and adopt a Water Quality Control Plan (Basin Plan) for its region. The regional plans are to conform to the policies set forth in the Porter-Cologne Act and established by the SWRCB in its State water policy. The Porter-Cologne Act also provides that a RWQCB may include within its regional plan water discharge prohibitions applicable to particular conditions, areas, or types of waste.

### **Water Quality Control Plan (Basin Plan) for the Central Valley Region**

The Water Quality Control Plan for the Central Valley Region (Basin Plan) includes a summary of beneficial water uses, water quality objectives needed to protect the identified beneficial uses, and implementation measures. The Basin Plan establishes water quality standards for all the ground and surface waters of the region. The term "water quality standards," as used in the Federal Clean Water Act, includes both the beneficial uses of specific water bodies and the levels of quality that must be met and maintained to protect those uses. The Basin Plan includes an implementation plan describing the actions by the RWQCB and others that are necessary to achieve and maintain the water quality standards.

The RWQCB regulates waste discharges to minimize and control their effects on the quality of the region's ground and surface water. Permits are issued under a number of programs and authorities. The terms and conditions of these discharge permits are enforced through a variety of technical, administrative, and legal means. Water quality problems in the region are listed in the Basin Plan, along with the causes, where they are known. For water bodies with quality below the levels necessary to allow all the beneficial uses of the water to be met, plans for improving water quality are included. The Basin Plan reflects, incorporates, and implements applicable portions of a number of national and statewide water quality plans and policies, including the California Water Code and the Clean Water Act.

### **State Water Resources Control Board (State Water Board) Storm Water Strategy**

The Storm Water Strategy is founded on the results of the Storm Water Strategic Initiative, which served to direct the State Water Board's role in storm water resources management and evolve the Storm Water Program by a) developing guiding principles to serve as the foundation of the storm water program, b) identifying issues that support or inhibit the program from aligning with the guiding principles, and c) proposing and prioritizing projects that the Water Boards could implement to address those issues. The State Water Board staff created a strategy-based document called the Strategy to

## 3.0 COMMUNITY SERVICES AND UTILITIES

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Optimize Management of Storm Water (STORMS). STORMS includes a program vision, missions, goals, objectives, projects, timelines, and consideration of the most effective integration of project outcomes into the Water Board's Storm Water Program.

### ENVIRONMENTAL SETTING

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The City of Willows Public Works Division is responsible for operating, maintaining, and improving the City's drainage and stormwater infrastructure, and facilities. Key areas of responsibility include the maintaining and improvements to streets, sewer, and storm drains. The City currently does not have an adopted storm drain master plan.

#### **Regional Flood Control**

**North Willows County Service Area (formerly Storm Drain Maintenance District #2) Storm Drain Maintenance Districts.** North Willows County Service Area provides service to an area northeast of Willows. This CSA, which is administered by the County Public Works Department, maintains natural drains and a pipeline system with a pump. The CSA has three long-range plans under consideration:

- Diversion of some drainage west of I-5.
- Development of standby power for the pumps.

**Central Valley Flood Protection Plan (2012/2017 Update).** The Central Valley Flood Protection Plan (CVFPP) was adopted by the Central Valley Flood Protection Board in 2012 and updated in 2017. The CVFPP is a guide to managing flood risk in the Central Valley and it will be updated every five years. The goal of the CVFPP is to improve flood risk management with the following supporting goals:

- Improve operations and maintenance
- Promote ecosystem functions
- Improve institutional support
- Promote multi-benefit projects

Flood infrastructure is to be planned and managed centrally, but O&M, flood response, and infrastructure implementation can be implemented either regionally or locally. The CVFPP promotes regional governance via local consolidation and collaboration among partnering agencies.

**Reclamation Districts.** Reclamation districts are governed by a board of trustees that are appointed by the County Board of Supervisors or are elected directly from the populations they serve (§50650). The board of trustees can consist of three, five or seven members and have the power to do all things necessary or convenient for accomplishing the purposes for which the reclamation district was formed (50900). The owners of the majority of acreage in the district may vote to adopt governing bylaws (§50370). A district may, by resolution of the board, provide a procedure for the collection charges and fees, by way of the tax bills of the county or counties in which such district is located (§50904).

There four reclamation districts in Glenn County, which are:

- Reclamation District No. 2047
- Reclamation District No. 2106

- Reclamation District No. 2140
- Reclamation District No. 1004

Reclamation District No. 2106 is a multicounty district, extending into Butte County. The District is approximately 49,549 acres in size, with approximately 35,507 acres located in Glenn County and approximately 14,402 acres located in Butte County. The District consists of approximately 439 parcels, 408 of which are found in Glenn County and 31 of which are located in Butte County. The Glenn Local Agency Formation Commission is the principal county LAFCo for Reclamation District No. 2106 as the majority of the parcels, along with the majority of the land value, lies within Glenn County.

Reclamation Districts 1004 and 2047 are also multicounty districts. Only a small portion of Reclamation District No. 1004, consisting of six parcels, totaling approximately 468 acres in area, is located within Glenn County. The remaining portion of Reclamation District No. 1004 is within Colusa County. As the majority of the assessed land value of Reclamation District No. 1004 is within Colusa County, the Colusa Local Agency Formation Commission is the principal county LAFCo for this District. As the principal county LAFCo, Colusa LAFCo is the agency that would act on annexations, detachments, SOI modifications and SOI Plans, and municipal services reviews for Reclamation District No. 1004. Likewise, a large portion of Reclamation District No. 2047, consisting of approximately 1,569 parcels totaling approximately 95,605 acres in size, is located within Glenn County. Even though a large portion of Reclamation District No. 2047 is within Glenn County, Colusa LAFCo is the principal county LAFCo for this district.

**Levee Districts.** Levee districts are governed by a three-member board of directors that are appointed by the County Board of Supervisors or are elected directly from the populations they serve. Levee districts may acquire by purchase, condemnation, gift or other action, drains, canals, sluices, bulkheads, watergates, levees, embankments, pumping plants and pipelines and to purchase, construct or otherwise acquire, maintain and keep in repair all things reasonable or convenient for the protection of the lands of the district from overflow and for the purpose of conserving or adding water to the sloughs and drains in the district. The district may co-operate and contract with the United States, the State of California, or any department or agency of either, in order to accomplish any of the purposes of the district.

There are three levee districts in Glenn County, which are:

- Levee District No. 1
- Levee District No. 2
- Levee District No. 3

**Levee District No. 1** is located north and south of the unincorporated community of Glenn along the west side of the Sacramento River. The District consists of approximately 207 parcels and totals approximately 9,630 acres in size. The predominant land use within the District boundaries is agricultural, along with some agricultural processing facilities and scattered residential uses. The majority of the district is zoned for agricultural uses. The District has an estimated population of 300. The District is responsible for maintenance of the levee located on the west side of the Sacramento River, from the north border of Levee District No. 2 northwards for approximately 12 miles.

## 3.0 COMMUNITY SERVICES AND UTILITIES

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**Levee District No. 2** is located in the Four Corners area of southeast Glenn County, along the west side of the Sacramento River. The District consists of approximately 130 parcels and totals approximately 5,620 acres in size. The predominant land use within the District boundaries is agricultural, along with some agricultural processing facilities and scattered residential uses. The majority of the district is zoned for agricultural uses. The District has an estimated population of 115. The District is responsible for maintenance of the levee located on the west side of the Sacramento River, from the Colusa County border northwards for approximately 4.9 miles.

**Levee District No. 3** is located in the southeast Glenn County area, east of the Sacramento River, and includes the unincorporated community of Butte City. The District consists of approximately 247 parcels and totals approximately 12,820 acres in size. The predominant land use within the District boundaries is agricultural, along with some agricultural processing facilities. The unincorporated community of Butte City, which is developed with approximately 40 dwellings, is located within the District. The majority of the district is zoned for agricultural uses, although the Butte City area is zoned for single-family residential uses. The District has an estimated population of 115. The District is responsible for maintenance of the levee located on the east side of the Sacramento River, from the Colusa County border northwards for a distance of approximately 12 miles.

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## 3.4 SOLID WASTE

Waste Management, a private garbage collection company, provides residential (single family and multi-family) and commercial garbage, recycling, and green waste collection services within the city limits.

### REGULATORY FRAMEWORK

#### *FEDERAL*

#### **Resource Conservation and Recovery Act**

The Resource Conservation and Recovery Act (RCRA) was enacted in 1976 to address the huge volumes of municipal and industrial solid waste generated nationwide. After several amendments, the current Act governs the management of solid and hazardous waste and underground storage tanks (USTs). RCRA was an amendment to the Solid Waste Disposal Act of 1965. RCRA has been amended several times, most significantly by the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA is a combination of the first solid waste statutes and all subsequent amendments. RCRA authorizes the Environmental Protection Agency (EPA) to regulate waste management activities. RCRA authorizes states to develop and enforce their own waste management programs, in lieu of the Federal program, if a state's waste management program is substantially equivalent to, consistent with, and no less stringent than the Federal program.

#### *STATE*

#### **California Integrated Waste Management Act (AB 939 and SB 1322)**

The California Integrated Waste Management Act of 1989 (AB 939 and SB 1322) requires every city and county in the state to prepare a Source Reduction and Recycling Element to its Solid Waste Management Plan that identifies how each jurisdiction will meet the mandatory state waste diversion goals of 25% by 1995 and 50% by 2000. The purpose of AB 939 and SB 1322 is to “reduce, recycle, and re-use solid waste generated in the state to the maximum extent feasible.” The term “integrated waste management” refers to the use of a variety of waste management practices to safely and effectively handle the municipal solid waste stream with the least adverse impact on human health and the environment. The Act has established a waste management hierarchy, as follows: Source Reduction; Recycling; Composting; Transformation; and Disposal.

#### **California Integrated Waste Management Board Model Ordinance**

Subsequent to the Integrated Waste Management Act, additional legislation was passed to assist local jurisdictions in accomplishing the goals of AB 939. The California Solid Waste Re-use and Recycling Access Act of 1991 (§42900-42911 of the Public Resources Code) directs the California Integrated Waste Management Board (CIWMB) to draft a “model ordinance” relating to adequate areas for collecting and loading recyclable materials in development projects. The model ordinance requires that any new development project, for which an application is submitted on or after September 1, 1994, include “adequate, accessible, and convenient areas for collecting and loading recyclable materials.” For subdivisions of single family detached homes, recycling areas are required to serve only the needs of the homes within that subdivision.

### **California's Mandatory Commercial Recycling Law (AB 341)**

Assembly Bill (AB) 341 directed CalRecycle to develop and adopt regulations for mandatory commercial recycling. CalRecycle initiated formal rulemaking with a 45-day comment period beginning Oct. 28, 2011. The final regulation was approved by the Office of Administrative Law on May 7, 2012. The purpose of AB 341 is to reduce GHG emissions by diverting commercial solid waste to recycling efforts and to expand the opportunity for additional recycling services and recycling manufacturing facilities in California.

Beginning on July 1, 2012, businesses have been required to recycle, and each jurisdiction has implemented programs that include education, outreach, and monitoring. Jurisdictions were required to start reporting on their 2012 Electronic Annual Report (due Aug. 1, 2013) on their initial education, outreach, and monitoring efforts, and, if applicable, on any enforcement activities or exemptions implemented by the jurisdiction.

In addition to Mandatory Commercial Recycling, AB 341 sets a *statewide* goal for 75 percent disposal reduction by the year 2020. This is not written as a 75 percent diversion mandate for each jurisdiction. The 50 percent disposal reduction mandate still stands for cities, counties, and State agencies (including community colleges) under AB 939. CalRecycle continues to evaluate program implementation as it has in the past through the Annual Report review process for entities subject to either AB 939.

#### *LOCAL*

### **Willows Municipal Code, Chapter 8.05: Garbage, Rubbish and Weeds**

Section 8.05 of the Willows Municipal Code provides rules and regulations regarding garbage collection and disposal. It includes general provisions, such as the unlawful accumulations of garbage and burying garbage (Article I), collection and transportation of garbage (Article II), weeds and rubbish removal (Article III), waste disposal sites (Article IV) and a description of fees and other requirements.

### **WASTE COLLECTION SERVICES**

The City of Willows has a contract with Waste Management to collect solid waste, recycling, and green waste from the residential and commercial sector. Waste Management is a private garbage collection company, provides residential (single family and multi-family) and commercial garbage, recycling, and green waste collection services within the city limits. The company's network includes 346 transfer stations 293 active landfill disposal sites, 146 recycling plants, 111 beneficial-use landfill gas projects and six independent power production plants. Waste Management offers environmental services to nearly 21 million residential, industrial, municipal and commercial customers in 48 United States, Canada, and Puerto Rico. With 26,000 collection and transfer vehicles, the company has the largest trucking fleet in the waste industry. Together with its competitor Republic Services, Inc, the two handle more than half of all garbage collection in the United States. With nearly 26,000 collection and transfer vehicles, Waste Management operates the largest trucking fleet in the waste industry, collecting over 80 million tons of solid waste each year. The company serves more than 20 million customers, offering a wide range of services, from picking up household trash at a single-subscription residence to providing comprehensive waste programs for large national customers with hundreds of locations. Refuse, recycling, and green waste bins are picked up once per week in the City of Willows.

The City of Willows has a three (3) cart system for the collection of garbage, recycling and green waste. The three-cart system was established to enable residents to assist in reducing the amount of waste that is dumped in landfills. Recycling service is provided for newspapers, cardboard (including cereal boxes,



soda boxes, etc.), glass bottles and jars, aluminum, tin, steel, plastic containers, and all junk mail and phone books.

## WASTE DISPOSAL FACILITIES

The vast majority of landfill disposal from the City of goes to the Glenn County Landfill, owned and operated by the Glenn County Waste & Recycling Department.

### Glenn County Landfill & Transfer Station

Glenn County owns and operates the 195+ acre Glenn County Landfill Site, located on County Road 33, west of Artois. It is a Class III landfill (a facility at which protection is provided to water quality from municipal, industrial and agricultural wastes) with a maximum permitted capacity of 2,400,000 cubic yards. This site receives agricultural waste, construction and demolition waste, dead animal, industrial, inert, mixed municipal waste, and tires.

The Glenn County Landfill Site is permitted to accept 1,400 tons of solid waste per week, not to exceed 200 tons per day. The average daily disposal is approximately 64 tons per day. The allotted disposal area is 83 acres, and it is designed to hold 2,400,000 cubic yards of inert or designated wastes. The maximum depth of the landfill is 192 feet below mean sea level and the permitted height is no greater than 342 feet above mean sea level. The remaining capacity is 866,521 cubic yards, which is expected to be capped and closed by 2020. Currently, Glenn County is proposing to develop a new Glenn County Solid Waste Conversion Facility (GCSWCF). The Project would include the construction and operation of a municipal solid waste, materials recovery facility, transfer station, and anaerobic digestion facility. These facilities and associated facilities, equipment and operations would be used to manage municipal solid waste from Glenn County (including Willows) and potentially from the City of Chico.

**TABLE 3.4-1: LANDFILLS EXISTING DAILY CAPACITY AND ESTIMATES CLOSURE DATE**

Landfill	Location	Maximum Daily Throughput (Tons/Day)	Remaining Capacity (Cubic Yards)	Anticipated Closure Date
Glenn County Landfill	Artois	200	866,521	2020

SOURCE: CAL RECYCLE. ACCESSED JUNE 2019.

## SOLID WASTE GENERATION RATES AND VOLUMES

The California Department of Resources Recycling and Recovery (CalRecycle) tracks and monitors solid waste generation rates on a per capita basis. Per capita solid waste generation rates and total annual solid waste disposal volumes for Glenn County between 2014 and 2018 are shown in Table 3.4-2 below.

### 3.0 COMMUNITY SERVICES AND UTILITIES

**TABLE 3.4-2: SOLID WASTE GENERATION RATES IN GLENN COUNTY**

YEAR	WASTE GENERATION RATES (POUNDS/PERSON/DAY)		TOTAL DISPOSAL TONNAGE (TONS/YEAR)
	PER RESIDENT	PER EMPLOYEE	
2014	3.9	28,465	20,236
2015	3.8	28,530	20,038
2016	4.2	28,604	21,758
2017	3.8	28,694	20,046
2018	4.4	28,762	23,232

SOURCE: [HTTP://WWW.CALRECYCLE.CA.GOV/LGCENTRAL/REPORTS/JURISDICTION/REVIEWREPORTS.ASPX](http://www.calrecycle.ca.gov/LGCENTRAL/REPORTS/JURISDICTION/REVIEWREPORTS.ASPX)  
 ACCESSED JUNE 2019.

As shown in the Table 3.4-2 above, the per capita waste generation rate increased from 3.9 to 4.4 lbs/person/day over the 5 year (2014-2018) period, however, the total annual disposal tonnage in Glenn County increased by 2,996 tons over the 2014 to 2018 time span. With the passage of SB 1016, per capita disposal rate is used to determine the diversion progress of a county and not the jurisdictional diversion rates. Therefore, a population increase resulting in the generation of more overall county waste does not affect the jurisdiction’s ability to meet its waste goals. The County’s waste disposal rate targets are shown in Table 3.4-2.

As shown in the above table, for the years 2014 through 2018 (the latest year of data available), the per capita waste generation rate in Glenn County was at the lowest level in 2015; and the total annual disposal tonnage in Glenn County was at their lowest level (during this period) in 2015. Glenn County, partnered by the City of Willows, complied with State requirements to reduce the volume of solid waste through recycling and reuse of solid waste. Glenn County achieved the County’s per capita disposal target rates for 2018 of 4.8 and 19.4 pounds per person per day for residents and employees, respectively, as established by CalRecycle.

## 3.5 ELECTRICITY AND NATURAL GAS

The following discussion describes the electricity and natural gas services that are available to the City of Willows.

### REGULATORY FRAMEWORK

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#### *STATE*

#### **Public Utilities Commission**

The California Public Utilities Commission (PUC) is the primary State agency that regulates privately owned public utilities in California. These utilities include telecommunications, electricity, natural gas, water, railroad, rail transit, and passenger transportation companies. A primary role of the PUC is to authorize utility rate changes. It also establishes service standards and safety rules, monitors the safety of utility and transportation operations, prosecutes unlawful marketing and billing activities, and oversees the merger and restructure of utility corporations.

#### **Bioenergy Action Plan – Executive Order #S-06-06**

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

#### **Senate Bill 14 and Assembly Bill 64**

Prior to the passage of SB 14 and AB 64 in 2009, California law required investor-owned utilities (IOUs) and energy service providers (ESPs) to increase their existing purchases of renewable energy by 1% of sales per year such that 20% of their retail sales, as measured by usage, are procured from eligible renewable resources (including biomass cogeneration) by December 31, 2010. This is known as the Renewable Portfolio Standard (RPS).

SB 14 and AB 64 require IOUs, POUs, and ESPs to increase their purchases of renewable energy such that at least 33% of retail sales are procured from renewable energy resources by December 31, 2020. For IOUs and ESPs, this is required only if the PUC determines that achieving these targets will result in just and reasonable rates.

#### **Title 24**

Title 24, Part 6, of the California Code of Regulations is also known as California's Energy Efficiency Standards for Residential and Nonresidential Buildings. Title 24 was 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. The 2019 Energy Efficiency Standards went into effect on January 1, 2020. Title 24, Part 11, of the California Code of Regulations establishes the California Green Building Standards Code (CalGreen). Initially, the code requirements were voluntary; however, CalGreen became mandatory in 2011. CalGreen addresses five areas of green building: 1) planning and design, 2) energy efficiency, 3) water

### 3.0 COMMUNITY SERVICES AND UTILITIES

efficiency and conservation, 4) material conservation and resources efficiency, and 5) environmental quality. The mandatory requirements are separated into non-residential and residential projects. CalGreen also includes two optional tiers: Tier 1 and Tier 2. The tiers employ higher thresholds that jurisdictions may adopt or that projects may meet voluntarily.

#### EXISTING SETTING

Pacific Gas and Electric Company (PG&E) provides electrical and natural gas services to residences and businesses throughout the City of Willows. PG&E’s service area is over 70,000 square miles, located throughout northern and central California. PG&E maintains approximately 42,000 miles of natural gas distribution pipelines, 6,700 miles of gas transmission pipelines, and provides approximately 970 billion cubic feet of natural gas to its customers per year.

PG&E generates electric power from many sources, including renewable, coal, hydroelectric powerhouses, natural gas, and nuclear energy sources. The electricity power mix for PG&E in 2017 is shown in the second column of Table 3.5-3. In 2017, approximately 78 percent of the electricity PG&E delivered to its customers came from greenhouse gas-free energy sources, which includes eligible renewable, large hydroelectric, and nuclear energy sources. The third column of Table 3.5-3 shows the electricity power mix for the State of California as a whole. Approximately 53 percent of the electricity power mix for the State of California as a whole in 2017 was represented by eligible renewable energy sources and/or energy sources that do not directly generate greenhouse gases. As shown, PG&E generates a larger proportion of eligible renewable and greenhouse gas-free energy sources than the State of California as a whole.

**TABLE 3.5-3: PACIFIC GAS AND ELECTRIC – 2017 POWER CONTENT LABEL**

<i>ENERGY SOURCES</i>	<i>PG&amp;E POWER MIX</i>	<i>TOTAL CALIFORNIA POWER MIX**</i>
<b>Eligible Renewable</b>	<b>33%</b>	<b>29%</b>
Biomass & biowaste	4%	2%
Geothermal	5%	4%
Eligible hydroelectric	3%	3%
Solar	13%	10%
Wind	8%	10%
<b>Coal</b>	<b>0%</b>	<b>4%</b>
<b>Large Hydroelectric</b>	<b>18%</b>	<b>15%</b>
<b>Natural Gas</b>	<b>20%</b>	<b>34%</b>
<b>Nuclear</b>	<b>27%</b>	<b>9%</b>
<b>Other</b>	<b>0%</b>	<b>&lt;1%</b>
<b>Unspecified sources*</b>	<b>2%</b>	<b>9%</b>
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>

SOURCE: [HTTPS://WW2.ENERGY.CA.GOV/PCL/LABELS/2017\\_LABELS/PG\\_AND\\_E\\_2017\\_PCL.PDF](https://ww2.energy.ca.gov/pcl/labels/2017_labels/pg_and_e_2017_pcl.pdf)

\* "UNSPECIFIED SOURCES OF POWER" MEANS ELECTRICITY FROM TRANSACTIONS THAT ARE NOT TRACEABLE TO SPECIFIC GENERATION SOURCES.

\*\* PERCENTAGES ARE ESTIMATED ANNUALLY BY THE CALIFORNIA ENERGY COMMISSION BASED ON THE ELECTRICITY SOLD TO CALIFORNIA CONSUMERS DURING THE IDENTIFIED YEAR.

Infrastructure to deliver electricity and natural gas throughout the City of Willows is currently in place. PG&E can generally provide these services to new development on request.

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### 3.6 PUBLIC SAFETY SERVICES

This section addresses the provision of public safety services in the City of Willows, including fire protection, law enforcement, and other public safety services.

#### FIRE PROTECTION SERVICES

Fire protection services within the City of Willows is provided by the Willows Fire Department. The Willows Fire Department also provides fire protection services for the surrounding 84.7 square miles of rural area around Willows (in unincorporated Glenn County). The locations of the Willows Fire Department station in Willows is shown on Figure 3.8-1.

#### REGULATORY FRAMEWORK

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##### *STATE*

#### **California Occupational Safety and Health Administration**

In accordance with California Code of Regulations Title 8 Sections 1270 "Fire Prevention" and 6773 "Fire Protection and Fire Equipment" the California Occupational Safety and Health Administration (Cal/OSHA) has established minimum standards for fire suppression and emergency medical services. The standards include, but are not limited to, guidelines on the handling of highly combustible materials, fire hose sizing requirements, restrictions on the use of compressed air, access roads, and the testing, maintenance, and use of all firefighting and emergency medical equipment.

#### **Emergency Response/Evacuation Plans**

The State of California passed legislation authorizing the Office of Emergency Services (OES) to prepare a Standard Emergency Management System (SEMS) program, which sets forth measures by which a jurisdiction should handle emergency disasters. Non-compliance with SEMS could result in the State withholding disaster relief from the non-complying jurisdiction in the event of an emergency disaster.

#### **California Fire Protection Code**

The California Fire Code contains regulations relating to construction and maintenance of buildings and the use of premises. Topics addressed in the Code include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions to protect and assist first responders, industrial processes, and many other general and specialized fire safety requirements for new existing buildings and premises.

#### **Uniform Fire Code**

The Uniform Fire Code with the State of California Amendments contains regulations relating to construction, maintenance, and use of buildings. Topics addressed in the California Fire Code include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions intended to protect and assist fire responders, industrial processes, and many other general and specialized fire-safety requirements for

new and existing buildings and the surrounding premises. The Fire Code contains specialized technical regulations related to fire and life safety.

### **California Health and Safety Code**

State fire regulations are set forth in Sections 13000 et seq. of the California Health and Safety Code. This includes regulations for building standards (as also set forth in the California Building Code), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training.

### **NFPA 1710**

The NFPA 1710 Standards are applicable to urban areas and where staffing is comprised of career Firefighters. According to these guidelines, a career fire department needs to respond within six minutes, 90 percent of the time with a response time measured from the 911 call to the time of arrival of the first responder.

The standards are divided as follows:

- Dispatch time of one (1) minute or less for at least 90 percent of the alarms
- Turnout time of one (1) minute or less for EMS calls (80 seconds for fire and special operations response)
- Fire response travel time of four (4) minutes or less for the arrival of the first arriving engine company at a fire incident and eight (8) minutes or less travel time for the deployment of an initial full alarm assignment at a fire incident
- Eight (8) minutes or less travel time for the arrival of an advanced life support (ALS) (4 minutes or less if provided by the fire department)

### *LOCAL*

### **City of Willows Municipal Code**

The City of Willows Municipal Code has ordinances related to fire protection. These include Chapter 19.05 (Impact Fee Ordinance), which requires development impact fees to be charged to fund improvements to the City's infrastructure. Chapter 2.25 (Fire Department) describes the duties of the municipal fire department and the responsibilities of the fire chief in determining imminent health and safety hazards, and the powers associated with such a determination. Chapter 17.25 (Improvements) describes the requirements of a subdivider to provide and connect water mains and fire hydrants to the City's water system.

### **Glenn County Multi-Jurisdiction Hazard Mitigation Plan (MJHMP)**

The purpose of the Glenn County MJHMP Update is to provide the County and the Cities of Orland and Willows with a blueprint for hazard mitigation planning to better protect the people and property of the County and the Cities of Orland and Willows from the effects of future natural hazard events. The Glenn County MJHMP is the official statement of the County's and the Cities' of Orland and Willows commitment to ensuring a resilient community and serves as a tool to assist decision makers in directing mitigation activities and resources. The MJHMP was also developed to ensure the County and the Cities of Orland and Willows eligibility for federal disaster assistance, including Federal Emergency

## 3.0 COMMUNITY SERVICES AND UTILITIES

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Management Agency's (FEMA) Pre-Disaster Mitigation (PDM), Hazard Mitigation Grant Programs (HMGP), and Flood Mitigation Assistance Program (FMA). It also outlines certain responsibilities of the Willows Fire Department.

### FIRE PROTECTION SERVICES

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The Willows SOI is covered by two independent Fire Protection Districts, which run out of a single fire house. One being the Willows Rural Protection district, which has a population of approximately 3,000, and covers approximately 78 square miles in unincorporated Glenn County. The other being the Willows Fire Department, with a population of approximately 7,000 and approximately 2 square miles within city limits.

In 2016, the firefighters of the Willows Fire Department (WFD) responded to 1,073 incidents. As expected, medical emergency calls dominated the reported incidents; in the last year WFD responded to 970 emergency medical calls, 91% of the annual call volume. Though the 12 structure fire calls last year only represent 2% of the annual call volume, these types of incidents still constitute one of the greatest threats to both the community and personnel.

Along with fire and medical response, the WFD provides emergency dispatching services for nine rural fire jurisdictions. In 2016, the WFD dispatched an additional 357 emergency and nonemergency calls for service. The City of Willows has also renewed a dispatch contract with the US Forest Service.

Throughout the year, the WFD makes training one of its top priorities. The training mandate at Willows Fire is 10 hours per month per volunteer firefighter and 20 hours per month per career firefighter. There is a vast assortment of assigned Fire/Ems related topics and activities covered with all members:

- First Responder/Emergency Medical Technician Training
- First Responder-Haz Mat training
- Wildland training per National Wildfire Coordinating Group 310-1 standard
- Live Fire training
- Structural Firefighting
- Search and Rescue Drills
- Vehicle extrication and Stabilization
- Multi-Company Drills
- Engine Company Standards

The Fire Prevention Education Division also provides fire and life safety education to the community, a vital component of saving lives and property. WFD offers many programs for citizens, ranging in age from 2 to 90 years of age, including:

- Fire prevention week
- Child Safety Seat Program
- National Night Out
- Lamb Derby
- Drug Store Program
- Willows Volunteer Bean Feed
- Willows Pancake Breakfast
- Smoke Detector Program
- Demonstrations



- Station tours

## Existing Facilities and Services

### *WILLOWS FIRE DEPARTMENT*

Willows Fire Department provides fire suppression, hazard materials first responder, rescue and Basic life support services.

The Operations Division is responsible for the following:

- **Suppression-** Individual fire companies are specially trained to respond to residential fires, commercial fires, industry related incidents, wildland fires and vehicle extrications.
- **Emergency Medical Services-** Medical service is provided at a Basic Life Support function through trained Emergency Medical Technician (EMT) and First Responders. The department is non transport, with our primary transport Advanced Life Support (ALS) unit provided by Enloe Medical Center from Willows, and secondary transport by West Side Ambulance from Orland.

The Fire Prevention Division provides the following services:

- **Code Enforcement-** inspections of public and private properties for unabated hazardous and/or combustible fuels (including weeds) which would allow a fire to travel from property to property.
- **Inspections-** annual inspection per fire code on commercial occupancy, licensed daycare and adult care facilities-on site inspections of commercial tenant improvement and new construction.
- **Plan Review-** review of construction plans and specifications for compliance with local and state requirements.
- **Fire Investigation-** determining the origin and cause of fire and the investigations of fire related incidents. This function is divided among several members of Willows Fire department whom have had specialized training. These members are also part of the Glenn County Bomb and Arson Task Force.

The WFD employs 5 full time (career) personnel, 21 volunteer firefighters, 19 Auxiliary personnel, 6 firefighter interns, 12 warden members and 6 fire explorers. Daily staffing is 1 engineer and 2 firefighter interns, providing round-the-clock immediate service, 1 fire prevention officer and a fire chief who works Monday through Friday 8-5. The City of Willows Fire Department and the Willows Rural Fire Protection district are also supported by a volunteer force, who provide firefighting service for both the City and Rural Departments. Response times of the Willows Fire Department average 4 minutes per call.

Fire engine types are placed into category types that are used in the Incident Command System, and as a means of organizing multiagency resources through the National Interagency Fire Center. The City and the Rural District maintains a variety of fire apparatus and equipment in order to meet the public safety need of our service area that includes major highways and streets, undeveloped residential/commercial and wildland areas.

- **Willows Fire Department:** two type 1 engines, one quint aerial ladder and a staff vehicle.
- **Willows Rural Fire Protection District:** one type 1 engine, two type 3 engines, one water tender, a specialty trailer and a support vehicle.

## 3.0 COMMUNITY SERVICES AND UTILITIES

Other specialty trailers include:

- **Fire Prevention-** Owned by Glenn County Fire Chief's Association.
- **Aux Trailer-** Owned by the Willows Fire Department Auxiliary.
- **Arson and Bomb-** Owned by Glenn County Office of Emergency Services.

The Willows Fire Department Auxiliary provides firefighting rehabilitation service during major incidents, fire dispatching when needed, and fund raising for the department.

The WFD boundaries spread over about 78 square miles. The location of the existing WFD fire station is presented in Figure 3.8-1.

The WFD responds, not only to fires of all types, but also medical emergencies, traffic accidents, and river rescues. The WFD is an active member of the Glenn County Bomb and Arson team ran out of the Willows Fire station. All fires are investigated to determine their cause and origin (City of Willows, 2019).

Fire investigation is a vital function of the WFD fire service. Several members of the WFD have received specialized training in fire origin and cause determination (City of Willows, 2019).

### **WILLOWS RURAL FIRE PROTECTION DISTRICT**

The Willows Rural Fire Protection District includes the area around the City of Willows in unincorporated Glenn County; which has a population of approximately 3,000, and covers approximately 78 square miles. The Willows Rural Fire Protection District utilizes the Willows Fire Department station which is responsible for the emergency response activities for the City of Willows and surrounding communities. They offer a vast range of emergency services, public relations and fire safety education. The Fire District responds not only to fires of all types, but also medical emergencies, traffic accidents, and river rescues.

### **ISO Rating**

The Insurance Services Office (ISO) rating measures individual fire protection agencies against a national Fire Suppression Rating Schedule which includes such criteria as facilities and support for handling and dispatching fire alarms, first-alarm responses and initial attack, and adequacy of the local water supply for the fire suppression purposes. ISO ratings are on a scale of 1-10 with 1 being the highest rating. In 2013, ISO developed split classifications for some communities, which can represent the risk of loss more precisely. An example of a split classification system is 4/4X or 4/4Y. The first number refers to the classification of properties within 5 road miles of a fire station and within 1,000 feet of a creditable water supply. The second number, with either the X or Y designation, applies to properties within 5 road miles of a fire station but beyond 1,000 feet of a creditable water supply. ISO generally assigned Class 10 to properties beyond 5 road miles.

#### *WILLOWS FIRE DEPARTMENT*

According to the Willows Fire Department 2016 Annual Fire report, the ISO Public Classification Program rates the WFD as a community classification of 3 for the City of Willows- the lowest (best) in Glenn County.

#### *WILLOWS RURAL FIRE PROTECTION DISTRICT*

According to the Willows Fire Department 2016 Annual Fire report, the ISO Public Classification Program rates the Willows Rural Fire Protection District as a community classification of 6 for the District.

## LAW ENFORCEMENT SERVICES

Provided below is a discussion of the law enforcement services in the City of Willows.

### POLICE PROTECTION SERVICES

Law enforcement services in the City of Willows are provided through contract with the Glenn County Sheriff's Department. The Sheriff's Department also operates the County Jail, Dispatch, County Coroner and the County Office of Emergency Services (OES). The Glenn County Sheriff's office operates out of its headquarters located at 543 W. Oak Street, Willows and the jail is located adjacent at 141 S. Lassen Street, Willows. The Sheriff's Department also provides 24-hour dispatching services for the municipal police departments.

#### Organization

The Glenn County Sheriff's office is composed of three (3) divisions: Operations, Support Services, and Jail. The Sheriff and Undersheriff are responsible for the administration and oversight of the division commanders.

##### *OPERATIONS DIVISION*

The Operations Division consist of Uniformed Patrol and Special Operations, which includes Traffic, Boating Enforcement, Police Aides/Assistants, Civil Unit, Court Security Unit, and Animal Control Unit. The operations Division in commanded by a lieutenant, and there are currently 3 sergeants, 1 detective, 11 deputies, 2 county service officers, 1 bailiff, 1 service clerk, and 4 public service employees assigned to the division.

##### *SUPPORT SERVICES DIVISION*

The Support Services Division consist of the major crimes unit, narcotics unit (G1.N.T.F.), evidence and property management, internal affairs, emergency services, volunteer services, communications, records, and clerical. The Support Services Division is commanded by a lieutenant, and there are currently 1 Administrative Services Officer, 3 detectives, 2 deputies, 1 California Highway Patrol Officer, 4 emergency dispatchers, 3 services clerks, and 3 public service employees assigned to the division.

##### *JAIL DIVISION*

The Jail Division consist of the Glenn County Jail facility and transportation unit. The Jail Division is currently commanded by an acting lieutenant, and there are 1 correctional sergeant, 4 correctional corporals, 15 correctional officer, 1 food manager, 1 cook, 1 service clerk, 1 supervising secured facilities maintenance technician, and a contracted medical unit assigned to the division.

## CRIMES BY CATEGORY IN GLENN COUNTY

Because the City of Willows contracts law enforcement services through the Glenn County Sheriff's Office, statistics on the number of crimes by category of crime in Glenn County during the year 2017, as reported by the Federal Bureau of Investigation (FBI) Criminal Justice Information Services Division, are shown in Table 3.6-1 below.

## 3.0 COMMUNITY SERVICES AND UTILITIES

**TABLE 3.6-1: GLENN COUNTY SHERIFF'S OFFICE CRIME STATISTICS (2017)**

CATEGORY/CRIME	2017
<b>Total Violent Crimes</b>	<b>81</b>
Homicide	0
Rape	5
Robbery	6
Assault	70
<b>Total Property Crimes</b>	<b>235</b>
Burglary	100
Auto Theft	123
Larceny	12
Arson	2

SOURCE: FBI CRIME STATISTICS; [HTTPS://UCR.FBI.GOV/](https://ucr.fbi.gov/).

As shown in the table, the majority of crimes committed in Glenn County consist of property crimes, primarily motor vehicle theft. Additionally, in 2017, there were no homicides reported in Glenn County.

### MISCELLANEOUS PUBLIC SAFETY

#### MULTI-JURISDICTIONAL LOCAL GOVERNMENT EMERGENCY RESPONSE

The Glenn County Office of Emergency Services (OES) is the single coordinating center for major emergency activities. In cooperation with others, OES maintains and oversees the Multi-Jurisdiction Hazard Mitigation Plan, which is the Countywide disaster preparedness program. OES also provides training for first responders, businesses, and other governmental agencies.

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### 3.7 PARKS AND RECREATION

This section addresses the provision of parks and recreation amenities in the City of Willows. Parks and recreational facilities in the City of Willows are managed and maintained by the Recreation Department. The City of Willows Recreation Department website was the primary source of information for this section. Figure 3.8-1 identifies the City's parks.

#### REGULATORY FRAMEWORK

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##### *STATE*

##### **Quimby Act**

The Quimby Act (California Government Code Section 66477) states that “the legislative body of a city or county may, by ordinance, require the dedication of land or impose a requirement of the payment of fees in lieu thereof, or a combination of both, for park or recreational purposes as a condition to the approval of a tentative or parcel map.” Requirements of the Quimby Act apply only to the acquisition of new parkland and do not apply to the physical development of new park facilities or associated operations and maintenance costs. The Quimby Act seeks to preserve open space needed to develop parkland and recreational facilities; however, the actual development of parks and other recreational facilities is subject to discretionary approval and is evaluated on a case-by-case basis with new residential development. The City has adopted park fees as allowed by the Quimby Act, as described in greater detail below.

##### *LOCAL*

##### **City of Willows Municipal Code**

The Willows Municipal Code contains ordinances regulating park fees within the City of Willows. Chapter 19.05 provides for the City's Impact Fee Ordinance, which requires development impact fees to be charged to fund improvements to the City's infrastructure. Chapter 19.05.030 allows the City Council to authorize the adoption of fees for recreation programs and for the use of park facilities for non-city functions, and provides other provisions related to parks within the City of Willows.

#### TYPES OF PARKS

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**Community parks:** Community parks are generally 15 to 25 acres in size, and include areas for active sports as well as space for family and group activities, such as picnicking. Community parks are larger in size than neighborhood parks and serve to fulfill the active and passive recreational needs of multiple neighborhoods. The community park serves the needs of local neighborhoods by providing a close to home site for more active recreation that is not typically suitable or physically possible in a neighborhood park (i.e. formal sports fields and courts with night lighting). Community parks and sports parks are where most organized activities provided by the Parks and Recreation Department and various league sports are intended to occur.

**Neighborhood parks:** Neighborhood parks serve as the focal point of neighborhood communities, the hub for both physical and social activities in a recreational setting that should be primarily passive. Appropriately designed neighborhood parks act as “pulse points” within the city. They are spaces that develop a sense of place while at the same time evolve to reflect the neighborhood they represent. Neighborhood parks act as critical building blocks of the city's image and assist in developing an overall sense of community and security. They also serve as critical nodes and access points in the city-wide

green space network. Neighborhood parks are generally 5 to 7 acres. Amenities at neighborhood parks may include open multi-uses spaces, basketball, volleyball, bocce ball, and tennis courts, small picnic areas, playground equipment, restroom facilities, water play features, and barbeques.

**Special use parks:** The Special Use Parks allow for flexibility in providing recreational resources throughout the city-wide park space network. This classification is intended to accommodate special circumstances, unique site characteristics, etc. in park, trail, and recreation resources. These types of resources add diversity to the park network and accommodate a variety of non-traditional recreation amenities beyond the standard neighborhood, and community, park classifications.

## CITY PARKS

The City currently maintains four public facilities, managed by the City of Willows Recreation Department. The location of parks within the City is shown on Figure 3.8-1. Table 3.7-1 summarizes the City's parks and facilities.

**TABLE 3.7-1: SUMMARY OF PARKS & RECREATION DEPARTMENT PARKS AND FACILITIES**

PARK/FACILITY NAME	ADDRESS	FACILITY TYPE
Central Park	1150 West Laurel Street	Park
Jensen	380 Elm Street	Park
Sycamore Park	800 West Sycamore Street	Park
Willows Swimming Pool	815 Laurel Street	Park

SOURCE: CITY OF WILLOWS RECREATION, 2019

On a regional scale, there are currently four federal park facilities close to the City of Willows, including Mendocino National Forest and the Sacramento National Wildlife Refuge. The Forest offers a variety of recreational opportunities both in Glenn County and in adjacent counties, including camping, backpacking, boating, fishing, hunting, and off-highway vehicle use. There are two designated wildernesses: the 100,600 acre Yolla Bolly Middle Eel Wilderness, and the Snow Mountain Wilderness with approximately 37,200 acre.

The Sacramento National Wildlife Refuge is located south of the City of Willows adjacent to Interstate 5, of which approximately 8,555 acres located in Glenn County. The facility provides a wintering area for migratory waterfowl.

## REFERENCES

City of Willows Recreation Department, 2019.

<<https://willowsca.myrec.com/info/facilities/default.aspx>>

### 3.8 SCHOOLS, LIBRARIES AND OTHER COMMUNITY FACILITIES

This section addresses the provision of schools, libraries, and other community facilities in the City of Willows. Data from the California Department of Education and the City of Willows were the primary sources of information for this section. Figure 3.8-1 provides the location of the City's public schools and library.

#### REGULATORY FRAMEWORK

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##### *STATE*

#### **California Code of Regulations**

The California Code of Regulations, Title 5 Education Code, governs all aspects of education within the State.

#### **Leroy F. Greene School Facilities Act of 1998 (SB 50)**

The "Leroy F. Greene School Facilities Act of 1998," also known as Senate Bill No. 50 or SB 50 (Chapter 407, Statutes of 1998), governs a school district's authority to levy school impact fees. This comprehensive legislation, together with the \$9.2 billion education bond act approved by the voters in November 1998 known as "Proposition 1A," reformed methods of school construction financing in California. SB 50 instituted a new school facility program by which school districts can apply for State construction and modernization funds. It imposed limitations on the power of cities and counties to require mitigation of school facilities impacts as a condition of approving new development and provided the authority for school districts to levy fees at three different levels:

- Level I fees are the current statutory fees allowed under Education Code 17620. This code section provides the basic authority for school districts to levy a fee against residential and commercial construction for the purpose of funding school construction or reconstruction of facilities. These fees vary by district for residential construction and commercial construction and are increased biannually.
- Level II fees are outlined in Government Code Section 65995.5, allowing school districts to impose a higher fee on residential construction if certain conditions are met. These conditions include having a substantial percentage of students on multi-track year-round scheduling, having an assumed debt equal to 15–30% of the district's bonding capacity (percentage is based on revenue sources for repayment), having at least 20% of the district's teaching stations housed in relocatable classrooms, and having placed a local bond on the ballot in the past four years which received at least 50% plus one of the votes cast. A Facility Needs Assessment must demonstrate the need for new school facilities for unhoused pupils is attributable to projected enrollment growth from the construction of new residential units over the next five years.
- Level III fees are outlined in Government Code Section 65995.7. If State funding becomes unavailable, this code section authorizes a school district that has been approved to collect Level II fees to collect a higher fee on residential construction. This fee is equal to twice the amount of Level II fees. However, if a district eventually receives State funding, this excess fee may be reimbursed to the developers or subtracted from the amount of State funding.



### **The Kindergarten-University Public Education Facilities Bond Act of 2002 (Prop 47)**

This act was approved by California voters in November 2002 and provides for a bond issue of \$13.05 billion to fund necessary education facilities to relieve overcrowding and to repair older schools. Funds will be targeted at areas of greatest need and must be spent according to strict accountability measures. Funds will also be used to upgrade and build new classrooms in the California Community Colleges, the California State University, and the University of California in order to provide adequate higher education facilities to accommodate growing student enrollment.

### **California Department of Education**

The California Department of Education (CDE) School Facilities Planning Division (SFPD) prepared a School Site Selection and Approval Guide that provides criteria for locating appropriate school sites in the State of California. School site and size recommendations were changed by the CDE in 2000 to reflect various changes in educational conditions, such as lowering of class sizes and use of advanced technology. The expanded use of school buildings and grounds for community and agency joint use and concern for the safety of the students and staff members also influenced the modification of the CDE recommendations.

Specific recommendations for school size are provided in the School Site Analysis and Development Guide. This document suggests a ratio of 1:2 between buildings and land. CDE is aware that in a number of cases, primarily in urban settings, smaller sites cannot accommodate this ratio. In such cases, the SFPD may approve an amount of acreage less than the recommended gross site size and building-to-ground ratio.

Certain health and safety requirements for school site selection are governed by State regulations and the policies of the SFPD relating to:

- Proximity to airports, high-voltage power transmission lines, railroads, and major roadways;
- Presence of toxic and hazardous substances;
- Hazardous facilities and hazardous air emissions within one-quarter mile;
- Proximity to high-pressure natural gas lines, propane storage facilities, gasoline lines, pressurized sewer lines, or high-pressure water pipelines;
- Noise;
- Results of geological studies or soil analyses; and
- Traffic and school bus safety issues.

#### *LOCAL*

### **City of Willows Municipal Code**

The City of Willows Municipal Code contains ordinances that relates to schools, libraries, and other public facilities. Chapter 19.05 provides for the City's Impact Fee Ordinance, which requires development impact fees to be charged to fund improvements to the City's infrastructure. Chapter 2.70, Library, provides for the establishment of the public library, board of trustees, functions of the board and library fund.

## 3.0 COMMUNITY SERVICES AND UTILITIES

### SCHOOLS

Most schools within the City of Willows are part of the Willows Unified School District (MUSD). The WUSD provides school services for grades kindergarten through 12 (K-12) within the City of Willows. Within the City of Willows, there is an elementary school (Murdock Elementary), one middle school (Willows Intermediate School) and two high schools (Willows High School and Willows Community High School). Willows has one charter elementary school (Walden Academy), located within the Glenn County Office of Education School District. Table 3.8-1 lists schools in Willows and the most recent enrollment for each school.

As shown in Table 3.8-1, the schools in the City had a total enrollment of approximately 1,648 students, of which 1,167 were enrolled in elementary and middle school (grades K – 8) and 481 were enrolled in high school (grades 9 – 12).

District-wide, WUSD Schools had a total enrollment of 1,465 students for the 2018-2019 school year.

**TABLE 3.8-1: PUBLIC SCHOOLS SERVING WILLOWS**

SCHOOL	GRADES SERVED	ADDRESS	ENROLLMENT 2018-2019 SCHOOL YEAR
Murdock Elementary	K-5	655 French Street	619
Walden Academy	K-8	1149 West Wood Street	183
Willows Intermediate School	6-8	1145 West Cedar Street	365
<b>Total</b>			<b>1,167</b>
Willows High School	9-12	203 North Murdock Avenue	466
Willows Community High School	10-12	823 West Laurel Street	15
<b>Total</b>			<b>481</b>

SOURCES: CALIFORNIA DEPARTMENT OF EDUCATION EDUCATIONAL DEMOGRAPHICS UNIT ENROLLMENT FOR 2018-19

### WILLOWS LIBRARY SERVICES

The Willows Public Library is located at 201 North Lassen Street. The Willows Public Library offers computer workstations for Internet and word processing use, a ready reference collection, and a circulating collection of popular materials in English and Spanish. Items include books, magazines, audiobooks, large print books, DVDs, and music CDs. In addition to the main library in Willows, there are branches in Bayliss and Elk Creek that serve the surrounding community. The Willows Public Library is open Tuesday through Thursday, from 11:00 to 7:00 PM, and Friday and Saturday from 11:00 to 5:00 PM.

### HEALTH CARE

Health care facilities within Willows encompass Glenn General Hospital located in the City of Willows, Willows Care Center, residential care facilities, as well as private physicians and other medical practitioners.

Glenn General Hospital, a County operated hospital, provides acute care service for Willows and the surrounding community. The hospital is located at 1133 West Sycamore in the City of Willows. Glenn General Hospital offers 24-hour emergency care, outpatient care, general surgical care, outpatient

surgical care, and minor heart surgery. The hospital sponsors an orthopedic clinic, a urology clinic, a cardiology clinic, podiatry clinic, gastroenterology clinic, neurology clinic, and obstetric-gynecology clinic.

Residents typically travel to other facilities, such as Enloe Hospital in Chico, for certain specialized services including burns, major heart surgery, and severe trauma and psychiatric care.

The Glenn County Public Health Department is organized under the Glenn County Health Services Agency and provides maternal and child health care programming, California Children's Services, child health and disability programs, vaccinations and general public health nursing to the community. Alcohol & drug programs are also organized under the County Health Service Agency and provide residential treatment, out-patient counseling, perinatal programs and community education and information. Mental Health programs offered by the same agency provide services to citizens of all ages who have a demonstrated mental disorder or affective disorder. Services include but are not limited to in-patient services, residential services, out-patient counseling, medication monitoring and community education and referral.

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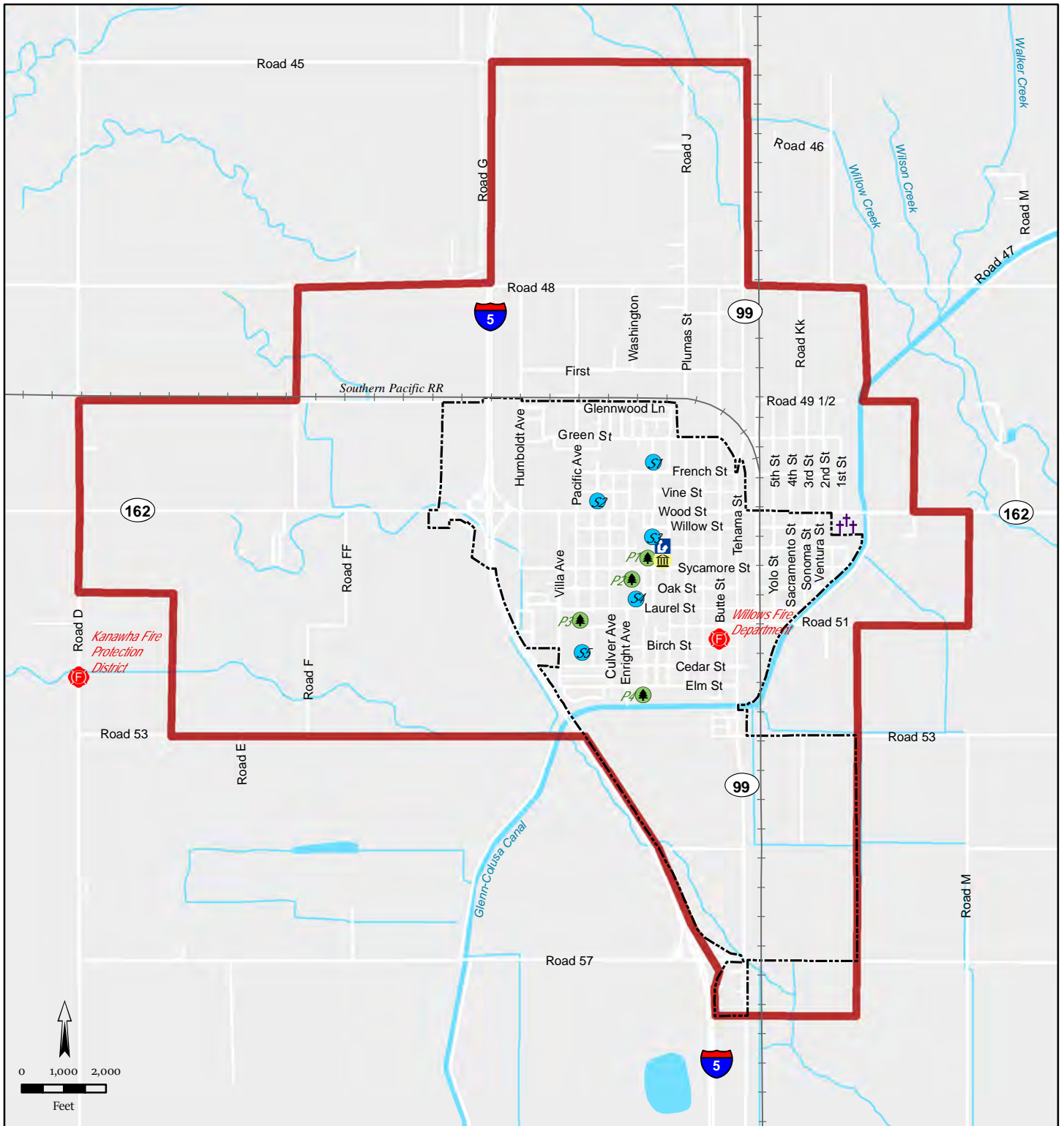
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Sources: USGS National Map; USGS Protected Areas Database; CalAtlas. Map date: October 18, 2019. Revised: January 14, 2020.

LEGEND

- City of Willows
- Willows Sphere of Influence

Community Facilities

- School
- 📖 Willows Public Library
- 🚒 Fire Station
- 🏛️ Willows Memorial Hall
- ⛔ Willows Cemetery
- 🌳 City Park

Parks	
P1	Willows Memorial Park
P2	Sycamore Park
P3	Central Park
P4	Jensen Park
Schools	
S1	Murdock Elementary School
S2	Walden Academy
S3	Willows High School
S4	Willows Community High School
S5	Willows Intermediate School

CITY OF WILLOWS  
FIGURE 3.8-1. COMMUNITY FACILITIES

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# Chapter 4

## Hazards, Safety, and Noise



Issues and topics related to hazards, safety and noise within the City of Willows are addressed in this chapter. Some of these hazards may be naturally induced, such as wildfire hazards. Other health and safety hazards may be the result of natural hazards, which are exacerbated by human activity, such as development in areas prone to flooding. Additional hazards are entirely human-made, including airport crash hazards, exposure to hazardous materials, and noise.

This Chapter includes the following topics:

- 4.1 Hazards and Hazardous Materials
- 4.2 Air Traffic
- 4.3 Fire Hazards
- 4.4 Flooding
- 4.5 Noise





## 4.0 HAZARDS, SAFETY, AND NOISE

Issues and topics related to hazards, safety, and noise within the Planning Area are addressed in this chapter. Some of these hazards may be naturally induced, such as wildfire hazards. Other hazards may be the result of natural hazards, which are exacerbated by human activity, such as development in areas prone to flooding. Additional hazards are entirely human-made, including airport crash hazards and exposure to hazardous materials. For issues related to emergency response and public safety see Section 3.6 (Public Safety Services).

This chapter is divided into the following sections:

- 4.1 Hazards and Hazardous Materials
- 4.2 Air Traffic
- 4.3 Fire Hazards
- 4.4 Flooding
- 4.5 Noise

### 4.1 HAZARDS AND HAZARDOUS MATERIALS

A hazardous material is a substance or combination of substances which, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may either (1) cause or significantly contribute to an increase in mortality or an increase in serious, irreversible, or incapacitating irreversible illness; or (2) pose a substantial present or potential hazard to human health and safety or the environment when improperly treated, stored, transported, or disposed of. Hazardous materials are mainly present because of industries involving chemical byproducts from manufacturing, petrochemicals, and hazardous building materials.

Hazardous waste is the subset of hazardous materials that has been abandoned, discarded, or recycled and is not properly contained, including contaminated soil or groundwater with concentrations of chemicals, infectious agents, or toxic elements sufficiently high to increase human mortality or to destroy the ecological environment. If a hazardous material is spilled and cannot be effectively picked up and used as a product, it is considered to be hazardous waste. If a hazardous material site is unused, and it is obvious there is no realistic intent to use the material, it is also considered to be a hazardous waste. Examples of hazardous materials include flammable and combustible materials, corrosives, explosives, oxidizers, poisons, materials that react violently with water, radioactive materials, and chemicals.

## REGULATORY FRAMEWORK

### *FEDERAL*

#### **Comprehensive Environmental Response, Compensation & Liability Act (CERCLA)**

This act, commonly associated with the term “Superfund,” established:

- Regulations concerning closed and abandoned hazardous waste sites
- Liability of parties responsible for any releases of hazardous waste at these sites
- Funding for cleanup when responsible parties cannot be identified

### **Resource Conservation and Recovery Act (RCRA)**

This act established EPA’s “cradle to grave” control (generation, transportation, treatment, storage, and disposal) over hazardous materials and wastes. In California, the Department of Toxic Substances Control (DTSC) has RCRA authorization.

### **Clean Air Act**

In according with the Clean Air Act, the EPA has established National Emissions Standards for Hazardous Air Pollutants. Exceeding the emissions standard for a given air pollutant may cause an increase in illnesses and/or fatalities.

### **Clean Water Act (CWA)**

The CWA, which amended the WPCA of 1972, sets forth the Section 404 program to regulate the discharge of dredged and fill material into Waters of the U.S. and the Section 402 National Pollutant Discharge Elimination System (NPDES) to regulate the discharge of pollutants into Waters of the U.S. The Section 401 Water Quality Certification program establishes a framework of water quality protection for activities requiring a variety of Federal permits and approvals (including CWA Section 404, CWA Section 402, FERC Hydropower and Section 10 Rivers and Harbors).

### *STATE*

### **California Health & Safety Code**

Division 20 of the Health and Safety Code establishes Department of Toxic Substances Control (DTSC) authority and sets forth hazardous waste and underground storage tank regulations. In addition, the division creates a State superfund framework that mirrors the Federal program.

Division 26 of the Health and Safety Code establishes California Air Resources Board (CARB) authority. The division designates CARB as the air pollution control agency per Federal regulations and charges the Board with meeting Clean Air Act requirements.

### **Food and Agriculture Code**

Division 6 of the California Food and Agricultural Code (FAC) establishes pesticide application regulations. The division establishes training standards for pilots conducting aerial applications as well as permitting and certification requirements.

### **Water Code**

Division 7 of the California Water Code, commonly referred to as the Porter-Cologne Water Quality Control Act, created the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCB). In addition, water quality responsibilities are established for the SWRCB and RWQCBs.

### **California Code of Regulations**

Title 3 of the CCR pertains to the application of pesticides and related chemicals. Parties applying regulated substances must continuously evaluate application equipment, the weather, the treated lands and all surrounding properties. Title 3 prohibits any application that would:

- Contaminate persons not involved in the application
- Damage non-target crops or animals or any other public or private property
- Contaminate public or private property or create health hazards on said property

Title 8 of the CCR establishes California Occupational Safety and Health Administration (Cal OSHA) requirements related to public and worker protection. Topics addressed in Title 8 include materials exposure limits, equipment requirements, protective clothing, hazardous materials, and accident prevention. Construction safety and exposure standards for lead and asbestos are set forth in Title 8.

Title 14 of the CCR establishes minimum standards for solid waste handling and disposal.

Title 17 of the CCR establishes regulations relating to the use and disturbance of materials containing naturally occurring asbestos.

Title 22 of the CCR sets forth definitions of hazardous waste and special waste. The section also identifies hazardous waste criteria and establishes regulations pertaining to the storage, transport, and disposal of hazardous waste.

Title 26 of the CCR is a medley of State regulations pertaining to hazardous materials and waste that are presented in other regulatory sections. Title 26 mandates specific management criteria related to hazardous materials identification, packaging, and disposal. In addition, Title 26 establishes requirements for hazardous materials transport, containment, treatment, and disposal. Finally, staff training standards are set forth in Title 26.

Title 27 of the CCR sets forth a variety of regulations relating to the construction, operation and maintenance of the State's landfills. The title establishes a landfill classification system and categories of waste. Each class of landfill is constructed to contain specific types of waste (household, inert, special, and hazardous).

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## ENVIRONMENTAL SETTING

### **Envirostor Data Management System**

The DTSC maintains the *Envirostor Data Management System*, which provides information on hazardous waste facilities (both permitted and corrective action) as well as any available site cleanup information. This site cleanup information includes: Federal Superfund Sites (NPL), State Response Sites, Voluntary Cleanup Sites, School Cleanup Sites, Corrective Action Sites, Tiered Permit Sites, and Evaluation / Investigation Sites. The hazardous waste facilities include: Permitted–Operating, Post-Closure Permitted, and Historical Non-Operating.

There are 7 locations listed within Willows that are listed in the Envirostor database. One site is listed as school investigation site with no action required, one site is listed as certified/ Operation & Maintenance, three sites are referred to other agencies and the RWQCB for evaluation, one site is listed as a military evaluation with no further action, and the Willows Glenn County Airport is listed as corrective action project with no further action required. Table 4.1-1 lists the Envirostor sites within the City of Willows.

**TABLE 4.1-1: WILLOWS SITE CLEANUP AND HAZARDOUS FACILITIES LIST (ENVIROSTOR)**

NAME	STATUS	LOCATION	ADDRESS	LISTED CITY
PG&E, Willows	Certified / Operation & Maintenance	Voluntary Cleanup	310 E. Wood Street	Willows
Willows Community School	No Action Required	School Investigation	Birch Street/Villa Avenue	Willows
Willows Glenn County Airport	No Further Action	Corrective Action	Hwy 162 & I-5	Willows
Willows Auxiliary Field (J09ca1002)	No Further Action	Military Evaluation		Willows
Burrows Oil Company	Refer: Other Agency	Evaluation	245 Garden	Willows
Richfield Oil Corp	Refer: Other Agency	Evaluation	545 North Colusa	Willows
Shell Oil	Refer: RWQCB	Evaluation	630 Eureka	Willows

SOURCE: CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL, ENVIROSTOR DATABASE, 2019.

### Cortese List

The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the State, local agencies, and developers to comply with the California Environmental Quality Act requirements in providing information about the location of hazardous materials release sites. Government Code Section 65962.5 requires the California Environmental Protection Agency to develop at least annually an updated Cortese List. California Department of Toxic Substances Control (DTSC) is responsible for a portion of the information contained in the Cortese List. Other State and local government agencies are required to provide additional hazardous material release information for the Cortese List. There are no sites within Willows that are listed on the Cortese List. The nearest site that is listed on the Cortese List is the Orland Cleaners located 726 Fifth Street within the City of Orland.

### GeoTracker

GeoTracker is the California Water Resource Control Board's data management system for managing sites that impact groundwater, especially those that require groundwater cleanup (Underground Storage Tanks, Department of Defense, Site Cleanup Program) as well as permitted facilities such as operating USTs and land disposal sites.

#### *LEAKING UNDERGROUND STORAGE TANKS (LUST)*

There are 23 locations identified with a City of Willows address that are listed in the GeoTracker database for Leaking Underground Storage Tanks (LUST). Of these, 20 of the locations have undergone LUST cleanup and the State has closed the cases, two are open cases for site assessments, and one is an open case for verification monitoring. Table 4.1-2 lists the location of open and closed cases for LUSTs in Willows.

**TABLE 4.1-2: WILLOWS LUST CLEANUP SITES**

NAME	ACTIVITY	ADDRESS
<i>CLOSED CASES (CLEANUP COMPLETED)</i>		
Ca Water Service Co	Completed - Case Closed	420 Cedar St Willows
Caltrans Willows Maintenance Stn	Completed - Case Closed	939 Humboldt N Willows
Chevron #9-0256	Completed - Case Closed	104 Tehama St N Willows
Fitzpatrick Chevrolet	Completed - Case Closed	201 Tehama St S Willows
Former SS	Completed - Case Closed	1401 Wood St W Willows
Gandy-Staley Oil Co. Inc.	Completed - Case Closed	630 Eureka St Willows
Glenn County Service Center	Completed - Case Closed	453 Co Rd 49 1/2 Willows
Glenn General Hospital	Completed - Case Closed	1133 Sycamore St Willows
I.G. Zumwalt Company	Completed - Case Closed	311 Butte St N Willows
Kampschmidt Trucking	Completed - Case Closed	895 North Tehama Street Willows
Kelleher Facility (Former)	Completed - Case Closed	710 South Tehama Street Willows
Knudsen/Foremost	Completed - Case Closed	121 Cedar St E Willows
Mendocino Forest	Completed - Case Closed	420 Laurel St E Willows
Meryl Stokes	Completed - Case Closed	200 Garden Willows
PG&E Willows Maintenance Stn.	Completed - Case Closed	631 Colusa St N Willows
Sehorn Property	Completed - Case Closed	315 Tehama St Willows
Shell SS	Completed - Case Closed	1300 Wood St W Willows
Unocal #6033	Completed - Case Closed	1502 Wood St W Willows
Willows Cardlock	Completed - Case Closed	900 South Tehama Street Willows
Willows O&M Facility	Completed - Case Closed	Hwy 162 Willows
Willows Plant	Completed - Case Closed	Co Rd 49 Willows
<i>OPEN - VERIFICATION MONITORING</i>		
ARCO #2094	Open - Verification Monitoring	1399 Wood St W Willows
<i>OPEN - SITE ASSESSMENT</i>		
Former Gas Station/JACO Oil Company Property	Open - Site Assessment	410 N. Tehama Street Willows
Willows Motor Supply	Open - Site Assessment	112 West Wood Street Willows

SOURCE: CALIFORNIA WATER RESOURCES CONTROL BOARD GEOTRACKER DATABASE, 2019.

### PERMITTED UNDERGROUND STORAGE TANK (UST)

There are four locations with a listed Willows address that have permitted Underground Storage Tanks (UST) that are permitted through the California Water Resources Control Board. Table 4.1-3 lists the location of the permitted USTs listed with a Willows Address.

**TABLE 4.1-3: WILLOWS PERMITTED UST SITES**

NAME	ADDRESS	CITY/AREA
Chevron Station #95266	1250 W Wood St	Willows
Russell M Morgan Inc. DBA Bud's Am/Pm	1399 W Wood St	Willows
Willows Shell	1300 W Wood St	Willows
Willows Travel Plaza Llc	1481 County Road 99w	Willows

SOURCE: CALIFORNIA WATER RESOURCES CONTROL BOARD GEOTRACKER DATABASE, 2019.

## Solid Waste Information System (SWIS)

### *FACILITY/SITE LISTING*

The Solid Waste Information System (SWIS) is a database of solid waste facilities that is maintained by the California Integrated Waste Management Board (CIWMB). The SWIS database contains information on solid waste facilities, operations, and disposal sites throughout the State of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites. For each facility, the database contains information about location, owner, operator, facility type, regulatory and operational status, authorized waste types, local enforcement agency and inspection and enforcement records.

The City of Willows has two solid waste facilities listed in the database, of which one is an active limited volume Caltrans transfer operation, and one is a waste disposal site which is closed. The site details are listed in Table 4.1-4 below.

**TABLE 4.1-4: CIWMB FACILITIES/SITES - WILLOWS**

NUMBER	NAME	ACTIVITY	REGULATORY	STATUS
11-AA-0035	Caltrans Maintenance	Limited Volume Transfer Operation	Notification	Active
11-CR-0005	Willows City Dump	Solid Waste Disposal Site	Pre-regulations	Closed

*SOURCE: CALIFORNIA DEPARTMENT OF RESOURCES RECYCLING AND RECOVERY, 2019.*

## REFERENCES

California Department of Resources Recycling and Recovery. 2019.

<http://www.calrecycle.ca.gov/SWFacilities/Directory/Search.aspx>.

California Department of Toxic Substances Control. 2019. Envirostor Database.

<http://www.envirostor.dtsc.ca.gov/public/>.

California Water Resources Control Board. 2019. <https://geotracker.waterboards.ca.gov/>.

## 4.2 AIR TRAFFIC

The State Division of Aeronautics has compiled extensive data regarding aircraft accidents around airports in California. According to the California Airport Land Use Planning Handbook (2002), prepared by the State Division of Aeronautics, 18.2% of general aviation accidents occur during takeoff and initial climb and 44.2% of general aviation accidents occur during approach and landing. The State Division of Aeronautics has plotted accidents during these phases at airports across the country and has determined certain theoretical areas of high accident probability.

### Approach and Landing Accidents

As nearly half of all general aviation accidents occur in the approach and landing phases of flight, considerable work has been done to determine the approximate probability of such accidents. Nearly 77% of accidents during this phase of flight occur during touchdown onto the runway or during the roll-out. These accidents typically consist of hard or long landings, ground loops (where the aircraft spins out on the ground), departures from the runway surface, etc. These types of accidents are rarely fatal and often do not involve other aircraft or structures. Commonly these accidents occur due to loss of control on the part of the pilot and, to some extent, weather conditions. (California Division of Aeronautics, 2002).

The remaining 23% of accidents during the approach and landing phase of flight occur as the aircraft is maneuvered towards the runway for landing, in a portion of the airspace around the airport commonly called the traffic pattern. Common causes of approach accidents include the pilot's misjudging of the rate of descent, poor visibility, unexpected downdrafts, or tall objects beneath the final approach course. Improper use of rudder on an aircraft during the last turn toward the runway can sometimes result in a stall (a cross-control stall) and resultant spin, causing the aircraft to strike the ground directly below the aircraft. The types of events that lead to approach accidents tend to place the accident site fairly close to the extended runway centerline. The probability of accidents increases as the flight path nears the approach end of the runway. (California Division of Aeronautics, 2002).

According to aircraft accident plotting provided by the State Division of Aeronautics, most accidents that occur during the approach and landing phase of flight occur on the airport surface itself. The remainder of accidents that occur during this phase of flight are generally clustered along the extended centerline of the runway, where the aircraft is flying closest to the ground and with the lowest airspeed. (California Division of Aeronautics, 2002).

### Takeoff and Departure Accidents

According to data collected by the State Division of Aeronautics, nearly 65% of all accidents during the takeoff and departure phase of flight occur during the initial climb phase, immediately after takeoff. This data is correlated by two physical constraints of general aviation aircraft:

- The takeoff and initial climb phase are times when the aircraft engine(s) is under maximum stress and is thus more susceptible to mechanical problems than at other phases of flight; and
- Average general aviation runways are not typically long enough to allow an aircraft that experiences a loss of power shortly after takeoff to land again and stop before the end of the runway.

While the majority of approach and landing accidents occur on or near to the centerline of the runway, accidents that occur during initial climb are more dispersed in their location as pilots are not attempting to get to any one specific point (such as a runway). Additionally, aircraft vary widely in payload, engine power, glide ratio, and several other factors that affect glide distance, handling characteristics after engine

loss, and general response to engine failure. This further disperses the accident pattern. However, while the pattern is more dispersed than that seen for approach and landing accidents, the departure pattern is still generally localized in the direction of departure and within proximity of the centerline. This is partially due to the fact that pilots are trained to fly straight ahead and avoid turns when experiencing a loss of power or engine failure. Turning flight causes the aircraft to sink faster and flying straight allows for more time to attempt to fix the problem. (California Division of Aeronautics, 2002).

## REGULATORY FRAMEWORK

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### *FEDERAL*

#### **Aviation Act of 1958**

The Federal Aviation Act resulted in the creation of the Federal Aviation Administration (FAA). The FAA was charged with the creation and maintenance of a National Airspace System.

#### **Federal Aviation Regulations (CFR, Title 14)**

The Federal Aviation Regulations (FAR) establish regulations related to aircraft, aeronautics, and inspections and permitting.

### *STATE*

#### **Aeronautics Act (Public Utilities Code §21001)**

The Caltrans Division of Aeronautics bases the majority of its aviation policies on the Aeronautics Act. Policies include permits and annual inspections for public airports and hospital heliports and recommendations for schools proposed within two miles of airport runways.

#### **Airport Land Use Commission Law (Public Utilities Code §21670 et seq.)**

The law, passed in 1967, authorized the creation of Airport Land Use Commissions (ALUC) in California. Per the Public Utilities Code, the purpose of an ALUC is to protect *public health, safety, and welfare by encouraging orderly expansion of airports and the adoption of land use measures that minimizes exposure to excessive noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses* (§21670). Furthermore, each ALUC must prepare an Airport Land Use Compatibility Plan (ALUCP). Each ALUCP, which must be based on a twenty-year planning horizon, should focus on broadly defined noise and safety impacts.

The Glenn County Airport Land Use Commission is established according the Chapter 22.10 of the Glenn County Code which was adopted by the Glenn County Board of Supervisors in 1985 (Ordinance No. 830).

The seven member Glenn County Airport Land Use Commission ensures compatible land uses in vicinity of all airport facilities. The Airport Land Use Commission review plans, regulations, & other actions of local agencies & airport operators.

### *WILLOWS AIRPORT ALUCP*

The overall goal for the Willows Airport Comprehensive Land Use Plan is to provide for the orderly growth of the Airport facility and to safeguard the general welfare of the inhabitants within the vicinity of the airport and the public in general.



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## ENVIRONMENTAL SETTING

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### Local Airport Facilities

There is one airport facility (Willows Glenn County Airport) located within the Willows Planning Area as described below.

**Willows Glenn County Airport:** The Willows Glenn County Airport has 254 Acres of land and an intersecting V-type runway system located adjacent to Interstate 5 west of Willows. The Airport Master plan was adopted in 2008.

The Primary runway, # 16-34, is 150 feet wide, 150 feet wide, and 4500 feet with pavement strength of 38,000 pounds single gear configuration loading. Runway #13-31 is 100 feet wide and 4500 feet long.

### Domestic airports in Glenn County, CA

**Orland Haigh Field Airport:** The Orland Haigh Field Airport is located on 390 acres owned by the County of Glenn on County Road "P" approximately 0.6 miles east of the City of Orland. The Airport Master Plan was prepared in 1989.

The Orland Airport has a 3,000 foot square asphalt mat on which most of the facilities are located. Runway #15/33 is 4500 feet long, 60 feet wide, paved, and lighted. In 1990 a new overlay was added to this Runway and a parallel taxi-way was constructed.

### Domestic airports near Willows

- 37 miles: Chico, CA (CIC / KCIC) Chico Municipal Airport
- 68 miles: Redding, CA (RDD / KRDD) Redding Municipal Airport

### Local airports near Willows

- 44 miles: Red Bluff, CA (RBL) Red Bluff Municipal Airport
- 47 miles: Paradise, CA (ZXW) Skypark
- 48 miles: Colusa, CA (DQI) Colusa Airport
- 48 miles: Colusa, CA (FVL) Colusa Airport
- 53 miles: Oroville, CA (OVE / KOVE) Oroville Municipal Airport

### Major Regional Airport Facilities

**Sacramento International Airport (SMF):** The Sacramento Airport (approximately 90 miles south of Willows serves approximately 9 million passengers a day. SMF serves the Greater Sacramento Area, and it is run by the Sacramento County Airport System. The Airport covers approximately 6,000 acres and has two parallel runways, oriented north–south to align with prevailing winds. The airport has two terminals, terminal A and terminal B, with 32 gates.

### National Transportation Safety Board Aviation Accident Database

The National Transportation Safety Board Aviation Accident Database identifies 11 aircraft accidents and 8 fatalities within Glenn County of which 7 accidents and two fatalities were associated within the vicinity of Willows. (National Transportation Safety Board, 2019). Table 4.2-1 below details each identified aircraft incident listed by the database within Glenn County.

**TABLE 4.2-1: NATIONAL TRANSPORTATION SAFETY BOARD AVIATION ACCIDENTS WITHIN GLENN COUNTY**

<i>EVENT DATE</i>	<i>LOCATION</i>	<i>MAKE/MODEL</i>	<i>EVENT SEVERITY</i>
05/18/2010	Glenn, CA	AYRES S2R	Nonfatal
02/21/1999	Glenn, CA	Bell UH-1H	Fatal(1)
08/27/2009	Orland, CA	James B. Taplin RV-6	Fatal(2)
09/17/1994	Orland, CA	Alon A2	Fatal(1)
11/25/2017	Willows, CA	Doshier Wilbert A Gt-500	Nonfatal
12/27/2016	Willows, CA	Air Tractor Inc At 602	Nonfatal
04/28/2006	Willows, CA	Cirrus SR-20	Nonfatal
08/21/2002	Willows, CA	Cessna 195	Nonfatal
04/11/2002	Willows, CA	Beech G35	Fatal(2)
06/16/2000	Willows, CA	Maule M4-210C	Fatal(2)
05/21/1999	Willows, CA	Beech A36	Nonfatal

Source: National Transportation Safety Board Accident Database 2019

## REFERENCES

- California Department of Transportation, Division of Aeronautics. 2001. California Airport Land Use Planning Handbook.
- Glenn County. 1990. Comprehensive Airport Land Use Plan Willows Glenn Airport. Adopted June 30 1990. Glenn County Land Use Commission.
- Glenn County. 1991. Comprehensive Airport Land Use Plan Orland Haigh Field Airport. Adopted February 27 1991. Glenn County Land Use Commission.
- National Transportation Safety Board. Accessed August 14, 2019. Available at: [http://www.nts.gov/\\_layouts/nts.aviation/index.aspx](http://www.nts.gov/_layouts/nts.aviation/index.aspx).

## 4.3 FIRE HAZARDS

This section addresses the hazards associated with wildfires in the Planning Area. The discussion of fire suppression resources is located in the Community Services and Facilities section (Section 3.6) of this report.

### REGULATORY SETTING

#### *FEDERAL*

#### **FY 2001 Appropriations Act**

Title IV of the Appropriations Act required the identification of “Urban Wildland Interface Communities in the Vicinity of Federal Lands that are at High Risk from Wildfire” by the U.S. Departments of the Interior and Agriculture.

#### *STATE*

#### **California Government Code Section 65302**

This section, which establishes standards for developing and updating General Plans, includes fire hazard assessment and Safety Element content requirements.

#### **Assembly Bill 337**

Per AB 337, local fire prevention authorities and the California Department of Forestry and Fire Protection (CalFire) are required to identify “Very High Fire Hazard Severity Zones (VHFHSZ) in Local Responsibility Areas (LRA). Standards related to brush clearance and the use of fire resistant materials in fire hazard severity zones are also established.

#### **California Public Resources Code**

The State’s Fire Safe Regulations are set forth in Public Resources Code §4290, which include the establishment of State Responsibility Areas (SRA).

Public Resources Code §4291 sets forth defensible space requirements, which are applicable to anyone that *...owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining a mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or land that is covered with flammable material* (§4291(a)).

#### **Uniform Fire Code**

The Uniform Fire Code (UFC) establishes standards related to the design, construction, and maintenance of buildings. The standards set forth in the UFC range from designing for access by firefighters and equipment and minimum requirements for automatic sprinklers and fire hydrants to the appropriate storage and use of combustible materials.

#### **CA Code of Regulations Title 8**

In accordance with CCR, Title 8, §1270 and §6773 (*Fire Prevention and Fire Protection and Fire Equipment*), the Occupational Safety and Health Administration (Cal OSHA) establishes fire suppression service standards. The standards range from fire hose size requirements to the design of emergency access roads.

#### **CA Code of Regulations Title 14 (Natural Resources)**

Division 1.5 (Department of Forestry and Fire Protection), Title 14 of the CCR establishes a variety of wildfire preparedness, prevention, and response regulations.

### **CA Code of Regulations Title 19 (Public Safety)**

Title 19 of the CCR establishes a variety of emergency fire response, fire prevention, and construction and construction materials standards.

### **CA Code of Regulations Title 24 (CA Building Standards Code)**

The California Fire Code is set forth in Part 9 of the Building Standards Code. The CA Fire Code, which is pre-assembled with the International Fire Code by the ICC, contains fire-safety building standards referenced in other parts of Title 24.

### **CA Health and Safety Code and UBC Section 13000 et seq.**

State fire regulations are set forth in §13000 *et seq.* of the California Health and Safety Code, which is divided into “Fires and Fire Protection” and “Buildings Used by the Public.” The regulations provide for the enforcement of the UBC and mandate the abatement of fire hazards.

The code establishes broadly applicable regulations, such as standards for buildings and fire protection devices, in addition to regulations for specific land uses, such as childcare facilities and high-rise structures.

### **CA Health and Safety Code Division 11 (Explosives)**

Division 11 of the Health and Safety Code establishes regulations related to a variety of explosive substances and devices, including high explosives and fireworks. Section 12000 *et seq.* establishes regulations related to explosives and explosive devices, including permitting, handling, storage, and transport (in quantities greater than 1,000 pounds).

### **CA Health and Safety Code Division 12.5 (Buildings Used by the Public)**

This Division establishes requirements for buildings used by the public, including essential services buildings, earthquake hazard mitigation technologies, school buildings, and postsecondary buildings.

### **CA Vehicle Code §31600 (Transportation of Explosives)**

Establishes requirements related to the transportation of explosives in quantities greater than 1,000 pounds, including licensing and route identification.

## **LOCAL SETTING**

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### **Fuel Rank**

Fuel rank is a ranking system developed by CalFire that incorporates four wildfire factors: fuel model, slope, ladder index, and crown index.

The U.S. Forest Service has developed a series of fuel models, which categorize fuels based on burn characteristics. These fuel models help predict fire behavior. In addition to fuel characteristics, slope is an important contributor to fire hazard levels. A surface ranking system has been developed by CalFire, which incorporates the applicable fuel models and slope data. The model categorizes slope into six ranges: 0-10%, 11-25%, 26-40%, 41-55%, 56-75% and >75%. The combined fuel model and slope data are organized into three categories, referred to as surface rank. Thus, surface rank is a reflection of the quantity and burn characteristics of the fuels and the topography in a given area.

The ladder index reflects the distance from the ground to the lowest leafy vegetation for tree and plant species. The crown index reflects the quantity of leafy vegetation present within individual specimens of a given species.

The surface rank, ladder index, and crown index for a given area are combined in order to establish a fuel rank of medium, high, or very high. Fuel rank is used by CalFire to identify areas in the California Fire Plan where large, catastrophic fires are most likely.

Glenn County contains areas with “moderate” “High” “Very High” and “non-wildland fuel” ranks. Generally the more developed areas within the county near the I-5 corridor including the City of Willows are considered non-wildland with the fuel rank increasing in the western foothill areas of the county. The areas warranting “moderate” to “Very High” fuel ranks possess combustible material in sufficient quantities combined with topographic characteristics that pose a wildfire risk.

### **Fire Hazard Severity Zones**

The state has charged CalFire with the identification of Fire Hazard Severity Zones (FHSZ) within State Responsibility Areas. In addition, CalFire must recommend Very High Fire Hazard Severity Zones (VHFHSZ) identified within any Local Responsibility Areas. The FHSZ maps are used by the State Fire Marshall as a basis for the adoption of applicable building code standards.

### **Local Responsibility Areas**

The Willows Planning Area is located within a Local Responsibility Area (LRA). CalFire has determined that the City of Willows has no Very High Fire Hazard Severity Zones (VHFHSZ) within Local Responsibility Areas. Figure 4.3-1 shows Fire Hazard Severity Zones for Local, State, and Federal Responsibility Areas.

### **State Responsibility Areas**

There are no State Responsibility Areas within the Willows Planning Area. State Responsibility Areas (SRAs) within the County generally bisect the county from north to south beginning roughly 5 miles west of Interstate 5 moving west through the foothill region. FHSZ within the SRAs range from “Moderate” to “Very High”. Figure 4.3-1 shows Fire Hazard Severity Zones for State Responsibility Areas within Glenn County.

### **Federal Responsibility Areas**

There are no Federal Responsibility Areas within the Willows Planning Area. As shown on Figure 4.3-2 there are several areas designated as Federal Responsibility Areas (FRA) within the County. The majority of FRA’s are located on the western side of the foothill region and include the Dogtown, Alder Springs, Fiddlers Green, and Copper City areas of Glenn County.

## REFERENCES

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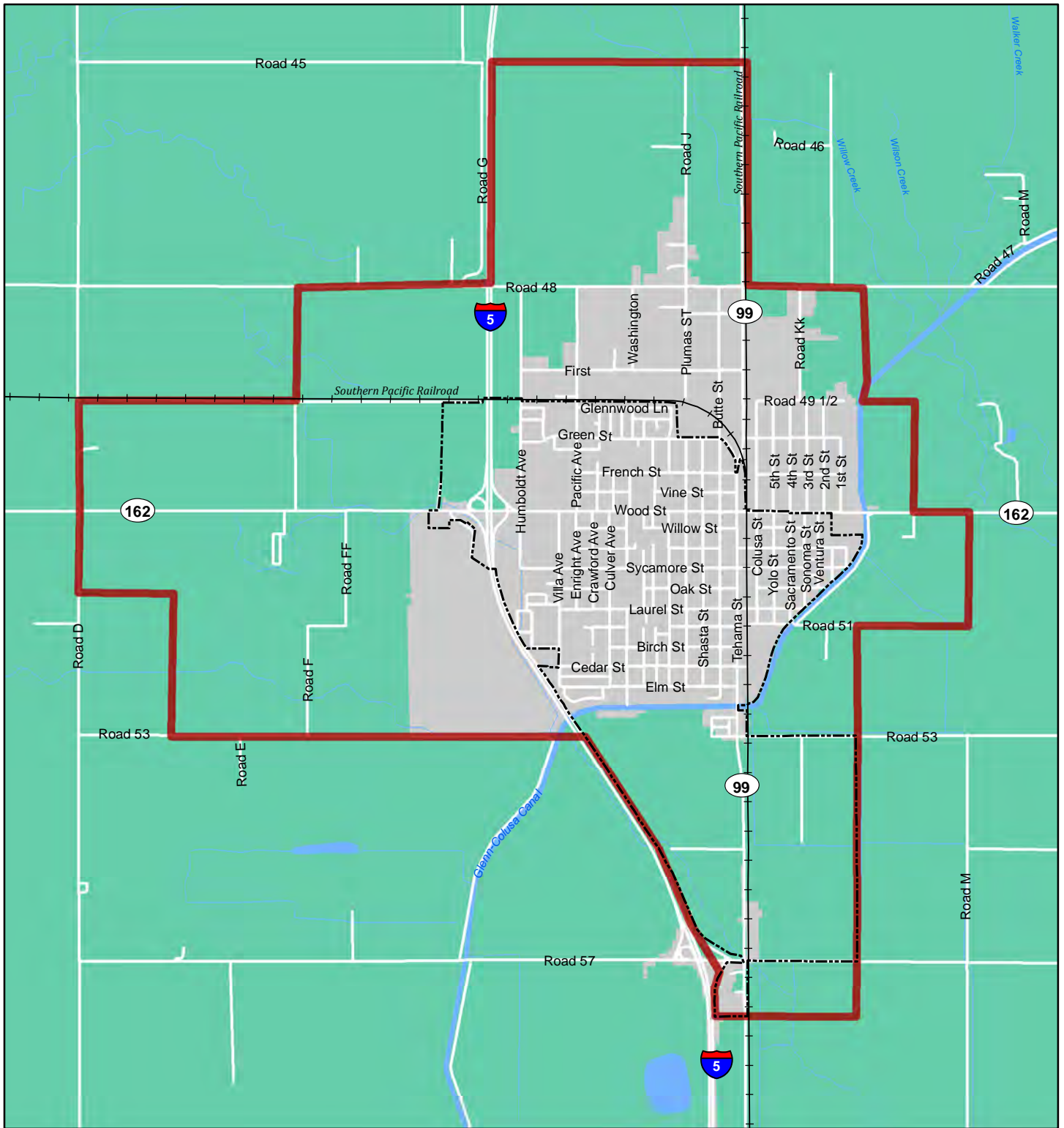
California Department of Forestry and Fire Protection and State Board of Forestry and Fire Protection. 2010. 2010 Strategic Fire Plan for California.

California Department of Forestry and Fire Protection and State Board of Forestry and Fire Protection. 2018. 2018 Strategic Fire Plan for California.



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**LEGEND**

-  City of Willows
-  Willows Sphere of Influence

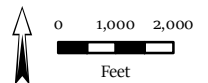
**Local Responsibility Area Hazard Class\***

-  Non-Wildland/Non-Urban
-  Urban Unzoned

\* CAL FIRE has determined that Glenn County has no Very High Fire Hazard Severity Zones (VHFHSZ) within Local Responsibility Areas.

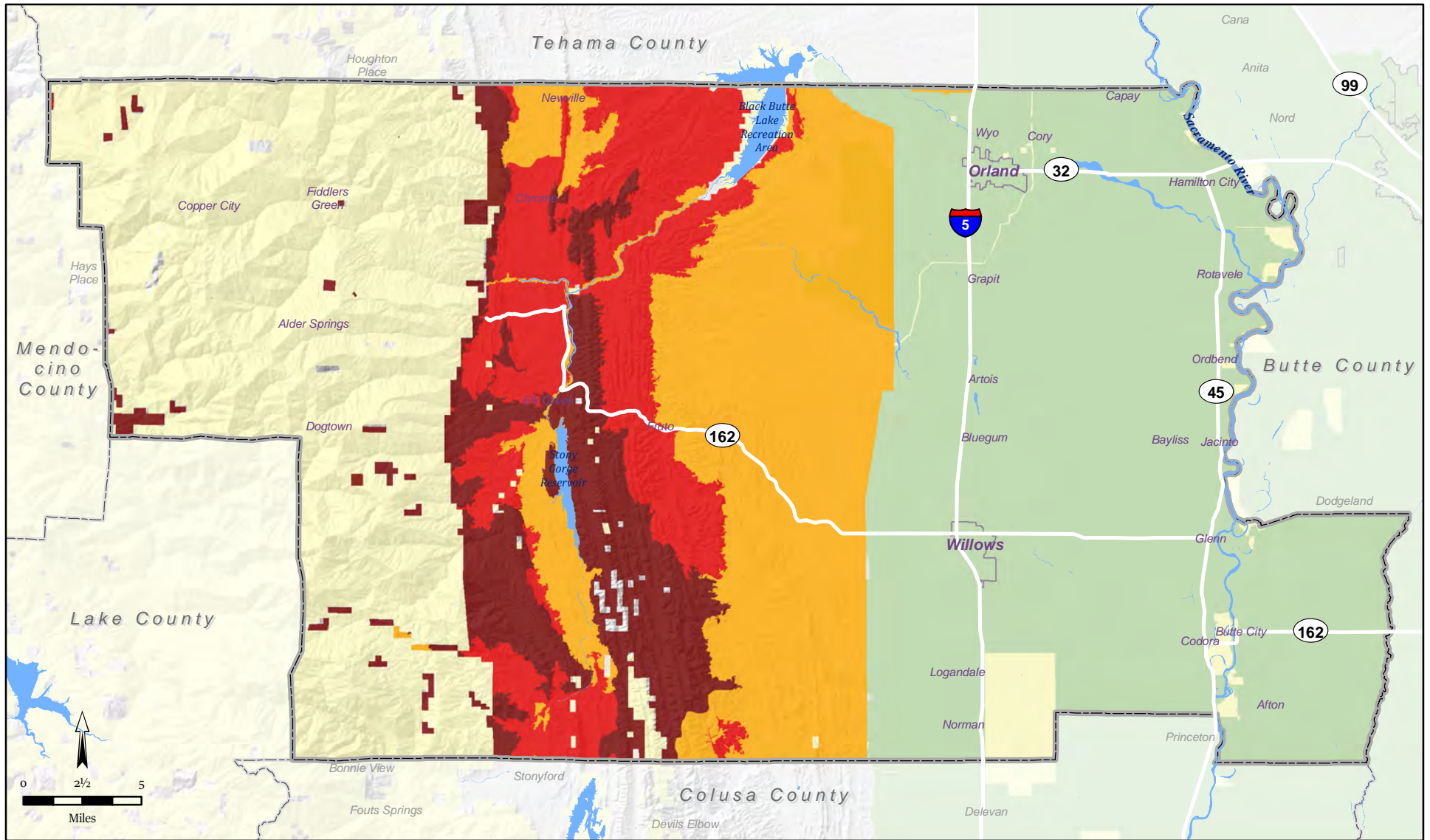
CITY OF WILLOWS

**FIGURE 4.3-1. FIRE HAZARD SEVERITY ZONES IN LOCAL RESPONSIBILITY AREAS**



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Sources: Cal Fire - FRAP, Fire Hazard Severity Zones in SRA, adopted 11-7-2007. Map date: July 22, 2019.

**Legend**

**Fire Hazard Severity Zones in State Responsibility Areas**

- Moderate
- High
- Very High

**Responsibility Areas**

- Federal Responsibility Area
- Local Responsibility Area\*

\* CAL FIRE has determined that Glenn County has no Very High Fire Hazard Severity Zones (VHFHSZ) within Local Responsibility Areas.

COUNTY OF GLENN, CALIFORNIA

**FIGURE 4.3-2. FIRE HAZARD SEVERITY ZONES IN STATE RESPONSIBILITY AREAS**

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## 4.4 FLOODING

This section addresses the hazards associated with flooding in the Planning Area. The discussion of storm drainage and infrastructure is located in Chapter 3.0 (Community Services and Facilities) of this report.

### REGULATORY FRAMEWORK

#### FEDERAL

#### **Federal Emergency Management Agency (FEMA)**

FEMA operates the National Flood Insurance Program (NFIP). Participants in the NFIP must satisfy certain mandated floodplain management criteria. The National Flood Insurance Act of 1968 has adopted as a desired level of protection, an expectation that developments should be protected from floodwater damage of the Intermediate Regional Flood (IRF). The IRF is defined as a flood that has an average frequency of occurrence on the order of once in 100 years, although such a flood may occur in any given year. Communities are occasionally audited by the California Department of Water Resources to insure the proper implementation of FEMA floodplain management regulations.

#### **Rivers and Harbors Appropriation Act of 1899**

One of the country's first environmental laws, this Act established a regulatory program to address activities that could affect navigation in Waters of the United States.

#### **Water Pollution Control Act of 1972**

The Water Pollution Control Act (WPCA) established a program to regulate activities that result in the discharge of pollutants to waters of the United States

#### **Clean Water Act of 1977**

The CWA, which amended the WPCA of 1972, sets forth the §404 program to regulate the discharge of dredged and fill material into Waters of the U.S. and the §402 National Pollutant Discharge Elimination System (NPDES) to regulate the discharge of pollutants into Waters of the U.S. The §401 Water Quality Certification program establishes a framework of water quality protection for activities requiring a variety of Federal permits and approvals (including CWA §404, CWA §402, FERC Hydropower and §10 Rivers and Harbors).

#### **Flood Control Act**

The Flood Control Act (1917) established survey and cost estimate requirements for flood hazards in the Sacramento Valley. All levees and structures constructed per the Act were to be maintained locally but controlled federally. All rights of way necessary for the construction of flood control infrastructure were to be provided to the Federal government at no cost.

Federal involvement in the construction of flood control infrastructure, primarily dams and levees, became more pronounced upon passage of the Flood Control Act of 1936.

#### **National Flood Insurance Program (NFIP)**

Per the National Flood Insurance Act of 1968, the NFIP has three fundamental purposes:

*Better indemnify individuals for flood losses through insurance; Reduce future flood damages through State and community floodplain management regulations; and Reduce Federal expenditures for disaster assistance and flood control.*

While the Act provided for subsidized flood insurance for existing structures, the provision of flood insurance by FEMA became contingent on the adoption of floodplain regulations at the local level.

### **Flood Disaster Protection Act (FDPA)**

The FDPA of 1973 was a response to the shortcomings of the NFIP, which were experienced during the flood season of 1972. The FDPA prohibited Federal assistance, including acquisition, construction, and financial assistance, within delineated floodplains in non-participating NFIP communities. Furthermore, all Federal agencies and/or federally insured and federally regulated lenders must require flood insurance for all acquisitions or developments in designated Special Flood Hazard Areas (SFHAs) in communities that participate in the NFIP.

Improvements, construction, and developments within SFHAs are generally subject to the following standards:

- All new construction and substantial improvements of residential buildings must have the lowest floor (including basement) elevated to or above the base flood elevation (BFE).
- All new construction and substantial improvements of non-residential buildings must either have the lowest floor (including basement) elevated to or above the BFE or dry-floodproofed to the BFE.
- Buildings can be elevated to or above the BFE using fill, or they can be elevated on extended foundation walls or other enclosure walls, on piles, or on columns.
- Extended foundation or other enclosure walls must be designed and constructed to withstand hydrostatic pressure and be constructed with flood-resistant materials and contain openings that will permit the automatic entry and exit of floodwaters. Any enclosed area below the BFE can only be used for the parking of vehicles, building access, or storage.

### *STATE*

#### **Assembly Bill 162**

This bill requires a general plan's land use element to identify and annually review those areas covered by the general plan that are subject to flooding as identified by flood plain mapping prepared by the Federal Emergency Management Agency (FEMA) or the Department of Water Resources (DWR). The bill also requires, upon the next revision of the housing element, on or after January 1, 2009, the conservation element of the general plan to identify rivers, creeks, streams, flood corridors, riparian habitat, and land that may accommodate floodwater for purposes of groundwater recharge and stormwater management. By imposing new duties on local public officials, the bill creates a State-mandated local program.

This bill also requires, upon the next revision of the housing element, on or after January 1, 2009, the safety element to identify, among other things, information regarding flood hazards and to establish a set of comprehensive goals, policies, and objectives, based on specified information for the protection of the community from, among other things, the unreasonable risks of flooding.

#### **Assembly Bill 70**

This bill provides that a city or county may be required to contribute its fair and reasonable share of the property damage caused by a flood to the extent that it has increased the State's exposure to liability for property damage by unreasonably approving, as defined, new development in a previously undeveloped

area, as defined, that is protected by a State flood control project, unless the city or county meets specified requirements.

### **Senate Bill 5**

Both State policy and recently enacted State legislation (Senate Bill 5) call for 200-year (0.5% annual chance) flood protection to be the minimum level of protection for urban and urbanizing areas in the Central Valley. Senate Bill 5 (SB5) requires that the 200-year protection be consistent with criteria used or developed by the Department of Water Resources. SB 5 requires all urban and urbanizing areas in the Sacramento and San Joaquin Valleys to achieve 200-year Urban Level of flood protection (or a finding of adequate progress toward 200-year flood protection) in order to approve development.

"Urban area" means a developed area in which there are 10,000 residents or more.

"Urbanizing area" means a developed area or an area outside a developed area that is planned or anticipated to have 10,000 residents or more within the next 10 years.

### **CA Government Code**

The Senate and Assembly bills identified above have resulted in various changes and additions to the California Government Code. Key sections related to the above referenced bills are identified below.

#### *SECTION 65302*

Revised safety elements must include maps of any 200-year flood plains and levee protection zones within the Planning Area.

#### *SECTION 65584.04*

Any land having inadequate flood protection, as determined by FEMA or DWR, must be excluded from land identified as suitable for urban development within the planning area.

#### *SECTION 8589.4*

California Government Code §8589.4, commonly referred to as the Potential Flooding-Dam Inundation Act, requires owners of dams to prepare maps showing potential inundation areas in the event of dam failure. A dam failure inundation zone is different from a flood hazard zone under the National Flood Insurance Program (NFIP). NFIP flood zones are areas along streams or coasts where storm flooding is possible from a "100-year flood." In contrast, a dam failure inundation zone is the area downstream from a dam that could be flooded in the event of dam failure due to an earthquake or other catastrophe. Dam failure inundation maps are reviewed and approved by the California Office of Emergency Services (OES). Sellers of real estate within inundation zones are required to disclose this information to prospective buyers.

#### *SECTION 8609*

The State Central Valley Flood Protection Board, under Section 8609 of the Water Code, has the authority to designate floodways in the Central Valley. California Code of Regulations, Title 23, Waters, provide further details of the Board's regulatory authority. Specifically, Title 23, Article 5, Section 107 regulates uses in Designated Floodways.

*LOCAL*

**Willows Municipal Code Chapter 15.65**

Chapter 15.65 of the Willows Municipal Code outlines the City’s Floodplain Management Ordinance, and includes regulations to (a) Restrict or prohibit uses which are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or flood heights or velocities; (b) Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction; (c) Control the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel floodwaters; (d) Control filling, grading, dredging, and other development which may increase flood damage; and (e) Prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards in other areas.

**ENVIRONMENTAL SETTING**

The City of Willows has hot, dry, summers with cool winters, similar to Orland. The mean annual rainfall is approximately 19 inches. The mean annual rainfall in the drainage area of Willow Creek is approximately 20 inches. Storms causing flooding occur in the winter seasons, generally from December through February. Snowmelt is less of a factor, versus higher elevation and snow levels, in flooding in this area. Storms of 100-year frequency from the South Fork Willows Creek and Wilson Creek will pond north of the city limits and then flow south along Highway 99 and southeast along Willow Creek. The 100-year frequency flows from South Fork Willows Creek, Wilson Creek, and Walker Creek will also pond behind the levee of the Glenn Colusa Canal northeast of the City and flow southward, causing flooding between Ventura Street to the west, the Glenn Colusa Canal on the east, and Walnut Street on the south. Local drainage from direct runoff has been a problem in the City’s eastern center and in areas north of French Street, between Butte and Lassen Streets. The existing storm drain system carries this flow into the Glenn Colusa Canal. These areas are both subject to 100-year storm frequency ponding or shallow flows from South Fork Willows Creek.

**FEMA Flood Zones**

FEMA mapping provides important guidance for cities and counties planning for flooding events and regulating development within identified flood hazard areas. FEMA’s National Flood Insurance Program (NFIP) is intended to encourage State and local governments to adopt responsible floodplain management programs and flood measures. As part of the program, the NFIP defines floodplain and floodway boundaries that are shown on Flood Insurance Rate Maps (FIRMs). The FEMA FIRM for the Planning Area is shown on Figure 4.4-1.

**TABLE 4.4-1 FEMA FLOOD ZONE ACREAGE BY DESIGNATIONS - WILLOWS**

<i>FEMA Designation</i>	<i>Acres within the City</i>	<i>Acres within the SOI</i>
100-yr Flood Zone	227	1,077
500-yr Flood Zone	270	881
Minimal Flood Hazard	1,315	1,955

Sources: FEMA Map Service Center

As shown on Figure 4.4-1 the Planning Area is subject to 100 year and 500 year flood events. The 100-year and 500-year flood plain is generally located within the southwestern, northern, and eastern portions of the City and SOI in areas near the Glenn-Colusa Canal and Willow Creek.

## SB 5 Flood Zones

SB 5 requires all urban and urbanizing areas in the Sacramento and San Joaquin Valleys to achieve 200-year Urban Level of flood protection (or a finding of adequate progress toward 200-year flood protection) in order to approve development. Currently the City of Willows does not have communities or regions that meet the standard to be considered an urban and urbanizing area. Additionally, the 200-year floodplain, as mapped by the U.S. Army Corps of Engineers does not extend into or near the City's Planning Area. Areas delineated as the 200-year floodplain in Glenn County are located on both sides of the Sacramento River, generally along Glenn County's eastern border.

## Dam Inundation

Earthquakes centered close to a dam are typically the most likely cause of dam failure. Dam Inundation maps have been required in California since 1972, following the 1971 San Fernando Earthquake and near failure of the Lower Van Norman Dam. A major dam failure event has not occurred in the Willows Planning Area or within Glenn County. A catastrophic failure of various dams in the region would have a significant impact on Glenn County. According to CalOES, there are six dams in Glenn County and four regional dams that could impact portions of Glenn County.

Figure 4.4-2, shows dam failure inundation areas that would be subject to inundation in the event of dam failure. As shown in Figure 4.4-2 a portion of northeast Willow would be subject to inundation from the Black Butte Dam.

Section 8589.5 of the California Government Code requires local jurisdictions to adopt emergency procedures for the evacuation of populated inundation areas identified by dam owners. The local Office of Emergency Services has prepared a Dam Failure Plan. This plan includes a description of dams, direction of floodwaters, responsibilities of local jurisdictions, and evacuation plans.

## Floodways

Designated Floodway refers to the channel of the stream and that portion of the adjoining floodplain reasonably required providing for the passage of a design flood; it is also the floodway between existing levees as adopted by the Central Valley Flood Protection Board (formerly the Reclamation Board) or the Legislature. The State Central Valley Flood Protection Board (CVFPB), under Section 8609 of the Water Code, designates floodways in the Central Valley. Within Glenn County the CVFPB has designated three areas as floodways of which the Colusa Drain floodway is located just outside the Willows Planning Areas east of Willows south through Colusa to Knights Landing in Yolo County.

Designated Floodways within Glenn County include:

- Sacramento River - From Glenn/Tehama/Butte County line south to the community of Glenn
- Stony Creek - From Black Butte Dam to the Sacramento River
- Colusa Drain - From just east of Willows south through Colusa to Knights Landing in Yolo County

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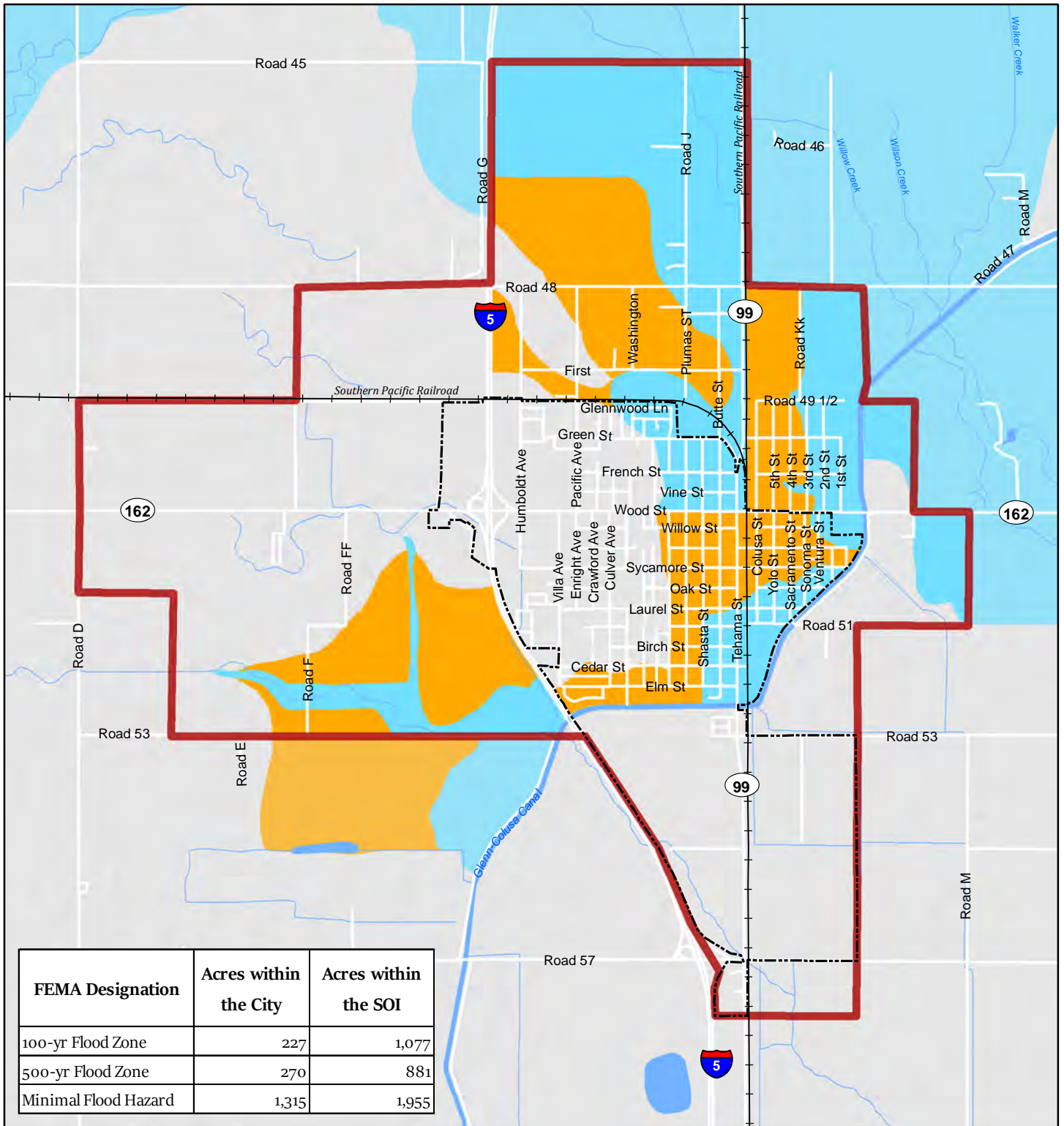
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**LEGEND**

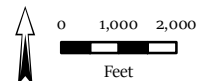
- City of Willows
- Willows Sphere of Influence

**FEMA Designations**

- 1% Annual Chance Flood Hazard (100-year Flood Zone)
- 0.2% Annual Chance Flood Hazard (500-year Flood Zone)
- Area of Minimal Flood Hazard

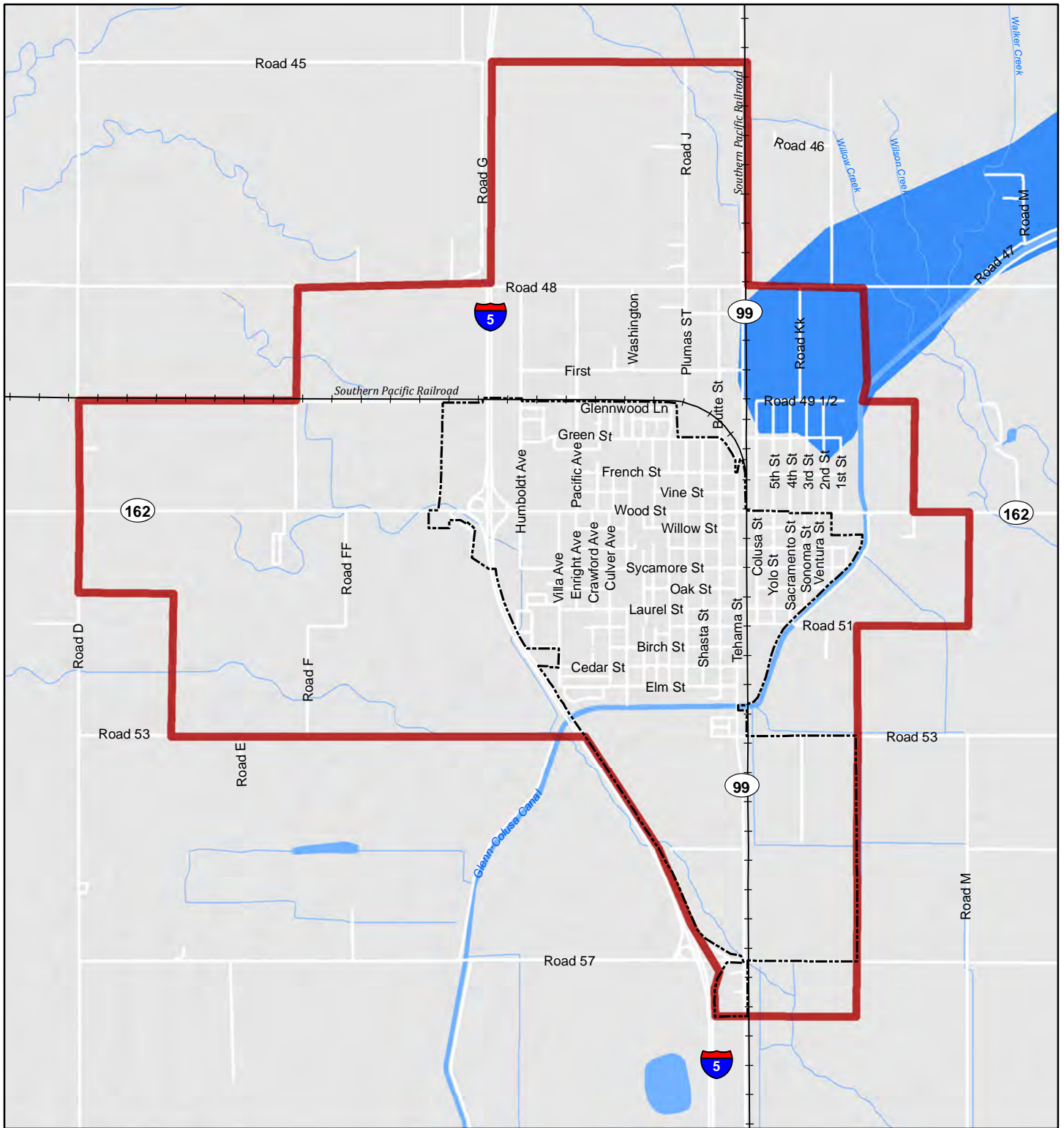
CITY OF WILLOWS

FIGURE 4.4-1. FEMA FLOOD ZONE DESIGNATIONS



Sources: Sources: FEMA Map Service Center, NFHL\_06021C, latest study effective date 8/5/2010, latest LOMR effective date 1/11/2011. Map date: July 23, 2019.




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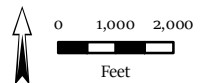


CITY OF WILLOWS

FIGURE 4.4-2. DAM INUNDATION AREAS

**LEGEND**

-  City of Willows
-  Willows Sphere of Influence
-  Dam Failure Inundation Areas



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## 4.5 NOISE

This section provides a discussion of the regulatory setting and a general description of existing noise sources in Willows. The information in this section was prepared with assistance from Saxelby Acoustics.

### KEY TERMS

<b>Acoustics</b>	The science of sound.
<b>Ambient Noise</b>	The distinctive acoustical characteristics of a given area consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
<b>Attenuation</b>	The reduction of noise.
<b>A-Weighting</b>	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
<b>CNEL</b>	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 p.m. - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
<b>Decibel or dB</b>	Fundamental unit of sound, defined as ten times the logarithm of the ratio of the sound pressure squared over the reference pressure squared.
<b>Frequency</b>	The measure of the rapidity of alterations of a periodic acoustic signal, expressed in cycles per second or Hertz.
<b>Impulsive</b>	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
<b>L<sub>dn</sub></b>	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
<b>L<sub>eq</sub></b>	Equivalent or energy-averaged sound level.
<b>L<sub>max</sub></b>	The highest root-mean-square (RMS) sound level measured over a given period of time.
<b>L<sub>(n)</sub></b>	The sound level exceeded as a described percentile over a measurement period. For instance, an hourly L <sub>50</sub> is the sound level exceeded 50 percent of the time during the one-hour period.
<b>Loudness</b>	A subjective term for the sensation of the magnitude of sound.
<b>Noise</b>	Unwanted sound.
<b>SEL</b>	A rating, in decibels, of a discrete event, such as an aircraft flyover or train passby, that compresses the total sound energy into a one-second event

### FUNDAMENTALS OF ACOUSTICS

Acoustics is the science of sound. Sound may be thought of as mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough (at least 20 times per second), then they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second or Hertz (Hz).

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected, or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals) as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels, but are expressed as dB, unless otherwise noted.

The decibel scale is logarithmic, not linear. In other words, two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70 dBA sound is half as loud as an 80 dBA sound, and twice as loud as a 60 dBA sound.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level ( $L_{eq}$ ), which corresponds to a steady-state A-weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The  $L_{eq}$  is the foundation of the composite noise descriptor,  $L_{dn}$ , and shows very good correlation with community response to noise.

The day/night average level ( $L_{dn}$ ) is based upon the average noise level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because  $L_{dn}$  represents a 24-hour average, it tends to disguise short-term variations in the noise environment. CNEL is similar to  $L_{dn}$ , but includes a +3 dB penalty for evening noise. Table 4.5-1 lists several examples of the noise levels associated with common situations.

**TABLE 4.5-1: TYPICAL NOISE LEVELS**

COMMON OUTDOOR ACTIVITIES	NOISE LEVEL (dBA)	COMMON INDOOR ACTIVITIES
	--110--	Rock Band
Jet Fly-over at 300 m (1,000 ft)	--100--	
Gas Lawn Mower at 1 m (3 ft)	--90--	
Diesel Truck at 15 m (50 ft), at 80 km/hr (50 mph)	--80--	Food Blender at 1 m (3 ft) Garbage Disposal at 1 m (3 ft)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 m (100 ft)	--70--	Vacuum Cleaner at 3 m (10 ft)
Commercial Area Heavy Traffic at 90 m (300 ft)	--60--	Normal Speech at 1 m (3 ft)

<i>COMMON OUTDOOR ACTIVITIES</i>	<i>NOISE LEVEL (dBA)</i>	<i>COMMON INDOOR ACTIVITIES</i>
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing

*SOURCE: CALTRANS, TECHNICAL NOISE SUPPLEMENT, TRAFFIC NOISE ANALYSIS PROTOCOL. SEPTEMBER 2013.*

## EFFECTS OF NOISE ON PEOPLE

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction;
- Interference with activities such as speech, sleep, and learning; and
- Physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3 dBA change is considered a just-perceivable difference;
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10 dBA change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6 dB per doubling of distance from the source, depending on environmental conditions (i.e., atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

## REGULATORY FRAMEWORK

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### *FEDERAL*

#### **Federal Highway Administration (FHWA)**

The FHWA has developed noise abatement criteria that are used for Federally funded roadway projects or projects that require Federal review. These criteria are discussed in detail in Title 23 Part 772 of the Federal Code of Regulations (23CFR772).

#### **Environmental Protection Agency (EPA)**

The EPA has identified the relationship between noise levels and human response. The EPA has determined that over a 24-hour period, an  $L_{eq}$  of 70 dBA will result in some hearing loss. Interference with activity and annoyance will not occur if exterior levels are maintained at an  $L_{eq}$  of 55 dBA and interior levels at or below 45 dBA. Although these levels are relevant for planning and design and useful for informational purposes, they are not land use planning criteria because they do not consider economic cost, technical feasibility, or the needs of the community.

The EPA has set 55 dBA  $L_{dn}$  as the basic goal for residential environments. However, other Federal agencies, in consideration of their own program requirements and goals, as well as difficulty of actually achieving a goal of 55 dBA  $L_{dn}$ , have generally agreed on the 65 dBA  $L_{dn}$  level as being appropriate for residential uses. At 65 dBA  $L_{dn}$  activity interference is kept to a minimum, and annoyance levels are still low. It is also a level that can realistically be achieved.

The U.S. Department of Housing and Urban Development (HUD) was established in response to the Urban Development Act of 1965 (Public Law 90-448). HUD was tasked by the Act (Public Law 89-117) “to determine feasible methods of reducing the economic loss and hardships suffered by homeowners as a result of the depreciation in the value of their properties following the construction of airports in the vicinity of their homes.”

HUD first issued formal requirements related specifically to noise in 1971 (HUD Circular 1390.2). These requirements contained standards for exterior noise levels along with policies for approving HUD-supported or assisted housing projects in high noise areas. In general, these requirements established the following three zones:

- 65 dBA  $L_{dn}$  or less - an acceptable zone where all projects could be approved.
- Exceeding 65 dBA  $L_{dn}$  but not exceeding 75 dBA  $L_{dn}$  - a normally unacceptable zone where mitigation measures would be required and each project would have to be individually evaluated for approval or denial. These measures must provide 5 dBA of attenuation above the attenuation provided by standard construction required in a 65 to 70 dBA  $L_{dn}$  area and 10 dBA of attenuation in a 70 to 75 dBA  $L_{dn}$  area.
- Exceeding 75 dBA  $L_{dn}$  - an unacceptable zone in which projects would not, as a rule, be approved.

HUD’s regulations do not include interior noise standards. Rather a goal of 45 dBA  $L_{dn}$  is set forth and attenuation requirements are geared towards achieving that goal. HUD assumes that using standard construction techniques, any building will provide sufficient attenuation so that if the exterior level is 65 dBA  $L_{dn}$  or less, the interior level will be 45 dBA  $L_{dn}$  or less. Thus, structural attenuation is assumed at 20 dBA. However, HUD regulations were promulgated solely for residential development requiring government funding and are not related to the operation of schools or churches.



The Federal government regulates occupational noise exposure common in the workplace through the Occupational Health and Safety Administration (OSHA) under the EPA. Noise exposure of this type is dependent on work conditions and is addressed through a facility's or construction contractor's health and safety plan. With the exception of construction workers involved in facility construction, occupational noise is irrelevant to this study and is not addressed further in this document.

#### *STATE*

### **California Department of Transportation (Caltrans)**

Caltrans has adopted policy and guidelines relating to traffic noise as outlined in the Traffic Noise Analysis Protocol (Caltrans 1998b). The noise abatement criteria specified in the protocol are the same as those specified by FHWA.

### **Governor's Office of Planning and Research (OPR)**

OPR has developed guidelines for the preparation of general plans. The guidelines include land use compatibility guidelines for noise exposure.

#### *LOCAL*

### **General Plan**

The Tri-County Area General Plan (Adopted by the City of Willows) Noise Element establishes goals and policies, as well as criteria for evaluating the compatibility of individual land uses with respect to noise exposure.

#### **NOISE/LAND USE COMPATIBILITY GUIDELINES AND NOISE LEVEL STANDARDS**

In the planning area of approximately 5,000 square miles, with a population density of about ten persons per square mile, and with most of its extensive mountain area in substantially unpopulated and undeveloped Federal land ownership, noise is a minor problem with respect to the total area.

General policy is to locate particular present or potential problem sites, identify noise sources, and provide for the reduction and/or reasonable control of noise through this plan element, precise plans based hereon, and appropriate regulatory measures to effectuate the proposals contained herein.

#### **Noise in Area**

Noise at or approaching problem magnitudes in the area is concentrated in the urban areas, at certain industrial operations, and along the corridors of transportation routes, air, rail and highway.

Urban and industrial noises and their sources are considered as a local noise problem subject to local attention, and related to but somewhat distinct from transportation noise, the control of which involves a number of Federal, State and local agencies.

It is plan policy to recognize and treat both fields of noise problems, each in a manner and to a degree considered reasonable and adequate for the best interests of the area and the comfort and convenience of its people.

#### **Policy Regarding Needed Controls**

Urban and industrial noise problems are generated by people and their local activities and in their use of land and equipment, and in their business and industrial operations.

Control of such noises and their sources is most effectively applied, as and when needed, by local City or County ordinances which include enforcement provisions which specify maximum permissible noise levels in relation to established ambient levels.

Controls of noises from transportation equipment and facilities, such as motor vehicles, railroad trains and aircraft, and their highways, tracks and airways, are almost entirely in the legal jurisdiction of Federal and State agencies.

The preparation of this Noise element was assisted by such agencies, and controls and preventive measures applied by or available through such agencies are incorporated herein.

**Desired Maximum Levels in Land Use Areas**

The intensity of sound, or noise, as detectable by the human ear, is measured in “Decibel” units. For purposes of this element, the A-weighted decibel unit, (dBA), as registered on commercial sound level meters, is used in relation to surface noises.

**Highway Design Standards**

The following is a summary of Federal standards for use in the design of roads and highways which are applicable with minor variations in California, and which are proposed element guides.

Land Use Category	Desired Ambient Level – L <sub>10</sub>
A. Unique and unusual tracts of land in which serenity and quiet are of extraordinary significance and preservation of those qualities if the area is to continue to serve its intended purpose.	60 dBA (Exterior)
B. Residential areas, schools, churches, libraries, hospitals, and so forth.	70 dBA (Exterior)
C. Other developed land not included in (A) and (B) and generally constituted by urbanized businesses or industrialized areas.	75 dBA (Exterior)
D. Special condition sites, areas, or activities. The design noise level should be established, based on the merit of the specific case and an analysis-of the acceptable level.	(Exterior or Interior)

### Land Use Classification Standards

The following standards are proposed as generally desirable ambient exterior noise level guides to be used together with other basic plan elements and in the future planning and location of noise-sensitive land uses and developments in relation to noise generating uses and facilities.

Land Use Classification		Desired Ambient Level, dBA
Residential, rural-suburban:	10 PM to 7 AM	40 – 45
	7 AM to 10 PM	45 – 50
Residential, suburban:	10 PM to 7 AM	45 – 50
	7 AM to 10 PM	50 – 55
Residential, low density urban:	10 PM to 7 AM	50 – 55
	7 AM to 10 PM	55 – 60
Residential, med/high density:	10 PM to 7 AM	55 – 60
	7 AM to 10 PM	60 – 75
Commercial zones, districts:	10 PM to 7 AM	65 – 70
	7 AM to 10 PM	70 – 75
Industrial zones, districts:	24 hours	75

\*Proposed where transportation noise is a significant factor.

NOTE: It is expected that some periodic peak noises from various agricultural and forestry operations which are common and established operations within the area may exceed the above desired ambient levels.

The above standards are intended to be applied with careful attention to the particular City or County area conditions, such as size and nature of development and expansion area, mixture of uses and spacing of mixed uses, present ambient level, etc.

The following are summarized noise level standards established by the Department of Housing and Urban Development for residential mortgaging estimates, construction projects and new housing.

General External Exposure, dBA	*NEF ZONES, Airport Environs
1. <u>Unacceptable:</u>	
a. Exceeds 80, 60 min. per 24 hours	Greater than 40*
b. Exceeds 75, 8 hours per 24 hours	
2. <u>Discretionary, Normally Unacceptable:</u>	
a. Exceeds 65, 8 hours per 24 hours	Between 30* & 40*
b. Loud repetitive sounds on site	
3. <u>Discretionary, Normally Acceptable:</u>	
a. Does not exceed 65 more than 8 hours per 24 hours	Less than 30*
4. <u>Acceptable:</u>	
a. Does not exceed 45 more than 30 minutes per 24 hours	Less than 30*

\*NEF = "Noise Exposure Forecast," HUD Noise Assessment Guidelines.

Because the foregoing HUD standards also apply to FHA financing of residential housing, they must be given particular attention and be related closely to the preceding and use classification standards if and when a local jurisdiction considers application of non-transportation noise regulations.

**Noise from Transportation Facilities Standards**

The State law definition of the Noise element mentions only, and so gives primary importance, to noise generated by transportation facilities:

1. Highways and Freeways
2. Ground rapid transit systems
3. Ground facilities associated with all airports operating under permit from the State Department of Aeronautics

Since ground rapid transit systems do not exist in the planning area except in the mild form of limited bus operation on public roads and highways, and since area airports are general aviation operations not used for the scheduled airline purposes or for large commercial jet engine aircraft, this Noise element plan directs primary attention to highway and freeway noise problems in the area.

Control of noise related to motor vehicles, aircraft, and railroad equipment is under the jurisdiction of Federal and State agencies. For this reason, this plan element is designed to present information useful for planning purposes rather than to propose specific local control standards for transportation facilities.

Under the State law, the agencies responsible for the construction and maintenance of major transportation facilities are obligated to provide present and projected noise levels for their facilities. Therefore, in this planning area, the State Department of Transportation is the major contributor of such information.

### Standards for Basic Information

Two recognized methods for presenting the present and projected noise level information are available from the California Department of Transportation, Division of Highways:

- a. "Test Method No. Calif. 701-A," mean truck noise levels for diesel trucks.
- b. "L<sub>10</sub> Method," the sound level that is exceeded ten percent of the time (the 10<sup>th</sup> percentile) for the period under consideration. This value is an indicator of both the magnitude and frequency of occurrence of the loudest noise events.

Both the U.S. Department of Transportation and the U.S. Department of Housing and Urban Development accept the L<sub>10</sub> Method, rather than the California Method. The Department of Transportation has provided L<sub>10</sub> Method data for 1974 and projected 1995 noise contour mapping of urban areas, together with section drawings from which to apply Calif. 701-A Method data along low traffic volume rural routes on an interim basis.

- c. Government Code Sec. 65302(g) Standards

Data Sources	dBA Map Contours
From LIQ data, meter readings, (or California Method charts, etc.):	
1. Freeways and Highways -	Down to 65
2. At hospitals, rest homes, long-term medical or mental care, or outdoor recreation areas (as appropriate) -	Down to 45

- d. Airport Ground Facilities and Aircraft

The following noise level standard is proposed as a goal for existing airports and a control for future airports where residential or hospital, etc. uses as above are located adjacent to, or in close proximity to the airport boundaries.

Location of Sound Level Reading	*CNEL Reading
At airport boundary adjacent to residential, etc. use areas	65 dBA

\*CNEL = "Community Noise Equivalent Level," in decibels, represents the average daytime noise level during a 24-hour day, adjusted to an equivalent level to account for the lower tolerance of people to noise during evening and night-time periods relative to daytime periods.

### General Policy Statements re. Standards, Goals

This Noise element is designed to provide a guide for local jurisdictions to use in relation to their particular needs and conditions. It is adaptable for adoption in this form as the broad General Plan element and may be revised or supplemented as particular needs dictate.

Standards contained herein are derived from State and Federal agency sources, and in most cases were developed specifically for such General Plan and related purposes.

Goals of the plan element are to provide the general guide and sufficient detail to identify noise problems, present basic standards for their reduction and/or control and indicate methods to effectuate such controls.

The element and its effective application in the planning area has value in that it may produce a more pleasant "people" environment through reduction and control of noise pollution which has been proven to have, at certain levels, adverse effects upon the physical and mental well-being of; persons subjected to such pollution.

## EXISTING NOISE LEVELS

### Traffic Noise Levels

The FHWA Highway Traffic Noise Prediction Model (FHWA-RD 77-108) was used to develop Ldn (24-hour average) noise contours for all highways and major roadways in the Planning Area. The model is based upon the CALVENO noise emission factors for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver and the acoustical characteristics of the site. The FHWA Model predicts hourly Leq values for free-flowing traffic conditions, and is generally considered to be accurate within 1.5 dB. To predict Ldn values, it is necessary to determine the hourly distribution of traffic for a typical 24-hour period.

Existing traffic volumes were obtained from the traffic modeling performed for the Planning Area. Day/night traffic distributions were based upon continuous hourly noise measurement data and Saxelby Acoustics file data for similar roadways. Caltrans vehicle truck counts were obtained for SR 162 and Interstate 5. Using these data sources and the FHWA traffic noise prediction methodology, traffic noise levels were calculated for existing conditions. Table 4.5-2 shows the results of this analysis.

**TABLE 4.5-2: PREDICTED EXISTING TRAFFIC NOISE LEVELS**

ROADWAY	SEGMENT	NOISE LEVEL AT CLOSEST RECEPTORS (DB, L <sub>DN</sub> ) <sup>1</sup>	DISTANCES TO TRAFFIC NOISE CONTOURS, L <sub>DN</sub> (FEET)		
			70 DB	65 DB	60 DB
Wood St	Washington St to Murdock Ave	63.4	25	54	117
County Road 57	Road D to I-5 SB Ramps	46.5	5	10	23
N Tehama	French St to SR 162	61.0	9	19	41
N Tehama	SR 162 to W Willow St	59.9	8	18	39
Hwy 99W	Road M to County Road 57	52.9	16	34	74
Hwy 99W	County Road 57 to South Ct	57.6	17	37	79
Wood St	N Tehama St to N Colusa St	65.4	17	37	80
County Road 57	Hwy 99W to Road M	58.2	8	18	38
Interstate 5	Road 57 to State Hwy 162	76.1	281	605	1303

NOTES: DISTANCES TO TRAFFIC NOISE CONTOURS ARE MEASURED IN FEET FROM THE CENTERLINES OF THE ROADWAYS.

<sup>1</sup> TRAFFIC NOISE LEVELS ARE PREDICTED AT THE CLOSEST SENSITIVE RECEPTORS OR AT A DISTANCE OF 100 FEET IN COMMERCIAL/RETAIL AREAS.

SOURCE: FEHR & PEERS, CALTRANS, SAXELBY ACOUSTICS, 2019.

Traffic noise levels are predicted at the sensitive receptors located at the closest typical setback distance along each Planning Area roadway segment. In some locations, sensitive receptors may be located at distances which vary from the assumed calculation distance and may experience shielding from intervening barriers or sound walls. However, the traffic noise analysis is believed to be representative of

the majority of sensitive receptors located closest to the Planning Area roadway segments analyzed in the noise analysis.

The actual distances to noise level contours may vary from the distances predicted by the FHWA model due to roadway curvature, grade, shielding from local topography or structures, elevated roadways, or elevated receivers. The distances reported in Table 4.5-2 are generally considered to be conservative estimates of noise exposure along roadways in the City of Willows.

### Railroad Noise Levels

Railroad activity in the City of Willows occurs along the California Northern Railroad Company (CFNR) line. The line extends from the Union Pacific Railroad (UPRR) junction in Davis to the UPRR junction in Tehama. The CFNR line is used to haul lumber, beverage products, food products, steel pipe, agricultural products, and construction materials.

In order to quantify noise exposure from existing train operations, continuous (24-hour) noise level measurement surveys were conducted along the CFNR railroad lines which run along the north side of the City.

The purpose of the noise level measurements was to determine typical sound exposure levels (SEL) for railroad line operations, while accounting for the effects of travel speed, warning horns and other factors which may affect noise generation. In addition, the noise measurement equipment was programmed to identify individual train events so that the typical number of train operations could be determined.

Table 4.5-3 shows a summary of the continuous noise measurement results for railroad activity within the City.

**TABLE 4.5-3: RAILROAD NOISE MEASUREMENT RESULTS**

MEASUREMENT LOCATION	RAILROAD TRACK	GRADE CROSSING / WARNING HORN	TRAIN EVENTS PER 24-HOUR PERIOD	DISTANCE TO CL	AVERAGE SEL
LT-3	CFNR	Yes	2	50	107 dBA

SOURCE: SAXELBY ACOUSTICS, 2019.

Noise measurement equipment consisted of Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters equipped with LDL ½" microphones. The measurement systems were calibrated using a LDL Model CAL200 acoustical calibrator before and after testing. The measurement equipment meets all of the pertinent requirements of the American National Standards Institute (ANSI) for Type 1 (precision) sound level meters.

To determine the distances to the day/night average ( $L_{dn}$ ) railroad contours, it is necessary to calculate the  $L_{dn}$  for typical train operations. This was done using the SEL values and above-described number and distribution of daily train operations. The  $L_{dn}$  may be calculated as follows:

$$L_{dn} = SEL + 10 \log N_{eq} - 49.4 \text{ dB, where:}$$

SEL is the mean Sound Exposure Level of the event,  $N_{eq}$  is the sum of the number of daytime events (7 a.m. to 10 p.m.) per day, plus 10 times the number of nighttime events (10 p.m. to 7 a.m.) per day, and 49.4 is ten times the logarithm of the number of seconds per day. Based upon the above-described noise level data, number of operations and methods of calculation, the  $L_{dn}$  value for railroad line operations have been calculated, and the distances to the  $L_{dn}$  noise level contours are shown in Table 4.5-4.

**TABLE 4.5-4: APPROXIMATE DISTANCES TO THE RAILROAD NOISE CONTOURS**

MEASUREMENT LOCATION	EXTERIOR NOISE LEVEL AT 100 FEET, $L_{DN}$	DISTANCE TO EXTERIOR NOISE LEVEL CONTOURS, FEET		
		60 DB $L_{DN}$	65 DB $L_{DN}$	70 DB $L_{DN}$
<i>CFNR LINE WITH WARNING HORNS</i>				
LT-3	54 dB	55'	25'	12'

SOURCE: SAXELBY ACOUSTICS, 2019.

### Aviation Noise Levels

Willows-Glenn County Airport is the main aviation facilities in the proximity of located at 353 Co Rd G, Willows, CA 95988, west of Willows. The airport is owned and operated by Glenn County. The Willows-Glenn County Airport measures 4125 ft. long by 100 ft. wide.

The most recent estimate of annual operations for Willows-Glenn County Airport is approximately 30,000 flights per year. A major portion of airport operations are a result of agricultural aircraft involved in crop dusting activities.

Noise impacts and contours for Willows-Glenn County Airport are addressed in *Willows Airport Land Use Plan*, adopted by the Glenn County Airport Land Use Commission on June 30, 1990. Figure 4.5-2 shows the most recent noise contours developed for the airport.

### Fixed Noise Sources

The production of noise is a result of many industrial processes, even when the best available noise control technology is applied. Noise exposures within industrial facilities are controlled by Federal and State employee health and safety regulations (OSHA and Cal-OSHA), but exterior noise levels may exceed locally acceptable standards. Commercial, recreational, and public service facility activities can also produce noise which affects adjacent sensitive land uses. These noise sources can be continuous and may contain tonal components which have a potential to annoy individuals who live nearby. In addition, noise generation from fixed noise sources may vary based upon climatic conditions, time of day, and existing ambient noise levels.

In Willows, fixed noise sources typically include parking lots, loading docks, parks, schools, and other commercial/retail use noise sources (HVAC, exhaust fans, etc.)

From a land use planning perspective, fixed-source noise control issues focus upon two goals:

1. To prevent the introduction of new noise-producing uses in noise-sensitive areas, and
2. To prevent encroachment of noise sensitive uses upon existing noise-producing facilities.

The first goal can be achieved by applying noise level performance standards to proposed new noise-producing uses. The second goal can be met by requiring that new noise-sensitive uses in near proximity to noise-producing facilities include mitigation measures that would ensure compliance with noise performance standards.

Fixed noise sources which are typically of concern include but are not limited to the following:

- HVAC Systems
- Pump Stations
- Steam Valves
- Generators
- Cooling Towers/Evaporative Condensers
- Lift Stations
- Steam Turbines
- Fans



- Air Compressors
- Conveyor Systems
- Pile Drivers
- Drill Rigs
- Welders
- Outdoor Speakers
- Chippers
- Loading Docks
- Heavy Equipment
- Transformers
- Grinders
- Gas or Diesel Motors
- Cutting Equipment
- Blowers
- Cutting Equipment
- Amplified Music and Voice

The types of uses which may typically produce the noise sources described above include, but are not limited to: wood processing facilities, pump stations, industrial/agricultural facilities, trucking operations, tire shops, auto maintenance shops, metal fabricating shops, shopping centers, drive-up windows, car washes, loading docks, public works projects, batch plants, bottling and canning plants, recycling centers, electric generating stations, race tracks, landfills, sand and gravel operations, and special events such as concerts and athletic fields. Typical noise levels associated with various types of stationary noise sources are shown in Table 4.5-5.

**TABLE 4.5-5: TYPICAL STATIONARY SOURCE NOISE LEVELS**

USE	NOISE LEVEL AT 100 FEET, $L_{EQ}^1$	DISTANCE TO NOISE CONTOURS, FEET			
		50 DB $L_{EQ}$ (NO SHIELDING)	45 DB $L_{EQ}$ (NO SHIELDING)	50 DB $L_{EQ}$ (WITH 5 DB SHIELDING)	45 DB $L_{EQ}$ (WITH 5 DB SHIELDING)
Auto Body Shop	56 dB	200	355	112	200
Auto Repair (Light)	53 dB	141	251	79	141
Busy Parking Lot	54 dB	158	281	89	158
Cabinet Shop	62 dB	398	708	224	398
Car Wash	63 dB	446	792	251	446
Cooling Tower	69 dB	889	1,581	500	889
Loading Dock	66 dB	596	1,059	335	596
Lumber Yard	68 dB	794	1,413	447	794
Maintenance Yard	68 dB	794	1,413	447	794
Outdoor Music Venue	90 dB	10,000	17,783	5,623	10,000
Paint Booth Exhaust	61 dB	355	631	200	355
School Playground / Neighborhood Park	54 dB	158	281	89	158
Skate Park	60 dB	316	562	178	316
Truck Circulation	48 dB	84	149	47	84
Vendor Deliveries	58 dB	251	446	141	251

<sup>1</sup> ANALYSIS ASSUMES A SOURCE-RECEIVER DISTANCE OF APPROXIMATELY 100 FEET, NO SHIELDING, AND FLAT TOPOGRAPHY. ACTUAL NOISE LEVELS WILL VARY DEPENDING ON SITE CONDITIONS AND INTENSITY OF THE USE. THIS INFORMATION IS INTENDED AS A GENERAL RULE ONLY, AND IS NOT SUITABLE FOR FINAL SITE-SPECIFIC NOISE STUDIES.

SOURCE: J.C. BRENNAN & ASSOCIATES, INC. 2017.

## Community Noise Survey

A community noise survey was conducted to document ambient noise levels at various locations throughout the city. Short-term noise measurements were conducted at thirteen locations throughout the County on July 17-19, 2019. In addition, seven continuous 24-hour noise monitoring sites were also conducted to record day-night statistical noise level trends. The data collected included the hourly average ( $L_{eq}$ ), median ( $L_{50}$ ), and the maximum level ( $L_{max}$ ) during the measurement period. Noise monitoring sites and the measured noise levels at each site are summarized in Table 4.5-6 and Table 4.5-7. Figure 4.5-1 shows the locations of the noise monitoring sites.

**TABLE 4.5-6: EXISTING CONTINUOUS 24-HOUR AMBIENT NOISE MONITORING RESULTS**

SITE	LOCATION	$L_{DN}$ (DBA)	MEASURED HOURLY NOISE LEVELS, DBA LOW-HIGH (AVERAGE)					
			DAYTIME (7:00 AM - 10:00 PM)			NIGHTTIME (10:00 PM – 7:00 AM)		
			$L_{EQ}$	$L_{50}$	$L_{MAX}$	$L_{EQ}$	$L_{50}$	$L_{MAX}$
LT-1	Highway 162	72	69	52	86	65	47	84
LT-2	South Humboldt Avenue at I-5	71	68	64	82	64	58	80
LT-3	Railroad	65	66	52	79	52	42	67

SOURCE: SAXELBY ACOUSTICS, 2019.

**TABLE 4.5-7: EXISTING SHORT-TERM COMMUNITY NOISE MONITORING RESULTS**

Site	Location	Time <sup>1</sup>	Measured Sound Level, dB			Notes
			$L_{eq}$	$L_{50}$	$L_{max}$	
ST-1	Glennwood Lane / Pacific Avenue	2:14 PM	56	42	75	Primary noise source is traffic on Pacific Avenue. Secondary noise sources include activity from neighbors. Lmax caused by passing autos.
ST-2	Willows High School	9:39 AM	58	56	68	Primary noise source is traffic on West Wood Street. Secondary noise sources include activity from neighbors. Lmax caused by passing autos.
ST-3	Sycamore Park	2:51 PM	48	44	64	Primary noise source is traffic on South Culver Street. Secondary noise sources include activity from park-goers. Lmax caused by passing autos.
ST-4	Jensen Park	3:10 PM	52	46	70	Primary noise source is traffic on Elm Street. Secondary noise sources include activity from park-goers. Lmax caused by passing autos.
ST-5	East Willows	9:58 AM	45	43	56	Primary noise source is auto traffic on Sierra St. Secondary noise sources include local wildlife and distant train horn. Lmax caused by passing autos.

<sup>1</sup> - ALL COMMUNITY NOISE MEASUREMENT SITES HAVE TEST DURATIONS OF 10:00 MINUTES.

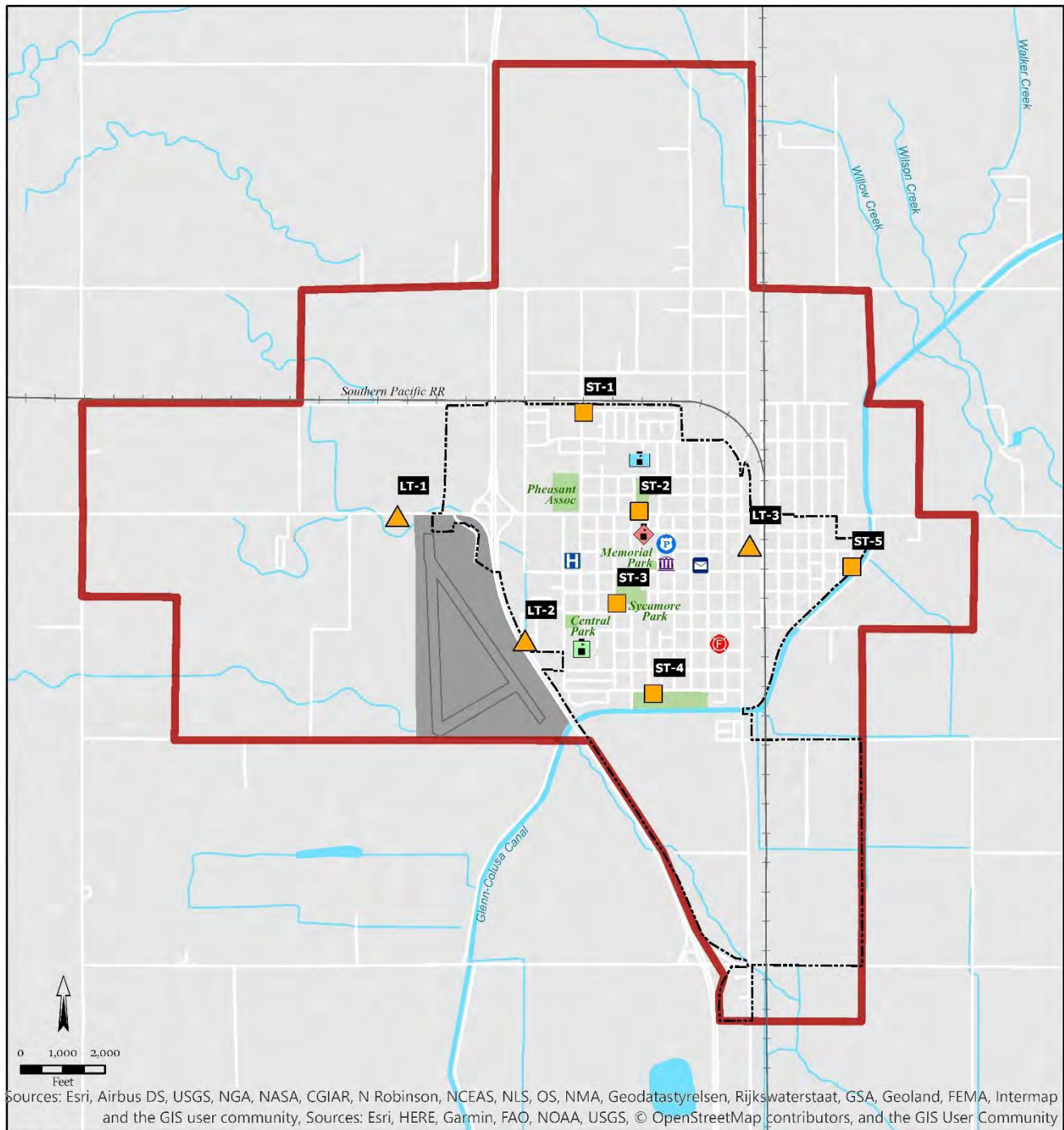
SOURCE: SAXELBY ACOUSTICS, 2019.

Community noise monitoring equipment included Larson Davis Laboratories (LDL) Model 812, 820, and 831 precision integrating sound level meters equipped with LDL ½" microphones. The measurement

systems were calibrated using a LDL Model CAL200 acoustical calibrator before and after testing. The measurement equipment meets all of the pertinent requirements of the American National Standards Institute (ANSI) for Type 1 (precision) sound level meters.

The results of the community noise survey shown in Tables 4.5-6 and 4.5-7 indicate that existing transportation noise sources were the major contributor of noise observed during daytime hours, especially during vehicle passbys.

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Sources: Glenn County; CalAtlas; Google Maps. Map date: May 22, 2019.

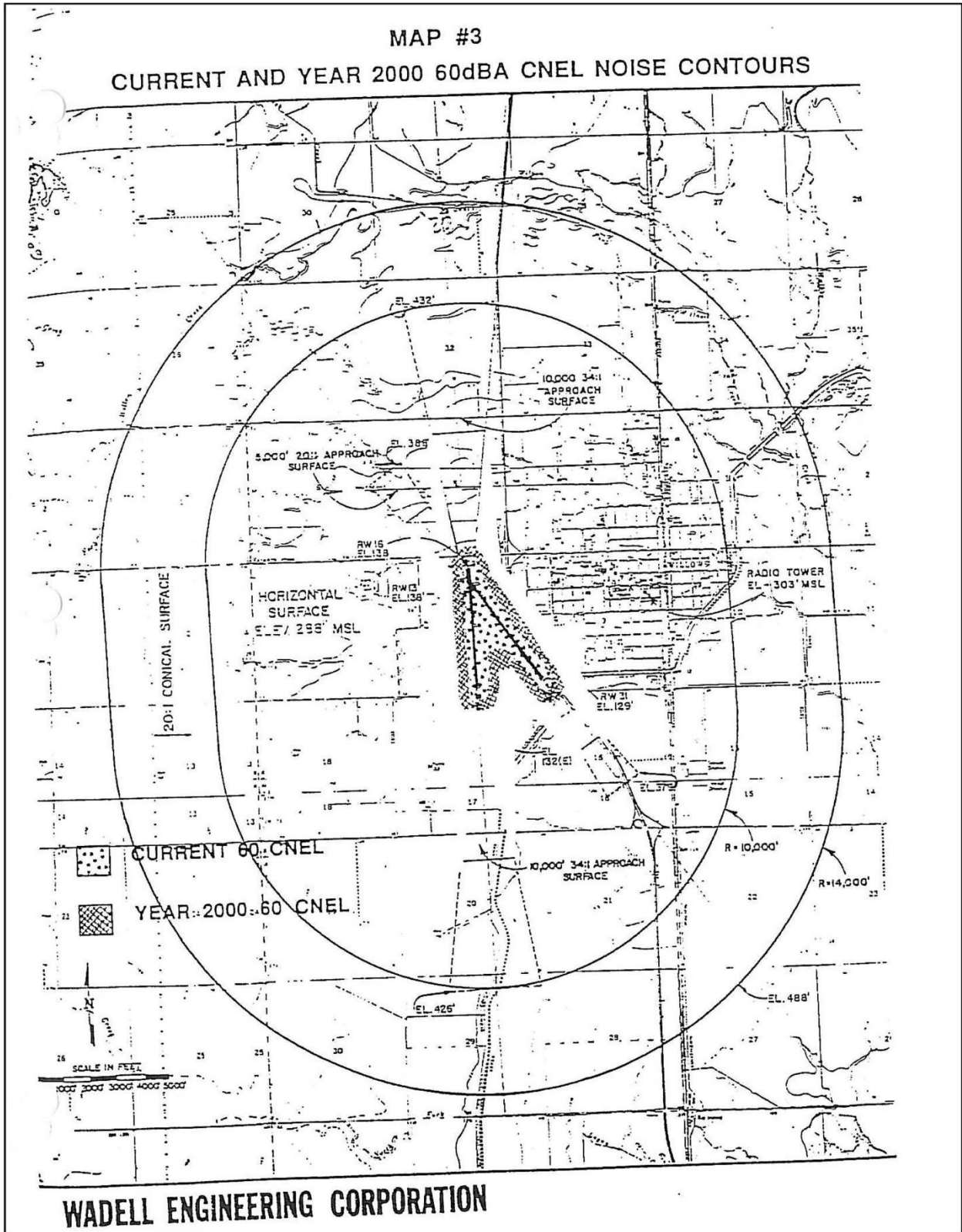
LEGEND	
	City of Willows
	Willows Sphere of Influence
	Park
	Willows-Glenn County Airport
	Murdock Elementary School
	Willows Intermediate School
	Willows High School
	Glenn-Willows Medical Center
	Fire Department
	Police Department/Library/City Hall
	Memorial Hall
	US Post Office
	Noise Measurement Sites - Short Term
	Noise Measurement Sites - Long Term

**FIGURE 4.6-1 Noise Measurement Locations**

CITY OF WILLOWS

Figure 4.5-1. Noise Measurement Locations

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COUNTY OF GLENN, CALIFORNIA

Figure 4.5-2. Willows-Glenn County Airport Noise Contours

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# Chapter 5

## Conservation and Natural Resources



The City's natural resources form an important part of its unique character and quality of life. In Willows, these resources include the City's biological resources, geology and soils, mineral and energy resources, hydrology and water quality, visual resources, and cultural resources.

This Chapter includes the following topics:

- 5.1 Cultural and Historic Resources
- 5.2 Biological Resources
- 5.3 Air Quality
- 5.4 Greenhouse Gases and Climate Change
- 5.5 Geology, Soils and Seismicity
- 5.6 Mineral and Energy Resources
- 5.7 Hydrology and Water Quality
- 5.8 Agricultural Resources
- 5.9 Aesthetics and Visual Resources



## 5.0 CONSERVATION AND NATURAL RESOURCES

The natural resources within Willows and surrounding areas are an important part of the city’s unique character and quality of life. In an effort to identify and understand the key natural resources of the city, this chapter is divided into the following sections:

- 5.1 Cultural and Historic Resources
- 5.2 Biological Resources
- 5.3 Air Quality
- 5.4 Greenhouse Gases and Climate Change
- 5.5 Geology, Soils and Seismicity
- 5.6 Mineral and Energy Resources
- 5.7 Hydrology and Water Quality
- 5.8 Scenic Resources
- 5.9 Agricultural Resources

### 5.1 CULTURAL AND HISTORIC RESOURCES

These resources are defined as buildings, sites, structures, or objects that may have historical, architectural, archaeological, cultural, or scientific importance. Preservation of the city’s cultural heritage should be considered when planning for the future.

#### KEY TERMS

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**Archaeology.** The study of historic or prehistoric peoples and their cultures by analysis of their artifacts and monuments.

**Complex.** A patterned grouping of similar artifact assemblages from two or more sites, presumed to represent an archaeological culture.

**Ethnography.** The study of contemporary human cultures.

**Midden.** A deposit marking a former habitation site and containing such materials as discarded artifacts, bone and shell fragments, food refuse, charcoal, ash, rock, human remains, structural remnants, and other cultural leavings.

**Paleontology.** The science of the forms of life existing in former geologic periods, as represented by their fossils.

#### REGULATORY SETTING

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##### *FEDERAL*

##### **National Historic Preservation Act**

Most regulations at the Federal level stem from the National Environmental Policy Act (NEPA) and historic preservation legislation such as the National Historic Preservation Act (NHPA) of 1966, as amended. NHPA established guidelines to "preserve important historic, cultural, and natural aspects of our national heritage, and to maintain, wherever possible, an environment that supports diversity and a

variety of individual choice." The NHPA includes regulations specifically for Federal land-holding agencies, but also includes regulations (Section 106) which pertain to all projects that are funded, permitted, or approved by any Federal agency and which have the potential to affect cultural resources. All projects that are subject to NEPA are also subject to compliance with Section 106 of the NHPA and NEPA requirements concerning cultural resources. Provisions of NHPA establish a National Register of Historic Places (The National Register) maintained by the National Park Service, the Advisory Councils on Historic Preservation, State Historic Preservation Offices, and grants-in-aid programs.

### **American Indian Religious Freedom Act and Native American Graves and Repatriation Act**

The American Indian Religious Freedom Act recognizes that Native American religious practices, sacred sites, and sacred objects have not been properly protected under other statutes. It establishes as national policy that traditional practices and beliefs, sites (including right of access), and the use of sacred objects shall be protected and preserved. Additionally, Native American remains are protected by the Native American Graves and Repatriation Act of 1990.

### **Other Federal Legislation**

Historic preservation legislation was initiated by the Antiquities Act of 1966, which aimed to protect important historic and archaeological sites. It established a system of permits for conducting archaeological studies on Federal land, as well as setting penalties for noncompliance. This permit process controls the disturbance of archaeological sites on Federal land. New permits are currently issued under the Archeological Resources Protection Act (ARPA) of 1979. The purpose of ARPA is to enhance preservation and protection of archaeological resources on public and Native American lands. The Historic Sites Act of 1935 declared that it is national policy to "Preserve for public use historic sites, buildings, and objects of national significance."

### *STATE*

### **California Register of Historic Resources (CRHR)**

California State law also provides for the protection of cultural resources by requiring evaluations of the significance of prehistoric and historic resources identified in documents prepared pursuant to the California Environmental Quality Act (CEQA). Under CEQA, a cultural resource is considered an important historical resource if it meets any of the criteria found in Section 15064.5(a) of the CEQA Guidelines. Criteria identified in the CEQA Guidelines are similar to those described under the NHPA. The State Historic Preservation Office (SHPO) maintains the CRHR. Historic properties listed, or formally designated for eligibility to be listed, on The National Register are automatically listed on the CRHR. State Landmarks and Points of Interest are also automatically listed. The CRHR can also include properties designated under local preservation ordinances or identified through local historical resource surveys.

### **California Environmental Quality Act (CEQA)**

CEQA requires that lead agencies determine whether projects may have a significant effect on archaeological and historical resources. This determination applies to those resources which meet significance criteria qualifying them as "unique," "important," listed on the California Register of Historic Resources (CRHR), or eligible for listing on the CRHR. If the agency determines that a project may have a significant effect on a significant resource, the project is determined to have a significant effect on the

environment, and these effects must be addressed. If a cultural resource is found not to be significant under the qualifying criteria, it need not be considered further in the planning process.

CEQA emphasizes avoidance of archaeological and historical resources as the preferred means of reducing potential significant environmental effects resulting from projects. If avoidance is not feasible, an excavation program or some other form of mitigation must be developed to mitigate the impacts. In order to adequately address the level of potential impacts, and thereby design appropriate mitigation measures, the significance and nature of the cultural resources must be determined. The following are steps typically taken to assess and mitigate potential impacts to cultural resources for the purposes of CEQA:

- identify cultural resources,
- evaluate the significance of the cultural resources found,
- evaluate the effects of the project on cultural resources, and
- develop and implement measures to mitigate the effects of the project on cultural resources that would be significantly affected.

Treatment of paleontological resources under CEQA is generally similar to treatment of cultural resources, requiring evaluation of resources in a project's area of potential affect, assessment of potential impacts on significant or unique resources, and development of mitigation measures for potentially significant impacts, which may include monitoring combined with data recovery and/or avoidance.

### **State Laws Pertaining to Human Remains**

Section 7050.5 of the California Health and Safety Code requires that construction or excavation be stopped in the vicinity of discovered human remains until the county coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must contact the California Native American Heritage Commission. CEQA Guidelines (Section 15064.5) specify the procedures to be followed in case of the discovery of human remains on non-Federal land. The disposition of Native American burials falls within the jurisdiction of the Native American Heritage Commission.

Several sections of the California Public Resources Code protect paleontological resources.

Section 5097.5 prohibits "knowing and willful" excavation, removal, destruction, injury, and defacement of any "vertebrate paleontological site, including fossilized footprints," on public lands, except where the agency with jurisdiction has granted express permission. "As used in this section, 'public lands' means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof."

California Public Resources Code, Section 30244 requires reasonable mitigation for impacts on paleontological resources that occur as a result of development on public lands.

The sections of the California Administrative Code relating to the State Division of Beaches and Parks afford protection to geologic features and "paleontological materials" but grant the director of the State park system authority to issue permits for specific activities that may result in damage to such resources, if the activities are in the interest of the State park system and for State park purposes (California Administrative Code, Title 14, Section 4307–4309).

### **Senate Bill 18 (Burton, Chapter 905, Statutes 2004)**

SB 18, authored by Senator John Burton and signed into law by Governor Arnold Schwarzenegger in September 2004, requires local (city and county) governments to consult with California Native American tribes to aid in the protection of traditional tribal cultural places (“cultural places”) through local land use planning. This legislation, which amended §65040.2, §65092, §65351, §65352, and §65560, and added §65352.3, §653524, and §65562.5 to the Government Code; also requires the Governor’s Office of Planning and Research (OPR) to include in the General Plan Guidelines advice to local governments on how to conduct these consultations. The intent of SB 18 is to provide California Native American tribes an opportunity to participate in local land use decisions at an early planning stage, for the purpose of protecting, or mitigating impacts to, cultural places. These consultation and notice requirements apply to adoption and amendment of both general plans (defined in Government Code §65300 et seq.) and specific plans (defined in Government Code §65450 et seq.).

### **Assembly Bill 52 (Chapter 532, Statutes of 2014)**

Assembly Bill (“AB”) 52 establishes a formal consultation process for California tribes as part of CEQA and equates significant impacts on “tribal cultural resources” with significant environmental impacts (PRC Section 21084.2). AB 52 defines a “California Native American Tribe” as a Native American tribe located in California, and included on the contact list maintained by the Native American Heritage Commission. AB 52 requires formal consultation with California Native American Tribes prior to determining the level of environmental document if a tribe has requested to be informed by the lead agency of proposed projects. AB 52 also requires that the consultation address project alternatives and mitigation measures, for significant effects, if requested by the California Native American Tribe, and that consultation be considered concluded when either the parties agree to measures to mitigate or avoid a significant effect, or the agency concludes that mutual agreement cannot be reached.

## ENVIRONMENTAL SETTING

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Cultural resources are defined as buildings, sites, structures, or objects that may have historical, architectural, archaeological, cultural, or scientific importance. Preservation of the city’s cultural heritage should be considered when planning for the future.

### **Prehistory**

Glenn County has not had large scale archeological excavations that would have provided a clear picture into the prehistoric period. The closest such excavation occurred just south of the Glenn County line. Archeology tells us that by at least 6,000 years ago, about 4,000 B.C., Native Americans were living along the Sacramento River in Colusa County and likely Glenn County too. Ten to twelve feet below the modern surface was a “buried midden” dated to 4020 B.C. that was discovered and dated, but not further investigated (White 2003a, 2003b). Midden is the remains of plants and animals, like a compost pile, usually with bits of artifacts too, left by a group who generally call the place home. Village sites have midden, temporary camps normally don’t.

After 2,500 B.C., archeologists do have a record of life at this village with various artifacts recovered including stone points designed to be used with a spear-thrower (atlatl), fishing related items, bone and stone tools, and shell ornaments (Figure 10.4 in Rosenthal et al. 2007:154). By this time, archeologists feel this village site was occupied year-round (White 2003a, 2003b). Colusa County, and no doubt Glenn County as well, looks to have had its first ‘town’ about 4,500 years ago.

At about 1,000 A.D., the bow and arrow were introduced into the area and new opportunities opened for the hunter. Fishing technology also continued to improve during this period, and, not surprisingly fish remains make up increasingly larger percentages of food remains found at river side villages from this period onward (Rosenthal et al. 2007:160). The collection of the local wild seed crop-supplementing the diet of acorn, a staple since about 500 B.C., also increased during this time. Over time, the size of certain types of seeds collected became larger, leading some to suggest that the foundations of horticulture were beginning to take root in California's Central Valley (Rosenthal 2007:159).

Populations at the villages along the river continued to expand, and by the time of first written records, a village with three or four thousand residents was not uncommon, particularly at a good fishing spot where weirs could be constructed.

### **Ethnology**

The Wintu are the northernmost dialectical groups of the Wintun, whose territory roughly incorporates the western side of the Sacramento Valley from the Carquinez Straits north to include most of the upper Sacramento River drainage, the McCloud River, and the lower reaches of the Pit River. The Wintun, a collective name, were subdivided into three sub-groups with the Southern, Central, and the Northern dialects known respectively as Patwin, Nomlaki, and Wintu. The area surrounding Willows has been identified as belonging to the River Nomlaki (Goldschmidt 1978:341).

Although economic subsistence was heavily weighted toward the acorn, the staple of the diet, the rich riverine resources of the Sacramento River supplied a large variety of foodstuffs. Hunting of game and small mammals augmented the diet with protein. Seasonal procurement of vegetable foods and the hunting of game occurred throughout the territory held by villages.

Villages were usually situated along rivers and streams or close to springs where reliable water supplies allowed a semi-permanent occupation. Major villages were located along the riverbanks, with locations oriented to higher spots on the natural levees. Smaller villages tended to be along the tributary streams and near springs. Cultural resources surveys in the region have demonstrated that there was very heavy use of tributary streams and other areas at a distance from the main river, while early ethnographies had emphasized the concentration of population along the Sacramento.

### **Historic Period Background**

Glenn County, named for Dr. Hugh Glenn, was organized in 1891, from the northern half of Colusa County. The earlier history of the County is that of Colusa County settlement.

In the early 1840s, Maria Josefa Soto, later the wife of Dr. James Stokes of Monterey, received the Capay Land Grant from the Mexican government. In 1846, a man named Bryant built the first house on the land, and in 1848, after Marshall's gold discovery in Coloma and the resulting gold rush, purchased the 44,388-acre grant stretching along the west side of the Sacramento River. The land soon attracted more settlers including U.P. Monroe, Martin Reager, and John McIntosh (Rodgers 1891:81; Kyle 2002).

The old River Road ran along the west side of the Sacramento River between Colusa through present day Glenn County and Shasta. With up to 50 freight wagons a day leaving Colusa for the northern mines, a series of hospitality houses, aptly named Four-Mile house, or Fourteen-Mile house, depending on their distance north were set up to feed and settler both two- and four-legged travelers (Kyle 2002:48).

## 5.0 CONSERVATION AND NATURAL RESOURCES

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The stagecoach lines following the Old River Road route along the Sacramento River were expanded during the summer of 1872 to include new tri-weekly stagecoach runs from Colusa north to Newville and west towards Wilbur and Bartlett Springs (Rogers 1891:128). Competition between competing stage coach companies on the existing run between Colusa and Marysville had become so fierce by November of that year that the fare was only 25 cents and, "...no effort of horse-flesh spared by competing lines in endeavoring to arrive first at their home station" (Rogers 1891). By 1873, nine stage lines were operating out of Colusa (Rogers 1891).

At the base of the steep Coast Range, Elk Creek was established in the late 1860s as a trading center for the valleys drained by Stony Creek and its tributaries. The post office in the town opened in 1872, and the town became the stopping point for stages from Colusa to the southeast and Newville to the north. Elk Creek is the entrance to the Mendocino National Forest (Kyle 2002).

Monroe's Ranch, later Monroeville, became a popular stopping point along the Old River Road. The hotel also doubled as a courthouse built partially from the wreck of the steamer *California*, one of the first steamers to ascend the Sacramento River.

Colusa County had obvious advantages in terms of natural transportation routes. The Sacramento River was once a navigable waterway with steamships plying the river from the bay area up to Red Bluff. Water based transportation was the primary means of transporting goods cheaply when Colusa County was first settled in the early 1850s. Up until the early 1870s, steamships regularly ran as far north as Red Bluff, but then the railroad came, boats quit going higher up than Chico Landing, except during unusually high water or on special occasions.

1876 was a pivotal year for Colusa (later Glenn County) when the "Northern Railway," later Southern Pacific, tracks were completed, and the communities of Willows and Orland prospered. By 1926, the road paralleling the Southern Pacific railroad was officially designated as Highway 99W. Beginning at Sacramento at the 'I' Street Bridge, Highway 99W followed the west side of the river up to the valley to eventually meet and merge with the Highway 99E branch at Red Bluff. In the early 1960s, construction began on a new interstate highway system, Interstate 5, and when "I-5" was completed, Highway 99W was relegated to a frontage road.

In 1887, California passed the Wright Irrigation Act that authorized and regulated the formation of irrigation districts. Wasting no time, on November 22, 1887 the Central Irrigation District was formed, incorporating 156,500 acres (McComish and Lambert 1918). Upon formation of the district, its members, by a vote of five to one, approved the issuance of \$750,000 in bonds for the construction of the necessary canals and irrigation works. Using \$290,000 of these funds, the district hired construction crews who began working on the canal in October, 1889. The canal, as proposed, covered the lands from its source north of Hamilton City to about midway between Willows and Arbuckle, where its outlet or discharge would into Willow Creek. The original estimates also called for a main canal with a depth of sixty-five feet and a length of thirty miles, tapering to a depth of twenty feet for the remainder of the canal. Lateral canals and sub-canals were also included in this original estimate (McComish and Lambert 1918).

By 1918, farmers had organized the Glenn-Colusa Irrigation District that provided water from Hamilton City south to near Willows (Eubank 1948).

Hamilton City is the newest town in Glenn County and is considered the legitimate descendant of two pioneer towns —Monroeville, about five miles south, and St. John. St. John, two miles north of Monroeville, was founded in 1856 on the banks of Stony Creek.



St. John began to fade, as Monroeville had done when business shifted to St. John. Hamilton City was founded in 1905 as the site of a large sugar beet factory and named for the president of the sugar company (Kyle 2002).

Agriculture has always been the primary economic activity of Glenn County. Other industries include chromite, mined briefly in this area informally during World War I and more formally during World War II. The Black Diamond Mine and Gray Eagle Mine operated between 1942-44 until supplies were exhausted. The Beehive Bend gas fields were discovered in the 1930s, about five miles east of Willows, the largest in northern California. The wells are scattered over a large area (Kyle 2002).

### **Cultural Resources**

Seven-hundred and thirty-six cultural resources have been identified within the County of Glenn General Plan Study Area, according to files maintained by the Northeast Information Center (NEIC) of the California Historical Resources Information System (CHRIS). The 736 recorded cultural resources span both the prehistoric and historic periods. Prehistoric period resources included numerous permanent and temporary Native American occupation areas (villages and campsites), stone tool quarries, and stone artifact scatters and isolated artifacts. Historic period resources span early cabin and homestead sites, bridges, mines, irrigation canals, single family residences and settlements.

The Gianella Bridge, once located at Hamilton City at the Sacramento River and replaced with a modern bridge in 1987, is the only property or district currently listed on the National Register of Historic Places or California Register of Historic Places for the County of Glenn General Plan Study Area ([www.nationalregisterofhistoricplaces.com](http://www.nationalregisterofhistoricplaces.com)).

The County of Glenn General Plan Study Area has one California Historical Landmark (CHL), #831, the site of the First Posted Water Notice by Will S. Green, located at Cutler and First Avenue, Hamilton City.

### **Consultation**

Letters were sent to: the Colusa County Historical Society; The Native American Heritage Commission; Glenda Nelson, Chairperson, Estom Yumeka Maidu Tribe of the Enterprise Rancheria; Ronald Kirk, Chairperson, Grindstone Rancheria of Wintun-Wailaki; Jessica Lopez, Chairperson, KonKow Valley Band of Maidu; Dennis Ramirez, Chairperson, Mechoopda Indian Tribe; Guy Taylor, Mooretown Rancheria of Maidu Indians; Benjamin Clark, Chairperson, Mooretown Rancheria of Maidu Indians; and, Andrew Alejandre, Chairperson, Paskenta Band of Nomlaki Indians. The Native American Heritage Commission responded with a letter dated March 13, 2019 which stated the results were positive and to contact the Grindstone Rancheria.

### **Paleontological Resources**

Among the natural resources deserving conservation and preservation, and existing within the County of Glenn General Plan Study Area, are the often-unseen records of past life buried in the sediments and rocks below the pavement, buildings, soils, and vegetation which now cover most of the area. Fossils constitute a non-renewable resource: Once lost or destroyed, the exact information they contained can never be reproduced.

Paleontology is the science that attempts to unravel the meaning of these fossils in terms of the organisms they represent, the ages and geographic distribution of those organisms, how they interacted in ancient ecosystems and responded to past climatic changes, and the changes through time of all of these aspects.

## 5.0 CONSERVATION AND NATURAL RESOURCES

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The sensitivity of a given area or body of sediment with respect to paleontologic resources is a function of both the potential for the existence of fossils and the predicted significance of any fossils which may be found there. The primary consideration in the determination of paleontologic sensitivity of a given area, body of sediment, or rock formation is its potential to include fossils. Information that can contribute to assessment of this potential includes: 1) direct observation of fossils within the project area; 2) the existence of known fossil localities or documented absence of fossils in the same geologic unit (e.g., "Formation" or one of its subunits); 3) descriptive nature of sedimentary deposits (such as size of included particles or clasts, color, and bedding type) in the area of interest compared with those of similar deposits known elsewhere to favor or disfavor inclusion of fossils; and 4) interpretation of sediment details and known geologic history of the sedimentary body of interest in terms of the ancient environments in which they were deposited, followed by assessment of the favorability of those environments for the preservation of fossils.

The most general paleontological information can be obtained from geologic maps, but geologic cross sections must be reviewed for each area in question. These usually accompany geologic maps or technical reports. Once it can be determined which formations may be present in the subsurface, the question of paleontological resources must be addressed. Even though a formation is known to contain fossils, they are not usually distributed uniformly throughout the many square miles the formation may cover. If the fossils were part of a bay environment when they died, perhaps a scattered layer of shells will be preserved over large areas. If on the other hand, a whale died in this bay, you might expect to find fossil whalebone only in one small area of less than a few hundred square feet. Other resources to be considered in the determination of paleontological potential are regional geologic reports, site records on file with paleontological repositories and site-specific field surveys.

Paleontologists consider all vertebrate fossils to be of significance. Fossils of other types are considered significant if they represent a new record, new species, an oldest occurring species, the most complete specimen of its kind, a rare species worldwide, or a species helpful in the dating of formations. However, even a previously designated low potential site may yield significant fossils.

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## 5.2 BIOLOGICAL RESOURCES

This section describes biological resources in the Planning Area from both a qualitative and quantitative perspective. The results of this assessment may be used in planning and management decisions that may affect biological resources in the Planning Area.

### KEY TERMS

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

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

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

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

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

- Federally listed or proposed for listing under the Federal Endangered Species Act (50 CFR 17.11-17.12);
- Candidates for listing under the Federal Endangered Species Act (61 FR 7596-7613);
- State listed or proposed for listing under the California Endangered Species Act (14 CCR 670.5);
- Species listed by the U.S. Fish and Wildlife Service (USFWS) or the CDFW as a species of concern (USFWS), rare (CDFW), or of special concern (CDFW);
- Fully protected animals, as defined by the State of California (California Fish and Game Code Section 3511, 4700, and 5050);
- Species that meet the definition of threatened, endangered, or rare under CEQA (CEQA Guidelines Section 15380);

## 5.0 CONSERVATION AND NATURAL RESOURCES

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- Plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code Section 1900 et seq.); and
- Plants listed by the California Native Plant Society (CNPS) as rare, threatened, or endangered (List 1A and List 2 status plants in Skinner and Pavlik 1994).

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

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

### REGULATORY FRAMEWORK

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

#### *FEDERAL*

#### **Federal Endangered Species Act**

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

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

### **Migratory Bird Treaty Act**

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

### **Bald and Golden Eagle Protection Act**

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

### **Clean Water Act – Section 404**

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

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

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

### **Clean Water Act – Section 401**

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

### **Department of Transportation Act - Section 4(f)**

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

*It is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites. The Secretary of Transportation shall cooperate and consult with the Secretaries of the Interior, Housing and Urban Development, and Agriculture,*

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

### **Rivers and Harbors Act of 1899**

The Rivers and Harbors Act prohibits the obstruction or alteration of any navigable water of the United States. The Act requires authorization from the USACE for any excavation or deposition of materials into these waters or for any work that could affect the course, location, condition, or capacity of rivers or harbors.

*STATE*

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

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

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

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

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

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

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



### **Fish and Game Code §1601-1603 – Streambed Alteration**

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

### **Public Resources Code § 21000 - California Environmental Quality Act**

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

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

### **Public Resources Code § 21083.4 - Oak woodlands conservation**

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

### **California Oak Woodland Conservation Act**

The California Legislature passed Assembly Bill 242, known as the California Oak Woodland Conservation Act, in 2001 as a result of widespread changes in land use patterns across the landscape that were fragmenting oak woodland character over extensive areas. The Act created the California Oak Woodland Conservation Program within the Wildlife Conservation Board. The legislation provides funding and incentives to ensure the future viability of California’s oak woodland resources by maintaining large scale land holdings or smaller multiple holdings that are not divided into fragmented, nonfunctioning biological units. The Act acknowledged that the conservation of oak woodlands enhances the natural scenic beauty for residents and visitors, increases real property values, promotes ecological balance, provides habitat for over 300 wildlife species, moderates temperature extremes, reduces soil erosion,

sustains water quality, and aids with nutrient cycling, all of which affect and improve the health, safety, and general welfare of the residents of the State.

### **California Wetlands Conservation Policy**

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

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

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

### **Natural Community Conservation Planning Act**

The Natural Community Conservation Planning Act provides long-term protection of species and habitats through regional, multi-species planning before the special measures of the CESA become necessary.

### **Porter-Cologne Water Quality Control Act**

The Porter-Cologne Water Quality Control Act authorizes the SWRCB to regulate state water quality and protect beneficial uses.

### **Water Quality Control Plan for the Sacramento-San Joaquin River Basins**

The Water Quality Control Plan for the Sacramento-San Joaquin River Basins (Basin Plan), adopted by the CVRWQCB in 1998, identifies the beneficial uses of water bodies and provides water quality objectives and standards for waters of the Sacramento River and SJR basins, including the Delta.

State and federal laws mandate the protection of designated "beneficial uses" of water bodies. State law defines beneficial uses as "domestic; municipal; agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves" (Water Code Section 13050[f]). Additional protected beneficial uses of the SJR include groundwater recharge and fresh water replenishment.

#### *LOCAL*

### **City of Willows General Plan**

The City of Willows General Plan contains the following goals policies and implementation measures related to biological resources.

#### **GOAL NRG-1: Preservation of Agricultural land**

**POLICY NRP-1:** Maintain agriculture as a primary, extensive land use, not only in recognition of the economic importance of agriculture, but also in terms of agriculture’s contribution to the preservation of open space and wildlife habitat.

**GOAL DPS-7:** Protect natural features and amenities of the City.

**OBJECTIVE DPS-7:** Protect existing trees and other natural features.

**POLICY DPS-7:** The city should consider the impact of a proposed development on natural features and amenities, and where feasible, require that natural features be preserved and /or enhanced.

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## ENVIRONMENTAL SETTING

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### Geomorphic Provinces/Bioregion

California's geomorphic provinces are naturally defined geologic regions that display a distinct landscape or landform. Earth scientists recognize eleven provinces in California. Each region displays unique, defining features based on geology, faults, topographic relief and climate. These geomorphic provinces are remarkably diverse. They provide spectacular vistas and unique opportunities to learn about earth's geologic processes and history. The Planning Area is located in the northern portion of the Great Valley Geomorphic Province of California.

The Great Valley is an alluvial plain about 50 miles wide and 400 miles long in the central part of California. Its northern part is the Sacramento Valley, drained by the Sacramento River and its southern part is the San Joaquin Valley drained by the San Joaquin River. The Great Valley Province is a broad structural trough bounded by the tilted block of the Sierra Nevada on the east and the complexly folded and faulted Coast Ranges on the west.

The planning area is defined by the Sacramento Valley bioregion. Figure 5.2-1 illustrates the boundaries of the bioregions within Glenn County, which the planning area resides.

The Sacramento Valley Bioregion is a watershed of the Sierra Nevada that encompasses the northern end of the great Central Valley, stretching from Redding to the southeast corner of Sacramento County. The bioregion is generally flat, and is rich in agriculture. The climate is characterized by hot dry summers and cool wet winters. Oak woodlands, riparian forests, vernal pools, freshwater marshes, and grasslands provide the major natural vegetation of the bioregion. This bioregion is the most prominent wintering area for waterfowl, attracting significant numbers of ducks and geese to its seasonal marshes along the Pacific Flyway. Species include northern pintails, snow geese, tundra swans, sandhill cranes, mallards, grebes, peregrine falcons, heron, egrets, and hawks. Black-tailed deer, coyotes, river otters, muskrats, beavers, ospreys, bald eagles, salmon, steelhead, and swallowtail butterflies are some of the wildlife that are common in this bioregion.

The region is bordered by the coastal range foothills to the west, the snow-capped peaks of the Sierra Nevada to the east and the Tehachapi Range to the south. Two major rivers– the Sacramento and the American– carry water that originates in the Sierra Nevada south and west into the Delta. Other rivers in the northern part of the bioregion include the Cosumnes, lower Feather, Bear, and Yuba rivers.

### Vegetation

Vegetation occurring within the Planning Area primarily consists of agricultural, ruderal, riparian, and landscaping vegetation. Because of urban nature of the developed areas within Willows and the active agricultural uses in surrounding lands, there is limited undisturbed natural vegetation. Common plant species observed in the region include: wild oat (*Avena barbata*), rip-gut brome (*Bromus diandrus*), softchess (*Bromus hordeaceus*) alfalfa (*Medicago sativa*), Russian thistle (*Salsola tragus*), Italian thistle (*Carduus pycnocephalus*), rough pigweed (*Amaranthus retroflexus*), sunflower (*Helianthus annuus*), tarragon (*Artemisia dracuncululus*), coyote brush (*Baccharis pilularis*), prickly lettuce (*Lactuca serriola*), milk thistle (*Silybum marianum*), sow thistle (*Sonchus asper*), telegraph weed (*Heterotheca grandiflora*), barley (*Hordeum sp.*), mustard (*Brassica niger*), and heliotrope (*Heliotropium curassavicum*).

### Wildlife

Agricultural, riparian vegetation along the Sacramento River, and ruderal vegetation found in the Planning Area provides habitat for both common and special-status wildlife populations. For example, some commonly observed wildlife species in the region include: California ground squirrel (*Spermophilus beecheyi*), California vole (*Microtus californicus*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), white-tailed kite (*Elanus leucurus*), American killdeer (*Charadrius vociferus*), gopher snake (*Pituophis melanoleucus*), garter snake (*Thamnophis species*), and western fence lizard (*Sceloporus occidentalis*), as well as many native insect species. There are also several bat species in the region. Bats often feed on insects as they fly over agricultural and natural areas.

Locally common and abundant wildlife species are important components of the ecosystem. Due to habitat loss, many of these species must continually adapt to using agricultural, ruderal, and ornamental vegetation for cover, foraging, dispersal, and nesting.

### Plant Communities

Agricultural and natural plant communities provide habitat for a variety of biological resources in the region. Sensitive habitats include those that are of special concern to resource agencies or those that are protected under a Habitat Conservation Plan, Natural Community Conservation Plan, the California Environmental Quality Act (CEQA), the Fish and Game Code, or the Clean Water Act (CWA). Additionally, sensitive habitats are usually protected under specific policies from local agencies. Figure 5.2-2 illustrates the plant communities (land cover types) in the county.

### CALIFORNIA WILDLIFE HABITAT RELATIONSHIP SYSTEM

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

According to the California Wildlife Habitat Relationship System, there are 13 land cover types (wildlife habitat classification) found in Willows out of the 59 found in California. These include: Annual Grassland, Cropland, Deciduous Orchard, Dryland Grain Crops, Evergreen Orchard, Fresh Emergent Wetland, Irrigated Grain Crops, Irrigated Hayfield, Irrigated Row and Field Crops, Rice, Riverine, Urban, and vineyard.

Table 5.2-1 identifies the area by acreage for each cover type (classification) found in the City. Figure 5.2-2 illustrates the location of each cover type (classification) within proximity to Willows.

**TABLE 5.2-1: COVER TYPES - CALIFORNIA WILDLIFE HABITAT RELATIONSHIP SYSTEM**

Cover Types	Acreage
Annual Grassland	4.87
Cropland	853.19
Deciduous Orchard	667.98
Dryland Grain Crops	727.02
Evergreen Orchard	206.94
Fresh Emergent Wetland	1.00
Irrigated Grain Crops	667.10
Irrigated Hayfield	192.23
Irrigated Row and Field Crops	1.11
Rice	509.80
Riverine	19.17
Urban	1,873
Vineyard	0.89
<b>Total</b>	<b>5,724.90</b>

SOURCE: SOURCE: CASIL GIS DATA, 2019

## Natural and Agricultural Communities

**Annual Grassland** habitat occurs mostly on flat plains to gently rolling foothills. Climatic conditions are typically Mediterranean, with cool, wet winters and dry, hot summers. The length of the frost free season averages 250 to 300 days (18 to 21 fortnights). Annual precipitation is highest in northern California.

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

## Other

There are a variety of other habitat types documented within Willows. These include aquatic habitats such as lacustrine (water) and riverine (rivers/creeks), and agricultural habitats (deciduous orchard, dryland grain crops, evergreen orchards, irrigated grain crops, irrigated hayfields, irrigated row and field crops, pasture, rice and vineyard). Additionally, Willows contains areas that are barren and urban.

## SPECIAL-STATUS SPECIES

The following discussion is based on a background search of special-status species that are documented in the California Natural Diversity Database (CNDDDB), the background search was regional in scope and focused on the documented occurrences within a 9 Quad search area of Willows.

## 5.0 CONSERVATION AND NATURAL RESOURCES

### Special Status Plants

The search revealed documented occurrences of the 15 special status plant species within the 9 Quad search area of Willows. Table 5.2-2 provides a list of special-status plant species that are documented in the region, their habitat, and current protective status. Figure 5.2-5 illustrates the location of each documented occurrence.

**TABLE 5.2-2: SPECIAL STATUS PLANTS PRESENT OR POTENTIALLY PRESENT IN WILLOWS**

<i>Species</i>	<i>Status</i>	<i>Habitat</i>
<i>Plants</i>		
<i>Atriplex persistens</i> Vernal pool smallscale	--;--;1B	Vernal pools (alkaline). 10-115M.
<i>Atriplex cordulata</i> Heartscale	--;--;1B	Chenopod scrub, meadows, seeps, Sandy soils in the valley and foothill grasslands (Dry alkaline flats)
<i>Atriplex depressa</i> Brittlescale	--;--;1B	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pools (Alkaline flats and clay soils)
<i>Atriplex joaquinian</i> San Joaquin spearscale	--;--;1B	Chenopod scrub, alkali meadow, valley and foothill grassland. In seasonal alkali wetlands or alkali sink scrub 1-250M.
<i>Castilleja rubicundula</i> ssp. <i>rubicundula</i> Pink creamsacs	--;--;1B	Chaparral, meadows, and seeps, valley and foothill grassland. Openings in chaparral or grasslands. Serpentine. 20-900M.
<i>Cordylanthus palmatus</i> palmate-bracted bird's-beak	FE;CE;1B	Chenopod scrub, valley and foothill grassland. Usually on Pescadero silty clay which is alkaline, with <i>Distichilis</i> , <i>Frankenia</i> , etc. ETC. 5-155M.
<i>Euphorbia hooveri</i> Hoover's spurge	FT;--;1B	Vernal Pools. 25-250M.
<i>Hibiscus lasiocarpus</i> Woolly rose-mallow	--;--;2	Marshes and swamps (freshwater). Moist, freshwater soaked river banks and low peat islands in sloughs; in California, known from the Delta Watershed. 0-150M.
<i>Lepidium latipes</i> var. <i>heckardii</i> Heckard's pepper-grass	--;--;1B	Valley and foothill grassland (alkaline flats). 2-200M.
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i> Baker's navarretia	--;--;1B	Cismontane woodland, meadows and seeps, vernal pools, valley and foothill grassland, lower montane coniferous forest. Vernal pools and swales, adobe or alkaline soils. 5-950M.
<i>Neostapfia colusana</i> Colusa grass	FT;CE;1B	Vernal pools. Usually in large, or deep vernal pool bottoms; adobe soils. 5-110M.
<i>Orcuttia pilosa</i> Hairy Orcutt grass	FE;CE;1B	Vernal pools. 46-200M.
<i>Tropidocarpum capparideum</i> Caper-fruited tropidocarpum	--;--;1B	Valley and foothill grassland (alkaline hills). 1-455M.
<i>Tuctoria greenei</i> Greene's tuctoria	FE;CR;1B	Vernal Pools. 30-1070M.
<i>Wolffia brasiliensis</i> Brazilian watermeal	--;--;2	Assorted shallow freshwater marshes and swamps. 20-100M.

SOURCE: DFG CNDDDB 2019

ABBREVIATIONS:

FE FEDERAL ENDANGERED  
 FT FEDERAL THREATENED  
 CE CALIFORNIA ENDANGERED SPECIES  
 CT CALIFORNIA THREATENED

- CR CALIFORNIA RARE (PROTECTED BY NATIVE PLANT PROTECTION ACT)
- 1B CNPS - RARE, THREATENED, OR ENDANGERED
- 2 CNPS - RARE, THREATENED, OR ENDANGERED IN CALIFORNIA, BUT MORE COMMON ELSEWHERE
- 4 CNPS - PLANTS OF LIMITED DISTRIBUTION - A WATCH LIST

**Special Status Animals**

The search revealed documented occurrences of the 21 special status animal species within the 9 Quad search area of Willows, including: 6 invertebrates, 2 amphibians/reptiles, 10 birds, 1 fish, and 1 mammal. Table 5.2-3 provides a list of the special-status animal species that are documented, their habitat, and current protective status. Figure 5.2-5 illustrates the location of each documented occurrence.

**TABLE 5.2-3: SPECIAL STATUS ANIMALS PRESENT OR POTENTIALLY PRESENT IN WILLOWS**

<i>Species</i>	<i>Status</i>	<i>Habitat</i>
<i>Invertebrates</i>		
<i>Branchinecta lynchi</i> Vernal pool fairy shrimp	FT;--	Endemic to grasslands of the central valley, central coast mtns., and south coast mtns., in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.
<i>Branchinecta conservatio</i> Conservancy fairy shrimp	FE;--	Inhabit rather large, cool-water vernal pools with moderately turbid water. The pools generally last until June.
<i>Linderiella occidentalis</i> California linderiella	--;--	Cold winter waters. Large, clear vernal pools. Typical in Central Valley floristic provinces below 300-m
<i>Lepidurus packardii</i> Vernal pool tadpole shrimp	FE;--	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water. Pools commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud-bottomed & highly turbid.
<i>Desmocerus californicus dimorphus</i> Valley elderberry longhorn beetle	FT;--	Found on or close to its host plant, red or blue elderberry ( <i>Sambucus</i> species), along rivers and streams. Females lay their eggs on the bark. Larvae hatch and burrow into the stems.
<i>Bombus crotchii</i> Crotch bumble bee	--;--	Occurs at relatively warm and dry sites, open grassland and scrub
<i>Amphibians/Reptiles</i>		
<i>Actinemys marmorata</i> western pond turtle	--;CSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Need basking sites and suitable (sandy banks or grassy open fields) upland habitat for egg-laying.
Thamnophis gigas Giant garter snake	FT;CT	Freshwater marshes, sloughs, ponds, small lakes or low gradient streams with adjacent upland areas. Also has adapted to drainage canals, irrigation ditches, and agricultural wetlands especially flooded rice fields.
<i>Birds</i>		
<i>Agelaius tricolor</i> tricolored blackbird	FSC;CSC	Highly colonial species, most numerous in central valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.
<i>Athene cuniculari</i> Burrowing owl	FSC; CSC	Open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California

## 5.0 CONSERVATION AND NATURAL RESOURCES

<i>Species</i>	<i>Status</i>	<i>Habitat</i>
		ground squirrel.
<i>Buteo swainsoni</i> Swainson's hawk	FSC; CT	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranches. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.
<i>Coccyzus americanus occidentalis</i> Western yellow-billed cuckoo	FT; CE	Nesting restricted to river bottoms and other mesic habitats where humidity is high.
<i>Egretta thula</i> snowy egret	FSC/ MBTA	Colonial nester, with nest sites situated in protected beds of dense tules. Rookery sites situated close to foraging areas; marshes, tidal flats, streams, wet meadows, and borders of lakes.
<i>Haliaeetus leucocephalus</i> bald eagle	FSC/FD; CE/CP	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within one mile of water. Nests in large, old-growth, or dominant live three w/open branches especially ponderosa pine. Roosts communally in winter.
<i>Nycticorax nycticorax</i> black-crowned night heron	MBTA;--	Colonial nester, usually in trees, occasionally in tule patches. Rookery sites located adjacent to foraging areas: lake margins, mud-bordered bays, marshy spots.
<i>Pandion haliaetus</i> osprey	MBTA; Raptor	Ocean shore, bays, fresh water lakes, and larger streams. Large nests built in tree tops within 15 miles of a good fish producing body of water.
<i>Riparia riparia</i> bank swallow	--;CT	Restricted to riparian areas with vertical cliffs and banks with fine-textured or sandy soils while breeding.
<i>Coccyzus americanus occidentalis</i> western yellow-billed cuckoo	FT;CE	Low to moderate elevation native forests lining the rivers and streams.
<i>Fish</i>		
<i>Oncorhynchus mykiss irideus</i> pop. 11 Steelhead – central valley DPS	FT;--	Primarily in cool, clear, fast-flowing waters. They typically thrive in tailwaters of large dams, but also can easily adapt to inhabiting lakes and reservoirs with ample food.
<i>Mammals</i>		
<i>Erethizon dorastum</i> North American porcupine	--;--	Most common in montane conifer, Douglas-fir, alpine dwarf-shrub, and wet meadow habitats. Less common in hardwood, hardwood-conifer, montane and valley-foothill riparian, aspen, pinyon-juniper, low sage, sagebrush, and bitterbrush.

SOURCE: DFG CNDDDB 2019

**ABBREVIATIONS:**

FE FEDERAL ENDANGERED

FT FEDERAL THREATENED

FC FEDERAL CANDIDATE

FSC FEDERAL SPECIES OF CONCERN

FD FEDERAL DELISTED

MBTA PROTECTED BY MIGRATORY BIRD TREATY ACT

CE CALIFORNIA ENDANGERED SPECIES

CT CALIFORNIA THREATENED

CP CALIFORNIA FULLY PROTECTED UNDER §3511, 4700, 5050 AND 5515 FG CODE

CSC CDFG SPECIES OF SPECIAL CONCERN



## Sensitive Natural Communities

The California Department of Fish and Wildlife (CDFW) considers sensitive natural communities to have significant biotic value, with species of plants and animals unique to each community. The CNDDDB search revealed documented occurrences of 4 sensitive natural communities within Willows and a brief description follows. This includes: Coastal and Valley Freshwater Marsh, Great Valley Cottonwood Riparian Forest, Great valley Mixed Riparian Forest, and Great Valley Willows Scrub.

All of these community types were once more widely distributed throughout California, but have been modified or destroyed by grazing, cultivation, and urban development. Since the remaining examples of these sensitive natural communities are under continuing threat from future development, CDFW considers them “highest inventory priorities” for future conservation.

## SALMON AND STEELHEAD TROUT FISHERIES

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

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

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

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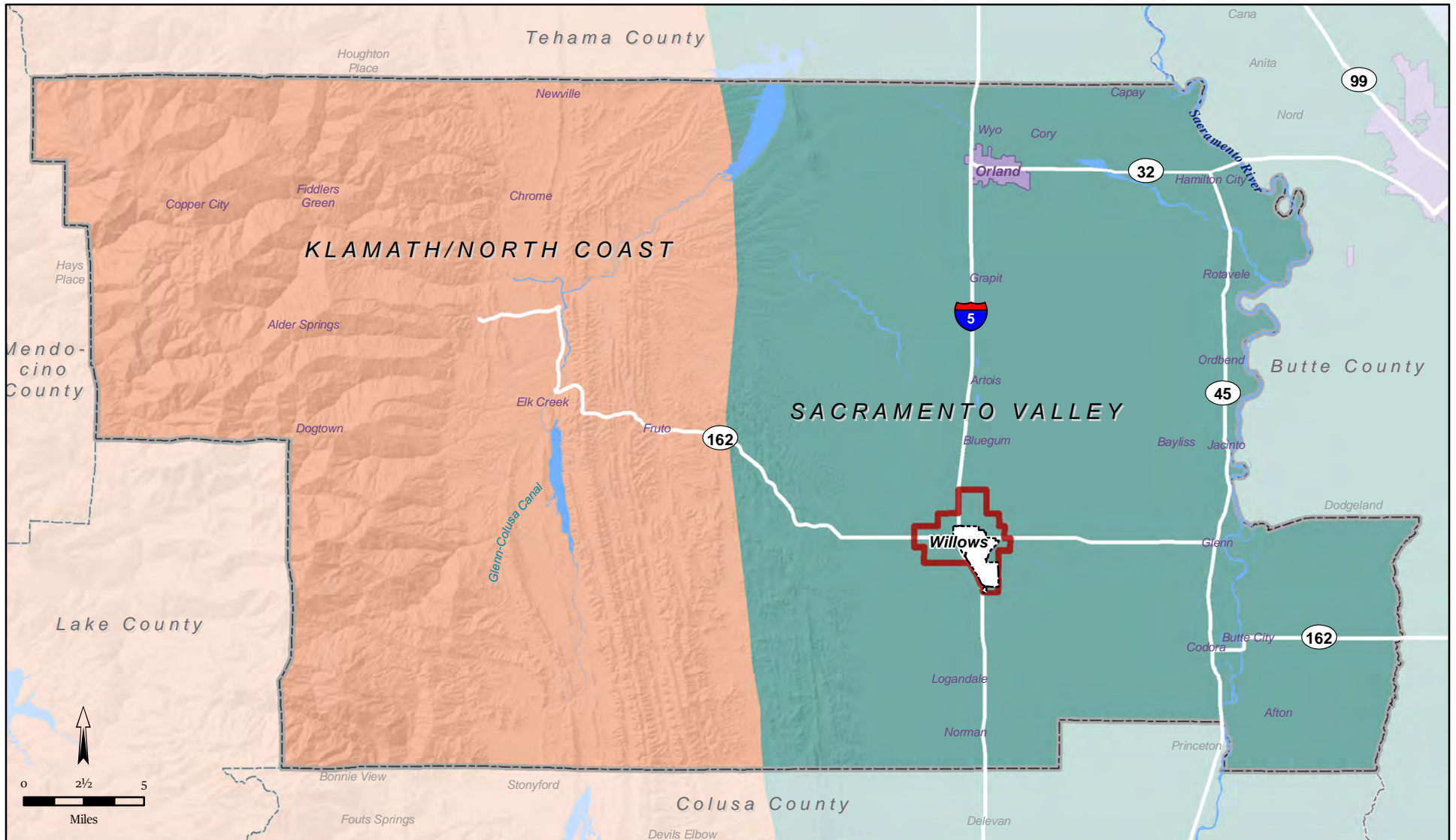
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Sources: INACC 2004; USGS National Map. Map date: June 26, 2019. Revised January 13, 2020.

**LEGEND**

City of Willows

Willows Sphere of Influence

**Bioregions**

Klamath/North Coast

Modoc

Sacramento Valley

San Joaquin Valley

Bay Area Delta

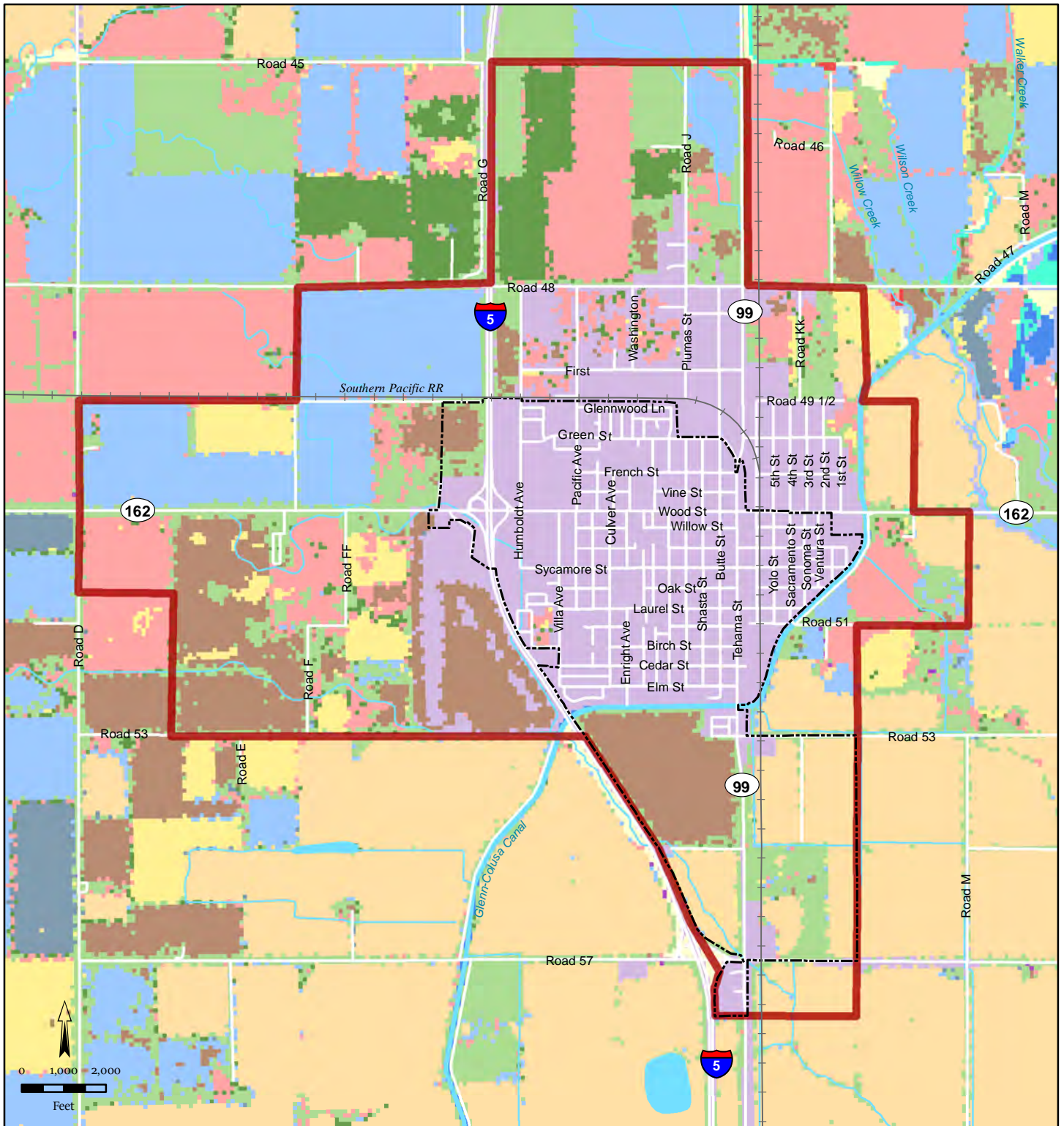
Sierra



CITY OF WILLOWS

FIGURE 5.2-1. BIOREGIONS

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Sources: Glenn County; FRAP Vegetation (FVEG15\_1). Map date: June 26, 2019. Revised: January 13, 2020.

**LEGEND**

City of Willows      Willows Sphere of Influence

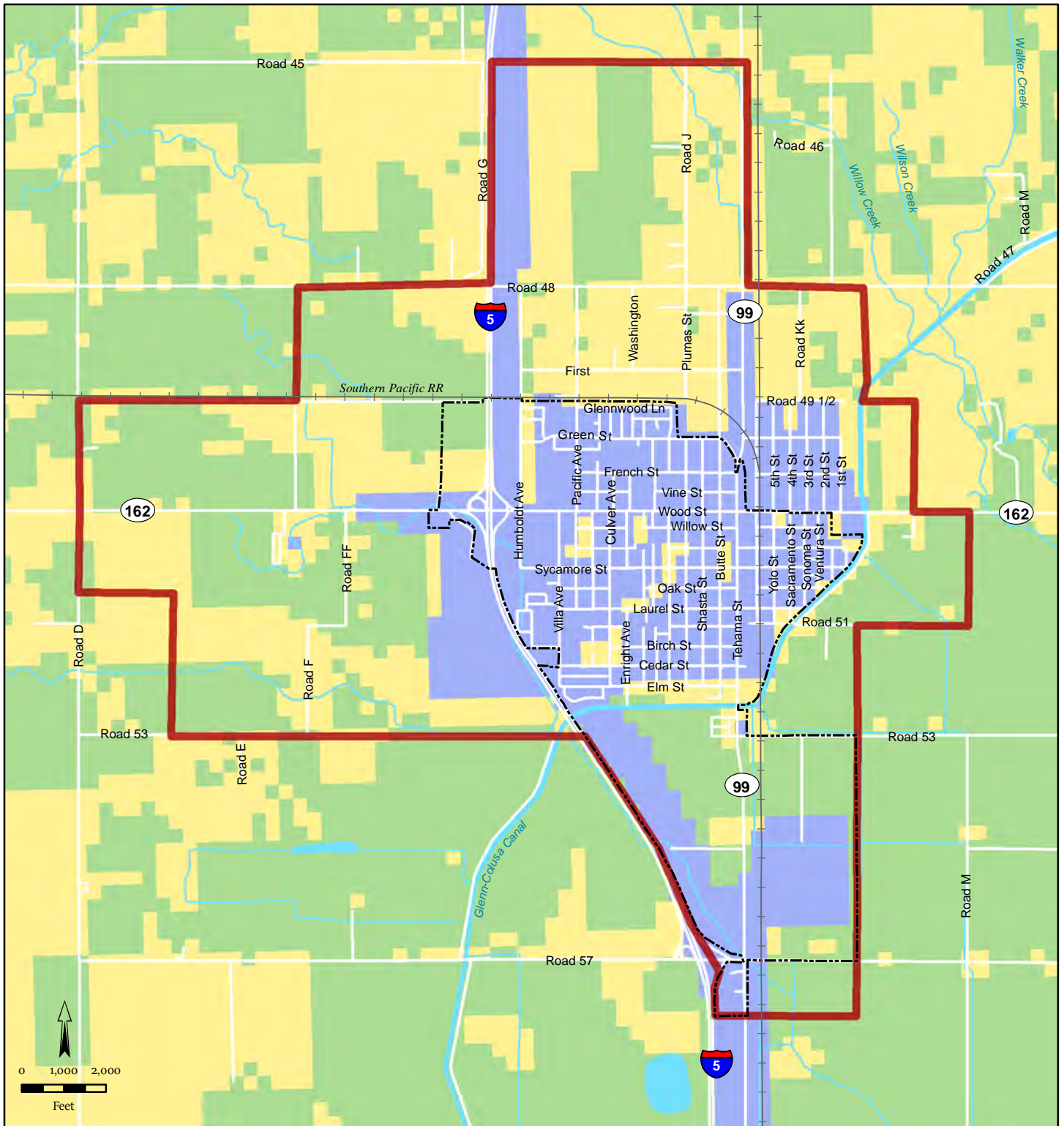
**Land Cover Types**

- |                     |                           |                          |
|---------------------|---------------------------|--------------------------|
| Annual Grassland    | Evergreen Orchard         | Rice                     |
| Cropland            | Fresh Emergent Wetland    | Riverine                 |
| Deciduous Orchard   | Irrigated Grain Crops     | Urban                    |
| Dryland Grain Crops | Irrigated Hayfield        | Valley Foothill Riparian |
| Eucalyptus          | Irrigated Row/Field Crops | Vineyard                 |

CITY OF WILLOWS

FIGURE 5.2-2. LAND COVER TYPES

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Sources: CalFire FRAP, mgmtscape\_v1, 2002. Map date: June 26, 2019. Revised: January 13, 2020.

**LEGEND**

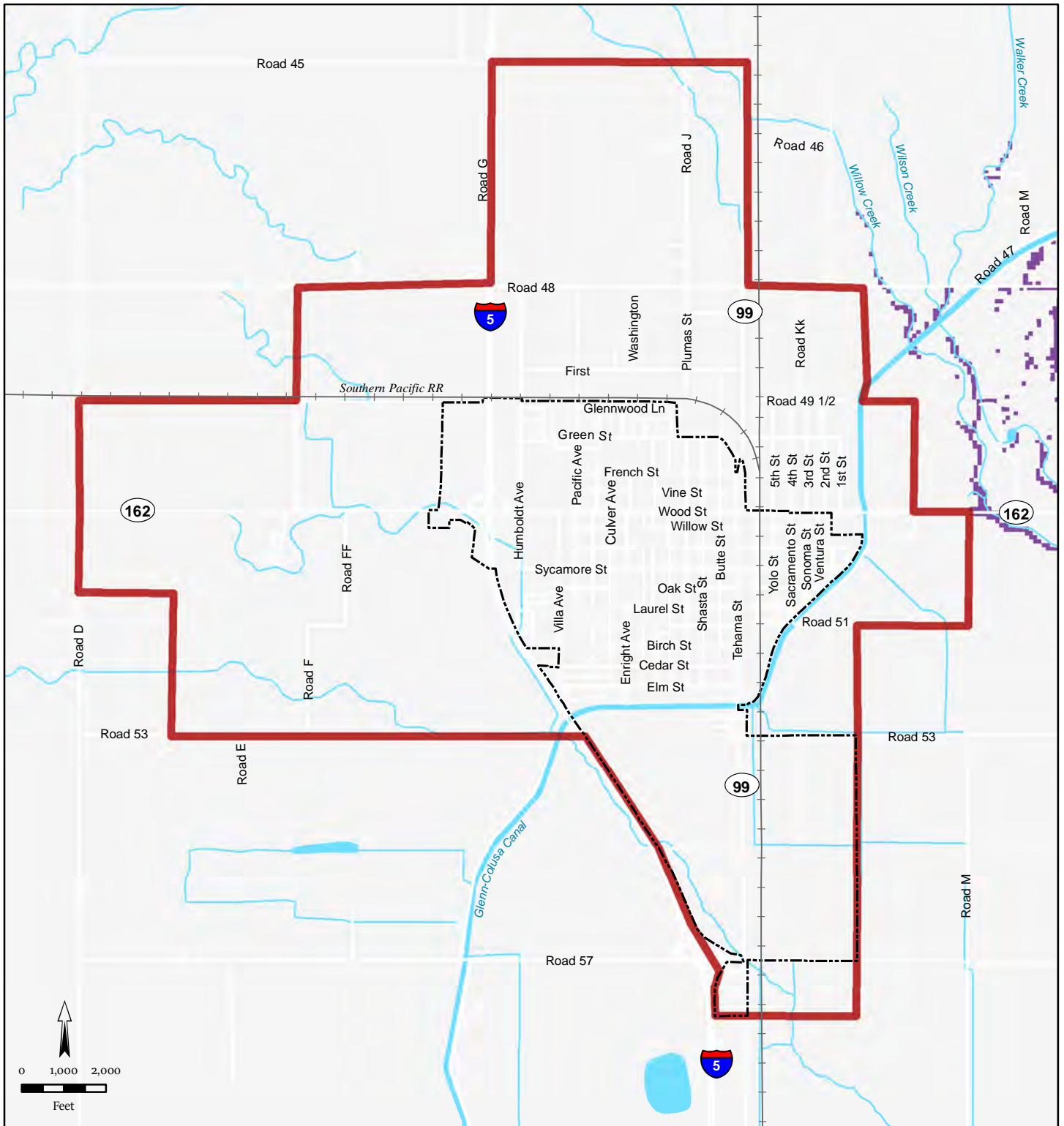
-  City of Willows
-  Willows Sphere of Influence
- Land Cover Types**
-  Agriculture - Active Farming
-  Urban
-  Agriculture - Rangeland/Forestland

CITY OF WILLOWS

FIGURE 5.2-3. LAND MANAGEMENT CLASSIFICATIONS

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Sources: CalFire FRAP, mgmtscene\_v1, 2002. Map date: June 26, 2019. Revised: January 13, 2020.

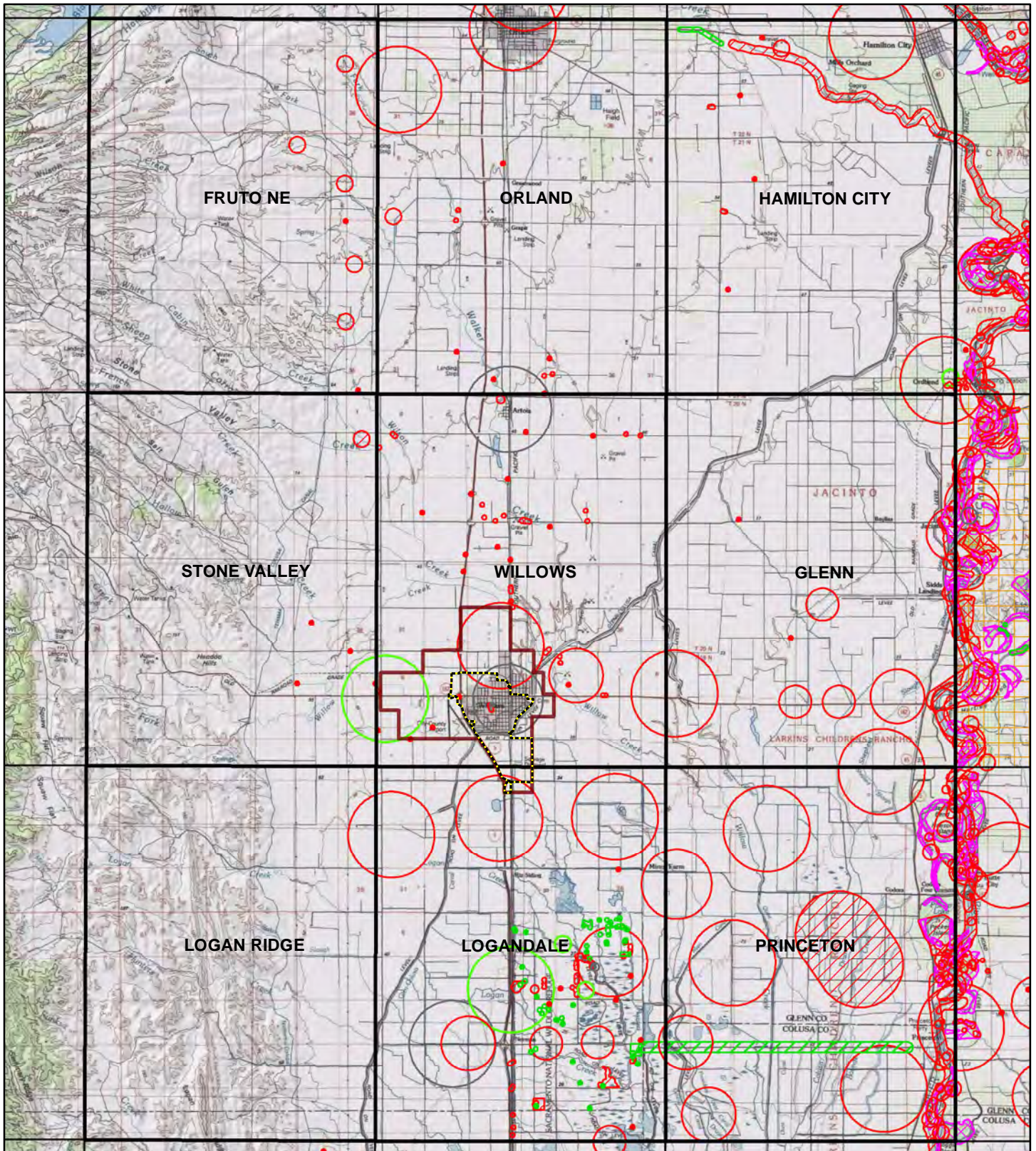
CITY OF WILLOWS

LEGEND

-  City of Willows
-  Willows Sphere of Influence
- Oak Woodland Communities**
-  Valley Foothill Riparian

FIGURE 5.2-4. OAK WOODLAND COMMUNITIES

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**LEGEND**

- City of Willows
- Willows Sphere of Influence
- Special Status Species**
- Plant (80m)
- Plant (specific)
- Plant (non-specific)
- Plant (circular)
- Animal (80m)
- Animal (specific)
- Animal (non-specific)
- Animal (circular)
- Terrestrial Comm. (specific)
- Terrestrial Comm. (circular)
- Multiple (80m)
- Multiple (specific)
- Multiple (non-specific)
- Multiple (circular)
- Sensitive Environmental Occurrence

CITY OF WILLOWS  
**FIGURE 5.2-5. CALIFORNIA NATURAL DIVERSITY DATABASE**  
 9-Quad Search

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## 5.3 AIR QUALITY

This section discusses the regulatory framework, regional climate, air pollution potential, and existing ambient air quality for criteria air pollutants, toxic air contaminants, odors, and dust. Information presented in this section is based in part on information gathered from the Glenn County Air Pollution Control District (Glenn County APCD) and the California Air Resources Board (CARB).

### REGULATORY FRAMEWORK

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#### *FEDERAL*

#### **Clean Air Act**

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

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

The law recognizes the importance for each state to locally carry out the requirements of the FCAA, as special consideration of local industries, geography, housing patterns, etc. are needed to have full comprehension of the local pollution control problems. As a result, the EPA requires each state to develop a State Implementation Plan (SIP) that explains how each state will implement the FCAA within their jurisdiction. A SIP is a collection of rules and regulations that a particular state will implement to control air quality within their jurisdiction. CARB is the state agency that is responsible for preparing the California SIP.

#### **U.S. Environmental Protection Agency**

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 (FCAA), which was enacted in 1963. The FCAA was amended in 1970, 1977, and 1990.

The FCAA required EPA to establish primary and secondary national ambient air quality standards (NAAQS). The FCAA 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 (FCAAA) 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 conformity to the mandates of the FCAAA and determine if implementation will achieve air quality goals. If the 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.

### **Federal Hazardous Air Pollutant Program**

Title III of the FCAA requires the EPA to promulgate national emissions standards for hazardous air pollutants (NESHAPs). 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), the EPA developed technology-based emission standards designed to produce the maximum emission reduction achievable. These standards are generally referred to as requiring maximum available control technology (MACT). These Federal rules are also commonly referred to as MACT standards, because they reflect the Maximum Achievable Control Technology. For area sources, the standards may be different, based on generally available control technology. In the second phase (2001–2008), the EPA is required to promulgate health risk–based emissions standards were deemed necessary to address risks remaining after implementation of the technology-based NESHAP standards. The FCAAA required the EPA to promulgate 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, §219 required the use of reformulated gasoline in selected U.S. cities (those with the most severe ozone nonattainment conditions) to further reduce mobile-source emissions.

### **Transportation Control Measures**

One particular aspect of the SIP development process is the consideration of potential control measures as a part of making progress towards clean air goals. While most SIP control measures are aimed at reducing emissions from stationary sources, some are typically also created to address mobile or transportation sources. These are known as transportation control measures (TCMs). TCM strategies are designed to reduce vehicle miles traveled and trips, or vehicle idling and associated air pollution. These goals are achieved by developing attractive and convenient alternatives to single-occupant vehicle use. Examples of TCMs include ridesharing programs, transportation infrastructure improvements such as adding bicycle and carpool lanes, and expansion of public transit.

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### *STATE*

## **CARB Mobile-Source Regulation**

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

## **California Clean Air Act**

The California Clean Air Act (CCAA) was first signed into law in 1988. The CCAA provides a comprehensive framework for air quality planning and regulation, and spells out, in statute, the state's air quality goals, planning and regulatory strategies, and performance. CARB is the agency responsible for administering the CCAA. CARB established ambient air quality standards pursuant to the California Health and Safety Code (CH&SC) [§39606(b)], which are similar to the federal standards. The Sacramento Valley Air Pollution Control District is one of 35 air quality management districts that have prepared air quality management plans to accomplish a five percent annual reduction in emissions documenting progress toward the state ambient air quality standards.

## **Air Quality Standards**

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

Federal and state ambient air quality standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, PM<sub>10</sub>, and lead. In addition, California has created standards for pollutants that are not covered by federal standards. The state and federal primary standards for major pollutants are shown in Table 5.3-1.

## **Tanner Air Toxics Act**

California regulates TACs primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). The Tanner Act sets forth a formal procedure for 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 more than 21 TACs and has 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 AB 2588 requires that existing facilities that emit toxic substances above a specified level prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures. 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 rules and standards provide for (1) more stringent emission standards for some new urban bus engines, beginning with 2002 model year engines; (2) zero-emission bus demonstration and purchase requirements applicable to transit agencies; and (3) reporting requirements under which transit agencies must demonstrate compliance with the urban transit bus fleet rule. Upcoming milestones include the low-sulfur diesel-fuel requirement, and tighter emission standards for heavy-duty diesel trucks (2007) and off-road diesel equipment (2011) nationwide.

### **Transport of Pollutants**

The California Clean Air Act, Section 39610 (a), directs the CARB to “identify each district in which transported air pollutants from upwind areas outside the district cause or contribute to a violation of the ozone standard and to identify the district of origin of transported pollutants.” The information regarding the transport of air pollutants from one basin to another was to be quantified to assist interrelated basins in the preparation of plans for the attainment of State ambient air quality standards. Numerous studies conducted by the CARB have identified air basins that are impacted by pollutants transported from other air basins (as of 1993). Among the air basins affected by air pollution transport from the SFBAAB are the North Central Coast Air Basin, the Mountain Counties Air Basin, the San Joaquin Valley Air Basin, and the Sacramento Valley Air Basin. The SFBAAB was also identified as an area impacted by the transport of air pollutants from the Sacramento region.

#### *LOCAL*

### **Glenn County Air Pollution Control District**

The Glenn County Air Pollution Control District (APCD) is the local agency with primary responsibility for compliance with both the federal and state standards and for ensuring that air quality conditions are maintained. They do this through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues.

Activities of the Glenn County APCD include the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, issuance of permits for stationary sources of air pollution, inspection of stationary sources of air pollution and response to citizen complaints, monitoring of ambient air quality and meteorological conditions, and implementation of programs and regulations required by the FCAA and CCAA.

#### *GLENN COUNTY APCD RULES AND REGULATIONS*

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## ENVIRONMENTAL SETTING

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### **Sacramento Valley Air Basin (SVAB)**

Glenn County is located within the Sacramento Valley Air Basin (SVAB). The SVAB is the northern half of California's Great Valley and is bordered on three sides (west, north, and east) by mountain ranges, with peaks in the eastern range above 9,000 feet. Figure 5.3-1 delineates the boundary of the SVAB. The SVAB is approximately 13,700 square miles and essentially a smooth valley floor with elevations ranging from 40 to 500 feet. The rolling valley is interrupted by the Sutter Buttes, an area of 80 square miles in northern Sutter County, which rise abruptly to more than 2,100 feet above the valley floor.

The SVAB consists of 11 counties and is split into two planning sections based on the degree of pollutant transport from one area to the other and the level of emissions within each area. The Glenn County area belongs to the Northern Sacramento Valley Air Basin (NSVAB), which is composed of the seven northern-most counties of the SVAB. These counties include Butte, Colusa, Glenn, Shasta, Sutter, Tehama, and Yuba.

The SVAB has been categorized as "moderately" non-attainment for ozone and particulate matter under the state standards. The air basin of the Sacramento Valley is about 200 miles long in a north-south direction, and has a maximum width of about 150 miles, although the width of the valley floor only averages about 50 miles.

The pollution potential of the Sacramento Valley is very high. The surrounding topographic features restrict air movement through and out of the basin and, as a result, impede the dispersion of pollutants from the basin. Inversion layers are formed in the SVAB throughout the year. (An inversion layer is created when a mass of warm dry air sits over cooler air near the ground, preventing vertical dispersion of pollutants from the air mass below). Surrounding elevated terrain in conjunction with temperature inversions frequently restrict lateral and vertical dilution of pollutants. Abundant sunshine and warm temperatures in summer are ideal conditions for the formation of photochemical oxidant, and the Valley is a frequent scene of photochemical pollution.

### **Climate**

The SVAB has an inland Mediterranean climate, with mild, rainy winter weather from November through March and warm to hot, dry weather from May through September. Sacramento Valley temperatures range from 20 to 115 degrees Fahrenheit and the average annual rainfall is 20 inches.

Glenn County has warm, dry days and relatively cool nights, with clear skies and limited rainfall. Winters are mild with light rains. In summer, high temperatures often exceed 100 degrees, with averages in the mid and high 90's. Summer low temperatures average in the high 50's.

### **Air Movement**

The Sacramento Valley portion of the air basin forms a bowl, bounded on the west by the Coast Ranges, on the north by the Cascade Range, and on the east by the Sierra Nevada. These mountain ranges reach heights exceeding 7,000 feet above sea level. During summer, the wide, flat expanse of the Sacramento Valley provides an ideal environment for the formation of photochemical smog. Moreover, the

prevailing winds in the Sacramento Valley blow from south to north, driven by the marine air traveling through the Carquinez Strait. These winds can transport pollutants from the broader Sacramento area and from the San Francisco Bay Area to the Northern Sacramento Valley Air Basin. The mountain ranges that surround the Northern Sacramento Valley Air Basin provide a physical barrier to continued movement of the air mass, significantly hindering the dispersal of pollutants.

Generally, the basin experiences moderate to very poor capability to disperse pollutants nearly 80 percent of the time. This is, in large measure, due to the relatively stable atmosphere which acts to suppress vertical air movement. Extremely stable atmospheric conditions referred to as "inversions" act as barriers to pollutants. In valley locations under 1,000 ft, they create a "lid" under which pollutants are trapped. Dust and other pollutants can become trapped within these inversion layers and will not disperse until atmospheric conditions become more unstable. This situation creates concentrations of pollutants at or near the ground surface which pose significant health risks for plants, animals, and people.

Inversions occur in the SVAB with great frequency in all seasons. The most stable inversions occur in late summer and fall. The summertime inversions are often the result of marine air pushing under an overlying warm air mass. These are termed "marine inversions" and are generally accompanied by brisk afternoon winds, which provide good air circulation.

In contrast, many autumn inversions are the result of warm air subsiding in a high-pressure cell where accompanying light winds do not provide adequate dispersion. Autumn inversions limit vertical mixing, creating a very stable layer of air with very light or calm winds. These inversions are usually present on clear cold nights during late fall and winter. In the morning, these ground-based inversions are weakened and eventually eliminated by solar heating. As a result, they are strongest in the late night and early morning, when ground-level temperatures are coldest and solar radiation is low.

### **Seasonal Pollution Variations**

Carbon monoxide, oxides of nitrogen, particulate matters, and lead particulate concentrations in the late fall and winter are highest when there is little interchange of air between the valley and the coast and when humidity is high following winter rains. This type of weather is associated with radiation fog, known as tule fog, when temperature inversions at ground level persist over the entire valley for several weeks and air movement is virtually absent.

Pollution potential in the Glenn County area is relatively high due to the combination of air pollutant emissions sources, transport of pollutants into the area and meteorological conditions that are conducive to high levels of air pollution. Elevated levels of particulate matter (primarily very small particulates or PM<sub>10</sub>) and ground-level ozone are of most concern to regional air quality officials.

Local carbon monoxide "hot spots" are important to a lesser extent. Ground-level ozone, the principal component of smog, is not directly emitted into the atmosphere but is formed by the reaction of reactive organic gases (ROG) and nitrogen oxides (NOx) (known as ozone precursor pollutants) in the presence of strong sunlight. Ozone levels are highest in Glenn County during late spring through early fall, when weather conditions are conducive and emissions of the precursor pollutants are highest.

Surface-based inversions that form during late fall and winter nights cause localized air pollution problems (PM<sub>10</sub> and carbon monoxide) near the emission sources because of poor dispersion conditions. Emission sources are primarily from automobiles. Conditions are exacerbated during drought-year winters.

## Sunlight

The presence and intensity of sunlight are necessary prerequisites for the formation of photochemical smog. Under the influence of the ultraviolet radiation of sunlight, certain original or “primary” pollutants (mainly reactive hydrocarbons and oxides of nitrogen) react to form “secondary” pollutants (primarily oxidants). Since this process is time dependent, secondary pollutants can be formed many miles downwind from the emission sources. Because of the prevailing daytime winds and time delayed nature of photochemical smog, oxidant concentrations are highest in the inland areas of the Sacramento Valley.

## Temperature Inversions

A temperature inversion is a reversal in the normal decrease of temperature as altitude increases. In most parts of the country, air near ground level is warmer than the air above it. Semi-permanent systems of high barometric pressure fronts establish themselves over the basin, deflecting low-pressure systems that might otherwise bring cleansing rain and winds. The height of the base of the inversion is known as the “mixing height” and controls the volume of air available for the mixing and dispersion of air pollutants.

The interrelationship of air pollutants and climatic factors are most critical on days of greatly reduced atmospheric ventilation. On days such as these, air pollutants accumulate because of the simultaneous occurrence of three favorable factors: low inversions, low maximum mixing heights and low wind speeds. Although these conditions may occur throughout the year, the months of July, August and September generally account for more than 40 percent of these occurrences.

The potential for high contaminant levels varies seasonally for many contaminants. During late spring, summer, and early fall, light winds, low mixing heights, and sunshine combine to produce conditions favorable for the maximum production of oxidants, mainly ozone. When strong surface inversions are formed on winter nights, especially during the hours before sunrise, coupled with near-calm winds, carbon monoxide from automobile exhausts becomes highly concentrated. The highest yearly concentrations of carbon monoxide and oxides of nitrogen are measured during November, December and January.

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## CRITERIA AIR POLLUTANTS AND EXISTING AMBIENT AIR QUALITY

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### Criteria Pollutants

The U.S. Environmental Protection Agency (U.S. EPA) uses six "criteria pollutants" as indicators of air quality, and has established a maximum concentration above which adverse effects on human health may occur for each of them. These threshold concentrations are called National Ambient Air Quality Standards (NAAQS). Each criteria pollutant is described below.

**Ozone (O<sub>3</sub>)** is a photochemical oxidant and the major component of smog. While ozone in the upper atmosphere is beneficial to life by shielding the earth from harmful ultraviolet radiation from the sun, high concentrations of ozone at ground level are a major health and environmental concern. Ozone is not emitted directly into the air but is formed through complex chemical reactions between precursor emissions of volatile organic compounds (VOC) and oxides of nitrogen (NO<sub>x</sub>) in the presence of sunlight. These reactions are stimulated by sunlight and temperature so that peak ozone levels occur typically during the warmer times of the year. Both VOCs and NO<sub>x</sub> are emitted by transportation and industrial sources. VOCs are emitted from sources as diverse as autos, chemical manufacturing, dry cleaners, paint shops and other sources using solvents.

## 5.0 CONSERVATION AND NATURAL RESOURCES

The reactivity of ozone causes health problems because it damages lung tissue, reduces lung function and sensitizes the lungs to other irritants. Scientific evidence indicates that ambient levels of ozone not only affect people with impaired respiratory systems, such as asthmatics, but healthy adults and children as well. Exposure to ozone for several hours at relatively low concentrations has been found to significantly reduce lung function and induce respiratory inflammation in normal, healthy people during exercise. This decrease in lung function generally is accompanied by symptoms including chest pain, coughing, sneezing and pulmonary congestion.

**Carbon monoxide (CO)** is a colorless, odorless and poisonous gas produced by incomplete burning of carbon in fuels. When CO enters the bloodstream, it reduces the delivery of oxygen to the body's organs and tissues. Health threats are most serious for those who suffer from cardiovascular disease, particularly those with angina or peripheral vascular disease. Exposure to elevated CO levels can cause impairment of visual perception, manual dexterity, learning ability and performance of complex tasks.

**Nitrogen dioxide (NO<sub>2</sub>)** is a brownish, highly reactive gas that is present in all urban atmospheres. NO<sub>2</sub> can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections. Nitrogen oxides are an important precursor both to ozone (O<sub>3</sub>) and acid rain, and may affect both terrestrial and aquatic ecosystems. The major mechanism for the formation of NO<sub>2</sub> in the atmosphere is the oxidation of the primary air pollutant nitric oxide. NO<sub>x</sub> plays a major role, together with VOCs, in the atmospheric reactions that produce ozone. NO<sub>x</sub> forms when fuel is burned at high temperatures. The two major emission sources are transportation and stationary fuel combustion sources such as electric utility and industrial boilers.

**Sulfur dioxide (SO<sub>2</sub>)** affects breathing and may aggravate existing respiratory and cardiovascular disease in high doses. Sensitive populations include asthmatics, individuals with bronchitis or emphysema, children and the elderly. SO<sub>2</sub> is also a primary contributor to acid deposition, or acid rain, which causes acidification of lakes and streams and can damage trees, crops, historic buildings and statues. In addition, sulfur compounds in the air contribute to visibility impairment in large parts of the country. Ambient SO<sub>2</sub> results largely from stationary sources such as coal and oil combustion, steel mills, refineries, pulp and paper mills and from nonferrous smelters.

**Particulate matter (PM)** includes dust, dirt, soot, smoke and liquid droplets directly emitted into the air by sources such as factories, power plants, cars, construction activity, fires and natural windblown dust. Particles formed in the atmosphere by condensation or the transformation of emitted gases such as SO<sub>2</sub> and VOCs are also considered particulate matter.

Based on studies of human populations exposed to high concentrations of particles (sometimes in the presence of SO<sub>2</sub>) and laboratory studies of animals and humans, there are major effects of concern for human health. These include effects on breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular disease, alterations in the body's defense systems against foreign materials, damage to lung tissue, carcinogenesis and premature death.

Respirable particulate matter (PM<sub>10</sub>) consists of small particles, less than 10 microns in diameter, of dust, smoke, or droplets of liquid which penetrate the human respiratory system and cause irritation by themselves, or in combination with other gases. Particulate matter is caused primarily by dust from grading and excavation activities, from agricultural activities (as created by soil preparation activities, fertilizer and pesticide spraying, weed burning and animal husbandry), and from motor vehicles, particularly diesel-powered vehicles. PM<sub>10</sub> causes a greater health risk than larger particles, since these fine particles can more easily penetrate the defenses of the human respiratory system.

Fine particulate matter (PM<sub>2.5</sub>) consists of fine particles, which are less than 2.5 microns in size. Similar to PM<sub>10</sub>, these particles are primarily the result of combustion in motor vehicles, particularly diesel engines, as well as from industrial sources and residential/agricultural activities such as burning. It is also formed through the reaction of other pollutants. As with PM<sub>10</sub>, these particulates can increase the chance of respiratory disease, and cause lung damage and cancer. In 1997, the EPA created new Federal air quality standards for PM<sub>2.5</sub>.

The major subgroups of the population that appear to be most sensitive to the effects of particulate matter include individuals with chronic obstructive pulmonary or cardiovascular disease or influenza, asthmatics, the elderly and children. Particulate matter also impacts soils and damages materials, and is a major cause of visibility impairment.

**Lead (Pb)** exposure can occur through multiple pathways, including inhalation of air and ingestion of Pb in food, water, soil or dust. Excessive Pb exposure can cause seizures, mental retardation and/or behavioral disorders. Low doses of Pb can lead to central nervous system damage. Recent studies have also shown that Pb may be a factor in high blood pressure and subsequent heart disease.

### **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 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; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another.

It is also important to note that 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.

### **Sensitive Receptors**

A sensitive receptor is a location where human populations, especially children, seniors, and sick persons, are present and where there is a reasonable expectation of continuous human exposure to

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pollutants. Examples of sensitive receptors include residences, hospitals, schools, daycare facilities, elderly housing, and convalescent facilities.

### Ambient Air Quality

Both the U.S. Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (CARB) have established ambient air quality standards for common pollutants. These ambient air quality standards represent safe levels of contaminants that avoid specific adverse health effects associated with each pollutant.

The federal and California state ambient air quality standards are summarized in Table 5.3-1 for important pollutants. The federal and state ambient standards were developed independently, although both processes attempted to avoid health-related effects. As a result, the federal and state standards differ in some cases. In general, the California state standards are more stringent. This is particularly true for ozone and particulate matter between 2.5 and 10 microns in diameter (PM<sub>10</sub>).

The U.S. Environmental Protection Agency established new national air quality standards for ground-level ozone and for fine particulate matter in 1997. The 1-hour ozone standard was phased out and replaced by an 8-hour standard of 0.075 PPM. Implementation of the 8-hour standard was delayed by litigation, but was determined to be valid and enforceable by the U.S. Supreme Court in a decision issued in February of 2001. In April 2005, the Air Resources Board approved a new eight-hour standard of 0.070 ppm and retained the one-hour ozone standard of 0.09 after an extensive review of the scientific literature. The U.S. EPA signed a final rule for the Federal ozone eight-hour standard of 0.070 ppm on October 1, 2015, and was effective as of December 28, 2015.

**TABLE 5.3-1: FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS**

POLLUTANT	AVERAGING TIME	FEDERAL PRIMARY STANDARD	STATE STANDARD
Ozone	1-Hour	--	0.09 ppm
	8-Hour	0.070 ppm	0.070 ppm
Carbon Monoxide	8-Hour	9.0 ppm	9.0 ppm
	1-Hour	35.0 ppm	20.0 ppm
Nitrogen Dioxide	Annual	0.053 ppm	0.03 ppm
	1-Hour	0.100 ppm	0.18 ppm
Sulfur Dioxide	Annual	0.03 ppm	--
	24-Hour	0.14 ppm	0.04 ppm
	1-Hour	0.075 ppm	0.25 ppm
PM <sub>10</sub>	Annual	--	20 ug/m <sup>3</sup>
	24-Hour	150 ug/m <sup>3</sup>	50 ug/m <sup>3</sup>
PM <sub>2.5</sub>	Annual	12 ug/m <sup>3</sup>	12 ug/m <sup>3</sup>
	24-Hour	35 ug/m <sup>3</sup>	--
Lead	30-Day Avg.	--	1.5 ug/m <sup>3</sup>
	3-Month Avg.	0.15 ug/m <sup>3</sup>	--

NOTES: PPM = PARTS PER MILLION,  $\mu\text{G}/\text{M}^3$  = MICROGRAMS PER CUBIC METER

SOURCES: CALIFORNIA AIR RESOURCES BOARD, 2017A.

In 1997, new national standards for fine particulate matter diameter 2.5 microns or less (PM<sub>2.5</sub>) were adopted for 24-hour and annual averaging periods. The current PM<sub>10</sub> standards were to be retained, but the method and form for determining compliance with the standards were revised.

In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TACs) are another group of pollutants of concern. TACs are injurious in small quantities and are regulated despite the absence of criteria documents. The identification, regulation and monitoring of TACs is relatively recent compared

to that for criteria pollutants. Unlike criteria pollutants, TACs are regulated on the basis of risk rather than specification of safe levels of contamination.

Existing air quality concerns within the project area is related to increases of regional criteria air pollutants (e.g., ozone and particulate matter), exposure to toxic air contaminants, odors, and increases in greenhouse gas emissions contributing to climate change. The primary source of ozone (smog) pollution is motor vehicles which account for 70 percent of the ozone in the region. Particulate matter is caused by dust, primarily dust generated from construction and grading activities, and smoke which is emitted from fireplaces, wood-burning stoves, and agricultural burning.

**Attainment Status**

In accordance with the California Clean Air Act (CCAA), the CARB is required to designate areas of the state as attainment, nonattainment, or unclassified with respect to applicable standards. An “attainment” designation for an area signifies that pollutant concentrations did not violate the applicable standard in that area. A “nonattainment” designation indicates that a pollutant concentration violated the applicable standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria.

Depending on the frequency and severity of pollutants exceeding applicable standards, the nonattainment designation can be further classified as serious nonattainment, severe nonattainment, or extreme nonattainment, with extreme nonattainment being the most severe of the classifications. An “unclassified” designation signifies that the data do not support either an attainment or nonattainment status. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The U.S. EPA designates areas for ozone, CO, and NO<sub>2</sub> as “does not meet the primary standards,” “cannot be classified,” or “better than national standards.” For SO<sub>2</sub>, areas are designated as “does not meet the primary standards,” “does not meet the secondary standards,” “cannot be classified,” or “better than national standards.” However, the CARB terminology of attainment, nonattainment, and unclassified is more frequently used.

Glenn County has a State designation of Nonattainment for O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> and is either Unclassified or Attainment for all other criteria pollutants. The County has a national designation of Nonattainment for O<sub>3</sub> and PM<sub>2.5</sub>. The County is designated either attainment or unclassified for the remaining national standards. Table 5.3-2 presents the State and national attainment status for Glenn County.

**TABLE 5.3-2: STATE AND NATIONAL ATTAINMENT STATUS**

<i>CRITERIA POLLUTANTS</i>	<i>STATE DESIGNATIONS</i>	<i>NATIONAL DESIGNATIONS</i>
Ozone	Nonattainment	Nonattainment
PM <sub>10</sub>	Nonattainment	Attainment
PM <sub>2.5</sub>	Nonattainment	Nonattainment
Carbon Monoxide	Attainment	Unclassified/Attainment
Nitrogen Dioxide	Attainment	Unclassified/Attainment
Sulfur Dioxide	Attainment	Unclassified
Sulfates	Attainment	
Lead	Attainment	
Hydrogen Sulfide	Unclassified	
Visibility Reducing Particles	Unclassified	

SOURCES: CALIFORNIA AIR RESOURCES BOARD (2018). [WWW.ARB.CA.GOV/DESIG/ADM/ADM.HTM](http://WWW.ARB.CA.GOV/DESIG/ADM/ADM.HTM)

## 5.0 CONSERVATION AND NATURAL RESOURCES

### Sacramento Valley Air Basin Monitoring

The SVAB consists of eleven counties, from Shasta County in the north to Sacramento County in the south. CARB maintains numerous air quality monitoring sites throughout each County in the Air Basin to measure O<sub>3</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub>. It is important to note that the Federal ozone 1-hour standard was revoked by the EPA and is no longer applicable for Federal standards. Data obtained from the SVAB monitoring sites over the last 3-year period is shown in Table 5.5-3.

**TABLE 5.3-3: SVAB AMBIENT AIR QUALITY MONITORING DATA SUMMARY - OZONE**

Year	Days > Standard				1-Hour Observations			8-Hour Averages				Year Coverage	
	State		National		Max.	State	Nat'l	State		National			
	1-Hr	8-Hr	1-Hr	8-Hr		D.V. <sup>1</sup>	D.V. <sup>2</sup>	Max.	D.V. <sup>1</sup>	Max.	D.V. <sup>2</sup>	Min	Max
2017	8	47	1	45	0.121	0.11	0.107	0.092	0.091	0.091	0.084	0	100
2016	17	61	1	59	0.115	0.11	0.107	0.100	0.093	0.099	0.083	81	100
2015	9	42	1	38	0.122	0.10	0.101	0.100	0.088	0.100	0.080	0	100

NOTES: ALL CONCENTRATIONS EXPRESSED IN PARTS PER MILLION. THE NATIONAL 1-HOUR OZONE STANDARD WAS REVOKED IN JUNE 2005 AND IS NO LONGER IN EFFECT. STATISTICS RELATED TO THE REVOKED STANDARD ARE SHOWN IN ITALICS. D.V.<sup>1</sup> = STATE DESIGNATION VALUE. D.V.<sup>2</sup> = NATIONAL DESIGN VALUE.

SOURCE: CALIFORNIA AIR RESOURCES BOARD (AEROMETRIC DATA ANALYSIS AND MANAGEMENT SYSTEM OR IADAM) AIR POLLUTION SUMMARIES.

**TABLE 5.3-4: SVAB AMBIENT AIR QUALITY MONITORING DATA SUMMARY - PM<sub>2.5</sub>**

Year	Est. Days > Nat'l '06 Std.	Annual Average		Nat'l Ann. Std. D.V. <sup>1</sup>	State Annual D.V. <sup>2</sup>	Nat'l '06 Std. 98th Percentile	Nat'l '06 24-Hr Std. D.V. <sup>1</sup>	High 24-Hour Average		Year Coverage	
		Nat'l	State					Nat'l	State	Min.	Max.
2017	12.3	9.7	14.0	9.6	14	40.6	34	85.9	85.9	87	100
2016	3.3	8.8	11.4	9.3	12	28.2	31	46.8	57.5	8	100
2015	8.7	10.4	12.3	10.2	13	37.8	35	109.8	109.8	86	99

NOTES: ALL CONCENTRATIONS EXPRESSED IN PARTS PER MILLION. STATE AND NATIONAL STATISTICS MAY DIFFER FOR THE FOLLOWING REASONS: STATE STATISTICS ARE BASED ON CALIFORNIA APPROVED SAMPLERS, WHEREAS NATIONAL STATISTICS ARE BASED ON SAMPLERS USING FEDERAL REFERENCE OR EQUIVALENT METHODS. STATE AND NATIONAL STATISTICS MAY THEREFORE BE BASED ON DIFFERENT SAMPLERS. STATE CRITERIA FOR ENSURING THAT DATA ARE SUFFICIENTLY COMPLETE FOR CALCULATING VALID ANNUAL AVERAGES ARE MORE STRINGENT THAN THE NATIONAL CRITERIA. D.V.<sup>1</sup> = STATE DESIGNATION VALUE. D.V.<sup>2</sup> = NATIONAL DESIGN VALUE.

SOURCE: CALIFORNIA AIR RESOURCES BOARD (AEROMETRIC DATA ANALYSIS AND MANAGEMENT SYSTEM OR IADAM) AIR POLLUTION SUMMARIES.

**TABLE 5.3-5: SVAB AMBIENT AIR QUALITY MONITORING DATA SUMMARY - PM<sub>10</sub>**

Year	Est. Days > Std.		Annual Average		3-Year Average		High 24-Hr Average		Year Coverage
	Nat'l	State	Nat'l	State	Nat'l	State	Nat'l	State	
2016	6.1	19.3	26.4	22.0	24	23	237.7	242.0	100
2015	*	12.2	24.2	20.6	23	25	88.5	88.9	100
2014	0.0	25.2	27.0	24.9	20	25	114.6	118.0	100

NOTES: THE NATIONAL ANNUAL AVERAGE PM<sub>10</sub> STANDARD WAS REVOKED IN DECEMBER 2006 AND IS NO LONGER IN EFFECT. AN EXCEEDANCE IS NOT NECESSARILY A VIOLATION. STATISTICS MAY INCLUDE DATA THAT ARE RELATED TO AN EXCEPTIONAL EVENT. STATE AND NATIONAL STATISTICS MAY DIFFER FOR THE FOLLOWING REASONS: STATE STATISTICS ARE BASED ON CALIFORNIA APPROVED SAMPLERS, WHEREAS NATIONAL STATISTICS ARE BASED ON SAMPLERS USING FEDERAL REFERENCE OR EQUIVALENT METHODS. STATE AND NATIONAL STATISTICS MAY THEREFORE BE BASED ON DIFFERENT SAMPLERS. NATIONAL STATISTICS ARE BASED ON STANDARD CONDITIONS. STATE CRITERIA FOR ENSURING THAT DATA ARE SUFFICIENTLY COMPLETE FOR CALCULATING VALID ANNUAL AVERAGES ARE MORE STRINGENT THAN THE NATIONAL CRITERIA.



SOURCE: CALIFORNIA AIR RESOURCES BOARD (AEROMETRIC DATA ANALYSIS AND MANAGEMENT SYSTEM OR IADAM) AIR POLLUTION SUMMARIES.

### Glenn County Air Quality Monitoring

Glenn County APCD and CARB maintain one air quality monitoring site in Glenn County that collect data for O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>, the Willows - Colusa monitoring site. The Federal ozone 1-hour standard was revoked by the EPA in 2005, but subsequent litigation reinstated portions of implementation requirements under the revoked standard. As a result, the Glenn County APCD adopted the 2013 Plan for the Revoked 1-Hour Ozone Standard in September 2013 to address the reinstated requirements for this standard. Data obtained from the monitoring sites between 2015 through 2017 is shown in Tables 5.3-6.

**TABLE 5.3-6: AMBIENT AIR QUALITY MONITORING DATA (WILLOWS– COLUSA)**

Pollutant	Cal.	Fed.	Year	Max Concentration	Days Exceeded State/Fed Standard
	Primary Standard				
Ozone (O <sub>3</sub> ) (1-hour)	0.09 ppm for 1 hour	NA	2015	0.080	0/NA
			2016	0.070	0/NA
			2017	0.068	0/NA
Ozone (O <sub>3</sub> ) (8-hour)	0.07 ppm for 8 hour	0.07 ppm for 8 hour	2015	0.072	0/0
			2016	0.070	0/0
			2017	0.068	0/0
Particulate Matter (PM <sub>10</sub> )	50 ug/m <sup>3</sup> for 24 hours	150 ug/m <sup>3</sup> for 24 hours	2015	118.0	*/0
			2016	79.6	*/0
			2017	181.7	*/1.0
Fine Particulate Matter (PM <sub>2.5</sub> )	No 24 hour State Standard	35 ug/m <sup>3</sup> for 24 hours	2015	31.8	NA/*
			2016	31.1	NA/*
			2017	55.2	NA/*

SOURCES: CALIFORNIA AIR RESOURCES BOARD (ADAM) AIR POLLUTION SUMMARIES, 2015, 2016, AND 2017.

**NOTES:**

PPM = PARTS PER MILLION.

UG/M3 = MICRONS PER CUBIC METER.

NA= NOT APPLICABLE

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

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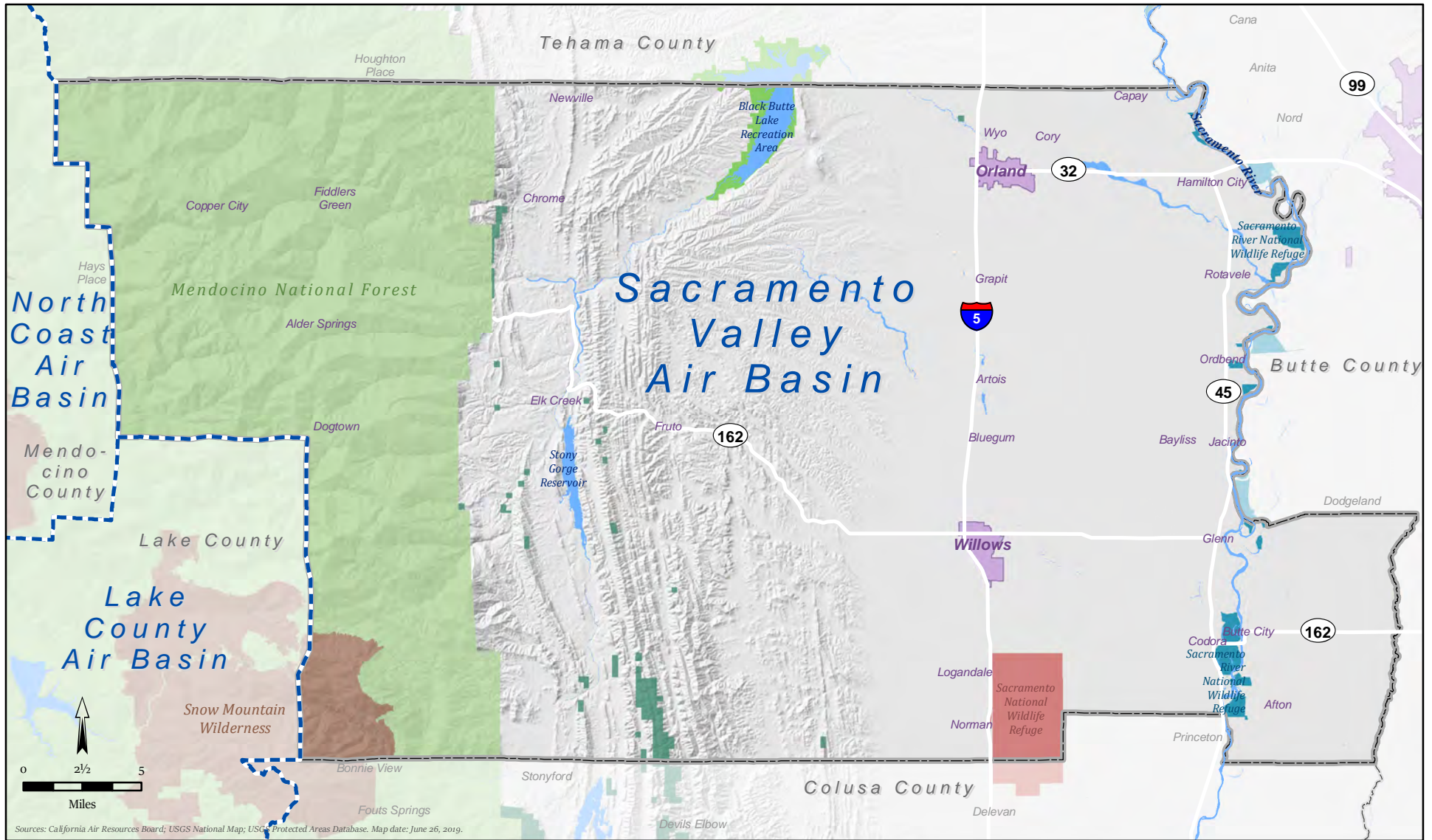
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- Legend**
- California Air Basin
  - Public Lands**
  - Mendocino National Forest
  - Wilderness Area
  - USFWS Sacramento National Wildlife Refuge
  - USFWS Sacramento River National Wildlife Refuge
  - BLM Lands



COUNTY OF GLENN, CALIFORNIA

FIGURE 5.3-1. SACRAMENTO VALLEY AIR BASIN

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## 5.4 GREENHOUSE GASES AND CLIMATE CHANGE

### Greenhouse Gases and Climate Change Linkages

Various gases in the Earth's atmosphere, classified as atmospheric greenhouse gases (GHGs), play a critical role in determining the Earth's surface temperature. Solar radiation enters Earth's atmosphere from space, and a portion of the radiation is absorbed by the Earth's surface. The Earth emits this radiation back toward space, but the properties of the radiation change from high-frequency solar radiation to lower-frequency infrared radiation.

Greenhouse gases, which are transparent to solar radiation, are effective in absorbing infrared radiation. As a result, this radiation that otherwise would have escaped back into space is now retained, resulting in a warming of the atmosphere. This phenomenon is known as the greenhouse effect. Among the prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), ozone (O<sub>3</sub>), water vapor, nitrous oxide (N<sub>2</sub>O), and chlorofluorocarbons (CFCs).

Human-caused emissions of these GHGs, in excess of natural ambient concentrations, are responsible for enhancing the greenhouse effect (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 (California Energy Commission 2006a). In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (California Energy Commission 2006a).

As the name implies, global climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern, respectively. California is the 12th to 16th largest emitter of CO<sub>2</sub> in the world and produced 492 million gross metric tons of carbon dioxide equivalents in 2004 (California Energy Commission 2006a).

Carbon dioxide equivalents are a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential of a GHG, is also dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. Expressing GHG emissions in carbon dioxide equivalents takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO<sub>2</sub> were being emitted.

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

### Effects of Global Climate Change

The effects of increasing global temperature are far-reaching and extremely difficult to quantify. The scientific community continues to study the effects of global climate change. In general, increases in the ambient global temperature as a result of increased GHGs are anticipated to result in rising sea levels, which could threaten coastal areas through accelerated coastal erosion, threats to levees and inland water systems and disruption to coastal wetlands and habitat.

If the temperature of the ocean warms, it is anticipated that the winter snow season would be shortened. Snowpack in the Sierra Nevada provides both water supply (runoff) and storage (within the

## 5.0 CONSERVATION AND NATURAL RESOURCES

snowpack before melting), which is a major source of supply for the state. The snowpack portion of the supply could potentially decline by 50% to 75% by the end of the 21<sup>st</sup> century (National Resources Defense Council, 2014). This phenomenon could lead to significant challenges securing an adequate water supply for a growing state population. Further, the increased ocean temperature could result in increased moisture flux into the state; however, since this would likely increasingly come in the form of rain rather than snow in the high elevations, increased precipitation could lead to increased potential and severity of flood events, placing more pressure on California's levee/flood control system.

Sea level has risen approximately seven inches during the last century and it is predicted to rise an additional 22 to 35 inches by 2100, depending on the future GHG emissions levels (California Environmental Protection Agency, 2010). If this occurs, resultant effects could include increased coastal flooding, saltwater intrusion and disruption of wetlands. As the existing climate throughout California changes over time, mass migration of species, or failure of species to migrate in time to adapt to the perturbations in climate, could also result. Under the emissions scenarios of the Climate Scenarios report (California Environmental Protection Agency, 2010), the impacts of global warming in California are anticipated to include, but are not limited to, the following.

### *PUBLIC HEALTH*

Higher temperatures are expected to increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone formation are projected to increase from 25% to 35% under the lower warming range and to 75% to 85% under the medium warming range. In addition, if global background ozone levels increase as predicted in some scenarios, it may become impossible to meet local air quality standards. Air quality could be further compromised by increases in wildfires, which emit fine particulate matter that can travel long distances depending on wind conditions. The Climate Scenarios report indicates that large wildfires could become up to 55% more frequent if GHG emissions are not significantly reduced.

In addition, under the higher warming scenario, there could be up to 100 more days per year with temperatures above 90°F in Los Angeles and 95°F in Sacramento by 2100. This is a large increase over historical patterns and approximately twice the increase projected if temperatures remain within or below the lower warming range. Rising temperatures will increase the risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat.

### *WATER RESOURCES*

A vast network of man-made reservoirs and aqueducts capture and transport water throughout the state from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada snow pack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snow pack, increasing the risk of summer water shortages.

The state's water supplies are also at risk from rising sea levels. An influx of saltwater would degrade California's estuaries, wetlands, and groundwater aquifers. Saltwater intrusion caused by rising sea levels is a major threat to the quality and reliability of water within the southern edge of the Sacramento/San Joaquin River Delta, a major state fresh water supply. Global warming is also projected to seriously affect agricultural areas, with California farmers projected to lose as much as 25% of the water supply they need; decrease the potential for hydropower production within the state (although the effects on hydropower are uncertain); and seriously harm winter tourism. Under the lower warming range, the snow dependent winter recreational season at lower elevations could be reduced by as much

as one month. If temperatures reach the higher warming range and precipitation declines, there might be many years with insufficient snow for skiing, snowboarding, and other snow dependent recreational activities.

If GHG emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snow pack by as much as 70% to 90%. Under the lower warming scenario, snow pack losses are expected to be only half as large as those expected if temperatures were to rise to the higher warming range. How much snow pack will be lost depends in part on future precipitation patterns, the projections for which remain uncertain. However, even under the wetter climate projections, the loss of snow pack would pose challenges to water managers, hamper hydropower generation, and nearly eliminate all skiing and other snow-related recreational activities.

### *AGRICULTURE*

Increased GHG emissions are expected to cause widespread changes to the agriculture industry reducing the quantity and quality of agricultural products statewide. Although higher carbon dioxide levels can stimulate plant production and increase plant water-use efficiency, California's farmers will face greater water demand for crops and a less reliable water supply as temperatures rise.

Plant growth tends to be slow at low temperatures, increasing with rising temperatures up to a threshold. However, faster growth can result in less-than-optimal development for many crops, so rising temperatures are likely to worsen the quantity and quality of yield for a number of California's agricultural products. Products likely to be most affected include wine grapes, fruits and nuts, and milk.

Crop growth and development will be affected, as will the intensity and frequency of pest and disease outbreaks. Rising temperatures will likely aggravate ozone pollution, which makes plants more susceptible to disease and pests and interferes with plant growth.

In addition, continued global warming will likely shift the ranges of existing invasive plants and weeds and alter competition patterns with native plants. Range expansion is expected in many species while range contractions are less likely in rapidly evolving species with significant populations already established. Should range contractions occur, it is likely that new or different weed species will fill the emerging gaps. Continued global warming is also likely to alter the abundance and types of many pests, lengthen pests' breeding season, and increase pathogen growth rates.

### *FORESTS AND LANDSCAPES*

Global warming is expected to alter the distribution and character of natural vegetation thereby resulting in a possible increased risk of large of wildfires. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55%, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors, including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the state. For example, if precipitation increases as temperatures rise, wildfires in southern California are expected to increase by approximately 30% toward the end of the century. In contrast, precipitation decreases could increase wildfires in northern California by up to 90%.

Moreover, continued global warming will alter natural ecosystems and biological diversity within the state. For example, alpine and sub-alpine ecosystems are expected to decline by as much as 60% to 80%

by the end of the century as a result of increasing temperatures. The productivity of the state's forests is also expected to decrease as a result of global warming.

### *RISING SEA LEVELS*

Rising sea levels, more intense coastal storms, and warmer water temperatures will increasingly threaten the state's coastal regions. Under the higher warming scenario, sea level is anticipated to rise 22 to 35 inches by 2100. Elevations of this magnitude would inundate coastal areas with saltwater, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats.

### **Energy Consumption**

Energy in California is consumed from a wide variety of sources. Fossil fuels (including gasoline and diesel fuel, natural gas, and energy used to generate electricity) are most widely used form of energy in the State. However, renewable source of energy (such as solar and wind) are growing in proportion to California's overall energy mix. A large driver of renewable sources of energy in California is the State's current Renewable Portfolio Standard (RPS), which requires the State to derive at least 33% of electricity generated from renewable resources by 2020, and 50 percent by 2030.

Overall, in 2013, California's per capita energy usage was ranked 48<sup>th</sup> in the nation (U.S. Energy Information Administration, 2016). Additionally, California's per capita rate of energy usage has remained relatively constant since the 1970's. Many State regulations since the 1970's, including new building energy efficiency standards, vehicle fleet efficiency measures, as well as growing public awareness, have helped to keep per capita energy usage in the State in check.

The consumption of nonrenewable energy (primarily gasoline and diesel fuel) associated with the operation of passenger, public transit, and commercial vehicles results in GHG emissions that ultimately result in global climate change. Other fuels such as natural gas, ethanol, and electricity (unless derived from solar, wind, nuclear, or other energy sources that do not produce carbon emissions) also result in GHG emissions and contribute to global climate change.

### *ELECTRICITY CONSUMPTION*

California relies on a regional power system composed of a diverse mix of natural gas, renewable, hydroelectric, and nuclear generation resources. In 2016, more than one-fourth of the electricity supply comes from facilities outside of the state. Much of the power delivered to California from states in the Pacific Northwest was generated by wind. States in the Southwest delivered power generated at coal-fired power plants, at natural gas-fired power plants, and from nuclear generating stations (U.S. EIA, 2017a) In 2016, approximately 50 percent of California's utility-scale net electricity generation was fueled by natural gas. In addition, about 25 percent of the state's utility-scale net electricity generation came from non-hydroelectric renewable technologies, such as solar, wind, geothermal, and biomass. Another 14 percent of the state's utility-scale net electricity generation came from hydroelectric generation, and nuclear energy powered an additional 11 percent. The amount of electricity generated from coal negligible (approximately 0.2 percent) (U.S. EIA, 2017a). The percentage of renewable resources as a proportion of California's overall energy portfolio is increasing over time, as directed the State's Renewable Portfolio Standard (RPS).

According to the California Energy Commission (CEC), total statewide electricity consumption increased from 166,979 gigawatt-hours (GWh) in 1980 to 228,038 GWh in 1990, which is an estimated annual growth rate of 3.66 percent. The statewide electricity consumption in 1997 was 246,225 GWh, reflecting



an annual growth rate of 1.14 percent between 1990 and 1997 (U.S. EIA, 2017b). Statewide consumption was 290,567 GWh in 2016, an annual growth rate of 0.8 percent between 1997 and 2016. The Sacramento Area Council of Governments (SACOG) region consumed approximately 17,948 GWh in 2014, roughly 6.7 percent of the state total (SACOG, 2016). The SACOG region includes the counties of El Dorado, Placer, Sacramento, Sutter, Yolo and Yuba as well as the 22 cities within these six counties.

### *OIL*

The primary energy source for the United States is oil, which is refined to produce fuels like gasoline, diesel, and jet fuel. Oil is a finite, nonrenewable energy source. World consumption of petroleum products has grown steadily in the last several decades. As of 2016, world consumption of oil had reached 96 million barrels per day. The United States, with approximately five percent of the world's population, accounts for approximately 19 percent of world oil consumption, or approximately 18.6 million barrels per day (International Energy Agency, 2018). The transportation sector relies heavily on oil. In California, petroleum-based fuels currently provide approximately 96 percent of the state's transportation energy needs (California Energy Commission, 2012).

### *NATURAL GAS/PROPANE*

The state produces approximately 12 percent of its natural gas, while obtaining 22 percent from Canada and 65 percent from the Rockies and the Southwest (California Energy Commission, 2012). Total natural gas demand in California in 2012 was 2,313, billion cubic feet of natural gas (California Energy Commission, 2012).

## REGULATORY FRAMEWORK

### *FEDERAL*

#### **Clean Air Act**

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

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

#### **Energy Policy and Conservation Act**

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

Since 1990, the fuel economy standard for new passenger cars has been 27.5 mpg. Since 1996, the fuel economy standard for new light trucks (gross vehicle weight of 8,500 pounds or less) has been 20.7 mpg.

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

### **Energy Policy Act of 1992 (EPAct)**

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

### **Energy Policy Act of 2005**

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

### **Intermodal Surface Transportation Efficiency Act (ISTEA)**

ISTEA (49 U.S.C. § 101 et seq.) promoted the development of intermodal transportation systems to maximize mobility as well as address national and local interests in air quality and energy. ISTEA contained factors that metropolitan planning organizations (MPOs), such as SACOG, were to address in developing transportation plans and programs, including some energy-related factors. To meet the ISTEA requirements, MPOs adopted explicit policies defining the social, economic, energy, and environmental values that were to guide transportation decisions in that metropolitan area. The planning process was then to address these policies. Another requirement was to consider the consistency of transportation planning with federal, state, and local energy goals. Through this requirement, energy consumption was expected to become a criterion, along with cost and other values that determine the best transportation solution.

### **Moving Ahead for Progress in the 21<sup>st</sup> Century (Map-21)**

MAP-21, the Moving Ahead for Progress in the 21st Century Act (P.L. 112-141), was signed into law on July 6, 2012. Funding surface transportation programs at over \$105 billion for fiscal years (FY) 2013 and 2014, MAP-21 is the first long-term highway authorization enacted since 2005. MAP-21 creates a streamlined, performance-based, and multimodal program to address the many challenges facing the U.S. transportation system. These challenges include improving safety, maintaining infrastructure condition, reducing traffic congestion, improving efficiency of the system and freight movement, protecting the environment, and reducing delays in project delivery.

## **Federal Climate Change Policy**

According to the EPA, “the United States government has established a comprehensive policy to address climate change” that includes slowing the growth of emissions; strengthening science, technology, and institutions; and enhancing international cooperation. To implement this policy, “the Federal government is using voluntary and incentive-based programs to reduce emissions and has established programs to promote climate technology and science.” The EPA administers multiple programs that encourage voluntary GHG reductions, including “ENERGY STAR”, “Climate Leaders”, and Methane Voluntary Programs. However, as of this writing, there are no adopted federal plans, policies, regulations, or laws directly regulating GHG emissions.

## **Mandatory Greenhouse Gas Reporting Rule**

On September 22, 2009, the U.S. EPA issued a final rule for mandatory reporting of GHGs from large GHG emissions sources in the United States. In general, this national reporting requirement was designed to provide the U.S. EPA with accurate and timely GHG emissions data from facilities that emit 25,000 metric tons or more of CO<sub>2</sub> per year. This publicly available data allow the reporters to track their own emissions, compare them to similar facilities, and aid in identifying cost effective opportunities to reduce emissions in the future. Reporting is at the facility level, except that certain suppliers of fossil fuels and industrial greenhouse gases along with vehicle and engine manufacturers will report at the corporate level. An estimated 85% of the total U.S. GHG emissions, from approximately 10,000 facilities, are covered by this final rule.

### *STATE*

## **Assembly Bill 1493**

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

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

## **Assembly Bill 1007**

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

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

### **ASSEMBLY BILL 2140**

Under the Federal Disaster Mitigation Act of 2000, each municipality must develop a Local Hazard Mitigation Plan (LHMP) or participate in a multi-jurisdictional LHMP in order to be eligible for pre-disaster mitigation grants or post-disaster recovery assistance from the federal government. AB 2140 authorizes local governments to adopt their LHMP’s with the safety elements of their General Plans. Integration or incorporation by reference is encouraged through a post-disaster financial incentive which authorizes the state to use available California Disaster Assistance Act funds to cover local shares of the 25% non-federal portion of grant-funded post-disaster projects.

### **Bioenergy Action Plan – Executive Order #S-06-06**

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

### **California Executive Orders S-3-05, S-20-06, and B-30-15, Assembly Bill 32, and Senate Bill 32**

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

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

In April 2015, Governor Jerry Brown signed Executive Order B-30-15, which requires that there be a reduction in GHG emissions to 40% below 1990 levels by 2030. This intermediate target was codified into law by Senate Bill 32 (SB 32), which was signed into law on September 8, 2016.

### **Climate Change Scoping Plan**

On December 11, 2008, the CARB adopted its *Climate Change Scoping Plan* (Scoping Plan), which functions as a roadmap of the CARB’s plans to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations. The Scoping Plan contains the main strategies California will implement to reduce CO<sub>2</sub>e emissions by 169 million metric tons (MMT), or approximately 30 percent, from the state’s projected 2020 emissions level of 596 MMT of CO<sub>2</sub>e under a business-as-usual scenario. (This is a reduction of 42 MMT CO<sub>2</sub>e, or almost 10 percent, from 2002–2004 average emissions, but requires the reductions in the face of population and economic growth through 2020.) The Scoping Plan

also breaks down the amount of GHG emissions reductions the CARB recommends for each emissions sector of the state's GHG inventory. The Scoping Plan calls for the largest reductions in GHG emissions to be achieved by implementing the following measures and standards:

- improved emissions standards for light-duty vehicles (estimated reductions of 31.7 MMT CO<sub>2</sub>e),
- the Low-Carbon Fuel Standard (15.0 MMT CO<sub>2</sub>e),
- energy efficiency measures in buildings and appliances and the widespread development of combined heat and power systems (26.3 MMT CO<sub>2</sub>e), and
- a renewable portfolio standard for electricity production (21.3 MMT CO<sub>2</sub>e).

The CARB updated the Scoping Plan in 2013 (*First Updated to the Scoping Plan*) and again in 2017 (the *Final Scoping Plan*). The 2013 Update built upon the initial Scoping Plan with new strategies and recommendations, and also set the groundwork to reach the long-term goals set forth by the state. The 2017 Update expands the scope of the plan further by focusing on the strategy for achieving the state's 2030 GHG target of 40 percent emissions reductions below 1990 levels (to achieve the target codified into law by SB 32).

### **California Strategy to Reduce Petroleum Dependence (AB 2076)**

In response to the requirements of AB 2076 (Chapter 936, Statutes of 2000), the CEC and the CARB developed a strategy to reduce petroleum dependence in California. The strategy, *Reducing California's Petroleum Dependence*, was adopted by the CEC and CARB in 2003. The strategy recommends that California reduce on-road gasoline and diesel fuel demand to 15 percent below 2003 demand levels by 2020 and maintain that level for the foreseeable future; the Governor and Legislature work to establish national fuel economy standards that double the fuel efficiency of new cars, light trucks, and sport utility vehicles (SUVs); and increase the use of non-petroleum fuels to 20 percent of on-road fuel consumption by 2020 and 30 percent by 2030.

### **Climate Action Program at Caltrans**

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

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

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

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

### **EXECUTIVE ORDER B-30-15**

On April 29, 2015, Governor Jerry Brown issued Executive Order (EO) B-30-15, which establishes a State GHG reduction target of 40 percent below 1990 levels by 2030. The new emission reduction target provides for a mid-term goal that would help the State to continue on course from reducing GHG emissions to 1990 levels by 2020 (per AB 32) to the ultimate goal of reducing emissions 80 percent under 1990 levels by 2050 (per EO S-03-05). This is in line with the scientifically established levels needed in the U.S. to limit global warming below 2 degrees Celsius – the warming threshold at which scientists say there will likely be major climate disruptions. EO B-30-15 also addresses the need for climate adaptation and directs State government to:

Incorporate climate change impacts into the State's Five-Year Infrastructure Plan;

Update the Safeguarding California Plan, the State climate adaptation strategy, to identify how climate change will affect California infrastructure and industry and what actions the State can take to reduce the risks posed by climate change;

Factor climate change into State agencies' planning and investment decisions; and

Implement measures under existing agency and departmental authority to reduce GHG emissions.

### **SENATE BILL 32**

An update to Assembly Bill 32 was passed in August 2016, which extends the state's targets for reducing greenhouse gases from 2020 to 2030. Under Senate Bill (SB) 32, the state would reduce its greenhouse gas emissions to 40 percent below 1990 levels by 2030.

### **Senate Bill 97**

Senate Bill 97 was signed by the Governor on August 24, 2007. This bill would provide that in an environmental impact report, negative declaration, mitigated negative declaration, or other document required by CEQA for either transportation projects funded under the Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006, or projects funded under the Disaster Preparedness and Flood Prevention Bond Act of 2006, the failure to analyze adequately the effects of greenhouse gas emissions otherwise required to be reduced pursuant to regulations adopted under the Global Warming Solutions Act of 2006 does not create a cause of action for a violation of CEQA. The bill would provide that this provision shall apply retroactively for any of the above documents that are not final and shall be repealed on January 1, 2010.

The bill would require the OPR, by July 1, 2009, to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions, as required by CEQA, including, but not limited to, effects associated with transportation or energy consumption. The Resources Agency would be required to certify and adopt those guidelines by January 1, 2010. The OPR would be required to periodically update the guidelines to incorporate new

information or criteria established by the CARB pursuant to the California Global Warming Solutions Act of 2006.

### **Senate Bill 375**

SB 375 (Stats. 2008, ch. 728) (SB 375) was built on AB 32 (California’s 2006 climate change law). SB 375’s core provision is a requirement for regional transportation agencies to develop a Sustainable Communities Strategy (SCS) in order to reduce GHG emissions from passenger vehicles. The SCS is one component of the Regional Transportation Plan (RTP).

The SCS outlines the region’s plan for combining transportation resources, such as roads and mass transit, with a realistic land use pattern, in order to meet a state target for reducing GHG emissions. The strategy must take into account the region’s housing needs, transportation demands, and protection of resource and farmlands.

Additionally, SB 375 modified the state’s Housing Element Law to achieve consistency between the land use pattern outlined in the SCS and the Regional Housing Needs Assessment allocation. The legislation also substantially improved cities’ and counties’ accountability for carrying out their housing element plans.

Finally, SB 375 amended the California Environmental Quality Act (Pub. Resources Code, § 21000 et seq.) to ease the environmental review of developments that help reduce the growth of GHG emissions.

### **SENATE BILL 379**

As California confronts climate change impacts, local governments are now required, in accordance with Senate Bill 379, to include a climate change vulnerability assessment, measures to address vulnerabilities, and comprehensive hazard mitigation and emergency response strategy within their Land Use and Safety Elements. Communities may use the safety element as a vehicle for defining “acceptable risk” and the basis for determining the level of necessary mitigation. Policies may include methods of minimizing risks, as well as ways to minimize economic disruption and expedite recovery following disasters.

### **California Building Energy Efficiency Standards**

Title 24, Part 6 of the California Code of Regulations, known as the Building Energy Efficiency Standards, was 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. On January 1, 2010, the California Building Standards Commission adopted CALGreen and became the first state in the United States to adopt a statewide green building standards code. CALGreen requires new buildings to reduce water consumption by 20 percent, divert 50 percent of construction waste from landfills, and install low pollutant-emitting materials. The California Building Energy Efficiency Standards are updated periodically. The standards were most recently updated in 2019, and are effective as of January 1, 2020.

### **CEQA Guidelines Appendix F**

In order to assure that energy implications are considered in project decisions, CEQA requires that EIRs include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy. The goal of conserving energy implies the wise and efficient use of energy.

#### *LOCAL*

### **Glenn County Regional Transportation Plan (RTP)**

The 2015 Glenn County Regional Transportation Plan (RTP) serves as the planning blueprint to guide transportation investments in Glenn County involving local, State, and Federal funding over the next twenty years. Transportation improvements in the RTP are identified as short-term (2025) or long-term (2035). The overall focus of the 2015 RTP is directed at developing a coordinated and balanced multi-modal regional transportation system that is financially constrained to the revenues anticipated over the life of the plan. The balance is achieved by considering investment and improvements for moving people and goods across all modes including roads, transit, bicycle, pedestrian, trucking, railroad, and aviation.

Using growth forecasts and economic trends projected out over study timeframe, the RTP considers the role of transportation in the broader context of economic, environmental, and quality-of-life goals for the future, identifying regional transportation strategies to address our mobility needs. The RTP addresses all transportation modes including motor vehicles, transit (commuter and local), rail (commuter and inter-regional), goods movement (rail, truck, and water), bicycle and pedestrian facilities, aviation systems, transportation systems management (TSM) and transportation demand management (TDM) programs, and other projects considered over the planning horizon of 2035. Regional transportation improvement projects proposed to be funded, in whole or in part, in the state transportation improvement program must be included in the adopted RTP.

The coordination focus brings the County, Caltrans, Cities of Orland and Willows, governmental resource agencies, commercial and agricultural interests, Grindstone Rancheria of Wintun-Wailaki Indians of California (Grindstone Indian Rancheria), and citizens into the planning process. The goals contained in the 2015 RTP/SCS are as follows:

- Upgrade and maintain existing road system.
- Provide a safe transportation system.
- Align financial resources to meet the highest demonstrated transportation needs.
- Promote coordination.
- Efficient and Effective Transportation System.
- Promote Economic Development and Progressive Land Use Policies.
- Develop a comprehensive system of bikeway facilities to serve Glenn County.
- Implement Transportation System Management (TSM) and Transportation Demand Management (TDM) Techniques where feasible.
- Improve Livability in the County through Land Use and Transportation Integration and Decisions that Encourage Walking, Transit, and Bicycling.



The County and Cities within the RTP are committed to implementing policies and strategies that reduce reliance on the automobile and contribute to the reduction of greenhouse gas emissions.

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### 5.5 GEOLOGY, SOILS, AND SEISMICITY

This section addresses seismic and geologic hazards in the City of Willows. For hazards relating to flooding, wildfire, and hazardous materials see Section 4.0 (Hazards, Safety, and Noise)

#### REGULATORY FRAMEWORK

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##### *STATE*

The State of California has established a variety of regulations and requirements related to seismic safety and structural integrity, including the California Building Standards Code, the Alquist-Priolo Earthquake Fault Zoning Act, and the Seismic Hazards Mapping Act.

##### **California Building Standards Code**

Title 24 of the California Code of Regulations, known as the California Building Standards Code (CBSC) or simply "Title 24," contains the regulations that govern the construction of buildings in California. The CBSC includes 12 parts: California Building Standards Administrative Code, California Building Code, California Residential Building Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Historical Building Code, California Fire Code, California Existing Building Code, California Green Building Standards Code (CALGreen Code), and the California Reference Standards Code. Through the CBSC, the State provides a minimum standard for building design and construction. The CBSC contains specific requirements for seismic safety, excavation, foundations, retaining walls, and site demolition. It also regulates grading activities, including drainage and erosion control.

The California Building Code, Title 24, Part 2, Chapter 16 addresses structural design, Chapter 17 addresses structural tests and special inspections, and Chapter 18 addresses soils and foundations. Section 1610 provides structural design standards for foundation walls and retaining walls to ensure resistance to lateral soil loads. Section 1613 provides structural design standards for earthquake loads. Section 1704.7 requires special inspections for existing site soil conditions, fill placement and load-bearing requirements during the construction as specified in Table 1704.7 of this section. Sections 1704.8 through 1704.16 provide inspection and testing requirements for various foundation types, and construction material types. Section 1803.1.1.1 requires each city and county enact an ordinance which requires a preliminary soil report and that the report be based upon adequate test borings or excavations, of every subdivision, where a tentative and final map is required pursuant to Section 66426 of the Government Code. Section 1803.5.3 defines expansive soils and specifies that in areas likely to have expansive soil, the building official shall require soil tests to determine where such soils do exist. Section 1803.5.4 specifies that a subsurface soil investigation must be performed to determine whether the existing ground-water table is above or within 5 feet (1524 mm) below the elevation of the lowest floor level where such floor is located below the finished ground level adjacent to the foundation. Section 1803.5.8 provides specific standards where shallow foundations will bear on compacted fill material more than 12 inches (305 mm) in depth. Sections 1803.5.11 and 1803.5.12 provide requirements for geotechnical investigations for structures assigned varying Seismic Design Categories in accordance with Section 1613. Section 1804 provides standards and requirements for excavation,

grading, and fill. Sections 1808, 1809, and 1810 provide standards and requirements for the construction of varying foundations.

### **Alquist-Priolo Earthquake Fault Zoning Act**

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 sets forth the policies and Criteria of the State Mining and Geology Board, which governs the exercise of governments' responsibilities to prohibit the location of developments and structures for human occupancy across the trace of active faults. The policies and criteria are limited to potential hazards resulting from surface faulting or fault creep within Earthquake Fault Zones, as delineated on maps officially issued by the State Geologist. Working definitions include:

- Fault – a fracture or zone of closely associated fractures along which rocks on one side have been displaced with respect to those on the other side;
- Fault Zone – a zone of related faults, which commonly are braided and sub parallel, but may be branching and divergent. A fault zone has a significant width (with respect to the scale at which the fault is being considered, portrayed, or investigated), ranging from a few feet to several miles;
- Sufficiently Active Fault – a fault that has evidence of Holocene surface displacement along one or more of its segments or branches (last 11,000 years); and
- Well-Defined Fault – a fault whose trace is clearly detectable by a trained geologist as a physical feature at or just below the ground surface. The geologist should be able to locate the fault in the field with sufficient precision and confidence to indicate that the required site-specific investigations would meet with some success.

“Sufficiently Active” and “Well Defined” are the two criteria used by the State to determine if a fault should be zoned under the Alquist-Priolo Act.

### **Seismic Hazards Mapping Act**

The Seismic Hazards Mapping Act, passed in 1990, addresses non-surface fault rupture earthquake hazards, including liquefaction and seismically-induced landslides. Under the Act, seismic hazard zones are to be mapped by the State Geologist to assist local governments in land use planning. The program and actions mandated by the Seismic Hazards Mapping Act closely resemble those of the Alquist-Priolo Earthquake Fault Zoning Act (which addresses only surface fault-rupture hazards) and are outlined below:

The State Geologist is required to delineate the various “seismic hazard zones.”

- Cities and Counties, or other local permitting authority, must regulate certain development “projects” within the zones. They must withhold the development permits for a site within a zone until the geologic and soil conditions of the site are investigated and appropriate mitigation measures, if any, are incorporated into development plans.

## 5.0 CONSERVATION AND NATURAL RESOURCES

- The State Mining and Geology Board provides additional regulations, policies, and criteria, to guide cities and counties in their implementation of the law. The Board also provides guidelines for preparation of the Seismic Hazard Zone Maps and for evaluating and mitigating seismic hazards.
- Sellers (and their agents) of real property within a mapped hazard zone must disclose that the property lies within such a zone at the time of sale.

### **Caltrans Seismic Design Criteria**

The California Department of Transportation (Caltrans) has Seismic Design Criteria (SDC), which is an encyclopedia of new and currently practiced seismic design and analysis methodologies for the design of new bridges in California. The SDC adopts a performance-based approach specifying minimum levels of structural system performance, component performance, analysis, and design practices for ordinary standard bridges. The SDC has been developed with input from the Caltrans Offices of Structure Design, Earthquake Engineering and Design Support, and Materials and Foundations. Memo 20-1 outlines the bridge category and classification, seismic performance criteria, seismic design philosophy and approach, seismic demands and capacities on structural components and seismic design practices that collectively make up Caltrans' seismic design methodology.

#### *LOCAL*

### **City of Willows General Plan**

Goals for achieving and maintaining safety from seismic events include preventing serious injury, loss of life, serious damage to critical facilities involving large assemblies of people, and loss of continuity in providing services.

#### **Safety and Seismic Safety Element:**

##### ***Levels of Acceptable Risk***

1. Avoid the many "Avoidable Risks" which are generally apparent and which may contribute to hazards resulting from carelessness, lack of attention to common safeguards, or failure to conform to existing safety standards.

Public information programs by public safety agencies and public utilities will be effective in reducing such risks.

2. Reduce risks, so far as possible to the "Acceptable Risk" level, which is a level which may be reached without the imposition of drastic new laws or regulations in order to ensure reasonable public safety.

This level may be reached to a substantial degree in most of the planning area through consistent enforcement of existing codes and regulation pertaining to construction, sanitation, fire zones, land use, land development projects, rural and forest fire safety standards, etc.

##### ***Objectives: Existing and New structures***

1. It is an objective of this plan that such structures, and in particular those of historical value, be preserved so far as may be practical to continue to enhance the pioneer character of the

planning area. However, preservation should recognize that renovation may be necessary to meet construction, sanitation and fire safety code standards to ensure that the structures will not constitute hazards to themselves, adjoining structures, and the general public.

- 2. It is a further objective of this plan that any structures which cannot be brought into conformance with appropriate standards be demolished per provision of law to eliminate them as hazards, unless they have been designated as having historical value.
  
- 3. It is a further objective of this plan that the placement and construction of future structures be carefully monitored not only with respect to existing codes and regulations, but also in consideration of safety and seismic safety factors contained herein and new safety plans and regulations which may become effective as proposed herein.

***Land use Element***

**GOAL DPS-6:** Plan for Hazards

**OBJECTIVE DPS-6:** Identify hazards relevant to community, and required by law, that present undue risks to the public health, safety, property, and welfare of the community.

**POLICY DPS-6:** The City should consider the implication of hazards and direct development away from hazard areas or require mitigation measures which reduce the hazard to an acceptable level.

**GEOLOGIC SETTING**

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**Regional Geology**

The Planning Area lies in the Sacramento Valley in Northern California. The Sacramento Valley is located in the Northern portion of the Great Valley Geomorphic Province. The Great Valley, also known as the Central Valley, is a topographically flat, northwest-trending, structural trough (or basin) about 50 miles wide and 400 miles long. It is bordered by the Tehachapi Mountains on the south, the Klamath Mountains on the north, the Sierra Nevada on the east, and the Coast Ranges on the west. Figure 5.5-1 shows the USGS Glenn County Quadrangle Topographic view.

The Sacramento Valley is filled with thick sedimentary rock sequences that were deposited as much as 130 million years ago. Large alluvial fans have developed on each side of the Valley. The larger and more gently sloping fans are on the east side of the Sacramento Valley, and overlie metamorphic and igneous basement rocks. These basement rocks are exposed in the Sierra Nevada foothills and consist of meta-sedimentary, volcanic, and granitic rocks.

**Local Setting**

*TOPOGRAPHY*

The Planning Area is relatively flat with natural gentle slope from east to west. Willows' topography has an average elevation of approximately 135 feet above sea level. Figure 5.5-1 shows the USGS Glenn County Quadrangle Topographic view and the USGS Willows 7.5' Quadrangle Index.

## 5.0 CONSERVATION AND NATURAL RESOURCES

### SOILS

A Custom Soil Survey was completed for the Planning Area using the NRCS Web Soil Survey program. The NRCS Soils Map is provided in Figure 5.5-2. Table 5.5-1 below identifies the type and range of soils found in the Planning Area.

**TABLE 5.5-1: PLANNING AREA SOILS**

NAME	ACRES	PERCENT OF AOI
Capay clay, 0 to 4 percent slopes, MLRA 17	0.1	<0.1%
Myers clay, 0 to 1 percent slopes, MLRA 17	1,249.4	68.1%
Myers clay loam, 0 to 3 percent slopes	60.6	3.3%
Willows clay, slightly saline-alkali	395.0	0.5%
Willows clay, moderately saline-alkali	77.9	21.5%
Willows clay, strongly saline-alkali	27.0	4.2%
Zamora silty clay, 0 to 2 percent slopes	0.0	<0.1%
Zamora silty clay loam, 0 to 3 percent slopes, MLRA 17	0.5	<0.1%
Water	8.8	0.5%
Total	1,835.1	100%

SOURCE: NRCS CUSTOM SOIL SURVEY 2019.

As shown in Table 5.5-1, the majority of soils within the Planning Area consist of clay. Below is a brief description of the most prominent soils within the Planning Area.

**Myers series.** The Myers series consists of very deep, well to moderately well drained soils on flood basins and alluvial fans. These soils formed in alluvium derived from mixed sources. Slope ranges from 0 to 18 percent. The mean annual precipitation is about 22 inches, and the mean annual temperature is about 60 degrees F. The soils are used for dry farmed grain, irrigated row, field crops and rice. Vegetation consists of annual grasses and forbs. This soil occurs on the west side of the Sacramento Valley and in valleys of the Coast Range and Cascade foothills of California. The soils are moderately extensive.

**Willows series.** The Willows series consists of very deep, poorly to very poorly drained sodic soils formed in alluvium from mixed rock sources. Willows soils are in flood basins. Slope ranges from 0 to 2 percent. The mean annual precipitation is about 16 inches and the mean annual temperature is about 60 degrees F. The soil is used for growing rice, sugar beets and safflower. Original vegetation was saline-sodic tolerant plants. These soils occur on the west side of the Sacramento and San Joaquin Valleys and intermountain valleys of the Coast Range, California. The soils are moderately extensive.

## FAULTS AND SEISMICITY

### Faults

A fault is a fracture in the crust of the earth. A fault trace is the line on the earth's surface defining the fault. Displacement of the earth's crust along faults releases energy in the form of earthquakes and in some cases in fault creep. Most faults are the result of repeated displacements over a long period of time.

Surface rupture occurs when movement on a fault deep within the earth breaks through to the surface. Surface ruptures have been known to extend up to 50 miles with displacements of an inch to 20 feet. Fault rupture almost always follows preexisting faults, which are zones of weakness. Rupture may occur suddenly during an earthquake or slowly in the form of fault creep. Sudden displacements are more damaging to structures because they are accompanied by shaking.

The State of California designates faults as active, potentially active, and inactive depending on how recent the movement that can be substantiated for a fault. Table 5.5-2 presents the California fault activity rating system.

**TABLE 5.5-2: FAULT ACTIVITY RATING**

<i>FAULT ACTIVITY RATING</i>	<i>GEOLOGIC PERIOD OF LAST RUPTURE</i>	<i>TIME INTERVAL (YEARS)</i>
Active (A)	Holocene	Within last 11,000 years
Potentially Active (PA)	Quaternary	11,000-1.6 Million Years
Inactive (I)	Pre-Quaternary	Greater than 1.6 Million

*SOURCE: CALIFORNIA GEOLOGICAL SURVEY*

The 2010 Fault Activity Map provided by the California Department of Conservation identified potential seismic sources within 100 kilometers (62 miles) of the Planning Area. The closest known faults classified by the California Geological Survey are the Corning fault, located approximately 5 miles to the northwest of the planning area; and the Stony Creek Fault, located approximately 23 miles west of the planning area. Both the Corning Fault and Stony Creek Fault has had movement as recently as the Late Quaternary Period (less than 130,000 years ago), thus, is considered potentially active faults. Other faults that could potentially affect the Planning Area include the Bartlett Springs, Hot Springs shear zone, Estel Ridge, Round Valley, Chico Monocline, and the Alquist-Priolo Zone. Figure 5.5-3 provides a map of known area faults.

**Seismicity**

The amount of energy available to a fault is determined by considering the slip-rate of the fault, its area (fault length multiplied by down-dip width), maximum magnitude, and the rigidity of the displaced rocks. These factors are combined to calculate the moment (energy) release on a fault. The total seismic energy release for a fault source is sometimes partitioned between two different recurrence models, the characteristic and truncated Gutenberg-Richter (G-R) magnitude-frequency distributions. These models incorporate our knowledge of the range of magnitudes and relative frequency of different magnitudes for a particular fault. The partition of moment and the weights for multiple models are given in the following summary.

Earthquakes are generally expressed in terms of intensity and magnitude. Intensity is based on the observed effects of ground shaking on people, buildings, and natural features. By comparison, magnitude is based on the amplitude of the earthquake waves recorded on instruments, which have a common calibration. The Richter scale, a logarithmic scale ranging from 0.1 to 9.0, with 9.0 being the strongest, measures the magnitude of an earthquake relative to ground shaking. Table 5.5-3 provides a description and a comparison of intensity and magnitude.

## 5.0 CONSERVATION AND NATURAL RESOURCES

**TABLE 5.5-3: RICHTER MAGNITUDES AND EFFECTS**

MAGNITUDE	EFFECTS
< 3.5	Typically not felt
3.5 – 5.4	Often felt but damage is rare
5.5 – < 6	Damage is slight for well-built buildings
6.1 – 6.9	Destructive potential over ±60 miles of occupied area
7.0 – 7.9	“Major Earthquake” with the ability to cause damage over larger areas
8	“Great Earthquake” can cause damage over several hundred miles

SOURCE: ASSOCIATION OF BAY AREA GOVERNMENTS, 2011.

According to the California Geological Survey’s Probabilistic Seismic Hazard Assessment Program, Glenn County is considered to be within an area that is predicted to have a 10 percent probability that a seismic event would produce horizontal ground shaking of 10 to 20 percent within a 50-year period. This level of ground shaking correlates to a Modified Mercalli intensity of V to VII, light to strong. Table 5.5-4 below presents Modified Mercalli intensity effects at each level.

**TABLE 5.5-4: MODIFIED MERCALLI INTENSITY SCALE FOR EARTHQUAKES**

RICHTER MAGNITUDE	MODIFIED MERCALLI	EFFECTS OF INTENSITY
0.1 – 0.9	I	Earthquake shaking not felt
1.0 – 2.9	II	Shaking felt by those at rest.
3.0 – 3.9	III	Felt by most people indoors, some can estimate duration of shaking.
4.0 – 4.5	IV	Felt by most people indoors. Hanging objects rattle, wooden walls and frames creak.
4.6 – 4.9	V	Felt by everyone indoors, many can estimate duration of shaking. Standing autos rock. Crockery clashes, dishes rattle and glasses clink. Doors open, close and swing.
5.0 – 5.5	VI	Felt by all who estimate duration of shaking. Sleepers awoken, liquids spill, objects are displaced, and weak materials crack.
5.6 – 6.4	VII	People frightened and walls unsteady. Pictures and books thrown, dishes and glass are broken. Weak chimneys break. Plaster, loose bricks and parapets fall.
6.5 – 6.9	VIII	Difficult to stand. Waves on ponds, cohesionless soils slump. Stucco and masonry walls fall. Chimneys, stacks, towers, and elevated tanks twist and fall.
7.0 – 7.4	IX	General fright as people are thrown down, hard to drive. Trees broken, damage to foundations and frames. Reservoirs damaged, underground pipes broken.
7.5 – 7.9	X	General panic. Ground cracks, masonry and frame buildings destroyed. Bridges destroyed, railroads bent slightly. Dams, dikes and embankments damaged.
8.0 – 8.4	XI	Large landslides, water thrown, general destruction of buildings. Pipelines destroyed, railroads bent.
8.5 +	XII	Total nearby damage, rock masses displaced. Lines of sight/level distorted. Objects thrown into air.

SOURCE: UNITED STATES GEOLOGICAL SURVEY

The Significant United States Earthquake data published by the USGS in the National Atlas identifies earthquakes that caused deaths, property damage, and geologic effects or were felt by populations near



the epicenter. No significant earthquakes are identified within the Planning Area; however, significant earthquakes are documented in the region. The following table presents the significant earthquakes in the region.

**TABLE 5.5-5: SIGNIFICANT EARTHQUAKES IN THE REGION**

MAGNITUDE	INTENSITY	LOCATION	YEAR
5.6	VII	Petrolia	2019
5.0	V	Geysers	2016
5.1	IV	Upper Lake	2016
5.7	VII	Greenville	2013
5.1	N/A	Redding	1998
5.7	N/A	Palermo	1975
5.5	N/A	Lassen Peak	1950
5.0	N/A	Lassen Peak	1946
5.6	N/A	Ukiah	1869
5.5	N/A	Sierra County	1855

SOURCE: UNITED STATE GEOLOGICAL SURVEY, 2019.

**Alquist-Priolo Special Study Zone**

The California legislature passed the Alquist-Priolo Special Studies Zone Act in 1972 to address seismic hazards associated with faults and to establish criteria for developments for areas with identified seismic hazard zones. The California Geologic Survey (CGS) evaluates faults with available geologic and seismologic data and determines if a fault should be zoned as active, potentially active, or inactive. If CGS determines a fault to be active, then it is typically incorporated into a Special Studies Zone in accordance with the Alquist-Priolo Earthquake Hazard Act. Alquist-Priolo Special Study Zones are usually one-quarter mile or less in width and require site-specific evaluation of fault location and require a structure setback if the fault is found traversing a project site. The Planning Area is not within an Alquist-Priolo Special Study Zone. The nearest Alquist-Priolo fault zone, the Bartlett Springs, is located approximately 40 miles southwest of Willows.

**SEISMIC HAZARDS**

**Seismic Ground Shaking**

The potential for seismic ground shaking in California is expected. As a result of the foreseeable seismicity in California, the State requires special design considerations for all structural improvements in accordance with the seismic design provisions in the California Building Code. These seismic design provisions require enhanced structural integrity based on several risk parameters.

**Fault Rupture**

A fault rupture occurs when the surface of the earth breaks as a result of an earthquake, although this does not happen with all earthquakes. These ruptures generally occur in a weak area of an existing fault. Ruptures can be sudden (i.e. earthquake) or slow (i.e. fault creep). The Alquist-Priolo Fault Zoning Act requires active earthquake fault zones to be mapped and it provides special development

considerations within these zones. Willows does not have surface expression of active faults and fault rupture is not anticipated. Figure 5.5-3 shows regional faults in relation to Willows.

### **Liquefaction**

Liquefaction typically requires a significant sudden decrease of shearing resistance in cohesion-less soils and a sudden increase in water pressure, which is typically associated with an earthquake of high magnitude. The potential for liquefaction is highest when groundwater levels are high, and loose, fine, sandy soils occur at depths of less than 50 feet. Soil data from the NRCS Web Soil Survey (NRCS 2019) suggests that the potential for liquefaction ranges from low to high within the Planning Area given that many soils are high in sand and the water table is moderately high.

### **Lateral Spreading**

Lateral spreading typically results when ground shaking moves soil toward an area where the soil integrity is weak or unsupported, and it typically occurs on the surface of a slope, although it does not occur strictly on steep slopes. Oftentimes, lateral spreading is directly associated with areas of liquefaction. The potential for liquefaction is moderate to high in many areas of Willows, however because the Planning Area is essentially flat lateral spreading of soils has not been observed within the Planning Area.

### **Landslides**

Landslides include rockfalls, deep slope failure, and shallow slope failure. Factors such as the geological conditions, drainage, slope, vegetation, and others directly affect the potential for landslides. One of the most common causes of landslides is construction activity that is associated with road building (i.e. cut and fill). The Planning Area is essentially flat; therefore, the potential for a landslides is generally low.

## **NON-SEISMIC HAZARDS**

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### **Expansive Soils**

Expansive soils can undergo significant volume change with changes in moisture content. They shrink and harden when dried and expand and soften when wet. If structures are underlain by expansive soils, it is important that foundation systems be capable of tolerating or resisting any potentially damaging soil movements. In addition, it is important to limit moisture changes in the surficial soils by using positive drainage away from buildings as well as limiting landscaping watering.

According to the NRCS Web Soil Survey, the soils in the Planning Area soils vary from a high shrink-swell potential to a very high shrink-swell potential. Figure 5.5-4 provides a map of the shrink-swell potential of the soils within the region.

### **Erosion**

Erosion naturally occurs on the surface of the earth as surface materials (i.e. rock, soil, debris, etc.) is loosened, dissolved, or worn away, and transported from one place to another by gravity. Two common types of soil erosion include wind erosion and water erosion. The steepness of a slope is an important factor that affects soil erosion. Erosion potential in soils is influenced primarily by loose soil texture and

steep slopes. Loose soils can be eroded by water or wind forces, whereas soils with high clay content are generally susceptible only to water erosion. The potential for erosion generally increases as a result of human activity, primarily through the development of facilities and impervious surfaces and the removal of vegetative cover.

The *Custom Soils Report* identified the erosion potential for the soils in the Planning Area. This report summarizes those soil attributes used by the Revised Universal Soil Loss Equation Version 2 (RUSLE2) for the map units in the selected area. Soil property data for each map unit component includes the hydrologic soil group, erosion factors K for the surface horizon, erosion factor T, and the representative percentage of sand, silt, and clay in the surface horizon.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water. Within the Planning Area, the erosion factor K varies from 0.24 to 0.37, which is considered a low to moderate potential for erosion. Furthermore, given the drainage characteristics of the majority of the soils and the nearly level topography of the Planning Area, runoff erosion hazard is considered low. The wind erosion potential ranges from moderate-to-high during the spring, summer, and fall, however this potential for wind erosion diminishes during the winter.

### **Collapsible Soils**

Collapsible soils undergo a rearrangement of their grains and a loss of cementation, resulting in substantial and rapid settlement under relatively low loads. Collapsible soils occur predominantly at the base of mountain ranges, where Holocene-age alluvial fan and wash sediments have been deposited during rapid run-off events. Soils prone to collapse are commonly associated with manmade fill, wind-laid sands and silts, and alluvial fan and mudflow sediments deposited during flash floods. During an earthquake, even slight settlement of fill materials can lead to a differentially settled structure and significant repair costs. Differential settlement of structures typically occurs when heavily irrigated landscape areas are near a building foundation. Examples of common problems associated with collapsible soils include tilting floors, cracking or separation in structures, sagging floors, and nonfunctional windows and doors. Collapsible soils have not been identified in the Planning Area as an issue. However, in areas subject to potential liquefaction, the potential for liquefaction induced settlement is present.

### **Subsidence**

Land subsidence is the gradual settling or sinking of an area with little or no horizontal motion due to changes taking place underground. It is a natural process, although it can also occur (and is greatly accelerated) as a result of human activities. Common causes of land subsidence from human activity include: pumping water, oil, and gas from underground reservoirs; dissolution of limestone aquifers (sinkholes); collapse of underground mines; drainage of organic soils; and initial wetting of dry soils. Subsidence has not been identified as an issue in the Planning Area.

### **Naturally Occurring Asbestos**

The term “asbestos” is used to describe a variety of fibrous minerals that, when airborne, can result in serious human health effects. Naturally occurring asbestos is commonly associated with ultramafic rocks

## 5.0 CONSERVATION AND NATURAL RESOURCES

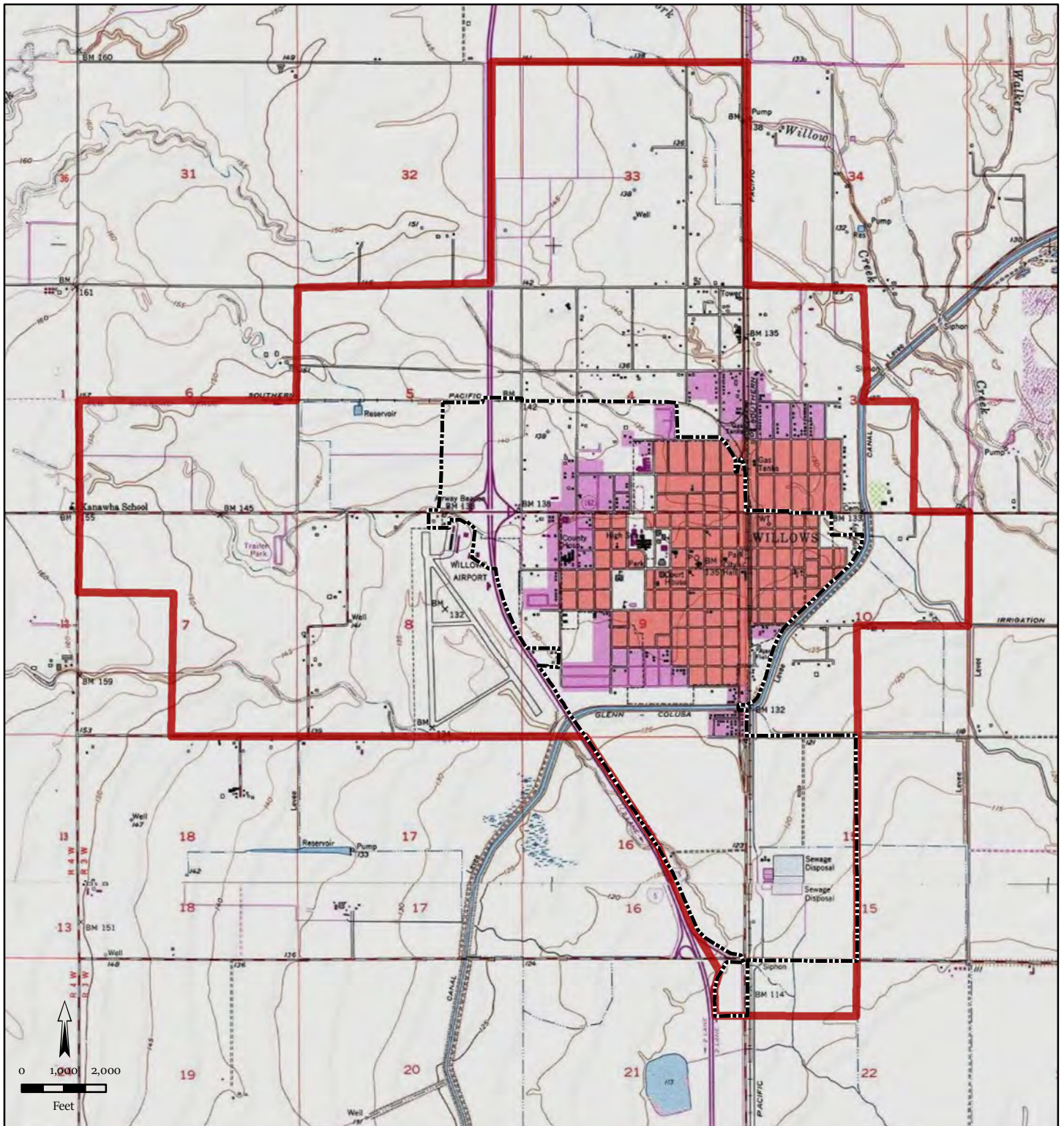
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and serpentinite. Ultramafic rocks, such as dunite, peridotite, and pyroxenite are igneous rocks comprised largely of iron-magnesium minerals. As they are intrusive in nature, these rocks often undergo metamorphism, prior to their being exposed on the Earth's surface. The metamorphic rock serpentinite is a common product of the alteration process. Naturally occurring asbestos is not identified within Glenn County, although it is all located to the east and west of the Planning Area in mountainous areas in Contra Costa and Calaveras Counties. There is no naturally occurring asbestos mapped within Willows.

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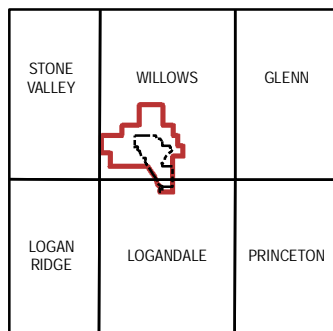


Sources: CalFire FRAP, mgmtscene\_v1, 2002. Map date: June 26, 2019. Revised: January 13, 2020.

USGS 7.5' QUADRANGLE INDEX

LEGEND

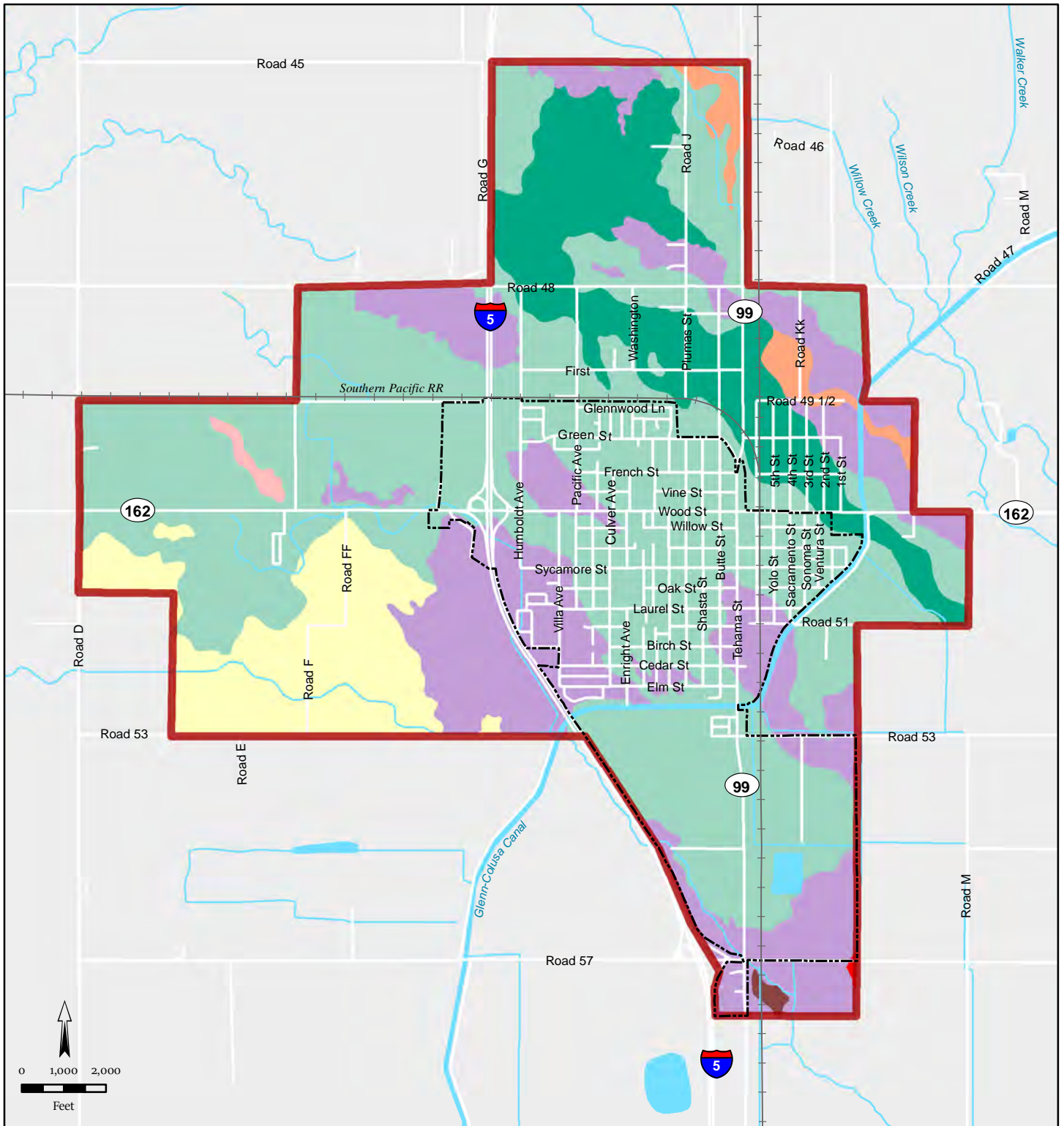
-  City of Willows
-  Willows Sphere of Influence



CITY OF WILLOWS

FIGURE 5.5-1. USGS TOPOGRAPHIC MAP

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Sources: NRCS web soil survey, CA021 Glenn County, California, v14, 09/12/2018. Map date: June 27, 2019. Revised: January 13, 2020.

LEGEND

- City of Willows
- Willows Sphere of Influence

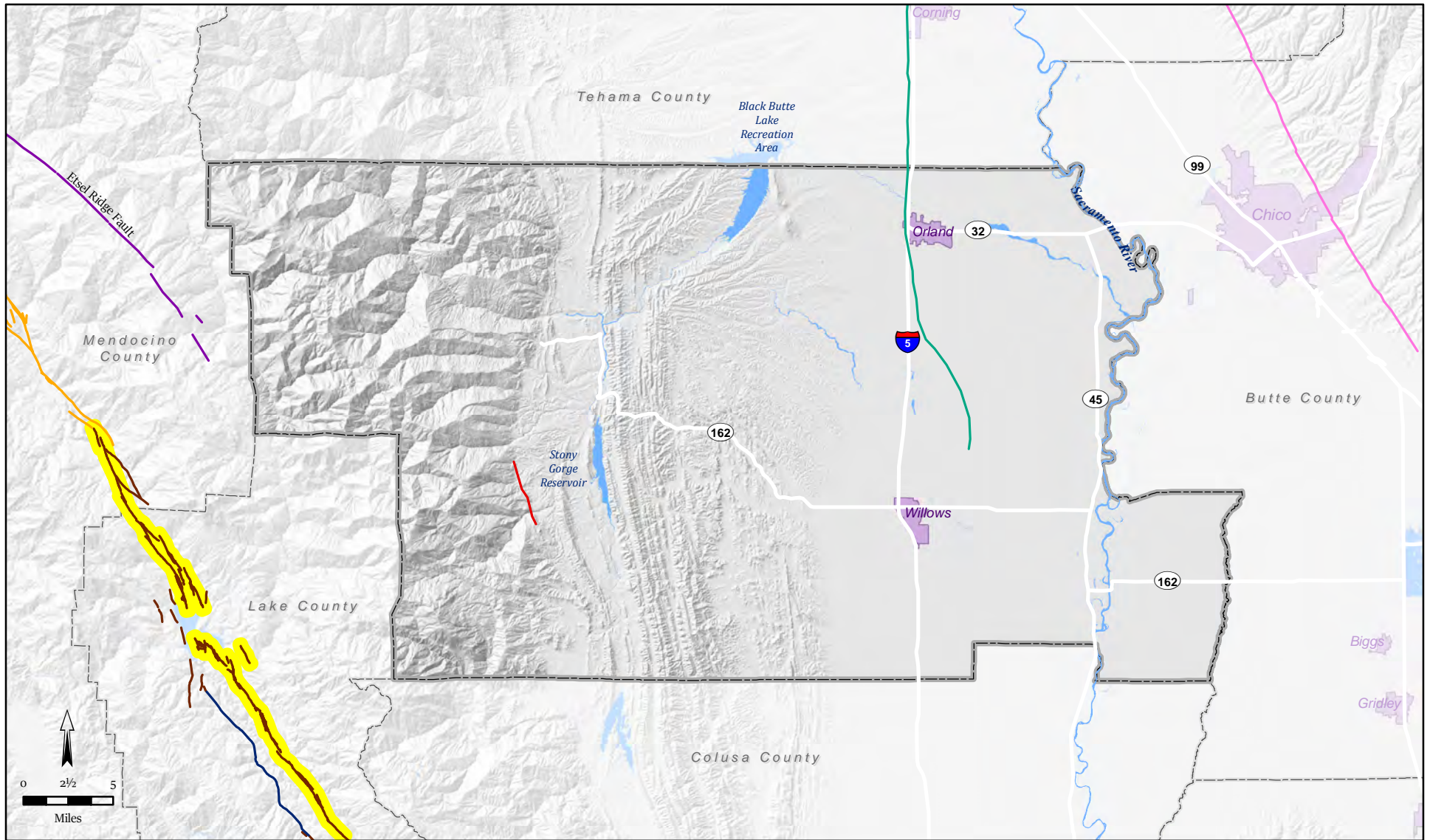
Soil Type

- |  |   |
|--|---|
| <span style="display: inline-block; width: 15px; height: 15px; background-color: red; border: 1px solid black; margin-right: 5px;"></span> Capay clay                          | <span style="display: inline-block; width: 15px; height: 15px; background-color: lightblue; border: 1px solid black; margin-right: 5px;"></span> Water                  |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></span> Hillgate loams and complexes     | <span style="display: inline-block; width: 15px; height: 15px; background-color: purple; border: 1px solid black; margin-right: 5px;"></span> Willows clays             |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: green; border: 1px solid black; margin-right: 5px;"></span> Myers clays, loams, and complexes | <span style="display: inline-block; width: 15px; height: 15px; background-color: orange; border: 1px solid black; margin-right: 5px;"></span> Yolo loams                |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: brown; border: 1px solid black; margin-right: 5px;"></span> Riz loams                         | <span style="display: inline-block; width: 15px; height: 15px; background-color: darkgreen; border: 1px solid black; margin-right: 5px;"></span> Zamora clays and loams |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: pink; border: 1px solid black; margin-right: 5px;"></span> Tehama loams and complexes         |   |

CITY OF WILLOWS  
FIGURE 5.5-2. SOILS

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Sources: USGS Quaternary faults database. Map date: June 27, 2019.

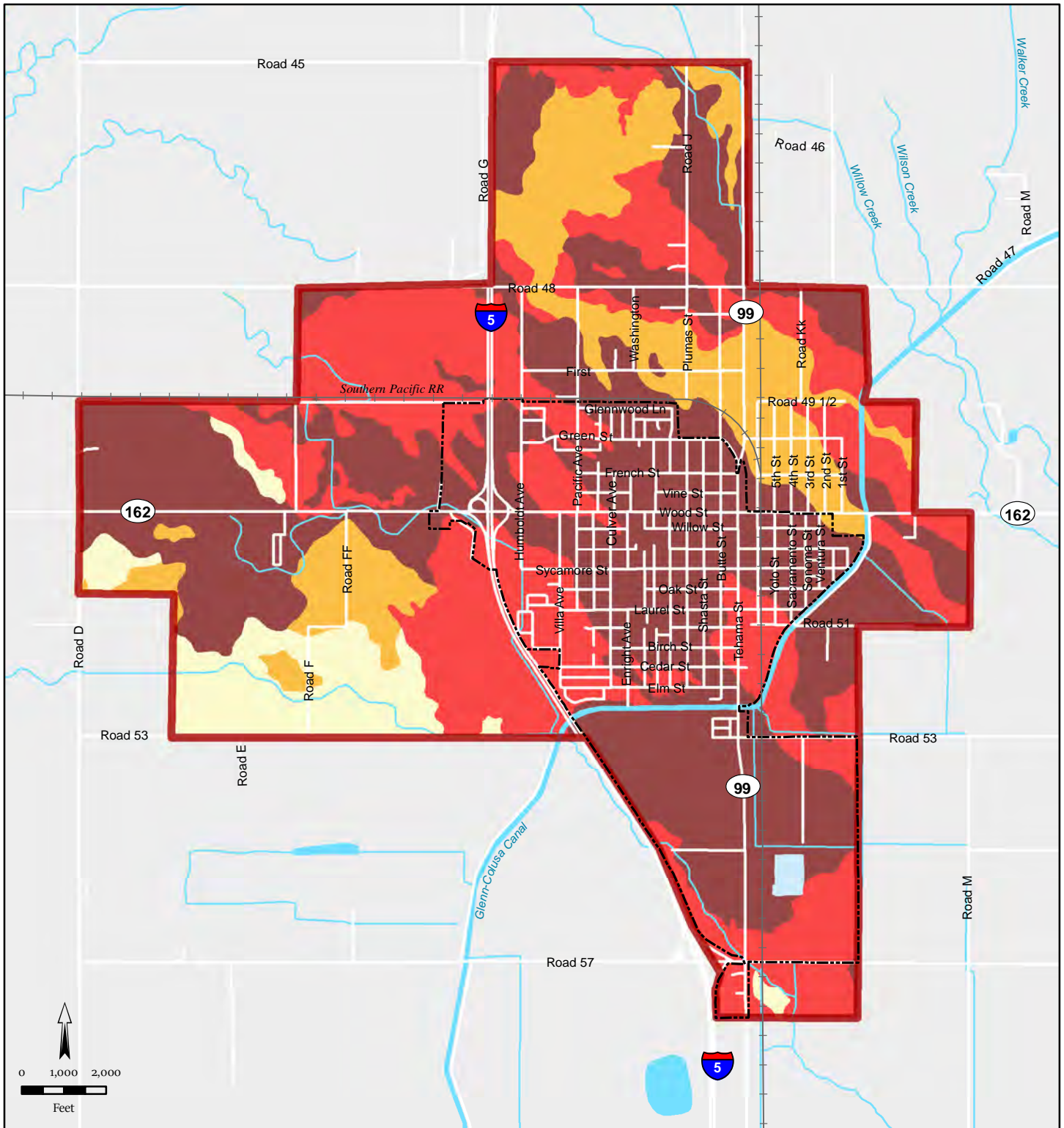
COUNTY OF GLENN, CALIFORNIA

**Legend**

- Bartlett Springs fault
- Hot Springs shear zone
- Etsel Ridge fault
- Round Valley fault
- Chico Monocline
- Corning fault
- Stoney Creek fault
- Alquist-Priolo Zone

**FIGURE 5.5-3. EARTHQUAKE FAULTS**

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Sources: NRCS web soil survey, CA021 Glenn County, California, v14, 09/12/2018. Map date: June 27, 2019. Revised: January 13, 2020.

**LEGEND**

- City of Willows
- Willows Sphere of Influence

**Shrink-Swell Potential of the Surface Horizon (Linear Extensibility %)\***

- |  |   |
|--|---|
| <span style="display: inline-block; width: 20px; height: 10px; background-color: #ffffcc; border: 1px solid black; margin-right: 5px;"></span> Low (0 - 3%)      | <span style="display: inline-block; width: 20px; height: 10px; background-color: #800000; border: 1px solid black; margin-right: 5px;"></span> Very High (9 - 30%)        |
| <span style="display: inline-block; width: 20px; height: 10px; background-color: #ffcc00; border: 1px solid black; margin-right: 5px;"></span> Moderate (3 - 6%) | <span style="display: inline-block; width: 20px; height: 10px; background-color: #add8e6; border: 1px solid black; margin-right: 5px;"></span> Not rated or not available |
| <span style="display: inline-block; width: 20px; height: 10px; background-color: #ff0000; border: 1px solid black; margin-right: 5px;"></span> High (6 - 9%)     |   |

\*Shrink-Swell Potential is determined by linear extensibility. Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Soils are considered to have low potential when the linear extensibility is less than 3%, moderate if 3-6%, high if 6-9%, and very high if greater than 9%.

CITY OF WILLOWS  
**FIGURE 5.5-4. SHRINK-SWELL  
 POTENTIAL OF SOILS**

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## 5.6 MINERAL AND ENERGY RESOURCES

This section describes mineral and energy resources in the Planning Area from both a qualitative and quantitative perspective. The results of this assessment may be used in planning and management decisions that may affect mineral and energy resources in the Planning Area.

### REGULATORY FRAMEWORK

#### *STATE*

#### **Surface Mining and Reclamation Act of 1975**

The California Department of Conservation Surface Mining and Reclamation Act of 1975 (§ 2710), also known as SMARA, provides a comprehensive surface mining and reclamation policy that permits the continued mining of minerals, as well as the protection and subsequent beneficial use of the mined and reclaimed land. The purpose of SMARA is to ensure that adverse environmental effects are prevented or minimized and that mined lands are reclaimed to a usable condition and readily adaptable for alternative land uses. The production and conservation of minerals are encouraged, while giving consideration to values relating to recreation, wildlife, range and forage, as well as aesthetic enjoyment. Residual hazards to public health and safety are eliminated. These goals are achieved through land use planning by allowing a jurisdiction to balance the economic benefits of resource reclamation with the need to provide other land uses.

If a use is proposed that might threaten the potential recovery of minerals from an area that has been classified mineral resource zone 2 (MRZ-2), SMARA would require the jurisdiction to prepare a statement specifying its reasons for permitting the proposed use, provide public notice of these reasons, and forward a copy of the statement to the State Geologist and the State Mining and Geology Board (Cal. Pub. Res. Code Section 2762). Lands classified MRZ-2 are areas that contain identified mineral resources.

#### **Division of Mines and Geology**

The California Division of Mines and Geology (DMG) operates within the Department of Conservation. The DMG is responsible for assisting in the utilization of mineral deposits and the identification of geological hazards.

#### **State Geological Survey**

Similar to the DMG, the California Geological Survey is responsible for assisting in the identification and proper utilization of mineral deposits, as well as the identification of fault locations and other geological hazards.

#### **Public Resources Code**

PRC Section 2762(d) and 2763 requires a lead agency to prepare a statement specifying its reasons for permitting a use that would threaten the potential to extract mineral resources either 1) in an area that has been designated in its general plan as having important minerals to be protected, or 2) if the use is proposed in an area with significant resources pursuant to Section 2761(b)(2) and the lead agency has not yet acted on the State's designation. PRC Section 2763 requires that lead agency land use decisions involving areas designated as being of regional significance shall be in accordance with the lead agency's mineral resource management policies and shall also, in balancing mineral values against alternative

land uses, consider the importance of these minerals to their market region as a whole and not just their importance to the lead agency's area of jurisdiction.

### **ASSEMBLY BILL 617**

Assembly Bill 617 (AB 617) was signed by Governor Jerry Brown on July 26, 2017, amends California Health and Safety Code section 40920.6, and requires Districts to adopt a schedule of BARCT regulation implementation. BARCT rules amend existing District Regulations but in the case that no specific District Regulations exist, new Regulations are adopted. In the Districts circumstance, it does not have a BARCT regulation so new rules would need to be evaluated. This schedule referenced in Item 5 is a timeframe for the District to potentially adopt new Regulation(s) specific to certain facilities in the natural gas industry identified by CARB.

## ENVIRONMENTAL SETTING

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### **Statewide Resources**

In 2012, the California Geological Survey identified that approximately 4 billion tons of permitted aggregate reserves lie within the 31 aggregate study areas in California. These permitted aggregate reserves have been determined to be acceptable for commercial use, exist within properties owned or leased by aggregate producing companies, and have permits allowing mining of aggregate material. Sand, gravel, and crushed stones are construction materials that are collectively referred to as construction aggregate. These materials provide the bulk and strength to cement concrete (CC), asphaltic concrete (AC), plaster, and stucco. Other uses include road base, subbase, railroad ballast, and fill.

From 1981 to 2010, California consumed an average of about 180 million tons of construction aggregate (all grades) per year. (CGS, 2012)

### **Regional Setting**

The primary mineral resources in Glenn County are sand, gravel, and natural gas. In 1997, the California Geological Survey assessed Glenn County mineral resources, with a focus on aggregate resources. Mineral resources in the region are classified based on whether the aggregate meets the specifications for use in CC. This aggregate is termed "CC-grade aggregate." The material quality specifications for CC-grade aggregate are more restrictive than the specifications for aggregate for other applications. As a result of the strict specifications, CC-grade aggregate deposits are more scarce and valuable than other aggregate resources.

Within Glenn County, 9 ARAs, including 41 subdivisions were identified as containing significant resources of concrete-grade aggregate. These areas contain an estimated minimum of 357 million tons of concrete-grade aggregate resources and a maximum of 1,031 million tons. Fourteen present production sites have an estimated 61 million tons of concrete-grade aggregate reserves, including both sand and gravel.

To be considered significant for the purpose of mineral land classification, a mineral deposit or group of deposits, must meet criteria adopted by the State Mining and Geology Board. These criteria include marketability and threshold values. The threshold value is approximately \$17.375 million for a construction aggregate deposit. CC-grade aggregate sells for approximately \$13 per ton on average in California; therefore, \$17,375,000 equates to about 1.3 million tons of CC-grade aggregate material.

Based on past production data, Glenn County will need 77 million tons of aggregate during the next 50 years. Of this projected demand, approximately 33% (27 million tons) must be suitable for CC and approximately 33% (27 million tons) must be suitable for AC. The 61 million tons of aggregate reserves are approximately 75% of the projected aggregate demand over the next 50 years. Unless new resources are permitted for mining, or alternative resources are used, existing reserves could be depleted by 2038. If a catastrophic event strikes the area and necessitates reconstruction, existing reserves will likely be depleted sooner.

**Mineral Resource Classification**

Pursuant to the Surface Mining and Reclamation Act of 1975 (SMARA), the California State Mining and Geology Board oversees the Mineral Resource Zone (MRZ) classification system. The MRZ system characterizes both the location and known/presumed economic value of underlying mineral resources. The mineral resource classification system uses four main MRZs based on the degree of available geologic information, the likelihood of significant mineral resource occurrence, and the known or inferred quantity of significant mineral resources. The four classifications are described in Table 5.6-1 below.

**TABLE 5.6-1: MINERAL RESOURCE CLASSIFICATION SYSTEM**

<i>CLASSIFICATION</i>	<i>DESCRIPTIONS</i>
MRZ-1	Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.
MRZ-2	Areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.
MRZ-3	Areas containing mineral deposits, the significance of which cannot be evaluated.
MRZ-4	Areas where available information is inadequate for assignment to any other MRZ classification.

*SOURCE: CALIFORNIA DEPARTMENT OF CONSERVATION DIVISION OF MINES AND GEOLOGY, ACCESSED JULY 2019*

**Mineral Extraction Activities**

Approximately 41 million tons of CC-grade aggregate reserves are permitted for production in the County (CGS, 2018). There are 21 active and inactive mines within Glenn County (California Department of Conservation, 2016). The nearest active aggregate mine is Watts Pit, owned and operated by the Glenn County Department of Public Works, located adjacent to the northeast portion of the Planning Area along County road 39.

**Local Resources**

Figure 5.6-1: Mineral Resource Zones shows mineral resources within and near the Planning Area. As shown on Figure 5.6-1, the planning area is designated as MRZ-3a “may contain significant aggregate deposit.”

## 5.0 CONSERVATION AND NATURAL RESOURCES

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### REFERENCES

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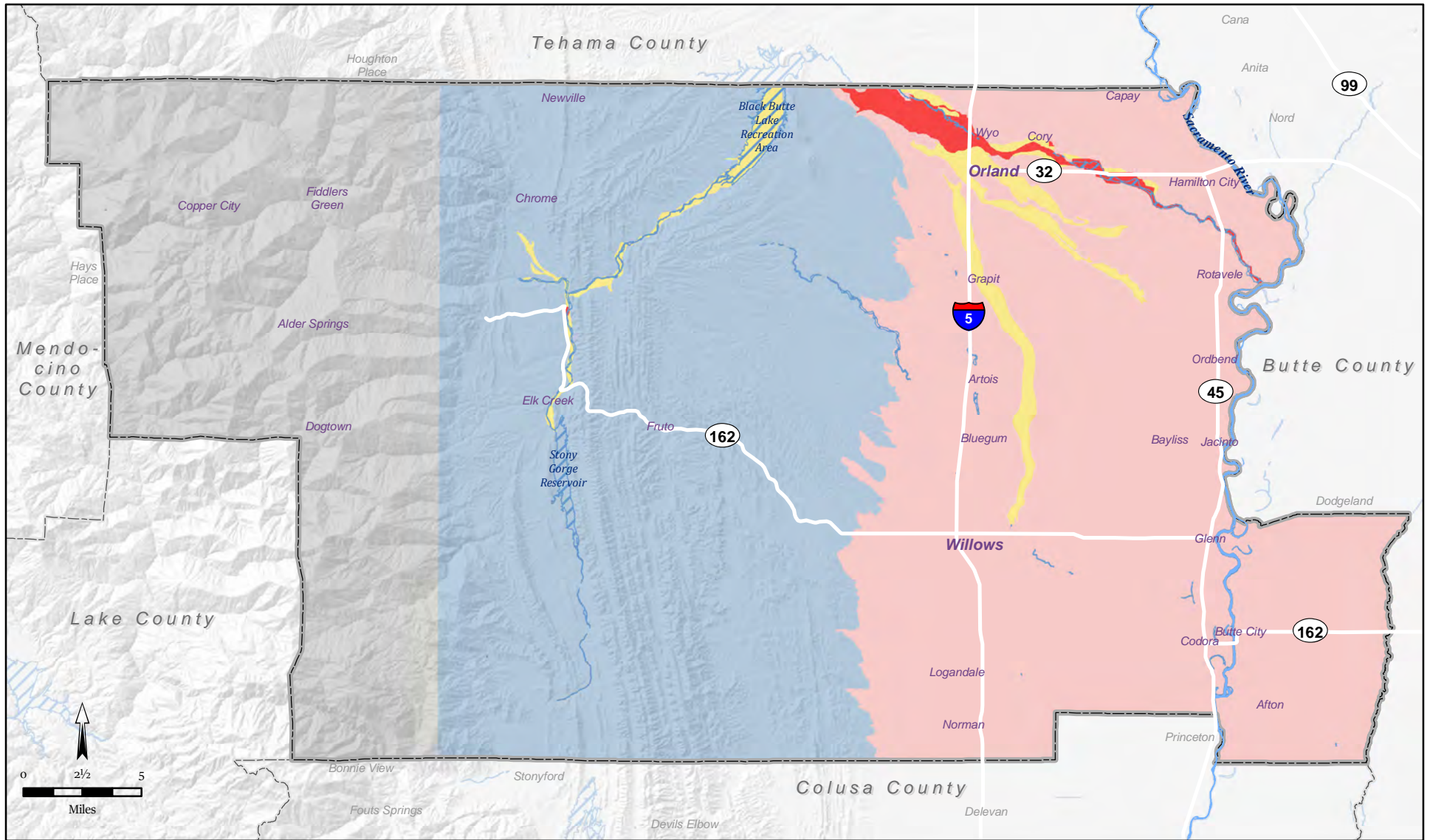
California Department of Conservation. 2002. California Geological Survey, Note 36.

California Natural Resources Agency (2015) updated mineral land classification map.

Department of Conservation (1997) Mineral Land Classification Map Concrete Grade Aggregate Resource in Eastern Glenn County.

Shumway. 1997. Mineral Land Classification of Concrete-Grade Aggregate Resources in Glenn County, California.





Sources: California Department of Conservation, Division of Mines and Geology, Open-File Report 97-02: Mineral Land Classification of Concrete-Grade Aggregate Resources in Glenn County, California, 1997, Plates 1 and 2. Map date: June 27, 2019. Revised December 10, 2019.

COUNTY OF GLENN, CALIFORNIA

FIGURE 5.6-1. MINERAL RESOURCE ZONES

**Legend**

- MRZ-2a: Significant aggregate deposit
- MRZ-2b: High likelihood of significant aggregate deposit
- MRZ-3a: May contain significant aggregate deposit
- Unclassified
- Unmapped

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## 5.7 HYDROLOGY AND WATER QUALITY

This section provides an overview of hydrology and water quality within the Planning Area and the vicinity. For information on flood-related issues and flood safety see Section 4.4 (Flooding). For information relating to water, wastewater, and drainage infrastructure see Section 3.1 (Utility Services).

### REGULATORY FRAMEWORK

#### *FEDERAL AND STATE*

#### **Clean Water Act (CWA)**

The Clean Water Act (CWA), initially passed in 1972, regulates the discharge of pollutants into watersheds throughout the nation. Section 402(p) of the act establishes a framework for regulating municipal and industrial stormwater discharges under the National Pollutant Discharge Elimination System (NPDES) Program. Section 402(p) requires that stormwater associated with industrial activity that discharges either directly to surface waters or indirectly through municipal separate storm sewers must be regulated by an NPDES permit.

The State Water Resources Control Board (SWRCB) is responsible for implementing the Clean Water Act and does so through issuing NPDES permits to cities and counties through regional water quality control boards. Federal regulations allow two permitting options for stormwater discharges (individual permits and general permits). The SWRCB elected to adopt a Statewide General Permit (Water Quality Order No. 2013-001-DWQ-DWQ).

#### **California Water Code**

The Clean Water Act places the primary responsibility for the control of surface water pollution and for planning the development and use of water resources with the states, although this does establish certain guidelines for the States to follow in developing their programs and allows the Environmental Protection Agency to withdraw control from states with inadequate implementation mechanisms.

California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Division 7 of the California Water Code) (Porter-Cologne Act). The Porter-Cologne Act grants the SWRCB and each of the Regional Water Quality Control Boards (RWQCBs) power to protect water quality, and is the primary vehicle for implementation of California's responsibilities under the Clean Water Act. The Porter-Cologne Act grants the SWRCB and the RWQCBs authority and responsibility to adopt plans and policies, to regulate discharges to surface and groundwater, to regulate waste disposal sites and to require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substance, sewage, or oil or petroleum product.

Each RWQCB must formulate and adopt a water quality control plan (Basin Plan) for its region the regional plans are to conform to the policies set forth in the Porter-Cologne Act and established by the SWRCB in its State water policy. The Porter-Cologne Act also provides that a RWQCB may include within its regional plan water discharge prohibitions applicable to particular conditions, areas, or types of waste.

## 5.0 CONSERVATION AND NATURAL RESOURCES

Water Code Section 13260 requires all dischargers of waste that may affect water quality in waters of the state to prepare and provide a water quality discharge report to the RWQCB. Section 13260a-c is as follows:

(a) Each of the following persons shall file with the appropriate regional board a report of the discharge, containing the information that may be required by the regional board:

(1) A person discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the state, other than into a community sewer system.

(2) A person who is a citizen, domiciliary, or political agency or entity of this state discharging waste, or proposing to discharge waste, outside the boundaries of the state in a manner that could affect the quality of the waters of the state within any region.

(3) A person operating, or proposing to construct, an injection well.

(b) No report of waste discharge need be filed pursuant to subdivision (a) if the requirement is waived pursuant to Section 13269.

(c) Each person subject to subdivision (a) shall file with the appropriate regional board a report of waste discharge relative to any material change or proposed change in the character, location, or volume of the discharge.

### **National Pollutant Discharge Elimination System (NPDES)**

National Pollutant Discharge Elimination System (NPDES) permits are required for discharges of pollutants to navigable waters of the United States, which includes any discharge to surface waters, including lakes, rivers, streams, bays, the ocean, dry stream beds, wetlands, and storm sewers that are tributary to any surface water body. NPDES permits are issued under the Federal Clean Water Act, Title IV, Permits and Licenses, Section 402 (33 USC 466 et seq.)

The RWQCB issues these permits in lieu of direct issuance by the Environmental Protection Agency, subject to review and approval by the Environmental Protection Agency Regional Administrator. The terms of these NPDES permits implement pertinent provisions of the Clean Water Act and the Act's implementing regulations, including pre-treatment, sludge management, effluent limitations for specific industries, and anti-degradation. In general, the discharge of pollutants is to be eliminated or reduced as much as practicable so as to achieve the Clean Water Act's goal of "fishable and swimmable" navigable (surface) waters. Technically, all NPDES permits issued by the RWQCB are also Waste Discharge Requirements issued under the authority of the Clean Water Act.

These NPDES permits regulate discharges from publicly owned treatment works, industrial discharges, stormwater runoff, dewatering operations, and groundwater cleanup discharges. NPDES permits are issued for five years or less, and are therefore to be updated regularly. The rapid and dramatic population and urban growth in the Central Valley Region has caused a significant increase in NPDES permit applications for new waste discharges. To expedite the permit issuance process, the SWRCB has adopted several general NPDES permits, each of which regulates numerous discharges of similar types of wastes. The SWRCB has issued general permits for stormwater runoff from industrial and construction sites statewide. Stormwater discharges from industrial and construction activities in the Central Valley Region can be covered under these general permits, which are administered jointly by the SWRCB and RWQCB.

### **Water Quality Control Plan for the Central Valley Region**

The Water Quality Control Plan for the Central Valley Region (Basin Plan) includes a summary of beneficial water uses, water quality objectives needed to protect the identified beneficial uses, and implementation measures. The Basin Plan establishes water quality standards for all the ground and surface waters of the region. The term “water quality standards,” as used in the Federal Clean Water Act, includes both the beneficial uses of specific water bodies and the levels of quality that must be met and maintained to protect those uses. The Basin Plan includes an implementation plan describing the actions by the RWQCB and others that are necessary to achieve and maintain the water quality standards.

The RWQCB regulates waste discharges to minimize and control their effects on the quality of the region’s ground and surface water. Permits are issued under a number of programs and authorities. The terms and conditions of these discharge permits are enforced through a variety of technical, administrative, and legal means. Water quality problems in the region are listed in the Basin Plan, along with the causes, where they are known. For water bodies with quality below the levels necessary to allow all the beneficial uses of the water to be met, plans for improving water quality are included. The Basin Plan reflects, incorporates, and implements applicable portions of a number of national and statewide water quality plans and policies, including the California Water Code and the Clean Water Act.

### **LOCAL**

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#### **Willows Municipal Code**

*Land use*

**GOAL DPS-4:** Maintain existing services, facilities and infrastructure, and provide for expansion, extension, or upgrades to meet the needs of new development without adversely impacting existing levels of service or the revenues required to provide them.

**POLICY DPS-4:** Before approving a development proposal, the city should determine through the California Environmental Quality Act (CEQA) process that proposed project will not adversely impact existing community services, facilities, and infrastructure. The City Council should determine that revenues are, or will be available to maintain and/or expand, extend, or upgrade services related to new development.

#### **Willows Municipal Code**

##### **CHAPTER 9.05 GENERAL PROVISIONS**

###### *9.05.330 WATER SYSTEM – TAMPERING WITH*

It shall be unlawful for any person, except a fireman in the discharge of his duties, or a person having a written permit from the superintendent of the waterworks or manager of the water company, to open or in any manner tamper with any fire hydrant, stopcock or air cock connected with the water mains of any company, individual or corporation furnishing water to the people of the city. [Code 1959 § 12.30; prior code § 11-68].

### CHAPTER 17.55 LAND DIVISION STANDARDS

#### 17.55.320 STORM DRAINAGE

(1) Properties shall be protected from flood hazard and inundation by stormwaters originating without and within the property. The design and construction of drainage facilities shall be such that watercourses traversing the property and water emanating from within the property will be carried through and off the property without damage to improvements, residential sites, or residences to be installed within the site or adjacent thereto.

(2) Drainage water entering the property shall be received and discharged from the property at the locations and, as nearly as possible, in the manner as existed prior to the construction of the drainage facilities within the property.

(3) Drainage facilities within the property shall be designed to conform to existing drainage plans or proposed land uses for areas within the watershed.

(4) Drainage waters originating within a property shall be conveyed into a permanent drainage facility. Such facility shall consist of either a well-defined natural channel or waterway of adequate capacity to accommodate the design discharge of the ultimate drainage of the watershed in which the property is located or a constructed facility having adequate capacity to carry the design discharge of the subdivision.

Storm drain conduits shall be constructed of Class 3 reinforced concrete pipe which conforms to the requirements of ASTM Designation C-76.

(5) Design quantities of stormwater flow shall be computed by the subdivider's engineer by use of the rational formula:

$$Q = CIA$$

wherein Q = the quantity of flow in cubic feet per second; C = runoff coefficient; I = intensity of rainfall in inches per hour; and A = tributary area in acres.

The determination of "C" and "I" shall be approved by the city engineer before flow computations are made.

(6) Within the development, catch basins shall be so placed along the streets that the width of flow in the gutter will not exceed two feet for a one-year average recurrence interval and the depth of flow will not exceed the top of curb for a 10-year average recurrence interval. In no case shall the spacing of catch basins exceed 500 feet.

(7) Drainage conduits or channels serving a tributary area of five acres or less shall be designed for a storm of five-year average recurrence interval. Conduits or channels serving a tributary area larger than five acres shall be designed for a storm of 10-year average recurrence interval. Unless approved by the city engineer, no design energy grade line of any closed or open waterway, or any bridges, culverts, or other appurtenances thereto, excepting curb and gutter sections, shall at any point be less than two feet below ground level.

(8) Drainage easements for closed conduits shall be no less than 12 feet in width and sufficient to contain the conduit and appurtenances, plus two feet on either side thereof. Such easements shall not

traverse a building site and shall, insofar as possible, be placed along or adjacent to lot boundary lines in a straight alignment without angle points.

(9) Drainage easements for open channels shall be of sufficient width to contain the top width of the channel plus a 10-foot continuous maintenance way on one side and four feet on the other side. Fencing requirements will be determined by staff.

(10) Natural channels and waterways into which subdivision drainage is proposed to be discharged shall also meet the design discharge requirements set forth in subsection (7) of this section. If, in the opinion of the city attorney, the discharge of additional water into such channel or waterway could result in litigation, the subdivider shall provide such flowage rights throughout the channel as deemed necessary by the planning commission.

### **Sacramento Valley Integrated Regional Water Management Plan**

Northern California water suppliers in partnership with local governments, environmental representatives and state and federal agencies continue to refine an "Integrated Regional Water Management Plan for the Sacramento Valley" (Regional Plan). The Regional Plan is designed to protect Northern California water rights and supplies and it will serve as a roadmap for present and future generations to provide water for farms, cities, birds, fish and recreation.

## **ENVIRONMENTAL SETTING**

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### **Regional Hydrology**

Glenn County is located in the Sacramento River watershed. The Sacramento River runs north-south through the eastern part of Glenn County, forming its eastern boundary on its way to the Delta and San Francisco Bay. Many tributary streams flow from the mountains on both sides of the valley into the Sacramento River. The Sacramento River is the primary source of surface irrigation water in the County. The total length of the Sacramento River is approximately 327 miles and its drainage area encompasses approximately 27,200 square miles. For irrigation purposes, water from the river is diverted into two major canals, the Glenn-Colusa Canal and the Tehama-Colusa Canal. Stony Creek is also a predominant source of surface water, supporting two reservoirs within the County - Stony Gorge and Black Butte. Stony Creek is the second largest tributary on the west side of the Sacramento Valley; it merges with the Sacramento River south of Hamilton City. The Stony Creek watershed is 741 square miles and includes portions of Glenn, Colusa, and Tehama counties. The watershed is roughly divided into Upper Stony Creek and Lower Stony Creek, with Black Butte Reservoir forming the boundary. The majority of the upper watershed is publicly owned (Mendocino National Forest), while most (96%) of the lower watershed is privately owned agricultural land.

### **Climate**

The SVAB has an inland Mediterranean climate, with mild, rainy winter weather from November through March and warm to hot, dry weather from May through September. Sacramento Valley temperatures range from 20 to 115 degrees Fahrenheit and the average annual rainfall is 20 inches. The topographic features giving shape to the SVAB are the Coast Range to the west, the Sierra Nevada to the east, and the Cascade Range to the north. The predominant annual and summer wind pattern in the Sacramento Valley is the sea breeze commonly referred to as the "Delta breeze." These cool winds originate from the Pacific Ocean and flow through a sea-level gap in the Coast Range called the Carquinez Strait.

## 5.0 CONSERVATION AND NATURAL RESOURCES

Glenn County has warm, dry days and relatively cool nights, with clear skies and limited rainfall. Winters are mild with light rains. In summer, high temperatures often exceed 100 degrees, with averages in the mid and high 90's. Summer low temperatures average in the high 50's.

### Watersheds

A watershed is a region that is bound by a divide that drains to a common watercourse or body of water. Watersheds serve an important biological function, oftentimes supporting an abundance of aquatic and terrestrial wildlife including special-status species and anadromous and native local fisheries. Watersheds provide conditions necessary for riparian habitat.

The State of California uses a hierarchical naming and numbering convention to define watershed areas for management purposes. This means that boundaries are defined according to size and topography, with multiple sub-watersheds within larger watersheds. Table 5.7-1 shows the primary watershed classification levels used by the State of California. The second column indicates the approximate size that a watershed area may be within a particular classification level, although variation in size is common.

**TABLE 5.7-1. STATE OF CALIFORNIA WATERSHED HIERARCHY NAMING CONVENTION**

<i>WATERSHED LEVEL</i>	<i>APPROXIMATE SQUARE MILES (ACRES)</i>	<i>DESCRIPTION</i>
Hydrologic Region (HR)	12,735 (8,150,000)	Defined by large-scale topographic and geologic considerations. The State of California is divided into ten HRs.
Hydrologic Unit (HU)	672 (430,000)	Defined by surface drainage; may include a major river watershed, groundwater basin, or closed drainage, among others.
Hydrologic Area (HA)	244 (156,000)	Major subdivisions of hydrologic units, such as by major tributaries, groundwater attributes, or stream components.
Hydrologic Sub-Area (HSA)	195 (125,000)	A major segment of an HA with significant geographical characteristics or hydrological homogeneity.

*SOURCE: CALIFORNIA DEPARTMENT OF WATER RESOURCES, 2012.*

### Hydrologic Region

The planning area is part of the Sacramento River Hydrologic Region.

The Sacramento River hydrologic region covers approximately 17.4 million acres (27,200 square miles) of California. The region includes all or large portions of Modoc, Siskiyou, Lassen, Shasta, Tehama, Glenn, Plumas, Butte, Colusa, Sutter, Yuba, Sierra, Nevada, Placer, Sacramento, El Dorado, Yolo, Solano, Lake, and Napa counties, and small areas of Alpine and Amador counties. Geographically, the region extends south from the Modoc Plateau and Cascade Range at the Oregon border, to the Sacramento-San Joaquin Delta. The Sacramento Valley, which forms the core of the region, is bounded to the east by the crest of the Sierra Nevada and southern Cascades and to the west by the crest of the Coast Range and Klamath Mountains.

### Local Watersheds (Hydrologic Sub-Areas)

Within the Sacramento River Hydrological Region, the Planning Area is located within the Logan Creek and Willow Creek watersheds, as shown on Figure 5.7-1.



## Groundwater Basin

The City overlies the Sacramento Valley - Colusa Groundwater subbasin (DWR 2006). The Sacramento Valley – Colusa basin is a subbasin of the Sacramento Valley Groundwater Basin (DWR 2006) and the Sacramento River forms its eastern boundary; Stony Creek forms its northern boundary. Groundwater basins are shown in 5.7-2.

**The Colusa Subbasin** is a portion of the larger Sacramento Valley Groundwater Basin covering approximately 723,823 acres. The subbasin spans Glenn and Colusa Counties. It is generally bounded by Stony Creek to the north, the Coast Ranges to the west, to the east by the Sacramento River and the Reclamation District 1004 western boundary, and to the south by the Colusa-Yolo County boundary and the Colusa County Water District boundary. The Glenn Groundwater Authority (GGA) governs the Glenn County portion of the Colusa Subbasin and consists of nine member agencies, including the City of Willows (GGA acreage 286,154). According to Department of Water Resources (DWR) Bulletin 118 (DWR, 2006), estimates of groundwater extraction for agricultural, municipal and industrial, and environmental wetland uses are 310,000, 14,000 and 22,000 acre-feet respectively. Deep percolation from applied water is estimated to be 64,000 acre-feet. The storage capacity of the subbasin was estimated based on estimates of specific yield for the Sacramento Valley. Estimates of specific yield, determined on a regional basis, were used to obtain a weighted specific yield conforming to the subbasin boundary. The estimated specific yield for the subbasin is 7.1 percent. The estimated storage capacity to a depth of 200 feet is approximately 13,025,887 acre-feet.

The Sustainable Groundwater Management Act (SGMA) passed in the fall of 2014, establishing a new structure for managing groundwater resources in California. The Department of Water Resources defines groundwater basins and subbasins and assigns a priority designation in relation to SGMA (High, Medium, Low, Very Low). High and Medium priority basins are required to be managed under SGMA by a Groundwater Sustainability Agency (GSA) or the State Water Resources Control Board. GSAs have the opportunity to manage groundwater at the local level by developing and implementing a Groundwater Sustainability Plan by 2022 and ensuring sustainable conditions by 2042 while avoiding six distinct undesirable results. If GSAs are not successful locally, the State Water Resources Control Board will intervene and assume responsibility for basin management. Glenn County has local GSA coverage and is currently compliant with SGMA.

GSAs will be working on the development of Groundwater Sustainability Plans (GSP) for the next several years. DWR has released the Groundwater Sustainability Plans and Projects Proposal Solicitation Package to allow agencies to apply for Proposition 1 grant funding to support GSP development and projects. GSAs within Glenn County are currently focused on applying for Proposition 1 grants for the development of GSPs within each subbasin to cover all areas within the County.

GSAs within Glenn County are currently focused on applying for Proposition 1 grants for the development of GSPs within each subbasin to cover all areas within the County. GSAs in the region are coordinating their Proposition 1 grant applications for GSP development in order to secure and maximize funding for shared subbasins.

Glenn County was also awarded a grant in 2016, as part of the Water Quality, Supply, and Infrastructure Improvement Act of 2014, (Sustainable Groundwater Planning Grant Program), administered by State of California, Department of Water Resources; in the amount of nearly \$250,000 to complete a project supporting Sustainable Groundwater Management Activities. With the grant, Glenn County completed the Data Management and Hydrogeologic Conceptual Model Project (2016-2018) to support sustainable groundwater management activities. This Project includes the compilation of groundwater data,

development of a groundwater data management system (DMS), creation of a water budget and hydrogeologic conceptual model (HCM), and ranking and scoring of groundwater-surface water modeling platforms. The data and models produced from this Project will be incorporated into one or more Sustainable Groundwater Management Act (SGMA) compliant Groundwater Sustainability Plans. The project concluded in July 2018.

### **Local Drainage**

The City provides and maintains a system of storm drains, detention basins, and pumping facilities as well as monitoring and control of the operations of the storm drain system. Additionally, the City enforces storm drain regulations established by the US EPA and the State of California.

### **Stormwater Quality**

Potential hazards to surface water quality include the following nonpoint pollution problems: high turbidity from sediment resulting from erosion of improperly graded construction projects, concentration of nitrates and dissolved solids from agriculture or surfacing septic tank failures, contaminated street and lawn run-off from urban areas, and warm water drainage discharges into cold water streams.

The most critical period for surface water quality is following a rainstorm which produces significant amounts of drainage runoff into streams at low flow, resulting in poor dilution of contaminants in the low flowing stream. Such conditions are most frequent during the fall at the beginning of the rainy season when stream flows are near their lowest annual levels. Besides the greases, oils, pesticides, litter, and organic matter associated with such runoff, heavy metals such as copper, zinc, and cadmium can cause considerable harm to aquatic organisms when introduced to streams in low flow conditions.

Urban stormwater runoff was managed as a non-point discharge (a source not readily identifiable) under the Federal Water Pollution Control Amendments of 1972 (PL 92-500, Section 208) until the mid-1980's. However, since then, the Federal Environmental Protection Agency has continued to develop implementing rules which categorize urban runoff as a point source (an identifiable source) subject to National Pollution Discharge Elimination System (NPDES) permits. Rules now affect medium and large urban areas, and further rulemaking is expected as programs are developed to meet requirements of Federal water pollution control laws.

Surface water pollution is also caused by erosion. Excessive and improperly managed grading, vegetation removal, quarrying, logging, and agricultural practices all lead to increased erosion of exposed earth and sedimentation of watercourses during rainy periods. In slower moving water bodies these same factors often cause a buildup of siltation, which ultimately reduces the capacity of the water system to percolate and recharge groundwater basins, as well as adversely affecting both aquatic resources and flood control efforts.

**303(d) Impaired Water Bodies:** Section 303(d) of the federal Clean Water Act requires States to identify waters that do not meet water quality standards or objectives and thus, are considered "impaired." Once listed, Section 303(d) mandates prioritization and development of a Total Maximum Daily Load (TMDL). The TMDL is a tool that establishes the allowable loadings or other quantifiable parameters for a waterbody and thereby the basis for the States to establish water quality-based controls. The purpose of TMDLs is to ensure that beneficial uses are restored and that water quality objectives are achieved.

According to the California Water Quality Control Monitoring Council, which is part of California Environmental Protection Agency, Natural Resources, there are many areas within Glenn County which

are considered Section 303(d) impaired waterbodies. The impaired water bodies are located within the Middle Butte Creek, Sacramento River, Colusa Drain, Upper Stony Creek, Middle Stony Creek, Lower Stony Creek, Walker Creek, Black Butte River, and Corbin Creek-Eel River hydrologic areas. These hydrologic areas extend beyond the county boundary so not all impaired water body segments are located within Glenn County. The pollution source is predominantly agricultural and crop related, although mercury, and resource extraction is also a pollution source. There are a few pollution sources that are not currently known.

## REFERENCES

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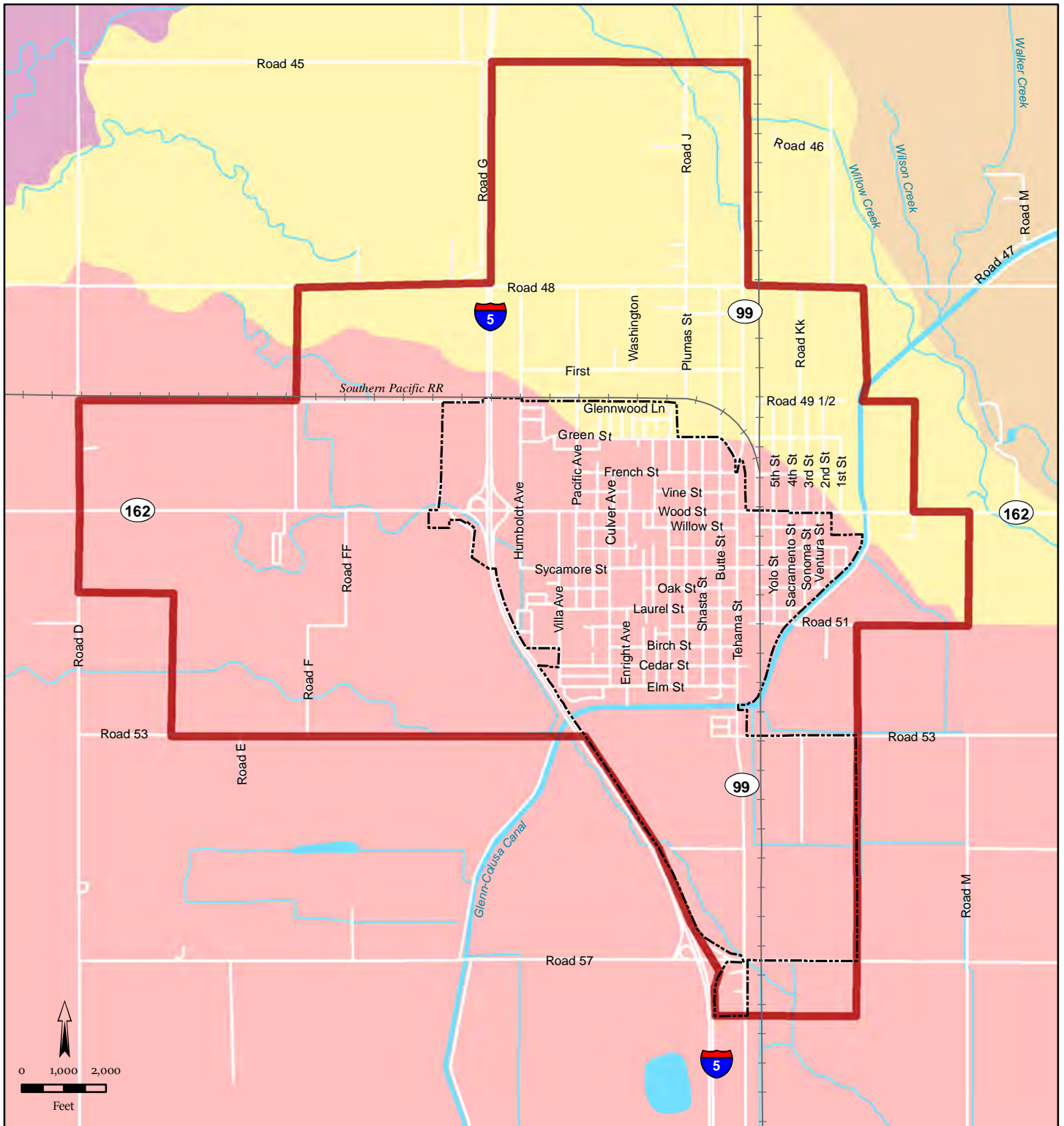
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

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Sources: USGS Watershed Boundary Dataset; USGS National Hydrography Dataset. Map date: June 26, 2019. Revised: January 14, 2020.

LEGEND

-  City of Willows
-  Willows Sphere of Influence

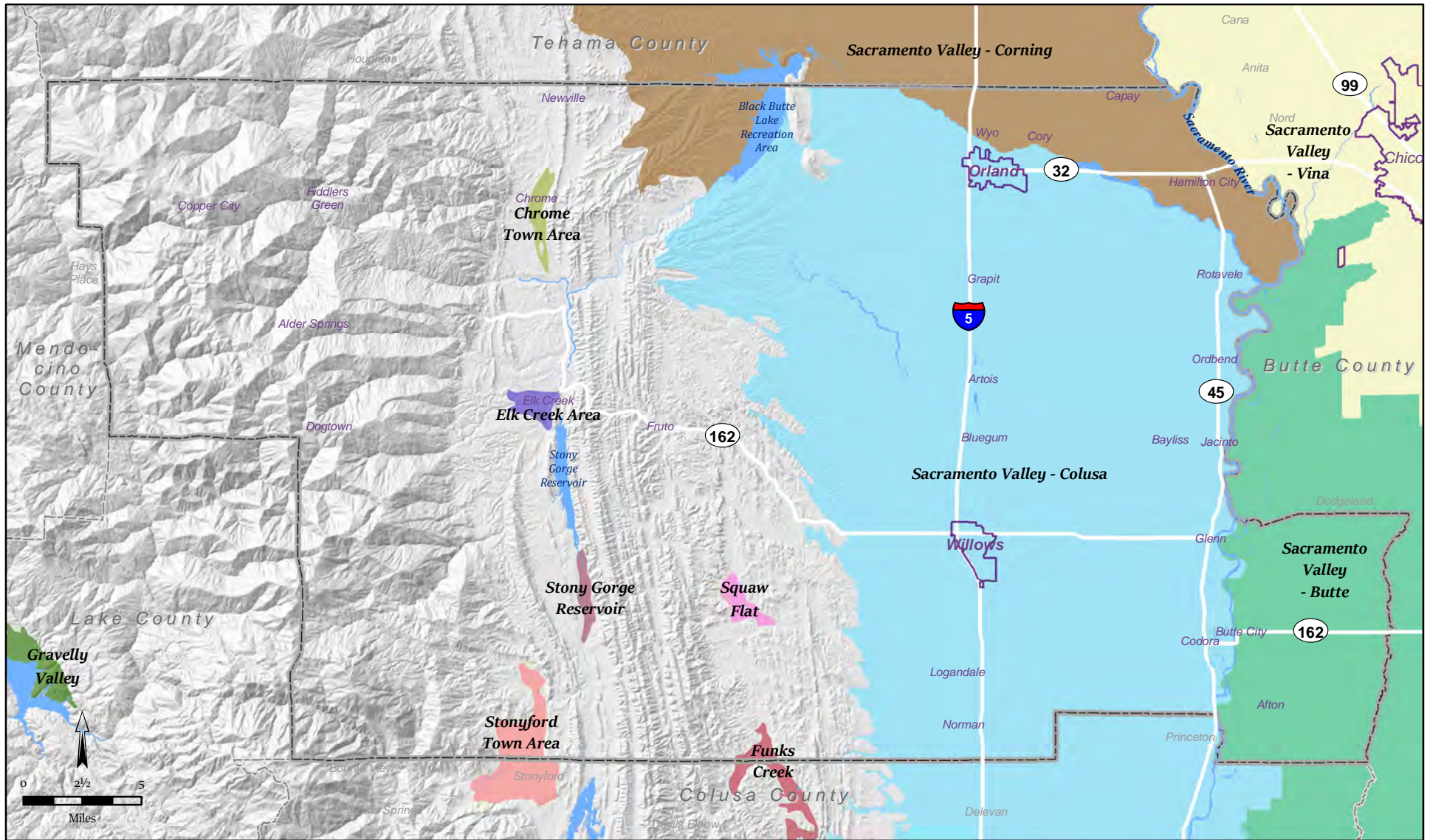
Watersheds

-  Logan Creek
-  South Fork Willow Creek
-  Walker Creek
-  Willow Creek

CITY OF WILLOWS

FIGURE 5.7-1. WATERSHEDS

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Sources: Department of Water Resources (DWR). Map date: June 27, 2019.

**Legend**

- Chrome Town Area
- Elk Creek Area
- Funks Creek
- Gravelly Valley
- Sacramento Valley - Butte
- Sacramento Valley - Colusa
- Sacramento Valley - Corning
- Sacramento Valley - Vina
- Squaw Flat
- Stony Gorge Reservoir
- Stonyford Town Area

COUNTY OF GLENN, CALIFORNIA

**FIGURE 5.7-2. GROUNDWATER BASINS**

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## 5.8 SCENIC RESOURCES

This section provides an overview of the visual character, scenic resources, views, and scenic highways that are encountered within the Planning Area and the regional vicinity. For information on historical structures and resources see Section 5.1 (Cultural and Historic Preservation).

### KEY TERMS

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

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

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

### REGULATORY FRAMEWORK

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#### STATE

#### **California Department of Transportation – California Scenic Highway Program**

California's Scenic Highway Program was created by the Legislature in 1963 to preserve and protect scenic highway corridors from change, which would diminish the aesthetic value of lands adjacent to highways. The State laws governing the Scenic Highway Program are found in the Streets and Highways Code, Section 260 et seq. The State Scenic Highway System includes a list of highways that are either eligible for designation as scenic highways or have been so designated. These highways are identified in Section 263 of the Streets and Highways Code. A list of California's scenic highways and map showing their locations may be obtained from the Caltrans Scenic Highway Coordinators. If a route is not included on a list of highways eligible for scenic highway designation in the Streets and Highways Code Section 263 et seq., it must be added before it can be considered for official designation. A highway may be designated scenic depending on the extent of the natural landscape that can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view.

#### LOCAL

#### **City of Willows General Plan**

The following Willows General Plan goals, which are intended to achieve visual and scenic quality in new developments, apply to the proposed project:

#### **Open Space/Conservation Element:**

1. To continue close cooperation with federal agencies in protecting, and carefully planning and regulating uses and developments of natural resources within and adjacent to City boundaries.

## 5.0 CONSERVATION AND NATURAL RESOURCES

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2. To continue similar cooperative action with state agencies with respect to recreation site acquisition and development.
3. To give careful consideration to the protection of natural scenic resources and environmental assets in all future major public and private development planning.

### **City of Willows Design Review Ordinance**

Chapter 2.45, Architectural Board of Review, of the City Zoning Ordinance contains ordinance with the purpose of preserving a continuity of pictorial design in commercial and other structures, boulevards, parkways, parking lots, parks, aboveground utilities and/or any installation that would affect the aesthetic appeal and beauty of the City of Willows. Buildings, structures and other physical improvements or change of or to existing buildings, structures and other physical improvements shall be subject to design review (unless exempt). Projects subject to the City's Design Review will be reviewed and approved by an architectural review board made up by the planning commission of the City of Willows

### **City of Willows Zoning Ordinance**

Chapter 18.110, General Provisions and Exceptions, of the City Zoning Ordinance contains several sections that regulate aesthetic or visual standards for development in the City. These include standards for landscaping, yards and fencing requirements for residential, commercial and industrial developments.

## ENVIRONMENTAL SETTING

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### **Regional Scenic Resources**

Visual resources are generally classified into two categories: scenic views and scenic resources. Scenic views are elements of the broader viewshed such as mountain ranges, valleys, waterways, and ridgelines. They are usually mid-ground or background elements of a viewshed that can be seen from a range of viewpoints, often along a roadway or other corridor. Scenic resources are specific features of a viewing area (or viewshed) such as trees, rock outcroppings, and historic buildings. They are specific features that act as the focal point of a viewshed and are usually foreground elements.

Aesthetically significant features occur in a diverse array of environments within the region, ranging in character from urban centers to rural agricultural lands to natural water bodies. Features of the built environment that may also have visual significance include individual or groups of structures that are distinctive due to their aesthetic, historical, social, or cultural significance or characteristics. Examples of the visually significant built environment may include bridges or overpasses, architecturally appealing buildings or groups of buildings, landscaped freeways, and a location where a historic event occurred.

### **Scenic Highways and Corridors**

Scenic highways and corridors make major contributions to the quality of life enjoyed by the residents of a region. The development of community pride, the enhancement of property values, and the protection of aesthetically-pleasing open spaces reflecting a preference for the local lifestyle are all ways in which scenic corridors are valuable to residents.

Scenic highways and corridors can also strengthen the tourist industry. For many visitors, highway corridors will provide their only experience of the region. Enhancement and protection of these corridors ensures that the tourist experience continues to be a positive one and, consequently, provides support for the tourist-related activities of the region's economy.

**Scenic Highways:** A scenic highway is generally defined by Caltrans as a public highway that traverses an area of outstanding scenic quality, containing striking views, flora, geology, or other unique natural attributes. A highway may be designated scenic depending upon how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view.

According to the California Scenic Highway Mapping System, administered by Caltrans, there are no officially designated scenic highways or scenic corridors in Glenn County. In addition, there are no eligible State Scenic Highway Corridors in Glenn County that have not yet been officially designated.

**Scenic Corridors:** A scenic corridor is the view from the road that may include a distant panorama and/or the immediate roadside area. A scenic corridor encompasses the outstanding natural features and landscapes that are considered scenic. It is the visual quality of the man-made or natural environments within a scenic corridor that are responsible for its scenic value. Commonly, the physical limits of a scenic corridor are broken down into foreground views (zero to one quarter mile) and distant views (over one quarter mile). In addition to distinct foreground and distant views, the visual quality of a scenic corridor is defined by special features, which include:

- Focal points - prominent natural or man-made features which immediately catch the eye.
- Transition areas - locations where the visual environment changes dramatically.
- Gateways - locations which mark the entrance to a community or geographic area.

The City of Willows General Plan does not specifically designate any scenic corridors within Willows.

## Other Scenic Resources Areas

The City of Willows General Plan does not specifically designate any scenic viewsheds within Willows. The existing Willows General Plan does, however, note the surrounding county's scenic environmental resources including the Sacramento River environment.

**Water Resources:** Water resources are important visual resources that draw tourists to the area for recreational opportunities, provide critical habitat, and provide for scenic areas within and surrounding urban areas. The most visually significant water body in the region is the Sacramento River.

**Agricultural Resources:** Much of the undeveloped land within the City Limits, SOI, and areas surrounding the urbanized portion of Willows is predominantly farmland, including alfalfa, orchard, row crops, and pasture. Agricultural lands have become important visual resources that contribute to the community identity of Willows, surrounding areas, and the Valley Region. Agricultural lands provide for visual relief from urbanized areas and act as community separators to nearby urban areas.

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## 5.9 AGRICULTURAL RESOURCES

This section provides an overview of the agricultural crops in Glenn County and the City of Willows. Information in this section is derived primarily from the California Important Farmlands Map (California Department of Conservation, 2014), the California Land Conservation (Williamson) Act Status Report (California Department of Conservation, 2016), the Glenn County Agricultural Report (Glenn County Agricultural Commissioner, 2016-2017), and the Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS, 2018).

### REGULATORY FRAMEWORK

#### *FEDERAL*

#### **Farmland Protection Policy Act**

The Farmland Protection Policy Act (FPPA) is intended to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses. It ensures that, to the extent practicable, federal programs are compatible with state and local units of government as well as private programs and policies to protect farmland. Projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a federal agency or with assistance from a federal agency. For the purpose of the FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for crop production. In fact, the land can be forest land, pastureland, cropland, or other land but does not include water bodies or land developed for urban land uses (i.e., residential, commercial, or industrial uses).

The Natural Resource Conservation Service (NRCS) administers the Farmland Protection Program. NRCS uses a land evaluation and site assessment (LESA) system to establish a farmland conversion impact rating score on proposed sites of federally funded and assisted projects. This score is used as an indicator for the project sponsor to consider alternative sites if the potential adverse impacts on the farmland exceed the recommended allowable level. The assessment is completed on form AD-1006, Farmland Conversion Impact Rating. The sponsoring agency completes the site assessment portion of the AD-1006, which assesses non-soil related criteria such as the potential for impact on the local agricultural economy if the land is converted to non-farm use and compatibility with existing agricultural use.

#### *STATE*

#### **Williamson Act**

The California Land Conservation Act of 1965, commonly known as the Williamson Act, was established based on numerous State legislative findings regarding the importance of agricultural lands in an urbanizing society. Policies emanating from those findings include those that discourage premature and unnecessary conversion of agricultural land to urban uses and discourage discontinuous urban development patterns, which unnecessarily increase the costs of community services to community residents.

The Williamson Act authorizes each County to establish an agricultural preserve. Land that is within the agricultural preserve is eligible to be placed under a contract between the property owner and County that would restrict the use of the land to agriculture in exchange for a tax assessment that is based on the yearly production yield. The contracts have a 10-year term that is automatically renewed each year,

unless the property owner requests a non-renewal or the contract is cancelled. If the contract is cancelled the property owner is assessed a fee of up to 12.5 percent of the property value.

### **Farmland Security Zones**

In 1998 the state legislature established the Farmland Security Zone (FSZ) program. FSZs are similar to Williamson Act contracts, in that the intention is to protect farmland from conversion. The main difference however, is that the FSZ must be designated as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance. The term of the contract is a minimum of 20 years. The property owners are offered an incentive of greater property tax reductions when compared to the Williamson Act contract tax incentives; the incentives were developed to encourage conservation of prime farmland through FSZs. The non-renewal and cancellation procedures are similar to those for Williamson Act contracts.

### **California Government Code Section 560643**

This section of the Government Codes defines “Prime agricultural land” as follows:

- Prime agricultural land means an area of land, whether a single parcel or contiguous parcels, that has not been developed for a use other than an agricultural use and that meets any of the following qualifications:
  - Land that qualifies, if irrigated, for rating as class I or class II in the USDA Natural Resources Conservation Service land use capability classification, whether or not land is actually irrigated, provided that irrigation is feasible.
  - Land that qualifies for rating 80 through 100 Storie Index Rating.
  - Land that supports livestock used for the production of food and fiber and that has an annual carrying capacity equivalent to at least one animal unit per acre as defined by the United States Department of Agriculture in the National Range and Pasture Handbook, Revision 1, December 2003.
  - Land planted with fruit or nut-bearing trees, vines, bushes, or crops that have a nonbearing period of less than five years and that will re-turn during the commercial bearing period on an annual basis from the production of unprocessed agricultural plant production not less than four hundred dollars (\$400) per acre.
  - Land that has returned from the production of unprocessed agricultural plant products an annual gross value of not less than four hundred dollars (\$400) per acre for three of the previous five calendar years.

### *LOCAL*

### **City of Willows General Plan**

The existing City of Willows General Plan provides a policy framework for the preservation and conservation of agricultural resources.

**Open Space/Conservation Element:**

- 1. To continue close cooperation with federal agencies in protecting, and carefully planning and regulating uses and developments of natural resources within and adjacent to City boundaries.
- 2. To continue similar cooperative action with state agencies with respect to recreation site acquisition and development.
- 3. To give careful consideration to the protection of natural scenic resources and environmental assets in all future major public and private development planning.
- 4. To provide all reasonable protection and encouragement to the preservation of agricultural soils and continued agricultural use of suitable soils.
- 5. To continue and further activate programs for the provision of area parks and open spaces in future subdivisions and land projects.

***Natural Resources***

**GOAL NRG-1:** Preservation of Agricultural land

**POLICY NRP-1:** Maintain agriculture as a primary, extensive land use, not only in recognition of the economic importance of agriculture, but also in terms of agriculture’s contribution to the preservation of open space and wildlife habitat.

**POLICY NRP-2:** Support the concept that agriculture is a total, functioning system which will suffer when any part of it is subjected to regulation resulting in the decline of agricultural productivity, unmitigated land use conflicts and/or excessive land fragmentation.

**POLICY NRP-3:** Recognize the value of rice lands for waterfowl habitat, watershed management, and for groundwater recharge in an effort to preserve such lands and to maintain necessary water supplies in Glenn County.

**POLICY NRP-4:** Support efforts underway to explore the potential to utilize rice lands as temporary storage reservoirs in winter months, thus increasing groundwater recharge and supplies of surface water for both agriculture and wildlife, and potentially providing an alternative to rice straw burning.

**POLICY NRP-5:** Continue participation in the Williamson Act, and allow new lands devoted to commercial agriculture and located outside urban limit lines to enter the program, subject to the specific standards for inclusion contained in this General Plan

**POLICY NRP-6:** Lobby on a continuing basis for maintenance and enhancement of the Williamson Act subvention in concert with other interested counties and organizations.

**POLICY NRP-7:** Recognize the importance of the dairy industry, as well as other confined animal agricultural uses, to the agricultural economy by actively supporting efforts to attract new dairies and to expand existing facilities.

**POLICY NRP-8:** Assure that future land use decision protect and enhance the agricultural industry while also protecting existing uses from potential incompatibilities.

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**POLICY NRP-9:** Encourage use of agricultural lands preservation tools such as in-county transfer of development rights, conservation easements, exclusive agricultural zoning and continuation of minimum parcel sizes.

**POLICY NRP-10:** Limit the application of rural residential and similar zoning in the county, and follow standards for its application as contained in this General Plan, so as not to encourage the premature conversion of otherwise viable agricultural land to rural residential environments which can no longer be farmed, and are typically too dispersed to be served efficiently by government services.

**POLICY NRP-11:** Monitor requests for subdivision of agriculturally developed and zoned parcels, located outside urban limit lines, in order to determine if present minimum parcel sizes are working effectively to discourage agricultural lands conversion.

**POLICY NRP-12:** Review agricultural lands conversion findings as described in NPR-11 with decision makers annually.

**POLICY NRP-13:** Establish urban limit lines around existing and planned future communities, development nodes and other areas of urban use, in an effort to protect agricultural land and to encourage infill and economic growth.

**POLICY NRP-14:** Consult Important farmland Maps and other sources of information on the relative value of agricultural lands when planning areas of growth, in order to direct growth and development toward lesser value agricultural lands.

**POLICY NRP-15:** Recognize that, in order to realistically provide for the necessary diversity and growth required in the local economy, some lands presently committed to agriculture may be consumed by other development activities, and plan for and monitor such conversion to assure that it does not hinder or restrict existing agricultural operations. Priority shall be given to industries related to agriculture.

**POLICY NRP-16:** Retain grazing land in large contiguous areas of the foothills, in recognition of its value to the livestock industry and as open space for watershed management, and its contribution to groundwater recharge, wildlife and waterfowl.

**POLICY NRP-17:** Recognize that limited conversion of grazing lands to other uses may be less harmful to agriculture than conversion of cropland, if the new uses are properly planned and serviced.

**POLICY NRP-18:** Support the U.S.D.A Soil Conservation Service effort to update soils survey information in Glenn County.

**POLICY NRP-19:** Support the erosion control programs, resource management programs, and agricultural conservation efforts of the Glenn County Resource Conservation District that benefit the county as a whole.

**POLICY NRP-20:** Recognize the potential restrictions urbanization places on nearby agricultural practices and mitigate such conflicts whenever possible. Continue to support the County's right "Right to Farm" ordinance and effort.

**POLICY NRP-21:** Require notices of nonrenewal for Williamson Act lands as a condition of land division and boundary line changes which result in parcel sizes below zoning minimums.



**Local Agency Formation Commission Boundary Controls**

The Glenn Local Agency Formation Commission (LAFCO) is responsible for coordinating orderly amendments to local jurisdictional boundaries, including annexations. Annexation to the City of Willows would be subject to LAFCO approval, and LAFCO’s decision is governed by state law (Gov’t Code § 56001 et seq.) and the local LAFCO Policies and Procedures. State law requires LAFCOs to consider agricultural land and open space preservation in all decisions related to expansion of urban development. LAFCO’s definition of Prime agricultural land refers to California Government Code Section 56064.3, which is described above under the State Regulatory Setting.

**ENVIRONMENTAL SETTING**

**Glenn County Agriculture**

Glenn County occupies a north-central location in California’s vast agricultural heartland, the Sacramento Valley. The County’s Agricultural Commissioner’s most recent published Agricultural Reports (2017) contains the following information relating to agriculture in the county.

Glenn County has a total land area of 1,327 square miles, of which 1,314 square miles is land and 13 square miles is water. The total acreage of crop land in the county is approximately 347,652 acres. The gross value of agricultural production in Glenn County for 2017 was \$834,632,000, which represents a 11.5 percent increase from 2016 when gross production value totaled \$748,461,000. Table 5.7-1 lists the top eight commodities in Glenn County in 2016 and 2017.

**TABLE 5.9-1: SUMMARY COMPARISON OF CROP VALUES**

<i>Product Type</i>	<i>2016 Value in Dollars</i>	<i>2017 Value in Dollars</i>
Field Crops	\$148,129,000	\$165,221,000
Vegetable Crops	\$5,782,000	\$6,026,000
Fruit and Nut Crops	\$449,457,000	\$484,205,000
Nursery Products	\$5,698,000	\$7,006,000
Livestock and Poultry	\$37,899,000	\$40,557,000
Livestock and Poultry Products	\$48,586,000	\$59,835,000
Seed Crops	\$25,859,000	\$41,177,000
Apiary Products	\$27,051,000	\$30,605,000

*SOURCE: GLENN COUNTY ANNUAL CROP & LIVESTOCK REPORT, 2017*

**Agricultural Capability**

The California Department of Conservation Farmland Mapping and Monitoring Program identifies lands that have agriculture value and maintains a statewide map of these lands called the Important Farmlands Inventory (IFI). IFI classifies land based upon the productive capabilities of the land, rather than the mere presence of ideal soil conditions.

The suitability of soils for agricultural use is just one factor for determining the productive capabilities of land. Suitability is determined based on many characteristics, including fertility, slope, texture, drainage, depth, and salt content. A variety of classification systems have been devised by the state to categorize soil capabilities. The two most widely used systems are the Capability Classification System and the Storie Index. The Capability Classification System classifies soils from Class I to Class VIII based on their ability to support agriculture with Class I being the highest quality soil. The Storie Index considers other

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factors such as slope and texture to arrive at a rating. The IFI is in part based upon both of these two classification systems.

### Soil Capability Classification

The Soil Capability Classification System takes into consideration soil limitations, the risk of damage when soils are used, and the way in which soils respond to treatment. Capability classes range from Class 1 soils, which have few limitations for agriculture, to Class 8 soils that are unsuitable for agriculture. Generally, as the rating of the capability classification increases, yields and profits are more difficult to obtain. A general description of soil classifications, as defined by the Natural Resources Conservation Service (NRCS) is provided in Table 5.9-2 below.

A Custom Soil Survey was completed for the Planning Area using the NRCS Web Soil Survey program. Table 5.9-3 identifies the soils and soil classifications found in the Planning Area. The NRCS Soils Map is provided on Figure 5.5-2.

**TABLE 5.9-2: SOIL CAPABILITY CLASSIFICATION**

<i>CLASS</i>	<i>DEFINITION</i>
1	Soils have slight limitations that restrict their use.
2	Soils have moderate limitations that restrict choice plants or that require moderate conservation practices.
3	Soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.
4	Soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.
5	Soils are not likely to erode but have other limitations; impractical to remove that limits their use largely to pasture or range, woodland, or wildlife habitat.
6	Soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife habitat.
7	Soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland, or wildlife habitat.
8	Soils and landforms have limitations that preclude their use for commercial plans and restrict their use to recreation, wildlife habitat, water supply, or aesthetic purposes.

*SOURCE: USDA SOIL CONSERVATION SERVICE.*

**TABLE 5.9-3: SOIL CLASSIFICATION**

NAME	ACRES	PERCENT OF PLANNING AREA	CAPABILITY CLASSIFICATION*
Capay clay, 0 to 4 percent slopes, MLRA 17	0.1	0.0%	2-3
Myers clay, 0 to 1 percent slopes, MLRA 17	1,249.4	68.1%	2-4
Myers clay loam, 0 to 3 percent slopes	60.6	3.3%	2-3
Willows clay, slightly saline-alkali	395.0	0.5%	3
Willows clay, moderately saline-alkali	77.9	21.5%	3-4
Willows clay, strongly saline-alkali	27.0	4.2%	4-6
Zamora silty clay, 0 to 2 percent slopes	0.0	0.0%	2-3
Zamora silty clay loam, 0 to 3 percent slopes, MLRA 17	0.5	0.0%	1-3
Water	8.8	0.5%	--
<b>Total</b>	<b>1,835.1</b>	<b>100.0%</b>	

\* DEPICTS IRRIGATED VS NON IRRIGATED CAPABILITY RATING

SOURCE: NRCS CUSTOM WEB SOIL SURVEY, 2019.

### Important Farmlands

The Farmland Mapping and Monitoring Program (FMMP) is a farmland classification system administered by the California Department of Conservation. Important farmland maps are based on the Land Inventory and Monitoring criteria, which classify a land's suitability for agricultural production based on both the physical and chemical characteristics of soils, and the actual land use. The system maps five categories of agricultural land, which include important farmlands (prime farmland, farmland of statewide importance, unique farmland, and farmland of local importance) and grazing land, as well as three categories of non-agricultural land, which include urban and built-up land, other land, and water area.

The State of California Department of Conservation Farmland Mapping and Monitoring Program and Glenn County GIS data were used to illustrate the farmland characteristics for the Planning Area. Farmlands in the Planning Area are identified in Table 5.9-4 and are shown on Figure 5.9-1. The farmland classifications for the site and surrounding area are described below.

**TABLE 5.9-4: FARMLAND CLASSIFICATION**

LAND CLASSIFICATION	CITY	SOI	TOTAL	% OF TOTAL
D - Urban/Built Up Land	1,173.0	986.5	2,159.5	33%
L - Farmland of Local Importance	13.8	344.4	358.2	5%
L- Farmland of Local Potential	1.1	185.6	186.7	2%
P – Prime Farmland	457.6	1,761.9	2,219.5	34%
S – Farmland of Statewide Importance	145.3	1,188	1,333.3	20%
U - Unique Farmland	10.4	104.1	114.5	2%
Other Land	62.7	173.8	236.5	4%

SOURCE: CALIFORNIA DEPARTMENT OF CONSERVATION; NRCS CUSTOM WEB SOIL SURVEY, 2019.

**Prime Farmland** is farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production

## 5.0 CONSERVATION AND NATURAL RESOURCES

at some time during the four years prior to the mapping date. Approximately 2,219.5 acres of Prime Farmland is located within the Planning Area.

**Farmland of Statewide Importance** is farmland with characteristics similar to those of prime farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date. Approximately 1,333.3 acres of Farmland of Statewide Importance is located within the Planning Area.

**Unique Farmland** is land which does not meet the criteria for Prime Farmland or Farmland of Statewide Importance, that has been used for the production of specific high economic value crops at some time during the two update cycles prior to the mapping date. It has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained high quality and/or high yields of a specific crop when treated and managed according to current farming methods. Examples of such crops may include oranges, olives, avocados, rice, grapes, and cut flowers. It does not include publicly owned lands for which there is an adopted policy preventing agricultural use. Approximately 114.5 acres of Unique Farmland is located within the Planning Area.

**Farmland of Local Importance** is land of importance to the local agricultural economy, as determined by each county's board of supervisors and a local advisory committee. Approximately 358.2 acres of Farmland of Local Importance is located within the Planning Area.

**Urban and Built-up Land** includes Land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. This land is used for residential, industrial, commercial, construction, institutional, public administration, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes. Approximately 2,159.5 acres of Urban and Built-Up Land is located within the Planning Area.

**Other Land** consists Land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than forty acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land. Approximately 236.5 acres of Other Land is located within the Planning Area.

### **Farmland Conversion in Glenn County**

Data from the Department of Conservation indicates that approximately 336 acres of Prime Farmland in the County were added between 2014 and 2016, resulting in an existing total of 158,117 acres of Prime Farmland (28 percent of agricultural land). The remaining agricultural land is comprised of Farmland of Statewide Importance (15 percent), Unique Farmland (3 percent), Farmland of Local Importance (14 percent), and Grazing Land (40 percent). The types and acreages of farmland in 2014 and 2016 are shown below in Table 5.9-5.

**TABLE 5.9-5: GLENN COUNTY FARMLANDS SUMMARY AND CHANGE BY LAND USE CATEGORY**

LAND USE CATEGORY	2014-16 ACREAGE CHANGES					
	Total Acreage Inventoried		Acres Lost	Acres Gained	Total Acreage	Net Acreage
	2014	2016	(-)	(+)	Changed	Changed
Prime Farmland	157,781	158,117	798	1,134	1,932	336
Farmland of Statewide Importance	87,938	88,669	455	1,186	1,641	731
Unique Farmland	17,626	18,030	566	970	1,536	404
Farmland of Local Importance	83,686	82,836	2,443	1,593	4,036	-850
IMPORTANT FARMLAND SUBTOTAL	347,031	347,652	4,262	4,883	9,145	621
Grazing Land	227,118	227,081	1,135	1,098	2,233	-37
AGRICULTURAL LAND SUBTOTAL	574,149	574,733	5,397	5,981	11,378	584
Urban and Built-up Land	6,450	6,501	2	53	55	51
Other Land	262,606	261,971	885	250	1,135	-635
Water Area	5,928	5,928	0	0	0	0
TOTAL AREA INVENTORIED	849,133	849,133	6,284	6,284	12,568	0

SOURCE: CA DEPARTMENT OF CONSERVATION, DIVISION OF LAND RESOURCE PROTECTION TABLE A-30, 2014-2016.

### Farmland Conservation

The Williamson Act authorizes each County to establish an agricultural preserve. Land that is within the agricultural preserve is eligible to be placed under a contract between the property owner and County that would restrict the use of the land to agriculture in exchange for a tax assessment that is based on the yearly production yield. The contracts have a 10-year term that is automatically renewed each year, unless the property owner requests a non-renewal or the contract is cancelled. If the contract is cancelled the property owner is assessed a fee of up to 12.5 percent of the property value.

Table 5.9-6 shows lands within the City that are under a Williamson Act contract and the status of the contract. Figure 5.9-2 shows Williamson Act Contracts within the City. As present in table 5.7-8, approximately 142.59 acres are Farmland Security Zone (FSZ) and approximately 371.64 are Mixed Enrollment Agricultural Land.

**TABLE 5.9-6: SUMMARY OF WILLIAMS ACT CONTRACTS**

CONTRACT LOCATION AND TYPE	TOTAL ACRES
FSZ	142.59
Mixed Enrollment Agricultural Land	371.64
Total	514.23

FARMLAND MAPPING AND MONITORING PROGRAM, GLENN COUNTY, 2016.

### REFERENCES

United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). 2019. Web Soil Survey. Available at: <http://websoilsurvey.nrcs.usda.gov>

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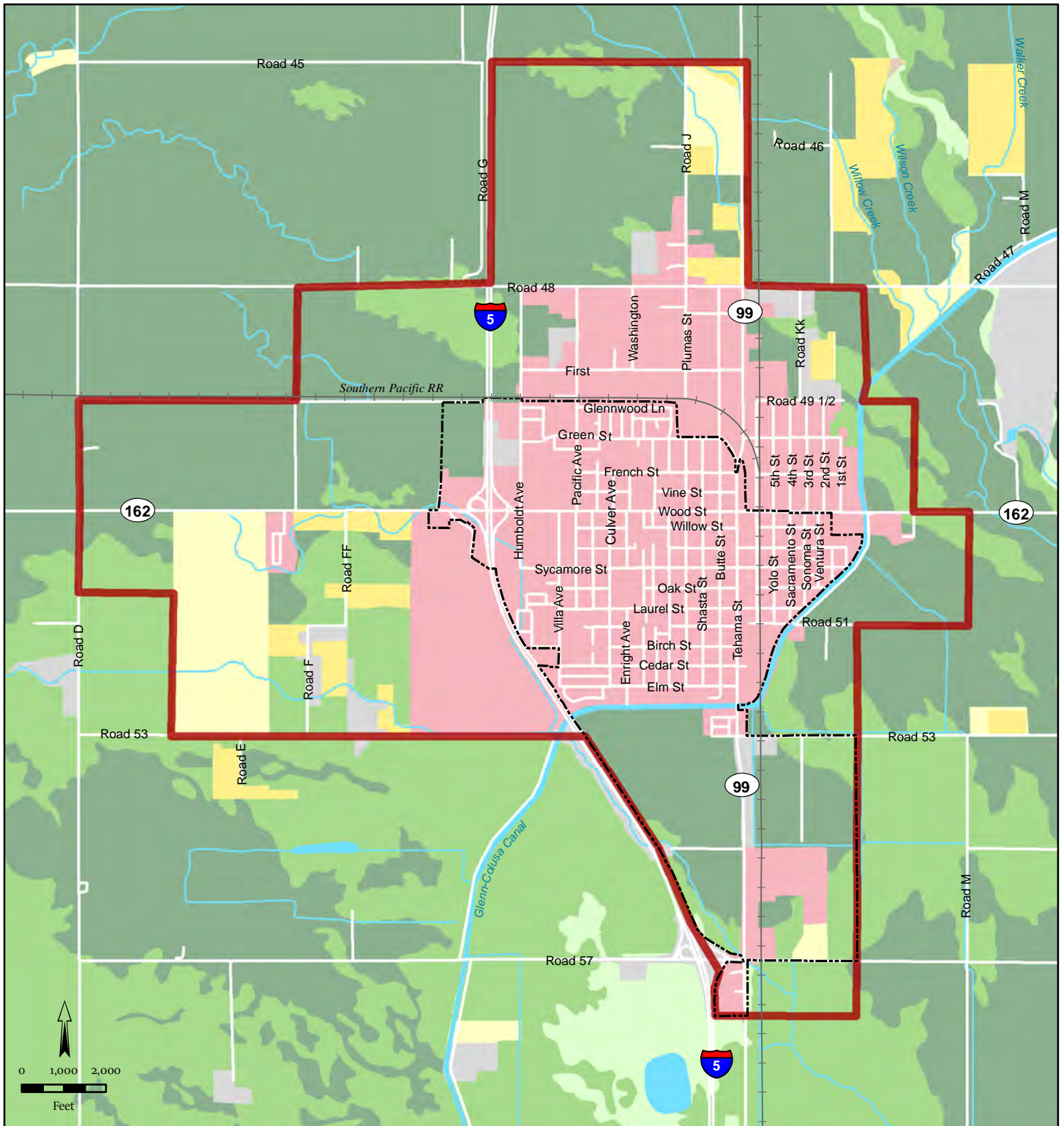
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California Department of Conservation. 2019. California Important Farmlands Map. Farmland Mapping and Monitoring Program, Glenn County, 2019;



Sources: California Department of Conservation, Farmland Mapping and Monitoring Program, Glenn County 2016. Map date: June 26, 2019. Revised: January 14, 2020.

LEGEND

- City of Willows
- Willows Sphere of Influence

Important Farmlands

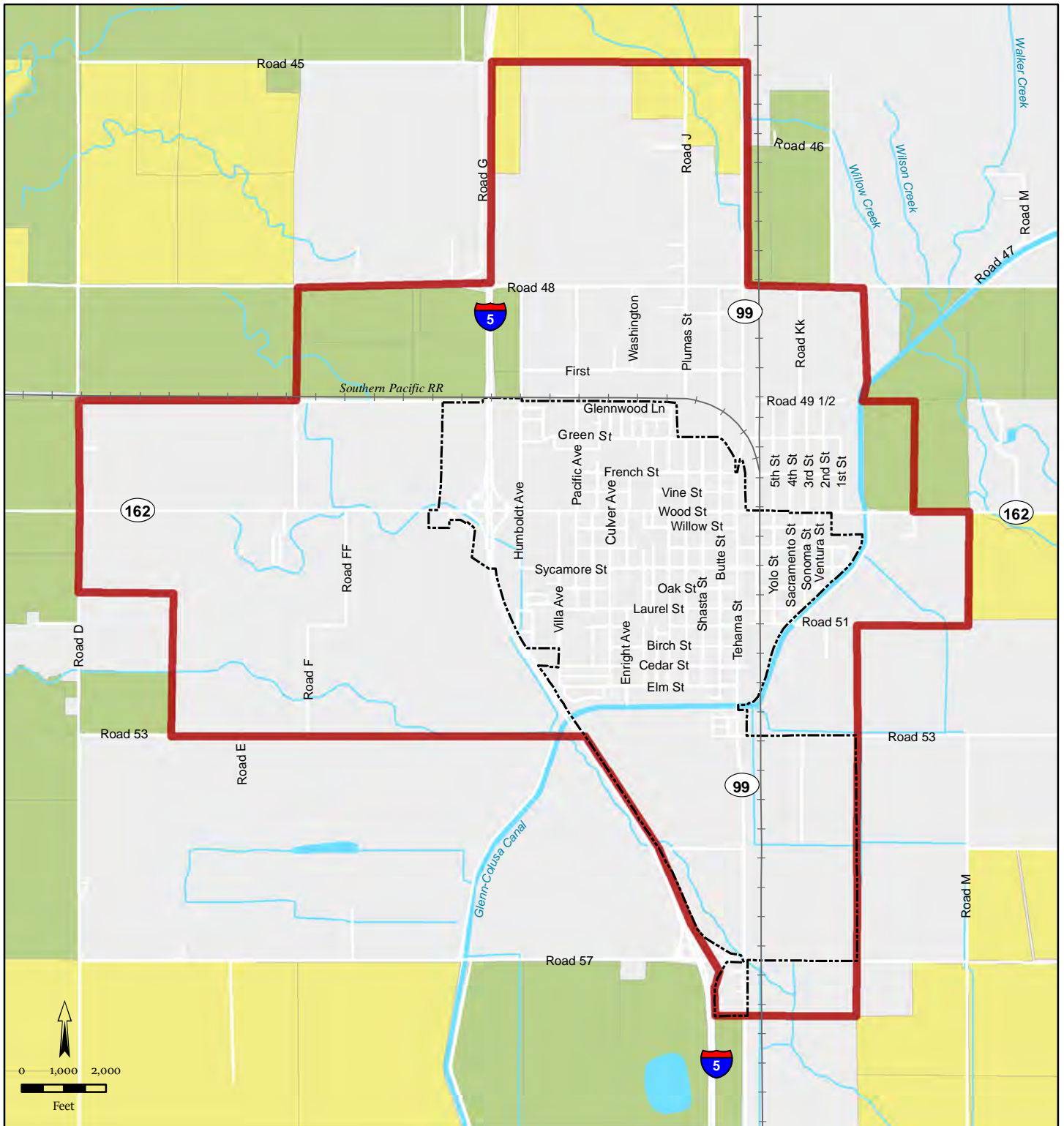
- |  |  |
|--|--|
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #38761d; margin-right: 5px;"></span> Prime Farmland                   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #ffff00; margin-right: 5px;"></span> Farmland of Local Importance |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #70ad47; margin-right: 5px;"></span> Farmland of Statewide Importance | <span style="display: inline-block; width: 15px; height: 10px; background-color: #ffcc00; margin-right: 5px;"></span> Farmland of Local Potential  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #c7e9c0; margin-right: 5px;"></span> Unique Farmland                  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #cccccc; margin-right: 5px;"></span> Other Land                   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #c4a37a; margin-right: 5px;"></span> Grazing Land                     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #e377c2; margin-right: 5px;"></span> Urban and Built-Up Land      |

CITY OF WILLOWS

FIGURE 5.9-1. IMPORTANT FARMLANDS



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




Sources: California Department of Conservation, Division of Land Resource Protection, Glenn Co, FY 2015-16. Map date: June 28, 2019. Revised: January 14, 2020.

LEGEND

-  City of Willows
-  Willows Sphere of Influence

Williamson Act Lands

-  Farmland Security Zone
-  Mixed Enrollment Agricultural Land
-  Nonenrolled

CITY OF WILLOWS

FIGURE 5.9-2. WILLIAMSON ACT LANDS

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# Chapter 6

## Health & Environmental Justice



The Environmental Justice chapter addresses a wide range of topics related to the health and well-being of City residents and workers. This section describes components of the built environment that may impact human health disproportionately. Environmental Justice is related to a number of environmental categories and topics. Therefore, this section contains numerous references to other sections in this report. For example, conditions regarding transit options, bicycle facilities, and pedestrian facilities are addressed in greater detail in Section 2.0 (Transportation and Circulation). Parks and recreational facilities are discussed in Section 3.0 (Community Services and Facilities). Hazards and hazardous materials and applicable regulations are addressed in Section 4.0 (Hazards, Safety, and Noise). Air quality and air quality regulations as well as water quality and water quality regulations, are addressed in Section 5.0 (Conservation).

This Chapter includes the following topics:

- Environmental Justice Background and Overview
- Environmental Justice Determinants in the City of Willows



## 6.0. ENVIRONMENTAL JUSTICE

This section addresses environmental justice in the City of Willows, provides an overview of existing environmental conditions for disadvantaged communities in Willows, and describes components of the built environment that may impact human health disproportionately. Environmental Justice is related to a number of environmental categories and topics. Therefore, this section of the Willows General Plan Existing Conditions Report contains numerous references to other sections in this report. For example, conditions regarding transit options, bicycle facilities, and pedestrian facilities are addressed in greater detail in Section 2.0 (Transportation and Circulation). Parks and recreational facilities are discussed in Section 3.0 (Community Services and Facilities). Hazards and hazardous materials and applicable regulations are addressed in Section 4.0 (Hazards, Safety, and Noise). Air quality and air quality regulations as well as water quality and water quality regulations, are addressed in Section 5.0 (Conservation).

### ENVIRONMENTAL JUSTICE- BACKGROUND AND OVERVIEW

#### BACKGROUND

The negative effects of environmental degradation and pollution are well-documented and include severe impacts to human health and longevity, depending on the level of exposure. Within the United States, certain communities have historically been disproportionately disadvantaged by environmental threats and the negative health impacts of environmental degradation. These disproportionately disadvantaged communities include, but are not limited to: communities of color, low-income communities, members of tribal nations, and immigrant communities. Increased exposure to environmental pollutants, unsafe drinking water, and contaminated facilities/structures have contributed to poorer health outcomes for these communities. Local and regional policies, intersectional structural inequalities, land-use planning, enforcement deficiencies, and lack of community engagement and advocacy are all critical facets of the disproportionate layout of negative environmental externalities. The field of environmental justice is focused on addressing these disproportionate impacts and improving the wellness of all communities by bolstering community planning efforts and promoting the fair treatment of all people regardless of their race, ethnicity, national origin, or income.

Environmental Justice practices across the United States have worked to improve the status of disadvantaged communities, through effective planning and policy decisions. Effective planning and policy decisions at the federal, state, and local levels can help ensure that equal protection from environmental hazards is prioritized for all people.

#### DEFINING DISADVANTAGED COMMUNITIES

The term ‘Disadvantaged Community’ is a broad designation that may include any community that lacks appropriate resources, or is confronted with any exceptional economic, health, or environmental burden. In relation to environmental justice, disadvantaged communities are typically those communities that disproportionately face the burdens of environmental hazards. The *Planning for Healthy Communities Act of 2016 (Senate Bill 1000)*, establishes a set criterion for identifying a Disadvantaged Community (DAC). The definition of a DAC for the purposes of the bill is as follows:

*“An area identified by the California Environmental Protection Agency (CalEPA) pursuant to Section 39711 of the Health and Safety Code or an area that is a low-income area that is disproportionately affected by environmental pollution and other hazards that can lead to negative health effects, exposure, or environmental degradation.”*

California cities that are updating two or more elements of their General Plans concurrently must include environmental justice if one or more disadvantaged communities is identified within their Planning Area. Using the CalEPA definition of a disadvantaged community, Senate Bill 1000 provides stakeholders with the CalEnviroScreen 3.0 map to identify communities that are disproportionately disadvantaged by environmental hazards. The CalEnviroScreen 3.0 map is a science-based tool developed by the Office of Environmental Health Hazards Assessment on behalf of CalEPA that uses existing environmental, health, and socioeconomic data to rank all census tracts in California with a CalEnviroScreen score designating disadvantaged communities as the highest 25% scoring census tracts. CalEnviroScreen scores for the Willows Planning Area are shown on Figure 6.0-1. As shown on this figure, Willows is not a designated Disadvantaged Community.

## REGULATORY SETTING

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### Senate Bill 1000

Senate Bill 1000 (SB 1000), also known as The Planning for Healthy Communities Act, is a comprehensive state legislation that requires California cities to include an Environmental Justice element or a set of environmental justice policies into their General Plans when updating two or more elements concurrently on or after January 1, 2018.

The Bill was established as a state regulation on September 24, 2016, with the goal of improving the health of California cities and addressing pertinent issues of environmental justice related to community wellness. SB 1000 outlines strategies to promote the protection of sensitive land uses within the state, and simultaneously mandates that cities address the needs of disadvantaged communities. Through this bill, environmental justice is a mandated consideration in all city's local land-use planning. SB 1000 was authored by Senator Connie Leyva, and co-sponsored by the California Environmental Justice Alliance (CEJA), and the Center for Community Action and Environmental Justice (CCA EJ).

To aid city governments in meeting the requirements of SB 1000, the California Environmental Justice Alliance (CEJA) has created a strategic toolkit. The SB 1000 Implementation Toolkit serves as a guide for key stakeholders by clarifying legislation requirements and providing tools, best practices, and resources to support these stakeholders as they begin to incorporate the law into local practice. To effectively meet the mandates of the bill, cities must formally identify disadvantaged communities (DACs) and work to reduce health risks specific to these communities by outlining methods and programs within their plan that address the needs of DACs. Each General Plan must address the following topics in order to meet the requirements of SB 1000:

- Pollution Exposure and Air Quality
- Public Facilities
- Food Access
- Safe and Sanitary Homes
- Physical Activity
- "Civil" or Community Engagement
- Improvements and Programs (that address the needs of Disadvantaged Communities)

### Senate Bill 535

In 2012, the Legislature passed SB 535, directing that 25 percent of the proceeds from the Greenhouse Gas Reduction Fund (established by the California Global Warming Solutions Act of 2006 AB 52's cap and trade program) go to projects that provide a benefit to disadvantaged communities.

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### **Assembly Bill 1550**

In 2016, the Legislature passed AB 1550, which amended SB 535 to require all GGRF investments that benefit DACs to also be located within those communities. The law also requires that an additional 10% of the fund be dedicated to low-income households and communities, of which 5% is reserved for low-income households and communities living within a half-mile of a designated DAC.

### **Senate Bill 673**

In 2015, the Legislature passed SB 673 directing the Department of Toxic Substances Control (DTSC) to include criteria such as cumulative impact and neighborhood vulnerability when issuing or renewing facility permits. The law provides the DTSC with an opportunity to use tools such as CalEnviroScreen when making decisions on hazardous waste permitting.

### **Assembly Bill 523**

Approved in 2017, AB 523, allocates at least 25% of the Electric Program Investment Charge (EPIC) funds administered by the California Energy Commission (CEC) to support technology demonstration and deployment projects located in and benefiting “disadvantaged communities,” and dedicates at least 10% of the fund to activities located in and benefiting “low-income” communities as defined by AB 1550.

### **Senate Bill 43**

Approved in 2013, SB 43, establishes the Green Tariff Shared Renewables program, administered by the California Public Utilities Commission (CPUC), which enables utility customers to meet their energy generation needs through offsite generation of renewable energy projects. The program requires 100 MW of renewable energy projects to be sited in the top 20% of CalEnviroScreen CES scores based on each investor-owned utility (IOU) service territory.

### **Assembly Bill 693**

Approved in 2015, AB 693 allocates \$100 million per year for 10 years to fund solar installations on multifamily affordable housing. To qualify, a multifamily affordable housing property must be: (1) located in a DAC as defined by SB 535 using the most recent version of CalEnviroScreen CES; or (2) have at least 80% of tenants with incomes at or below 60% of area median income (AMI).

### **Assembly Bill 2722**

Approved in 2016, AB 2722 requires the California Strategic Growth Council to award competitive grants to specified eligible entities for the development and implementation of neighborhood-level transformative climate community plans that include greenhouse gas emissions reduction projects that provide local economic, environmental, and health benefits to disadvantaged communities, as defined. AB 2722 created the Transformative Climate Communities (TCC) program administered through the California Strategic Growth Council (SGC). The TCC is a GGRF-funded program that supports innovative, comprehensive, and community-led plans that reduce pollution and achieve multiple co-benefits at the neighborhood level.

### **Senate Bill 244**

Approved in 2011, SB 244 requires cities and counties to address the infrastructure needs of unincorporated disadvantaged communities in city and county general plans and LAFCo Municipal Service Reviews (MSRs) and annexation decisions. SB 244 defines an unincorporated disadvantaged community as a place that: contains 10 or more dwelling units in close proximity to one another; is

either within a city SOI, is an island within a city boundary, or is geographically isolated and has existed for more than 50 years; and has a median household income that is 80 percent or less than the statewide median household income. For cities and counties, SB 244 requires that before the due date for adoption of the next housing element after January 1, 2012, the general plan land use element must be updated to: identify unincorporated disadvantaged communities; analyze for each identified community the water, wastewater, stormwater drainage, and structural fire protection needs; and identify financial funding alternatives for the extension of services to identified communities. For LAFCos, SB 244 generally prohibits approval of city annexations greater than 10 acres that are contiguous to a disadvantaged unincorporated community unless the city applies to annex the disadvantaged unincorporated community as well.

### **California Department of Transportation’s Active Transportation Program (ATP)**

California Department of Transportation (CalTrans) the Active Transportation Program (ATP) aims to enhance public health and advance California’s climate goals by increasing safety and mobility for non-motorized active transportation such as biking and walking. Twenty-five percent of program funds are set aside for ATP projects in “disadvantaged communities” (defined as census tracts within the top 25% of CalEnviroScreen (CES) scores along with several other options), while an additional 2% is set aside to fund active transportation planning in DACs.

### **City of Willows**

Specific goals and policies included within the Willows General Plan that are most related to the topics of environmental justice and disadvantaged communities include:

#### GOALS:

**MI-1 Ensure that the equality, safety, affordability, and livability of the housing stock in Willows is continually maintained or upgraded and that dilapidated housing which cannot be improved is replaced.**

**EO-1 Ensure that housing programs maximize choice, avoid economic segregation, and avoid discrimination based on age, sex, race, and ethnic background.**

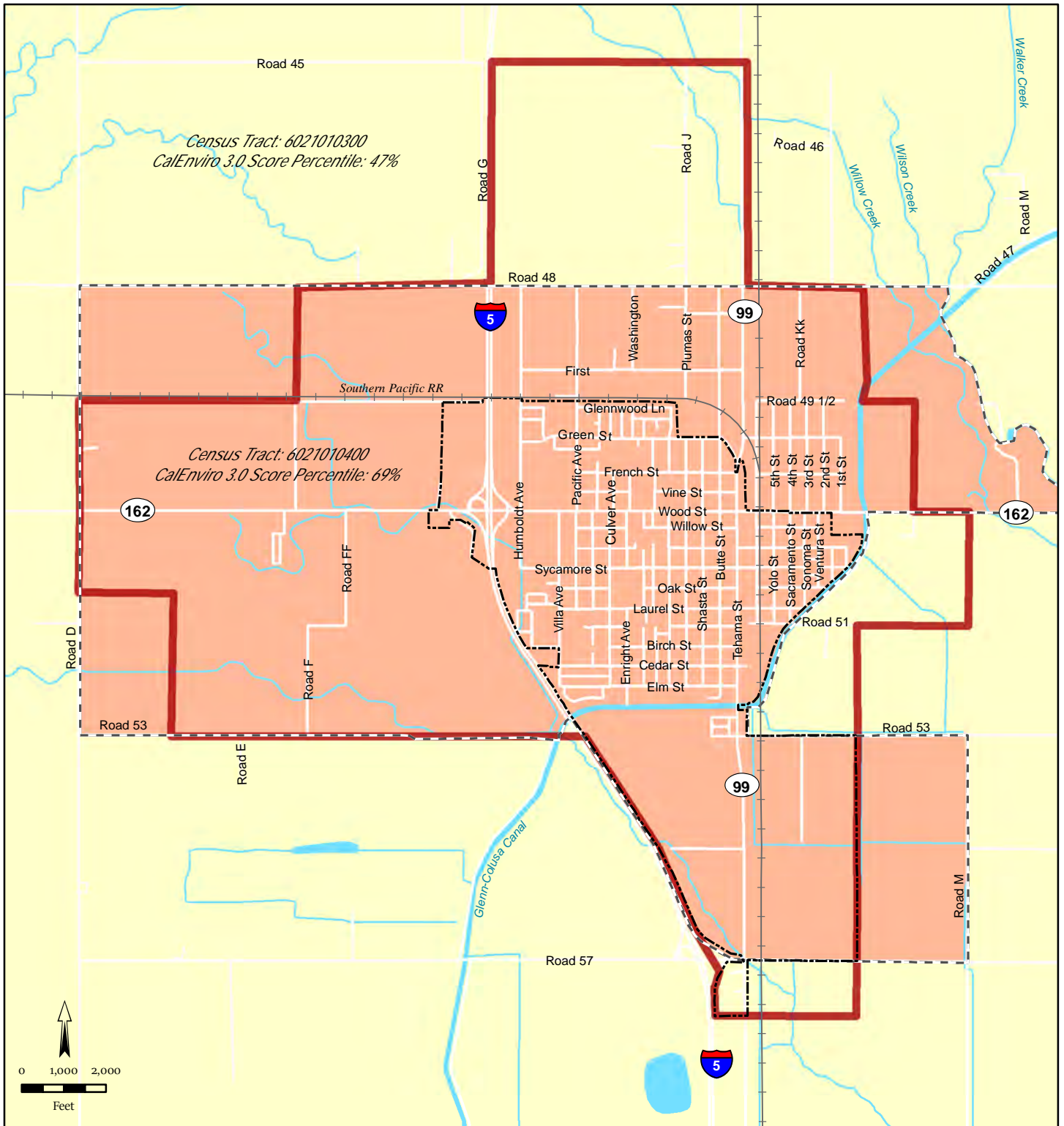
#### POLICIES:

It shall be the policy of Willows to:

MI-1.1 Continue to annually apply for available federal and state housing subsidies to the fullest extent possible to assist extremely low-, very low-, low-, and moderate-income households and owners of housing available to extremely low-, very low-, low-, and moderate income tenants to maintain and rehabilitate homes and apartments until local needs are met.

EO-1.1 Promote equal opportunity in housing, assessing nondiscrimination in all City housing programs.





Sources: OEHHA CalEnviroScreen 3.0, June 2018. Map date: October 23, 2019. Revised: January 14, 2020.

**LEGEND**

- City of Willows
- Willows Sphere of Influence
- Census Tract

**CalEnviroScreen 3.0 Score Percentile**

- 47%
- 69%

CITY OF WILLOWS

**FIGURE 6.0-1. CALENVIROSCREEN 3.0 DISADVANTAGED COMMUNITIES\***

\*There are no Disadvantaged Communities within the mapped area.

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## ENVIRONMENTAL JUSTICE DETERMINANTS IN WILLOWS

The CalEnviroScreen 3.0 tool is the standard metric for determining the location and presence of designated disadvantaged communities within an area. As shown on Figure 6.0-1, based on a screening of existing census tracts within the City of Willows, the census tract defined by City boundaries is considered a CalEnviroScreen-designated Disadvantaged Community (DAC). As described previously, there are seven primary environmental justice focus areas defined within *The Planning for Healthy Communities Act* that must be used in addressing the unique or compounded health risks in disadvantaged communities (Pollution Exposure and Air Quality, Public Facilities, Food Access, Safe and Sanitary Homes, Physical Activity, Community Engagement, and Improvements and Programs). The existing conditions for these focus areas within the City of Willows are assessed below.

### POLLUTION EXPOSURE AND AIR QUALITY

Air quality and pollution exposure is an aspect of environmental quality that may disproportionately impact disadvantaged communities (DACs). This is often due to the existence and maintenance of pollution-emitting sources within close proximity to DACs. If disadvantaged communities have unequal or excessive exposure to sources of pollution including; air pollution, water contamination, and hazardous waste exposure, this exposure must be addressed using appropriate planning measures. Disproportionate exposure to pollutants is linked to negative health impacts including asthma, cardiovascular illness, and other fatal conditions.

Air quality is a mandated environmental justice focus area under SB 1000. As mentioned previously, the census tract defined by City boundaries is considered a CalEnviroScreen-designated Disadvantaged Community (DAC). This section serves to assess pollution exposure and air quality in the City of Willows. A detailed assessment of existing air quality and air quality regulations as well as water quality and water quality regulations within the City of Willows, are addressed in Section 5.0 (Conservation) and Section 3.0 (Community Services & Facilities).

#### Air Quality

As described in Section 5.0 of this document, pollution potential in the Glenn County area is relatively high due to the combination of air pollutant emissions sources, transport of pollutants into the area and meteorological conditions that are conducive to high levels of air pollution. Elevated levels of particulate matter (primarily very small particulates or PM<sub>10</sub>) and ground-level ozone are of most concern to regional air quality officials.

Table 6.0-1 depicts the State and national attainment status for Glenn County. As evident in the table Glenn County has a State designation of Nonattainment for O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> and is either Unclassified or Attainment for all other criteria pollutants. The County has a national designation of Nonattainment for O<sub>3</sub> and PM<sub>2.5</sub>. In accordance with the California Clean Air Act (CCAA), areas of the state are designated as attainment, nonattainment, or unclassified with respect to applicable standards dependent upon the status of pollutant concentrations. "Attainment" refers to instances where pollutant concentrations did not violate the applicable standard in that area. A "nonattainment" designation indicates that a pollutant concentration violated the applicable standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. A detailed analysis of criteria pollutants within Glenn County is available in Section 5.0 (Conservation).

**TABLE 6.0-1: STATE AND NATIONAL ATTAINMENT STATUS**

<i>CRITERIA POLLUTANTS</i>	<i>STATE DESIGNATIONS</i>	<i>NATIONAL DESIGNATIONS</i>
Ozone	Nonattainment	Nonattainment
PM <sub>10</sub>	Nonattainment	Attainment
PM <sub>2.5</sub>	Nonattainment	Nonattainment
Carbon Monoxide	Attainment	Unclassified/Attainment
Nitrogen Dioxide	Attainment	Unclassified/Attainment
Sulfur Dioxide	Attainment	Unclassified
Sulfates	Attainment	
Lead	Attainment	
Hydrogen Sulfide	Unclassified	
Visibility Reducing Particles	Unclassified	

SOURCE: California Air Resources Board (2018). [www.arb.ca.gov/desig/adm/adm.htm](http://www.arb.ca.gov/desig/adm/adm.htm)

## Asthma Rates

Table 6.0-2 includes data from California Health Interview Survey (CHIS) administered by the UCLA Center for Health Policy Research for asthma rates, symptoms and hospitalizations for Glenn County, and the State.

**TABLE 6.0-2: ASTHMA RATES AND HOSPITALIZATIONS (2016)**

<i>REGION</i>	<i>EVER DIAGNOSED WITH ASTHMA</i>	<i>EMERGENCY OR URGENT CARE IN PAST 12 MONTHS FOR ASTHMA (CURRENT ASTHMATICS)</i>	<i>HAD ASTHMA EPISODE / ATTACK IN PAST 12 MONTHS (CURRENT ASTHMATICS)</i>	<i>HAD ASTHMA SYMPTOMS WITHIN PAST 12 MONTHS (CURRENT ASTHMATICS)</i>
Glenn County	17.3%	19.2%*	34.6%	100%
California	14.8%	13.1%	28.7%	90.3%

SOURCE: CALIFORNIA HEALTH INTERVIEW SURVEY. CHIS 2016 ASTHMA SOURCE FILE. LOS ANGELES, CA: UCLA CENTER FOR HEALTH POLICY RESEARCH.

\* INDICATES POSSIBLE STATISTICALLY UNSTABLE VALUES DUE TO SAMPLE SIZE.

As shown in Table 6.0-2 above, 17.3 percent of Glenn County residents have been diagnosed with asthma at some point in their lives, and of those who have been diagnosed, all have had asthma symptoms in the past 12 months (from the time the 2016 CHIS survey was conducted). In addition, county hospitalizations due to asthma are slightly higher than statewide averages at 19.2 percent and 34.6 percent respectively.<sup>1</sup> The percentage of people diagnosed with asthma in Glenn County is slightly higher than the statewide average.

## Water Quality

According to the California Water Quality Control Monitoring Council, there are areas designated as Section 303(d) impaired waterbodies within Glenn County. According to the California Water Quality Control Monitoring Council, which is part of California Environmental Protection Agency, there are many areas within Glenn County which are considered Section 303(d) impaired waterbodies. Nine watersheds within Glenn County have Section 303(d) listed impaired water bodies. The impaired water bodies are

<sup>1</sup> Possible statistically unstable values due to sample size.

located within the Middle Butte Creek, Sacramento River, Colusa Drain, Upper Stony Creek, Middle Stony Creek, Lower Stony Creek, Walker Creek, Black Butte River, and Corbin Creek-Eel River hydrologic areas. These hydrologic areas extend beyond the county boundary so not all impaired water body segments are located within Glenn County. The pollution source is predominantly agricultural and crop related, although mercury, and resource extraction is also a pollution source. There are a few pollution sources that are not currently known. To maintain water quality The City provides and maintains a system of storm drains, detention basins, and pumping facilities as well as monitoring and control of the operations of the storm drain system. Additionally, the City enforces storm drain regulations established by the US EPA and the State of California.

In regard to water treatment and wastewater; the City of Willows has an approved Sewer Master Plan (SSMP) in place that was prepared in compliance with the State Water Resource Board (SWRCB) General Order No. 2006-0003-DWQ. Additionally, Wastewater from the City of Willows is currently treated at the Willows Wastewater Treatment Plant (WWTP). Section 5.0, (Conservation), and Section 3.0 (Community Services and Facilities) includes additional information related to water quality, and water quality facilities.

### **Drinking Water Quality Reporting**

Based on the City's 2018 Water Quality Report, prepared by California Water Services, the water quality tests conducted on the City's water system, Willows is currently meeting or exceeding all of the drinking water standards set Environmental Protection Agency.

### **Water Supply**

The county's water supply needs are met primarily through pumping water from groundwater basins. There are seven groundwater basins within Glenn County: the Stonyford Town Area, Funks Creek, Squaw Flat, Stony Gorge Reservoir, Elk Creek Area, Chrome Town Area, and Sacramento Valley Groundwater Basins.

Willows is located within the Sacramento River Hydrological Region, the Planning Area is located in the Logan Creek watershed. In regard to groundwater, Willows is located in the Sacramento Valley - Colusa Groundwater subbasin. The Sacramento Valley – Colusa basin is a subbasin of the Sacramento Valley Groundwater Basin. Groundwater management in Glenn County is conducted in accordance with the management objectives in the Glenn County Groundwater Management Plan. The Glenn County Groundwater Management Plan requires basin management objectives (BMOs) for minimum groundwater levels, minimum water quality and maximum inelastic subsidence be established for each of the 17 subareas within the plan area which generally includes areas of the county where irrigated agriculture is conducted; primarily in the Valley portion of the county. A detailed discussion of the groundwater basins within Glenn County is available in Section 3.0 (Community Services and Facilities) and Section 5.0 (Conservation).

The City has an adopted Urban Water Management Plan (UWMP) to ensure water supply capacity and infrastructure is adequate for existing and projected needs. Considering existing water supply sources, all planned system improvements, planned construction, future unaccounted-for conservation measures, and other projected availability considerations, the City is expected to have adequate supplies through 2040 during normal water years (California Water Service Company, 2015). For detailed information on the City's surface water supply, groundwater supply, and distribution system please see Section 5.0 (Conservation) and Section 3.0 (Community Services & Facilities).

## PUBLIC FACILITIES

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Access and availability of public facilities is an aspect of the built-environment that may disproportionately limit the opportunities of disadvantaged communities (DACs). If disadvantaged communities have unequal access to public facilities, or if a City does not provide adequate facilities for public use, DACs may be limited in their ability to access necessary key resources. Adequate planning of parks, and transportation infrastructure can ensure that all communities within a City have equal access to resources. Limited access to resources as a result of inadequate public facilities can lead to reduced lifespan, poorer health outcomes, and diminished mental well-being.

Public Facilities is a mandated environmental justice focus area under SB 1000. As mentioned, the census tract defined by City boundaries is not considered a CalEnviroScreen-designated Disadvantaged Community (DAC). This section serves to assess the adequacy of public facilities in the City of Willows.

### Parks and Cultural Centers

Equitable access to public parks, schools and cultural centers within a community is critical to the promotion of public health and well-being. Lack of recreational and open spaces is a significant driver of poor physical and mental health. Parks and public facilities provide opportunities for exercise, recreation, and community engagement that is necessary to bolster resident health. Parkland within the city is detailed and displayed in Section 3.0 Community Services and Facilities (Table 3.3-1 and Figure 3.3-1).

Under the SB 1000 guidelines, the current distribution of park acreage per 1,000 residents for the entire City of Willows is an appropriate indicator of adequate park space and access. The California Statewide Park Program (Public Resources Code §5642) defines underserved communities as having a ratio of less than three acres of parkland per 1,000 residents.<sup>2</sup> This measure identifies areas where surrounding population density may overwhelm limited park space. As described in Section 3.0 (Community Services and Facilities) the city has approximately 26 acres of parkland. Therefore, with a 2019 population of approximately 6,282 the current distribution of park acreage per 1,000 residents is 4.14, which is above the Statewide Park Program standard.

An additional factor that determines the equitability and accessibility of parks and public facilities within an area is the distance between these public facilities and the home. If this distance to public facilities is perceived as “walkable”, residents may be more likely and willing to walk to those amenities. A distance of 1/4 mile is a commonly cited threshold for how far most people are willing to walk for neighborhood services. Conversely, a national survey of bicyclist and pedestrian attitudes and behavior, by the National Highway Traffic and Safety Administration and the Bureau of Transportation Statistics, surveyed almost 10,000 people over the age of 16 and found that only 5 percent of walking trips were for getting to work. Of the other trips, 38 percent were for personal errands, 28 percent were for exercise, and 21 percent were for recreation or leisure and the average trip length was 1.3 miles. The validity of both the quarter-mile, and or longer distances, may be dependent on perceptions of the built environment, safety, and time constraints, distance, as well as connectivity. The majority of developed residential areas fall within the half-mile radius, and most are also within a quarter-mile of public parks.

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<sup>2</sup> California Department of Parks and Recreation. SCORP 2015. Available at: [http://www.parksforcalifornia.org/data/Calif\\_SCORP2015\\_ScreenRes.pdf](http://www.parksforcalifornia.org/data/Calif_SCORP2015_ScreenRes.pdf)

## Public Transit

Public transit within a city increases accessibility to resources for disadvantaged communities and ensures that those without automobile access or without the ability to operate an automobile can maintain mobility. In this way, public transit provides a way of promoting equity within the built-environment.

Within the City of Willows, Glenn Transit Service (GTS) is the primary provider of bus transit. GTS provides connections, through Glenn Ride (an intercity fixed route), throughout Glenn County and the cities of Willows, Orland, Artois, Hamilton City and Chico. GTS also provides paratransit, also known as dial-a-ride or door-to-door service, for people who are unable to independently use the transit system due to a physical or mental disability. Additionally, GTS offers a program for eligible Glenn County residents who are unable to provide for their own transportation to and from medical appointments outside of the Glenn Ride bus system and Dial-A-Ride service areas. Standard priced bus fare within Glenn County is shown in Table 6.0-3 below.

**TABLE 6.0-3: GLENN RIDE BUS FARE**

<i>FARE</i>	<i>COST</i>
1 one way pass within county	\$2.00
1 one way pass Tehama TRAX	\$2.50
1 one way to/from Chico	\$3.00
30 Day Pass	\$50.00

*GLENN TRANSIT SERVICE (2019)*

The affordability and competency of the public transit network within a city is critical for ensuring equitable resource access. Expanding the network of bus routes and maintaining discounted fare rates will promote equitable mobility within the City of Willows. Additional information on public transportation and circulation within the City of Willows is available in Section 2.0 (Circulation).

## Bike Lanes

Bike access is a facet of transportation that offers a mobility option for those residents who do not have access to a car and/or those who prefer active transportation. Increased accessibility of bike lanes may help reduce congestion, contribute to community physical health, and improve air quality. Communities that do not have available bike lanes may be disadvantaged by limited resource access and diminished opportunity for physical exercise. Maintaining facilities that allow for bicycle mobility is important for community vitality. This is especially true in disadvantaged communities where transportation via car may be less accessible.

The City of Willows established the City-Wide Bicycle Transportation Plan in 2008 to identify bicycle routes and paths throughout the City to provide better safety for bicyclists and provide better connectivity between schools, shopping areas, businesses and other attractions (parks, hospitals, etc.). The City of Willows Bicycle Plan identifies existing gaps in the non-motorized facilities in Willows. The project lists contain non-motorized improvements including bike lanes, sidewalk and intersection crossing improvements which will act to connect existing non-motorized facilities and improve connectivity both with other non-motorized facilities and also between non-motorized facilities and transportation and transit facilities. Several short range and long-range projects are identified below. By 2030 the City of Willows plans to implement and improve Class II and III Complete routes throughout the city. Upon completion, these projects will provide a continuous and comprehensive system of bikeways that improves connectivity and encourages biking.

In general, bicycle parking is not abundant or even readily available; bicycle parking is most commonly found at schools and major shopping areas for short-term bicycle parking. The City has a limited amount of bike lanes and bike infrastructure currently in existence for residents to travel. Increasing bike infrastructure to increase accessibility to necessary resources for residents will be one of the objectives of the General Plan Update. More information on bicycle and transportation-related facilities is available in Section 2.0 (Circulation).

## FOOD ACCESS

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Ensuring adequate food access is challenging in many communities in California. Some communities within California cities have limited access to adequate and/or healthy food. Often, low-income areas may lack healthy food options or adequate supermarkets. An inability to access nutritious foods can lead to poor health outcomes in disadvantaged communities. Food-insecurity, or the uncertainty of having adequate food, is especially harmful for children and pregnant women who are most in need of nutrient-rich foods. Communities that are most often impacted by food insecurity include low income communities and communities of color.<sup>3</sup>

Food Access is a mandated environmental justice focus area under SB 1000. As mentioned, the census tract defined by City boundaries is not considered a CalEnviroScreen-designated Disadvantaged Community (DAC) as shown in figure 6.0-1. This section serves to assess the existing conditions of food accessibility in the City of Willows.

### Food Insecurity

Food insecurity is the uncertainty about the availability or adequacy of nutritional and safe foods. Based on the USDA available food security data and data from the 2017 American Community Survey, Feeding America estimates the number of food insecure people within a given county. These estimates are located in the Feed America Map the Meal Gap Report. Feeding America estimated that the number of food insecure individuals in Glenn County was 3,620, with a food insecurity rate of 13.0% for the year 2017. The state estimate for these same measures was 11.0%. Therefore, the rate of food insecurity within Glenn County is higher than the rate of food insecurity within California as a whole.

Of the food insecure population within Glenn County, 100% were from households which were below the Federal poverty threshold used for nutrition assistance programs and are therefore eligible for food assistance from the federal government<sup>4</sup>. These residents who qualify for federal nutrition assistance programs can utilize assistance at any store that accepts WIC and SNAP purchases. At the county level, the UCLA Center for Health Policy Research and the California Health Interview Survey (CHIS) reported that 44.6% of adults in Glenn County are food insecure due to low income. In comparison, the same measure for the state of California is 40.8%<sup>5</sup>. Based on the data from both the CHIS and Feeding America, it is evident that the City of Willows food insecurity rate is slightly above the average for cities in California.

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<sup>3</sup>Elsheikh, E.; Barhoum, N. (2013). Structural Racialization and Food Insecurity in the United States. Prepared for the U.N. Human Rights Committee on the International Covenant on Civil and Political Rights.

<sup>4</sup>Gundersen, C., et al. (2018). Map the Meal Gap 2018: Food insecurity and child food insecurity estimates at the county level. Feeding America. Accessible at: [http://www.feedingamerica.org/research/map-the-meal-gap/2016/overall/CA\\_AllCounties\\_CDs\\_MMG\\_2016.pdf](http://www.feedingamerica.org/research/map-the-meal-gap/2016/overall/CA_AllCounties_CDs_MMG_2016.pdf)

<sup>5</sup> California Health Interview Survey. CHIS 2017 Food Security Source File. Los Angeles, CA: UCLA Center for Health Policy Research. Available at: [http://ask.chis.ucla.edu/AskCHIS/tools/\\_layouts/AskChisTool/home.aspx#/results](http://ask.chis.ucla.edu/AskCHIS/tools/_layouts/AskChisTool/home.aspx#/results) Accessed September 10, 2019.



## Food Access

The Healthy Food Financing Initiative (HFFI) Working Group considers a food desert as a low-income census tract where a substantial number or share of residents has low access to a supermarket or large grocery store. Additionally, the USDA developed a Food Access Research Atlas that identifies “Food deserts” in the United States at the census tract level. The 2008 U.S. Department of Agriculture (USDA) Farm Bill defined a food desert as an “area in the United States with limited access to affordable and nutritious food, particularly such an area composed of predominantly lower income neighborhoods and communities.”

The USDA Food Access Research Atlas does not designate any portion of the planning area as a Food Desert. In addition to the proximity of grocery and food sources within an area, the types of food sources available are important for determining adequacy of food access. The USDA Food Research Atlas data shows that there were approximately 9 grocery stores in Glenn County as of 2014, and approximately 34 of stores were SNAP authorized as of 2016. In addition, the same data set shows that the County had 14 fast food restaurants as of 2014.<sup>6</sup>

## SAFE AND SANITARY HOMES

The condition of the housing stock in a disadvantaged community may have negative impacts on the well-being of community residents. These health impacts stem from issues such as poor indoor air quality, toxic building materials, exposure to climate variation such as excess heat or cold, improper ventilation, and structural insecurity. Unsafe housing conditions can be a result of the age of the dwelling structure, which increases the likelihood of incorporation of dangerous materials like lead and asbestos, that have significant negative health impacts.<sup>7</sup> Disadvantaged communities often have a larger amount of older units within their housing stock and therefore, residents of these communities are more likely to be exposed to the harmful health impacts that are associated with older housing. Other factors that can contribute to unsafe housing conditions include; improper regulation and overcrowding. Ensuring the safety and sanitation of housing stock within a community ensures that there are proper living conditions for all residents.

Safe and Sanitary Homes is a mandated environmental justice focus area under SB 1000. As mentioned, the census tract defined by City boundaries is not considered a CalEnviroScreen-designated Disadvantaged Community (DAC). This section serves to assess the existing conditions of home safety and home sanitation in the City of Willows.

## Age of Housing Stock

The age of a housing unit is a primary factor in the building conditions of the dwelling unit, therefore the age of a community's housing stock is a good indicator of the condition of the housing stock. Data from the 2003-2017 ACS indicates that 43.2 percent of units within the City of Willows have been built in 1970 or later. Table 1.1-4. Located in Section 1.0 (Land Use and Socioeconomics) shows Development Trends by year built based on County Assessor data. According to the CDC, a substantial amount of existing United States housing regulation and bans related to the use of toxic materials were developed in the 1970s; including regulations on the use of lead paint and asbestos.<sup>8</sup> Additionally, older housing units are more likely to have structural and material damage. Therefore, the relatively old age of Willows's housing stock indicates that overall housing conditions will likely need renovation.

<sup>6</sup> <https://www.ers.usda.gov/data-products/food-environment-atlas/go-to-the-atlas>

<sup>7</sup> SB 1000 Toolkit

<sup>8</sup> Centers for Disease Control and Prevention, National Center for Environmental Health, 2018. Retrieved from: <https://www.cdc.gov/nceh>

## Housing Conditions

In May 2014, the City completed a housing conditions survey. This survey includes all of the housing units in Willows. The information collected during the 2014 survey is summarized in Table 6.0-4, Willows Housing Stock Conditions 2014.

**TABLE 6.0-4: WILLOWS HOUSING STOCK CONDITIONS 2014**

Condition	All Housing	
	Number	Percent
Sound	664	38.3%
Minor*	403	23.3%
Moderate*	498	28.7%
Substantial**	122	7.0%
Dilapidated***	46	2.7%
<b>Total</b>	<b>1,733</b>	<b>100%</b>

SOURCE: CITY OF WILLOWS HOUSING ELEMENT, 2015; CITY OF WILLOWS HOUSING SURVEY, 2014

Based on data from the 2014 housing survey depicted in Table 6.0-4, the majority of the City's housing stock surveyed (1,733 units surveyed,) 62% were determined to be in sound or minor condition, and any repairs needed are primarily aesthetic improvements.

## Overcrowding

Overcrowding within a housing unit is a primary cause of unsafe housing conditions. The World Health Organization notes that overcrowding is a potential health risk as it contributes to the transmission of disease by creating unsanitary conditions.<sup>9</sup> A housing unit is considered overcrowded if there is more than one person per room and severely overcrowded if there are more than 1.5 persons per room. Table 6.0-5 taken from the U.S. Census 2017 American Community Survey depicts overcrowding data for Willows.

**TABLE 6.0-5: OVERCROWDING BY TENURE (2017)**

PERSONS PER ROOM	OWNER		RENTER		TOTAL	
	Number	Percent	Number	Percent	Number	Percent
1.00 or less	911	91.47%	1,213	95.06%	2,124	93.49%
1.01 to 1.50	46	4.62%	63	4.94%	109	4.80%
1.51 or more	9	0.90%	0	0.00%	9	0.40%
TOTAL	996	100.00%	1,276	100.00%	2,272	100.00%
<b>Overcrowded</b>	<b>55</b>	<b>5.5%</b>	<b>63</b>	<b>4.9%</b>	<b>118</b>	<b>5.2%</b>

SOURCE: US CENSUS, 2013-2017 ACS

According to the data from the U.S. Census ACS 2017, 91.5 percent of owner occupied housing units were not considered overcrowded (had one or fewer persons per room) and 95 percent of rental units were not overcrowded. Owner units had a higher rate of severe overcrowding (0.9 percent) compared to renter units which had none.

## Policies

Glenn County has no public housing authority. The Housing Authority of the County of Butte administers the Housing Choice Voucher program in Glenn County. The Glenn County Human Resource Agency,

Community Action Division, also manages other housing activities, including housing rehabilitation programs and a first-time homebuyers program. The existing City of Willows Housing Element was adopted in 2015 and contains policies that are focused on supporting the efforts of the Butte County Housing Authority in its administration of Section 8/Housing Choice vouchers. The Housing Element also includes policies to promote the construction of housing that is affordable to all income levels and policies to ensure healthy and safe housing.

## PHYSICAL ACTIVITY

Residents of Disadvantaged Communities (DACs) are often more likely to have negative health outcomes. Increased physical activity levels are associated with a decreased risk for numerous health conditions and chronic illnesses. The built environment in DACs can often be limited by land use planning and lack of investment, leaving less opportunities for formal and informal physical activity. Increasing the opportunity for physical activity within a community can work to positively impact the health of DACs.

Physical activity a mandated environmental justice focus area under SB 1000. As mentioned, the census tract defined by City boundaries is not considered a CalEnviroScreen-designated Disadvantaged Community (DAC). This section serves to assess the existing conditions of physical activity in the City of Willows given the presence of DACs within the City.

### Physical Fitness and Health Demographics

Lack of physical activity is a major risk factor for many diseases and causes of death, including heart disease, obesity, mental-health conditions, diabetes, stroke, and Alzheimer's. The Glenn County 2012 Community Health Needs Assessment includes data regarding health measures for children and adults in Glenn County. As shown in Table 6.0-6 below, for almost all listed indicators (Smoking status heart disease prevalence, self-reported health quality, and obesity rates), Glenn County had higher percentages of residents with physical activity-related health problems than those same measures for the State of California.

**TABLE 6.0-6: HEALTH INDICATORS (GLENN COUNTY AND STATEWIDE)**

INDICATOR	GLENN COUNTY	CALIFORNIA
Diabetes Prevalence (Age-adjusted) <sup>10</sup>	19%	13.2%
Adult Heart Disease Prevalence <sup>11</sup>	7.8%	8.3%
Poor Mental Health <sup>12</sup>	9.9%	6.6%
Adults with Self-Reported Poor or Fair Health (Age-adj) <sup>13</sup>	16.1%	18.6%
Adult Obesity Prevalence (BMI > 30) <sup>14</sup>	18.8%	16.6%
Child Obesity Prevalence (Grades 5, 7, 9) (BMI>30) <sup>15</sup>	32.4.0%	24.2%

SOURCE: ADAPTED FROM THE COLUSA-GLENN COUNTY 2012 COMMUNITY HEALTH NEEDS ASSESSMENT <sup>16</sup>

<sup>10</sup> Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, 2012.

<sup>11</sup> California Health Interview Survey, 2011-12

<sup>12</sup> California Health Interview Survey, 2013-14.

<sup>13</sup> Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System. Accessed via the Health Indicators Warehouse. US Department of Health & Human Services, Health Indicators Warehouse, 2006-12

<sup>14</sup> Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, 2012.

<sup>15</sup> California Department of Education, FITNESSGRAM® Physical Fitness Testing, 2013-14.

<sup>16</sup> Glenn County Medical Center. 2012 Community Health Needs Assessment. Available At:

[https://www.glenmed.org/pages/pdf/GlennMedicalCtr\\_CHNA\\_12.pdf](https://www.glenmed.org/pages/pdf/GlennMedicalCtr_CHNA_12.pdf)

In addition, the California Health Interview Survey includes data regarding activity levels for children and teens in Glenn County. As shown in Table 6.0-7 below, approximately 33.5 percent of Glenn County children ages 5-11 identified being physically active every day of the week for at least one hour, which is roughly 4 percentage points higher than the Statewide average for children. In addition, approximately 7.1 percent of children in the County reported zero days per week of more than one hour of physical activity, compared to a Statewide average of 8.6 percent. Most of the children in Glenn County, approximately 40.2 percent, reported two days per week of more than one hour of physical activity, compared to a Statewide average of 10.5 percent.

This data also indicates that exercise and activity levels may decrease from childhood ages to teen ages. 19.9 percent of teens in the county reported being active for at least one hour, seven days a week, compared to 33.5 percent of children, however it should be noted that these values may be statistically unstable due to limited sample sized in several topic areas.

**TABLE 6.0-7: NUMBER OF DAYS PER WEEK PHYSICALLY ACTIVE AT LEAST ONE HOUR (2019)**

DAYS PER WEEK	GLENN COUNTY CHILDREN (5-11)	CALIFORNIA CHILDREN (5-11)	GLENN COUNTY TEENS	CALIFORNIA TEENS
0	7.1%*	8.6%	--	9.9%
1	--	4.6%	--	11.1%
2	40.2%*	10.5%	--	15.2%
3	3.3%*	15.6%	23.2%*	13.4%
4	--	10.8%	--	12.1%
5	4.2%*	15.9%	32.0%*	16.1%
6	10.9%*	4.7%	--	9.0%
7	33.5%*	29.4%	19.9%*	13.0%

SOURCE: CALIFORNIA HEALTH INTERVIEW SURVEY. CHIS 2016 CHILDREN AND TEEN SOURCE FILE. LOS ANGELES, CA: UCLA CENTER FOR HEALTH POLICY RESEARCH. \* INDICATES POSSIBLE STATISTICALLY UNSTABLE VALUES DUE TO SAMPLE SIZE. -- =NONE REPORTING.

### PHYSICAL FITNESS TESTING

Another indicator of physical activity and fitness for children and teens is the California Department of Education's Physical Fitness Testing (PFT) Program, which is administered by local school districts to all fifth, seventh, and ninth graders annually.<sup>17</sup> The test assesses six major fitness areas, including aerobic capacity (cardiovascular endurance), body composition (percentage of body fat), abdominal strength and endurance, trunk strength and flexibility, upper body strength and endurance, and overall flexibility. The PFT Program provides a statewide snapshot of physical fitness. However, its data is collected at the local school district level by people who are not health professionals, and tests for each of the fitness areas are difficult to administer consistently. Consequently, its results are prone to some margin of error over time and from place to place. California Physical Fitness Test PFT Results for the Willows Unified District, and statewide results for the 2016-17 academic year are shown in Table 6.0-8.

<sup>17</sup> California Department of Education. Physical Fitness Testing Results, Accessed on September 5, 2018. Accessible at: <http://www.cde.ca.gov>

**TABLE 6.0-8: STUDENT PHYSICAL FITNESS TESTING (PFT) RESULTS (2017-2018)**

PHYSICAL AREAS	WILLOWS UNIFIED DISTRICT % WITHIN HEALTHY FITNESS ZONE HFZ			STATEWIDE % WITHIN HEALTHY FITNESS ZONE HFZ		
	Gr. 5	Gr. 7	Gr. 9	Gr. 5	Gr. 7	Gr. 9
Aerobic Capacity	42.5%	60.7%	62.4%	61.9%	63.6%	61.7%
Body Composition	47.1%	59.3%	55%	59.5%	61%	62.7%
Abdominal Strength	66.7%	97.8%	97.2%	70.1%	78.4%	82.4%
Trunk Extension Strength	80.5%	88.9%	100%	83.9%	86.6%	89.6%
Upper Body Strength	46.0%	63.7%	91.7%	62%	64.7%	69.7%
Flexibility	79.3%	69.6%	93.6%	71.5%	79.4%	84.3%

SOURCE: CALIFORNIA DEPARTMENT OF EDUCATION, PHYSICAL FITNESS TESTING RESULTS (2017-2018).

As shown in Table 6.0-8 above, the PFT results for 5<sup>th</sup> and 7<sup>th</sup> graders in the Willows, between 2017-18 show that generally local children subceed the statewide averages in all testing areas with the exception of Abdominal Strength and Trunk Extension Strength. 9<sup>th</sup> graders generally exceed all testing areas with the exception of body composition.

### Sidewalks

The City of Willows is a well-connected gridular community. It is relatively compact and approximately 2.8 miles across. Sidewalks are infrequent in most areas of the community; however, wide shoulders provide an area for pedestrian use. In addition, a large majority of homes in Willows are found within one mile of schools, making walking to school a feasible option for school-aged children. Despite this, walking remains an underutilized mode of transportation.

Furthermore, the City does not have a comprehensive inventory of pedestrian facilities such as sidewalks, street crossings, lighting, shade trees, or benches. Therefore, assessing the baseline for pedestrian facilities within the City is difficult.

### Active Transportation Use

Active transportation is any form of transportation that is non-motorized. The use of active transportation during a daily commute increases physical activity levels. Increased physical activity has positive health benefits; including mortality risk reduction, disease prevention, cardiorespiratory fitness, and metabolic health.<sup>7</sup> Disadvantaged communities often have disproportionately poorer health outcomes. Increasing opportunities for active transportation within a city can improve the overall health outcomes of DACs.

Data from the 2019 California Department of Finance (DOF) Population and Housing Estimate Report and 2013-2017 American Community Survey (ACS) were utilized to illustrate journey to work (JTW) statistics for Willows. Table 6.0-9 provides an overview of Willows's JTW mode split data compared to countywide statistics for Glenn County and the State of California.

**TABLE 6.0-9: DEMOGRAPHIC AND JOURNEY TO WORK DATA**

	WILLOWS		GLENN COUNTY		CALIFORNIA	
Population <sup>1</sup>	6,282		29,132		39,927,315	
Employed persons <sup>2</sup>	1,976		10,337		17,589,758	
MODE SPLIT	NUMBER	PERCENTAGE	NUMBER	PERCENTAGE	NUMBER	PERCENTAGE
Drove alone	1,334	67.5%	7,850	75.9%	12,950,487	73.6%
Carpooled	454	23.0%	1,286	12.4%	1,830,968	10.4%
Public transit	0	0.0%	45	0.4%	909,679	5.2%
Walked	90	4.6%	402	3.9%	470,101	2.7%
Other	0	0.0%	162	1.6%	450,486	2.6%
Worked at home	98	5.0%	592	5.7%	978,047	5.6%

<sup>1</sup>POPULATION DATA OBTAINED FROM 2019 CALIFORNIA DEPARTMENT OF FINANCE POPULATION AND HOUSING ESTIMATE REPORT.

<sup>2</sup>EMPLOYMENT AND MODAL CHOICE DATA OBTAINED FROM 2013-2017 AMERICAN COMMUNITY SURVEY 5-YEAR ESTIMATES.

The ACS reports that the majority of workers living in Willows, 67.5 percent, drove to work alone, whereas alternative modes of transportation accounted for approximately 27.6 percent of commute trips. Of the commute trips using alternative modes of transportation, only 4.6 percent of commuters reported walking to work and none were reported bicycling to work. This data indicates that most commuters in Willows do not use active transportation as a means of getting to work. Approximately 90.5% of all trips made by Willow's employed residents are made by automobile. Utilizing active transportation is an effective way of engaging in physical exercise and can be a factor in improving community health outcomes in disadvantaged communities. More details on active transportation use and bicycle facilities can be found in the *Public Facilities* section and Section 2.0 (Circulation).

## CIVIC AND COMMUNITY ENGAGEMENT

An important aspect of planning for environmental justice is the development of effective policies and programs that enable all residents to participate in local decision making. Disadvantaged communities can often be excluded from decision-making when officials and policies do not focus on involving these communities in a strategic manner. SB 1000 emphasizes that community engagement must be promoted in a local jurisdiction through the development of objectives and policies that seek to involve members of DACs specifically. By involving and engaging DACs in decision-making processes, policy-makers can effectively meet the needs of these community members. Disadvantaged communities often have culturally-specific needs that must be made a priority within local policy to ensure community success. These needs are often distinct from those of the general population. The US EPA Environmental Justice Policy requires the "... meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." The establishment of appropriate opportunities for those who are low-income, minorities, and linguistically isolated to engage in local decision making will help ensure that environmental justice issues are identified and resolved. In addition, community programs that address the needs of disadvantaged communities are critical to ensuring environmental justice is achieved for these communities within a city.

Promoting civic engagement and programs for DACs is a mandated environmental justice focus area under SB 1000. As mentioned, the census tract defined by City boundaries is not considered a CalEnviroScreen-designated Disadvantaged Community (DAC). This section serves to assess the levels of civic engagement and existing community programs in the City of Willows.

## Levels of Civic Engagement

At the local level, there were 12,730 total registered voters in Glenn County 15 days before the general election in 2018; 2,395 of these registered voters were from the City of Willows.<sup>18</sup> At the same time there were 4,401 people of voting age living within the City of Willows according to ACS 2013-2017 estimates.<sup>19</sup> This indicates that for one measure of voter participation, the participation rate for residents of voting age within the City of Willows was about 54.4%. It should be noted that not all residents of voting age are eligible to vote in the state of California.

According to the Glenn County Registrar of Voters, there were 2,305 registered voters in the City of Willows in 2016 and there 4,297 residents of voting age living within the City of Willows. This puts the voter turnout rate for the City of Willows at 53.6%. As for the year 2014, the general election rate was only 51.0%.<sup>20</sup> While it is expected that voter turnout rate drops significantly on years where there is no presidential election, voter turnout in Willows stays relatively consistent.

## IMPROVEMENTS AND PROGRAMS

### DAC Programs

A critical aspect of planning to achieve environmental justice is prioritizing projects and policies that directly benefit disadvantaged communities. As stated previously, in Willows, the census tract defined by City boundaries is not considered a CalEnviroScreen-designated Disadvantaged Community (DAC), however, it is often the case that individual disadvantaged communities are not considered in regard to public investment decisions and new public programs. When disadvantaged communities are overlooked for public programs and investments, the specific needs of these communities are not met and the conditions in which they live often worsen. To promote environmentally just planning, cities should incorporate programs and policies that are specific to the needs of DACs.

As describe previously in the regulatory setting, the Willows General Plan includes a variety of goals and policies to support disadvantaged communities and environmental justice issues through policies aimed at improving the transportation network to accommodate bicycle and pedestrian travel, supplying the city residents with high quality parks, recreation opportunities, community services and facilities, improving housing conditions and affordability, and promoting air and water quality throughout the planning area.

Furthermore, the City of Willows 2015 Housing Element contains policies that are focused on supporting the efforts of the Butte County Housing Authority in its administration of Section 8/Housing Choice vouchers. The Housing Element also includes policies to promote the construction of housing that is affordable to all income levels and policies to ensure healthy and safe housing. The City has taken a proactive approach within the Housing Element to ensure the safety and sanitation of housing for its residents.

<sup>18</sup> California Secretary of State (2018). Voter Registration Statistics: 15 Day Report of Registration. Available at: <http://www.sos.ca.gov/elections/voter-registration/voter-registration-statistics/>

<sup>19</sup> U.S. Census Bureau; American Community Survey, 2012-2016 American Community Survey 5-Year Estimates, Retrieved from: <http://factfinder.census.gov> (6 September 2018).

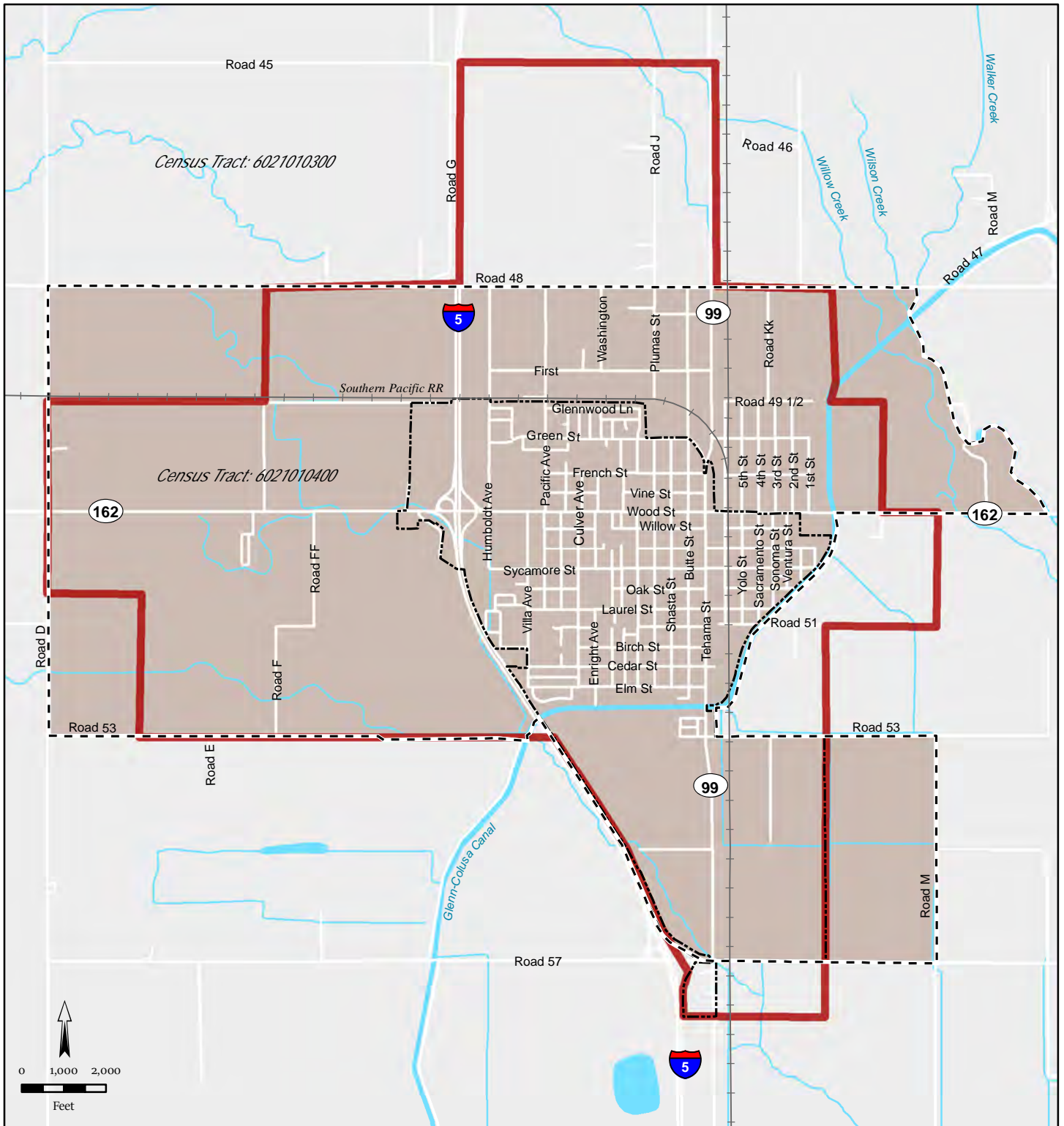
<sup>20</sup> City of Lathrop Office of the City Clerk. Chronology of Elections. Accessed in September of 2017. Available At: [http://www.ci.lathrop.ca.us/cco/pdf/ChronologyofElections\\_July2018.pdf](http://www.ci.lathrop.ca.us/cco/pdf/ChronologyofElections_July2018.pdf)

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



Sources: California Department of Public Health, Nutrition Education and Obesity Prevention Branch GIS Map Viewer; Glenn County GIS. Map date: October 23, 2019. Revised: January 14, 2020.

CITY OF WILLOWS

FIGURE 6.0-2. FOOD DESERTS

LEGEND

-  City of Willows
-  Willows Sphere of Influence
-  Census Tract
-  Food Desert

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