Fresno County

General Plan Background Report

General Plan Review

February 2024

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ERRATA

Since the publication of the Background Report in 2018, the document has been updated to include updated information on the following topics.

CHAPTER 3: LAND USE

Section 3.11, Disadvantaged Unincorporated Communities

- This section was updated to reflect the SB 244 information presented to the Planning Commission on September 10, 2020 and by the Board of Supervisors on October 20, 2020.
- Details on each community and analysis of water, wastewater, stormwater drainage, and structural fire protection are included in a new Appendix A, Disadvantaged Unincorporated Communities.

Section 3.12, Environmental Justice

- New section on Environmental Justice was added to this chapter.
- Includes community profiles based on data provided by CalEnvironScreen 3.0.

CHAPTER 5: TRANSPORTATION AND MOBILITY

Section 5.2, Level of Service and VMT

- Updated traffic count volumes, number of lanes and LOS; added VMT discussion regarding SB 743; discussed COVID impacts to traffic.

Section 5.3, Active Transportation

- Updated journey to work data; updated bicycle and pedestrian facility sections.

Section 5.4, Transit Services

- Updated ridership numbers, figures, routes, productivity statistics for transit providers.

Section 5.5, Goods Movement

- Updated truck networks maps; truck travel statistics; freight shipments by origin and mode.

Section 5.6, Aviation Facilities and Services

- Updated all airport enplanements for public and private airports; updated number based aircraft, runway lengths, based aircraft, surface type, etc.

Section 5.7, Transportation Demand / System Management

- Updated sections to be consistent with existing programs/strategies.

Section 5.8, Programmed Transportation Improvements

- Updated funding sources; included projects in FTIP/STIP/RTIP/IIP.

CHAPTER 7: NATURAL RESOURCES

Water Resources and Water Quality

- Updated surface water and groundwater supply data
- Updated water quality data

Air Quality

- Updated annual air quality data for Fresno County

Biological Resources

- Updated CNDDB report for special-status plants and animals
- Updated wetlands map
- Updated critical habitat map

Agricultural Resources

- Updated Important Farmland mapping and data
- Updated the top-ranked crops in Fresno County

Recreation

- Updated the list of County parks and recreation facilities

Energy Resources

- Updated the oil and gas well data
- Updated all renewable energy data

CHAPTER 8: HAZARDS AND SAFETY

Section 8.1, Geologic and Seismic Hazards

- Updated references to State and Federal law changes
- Updated references to goals, polices, and implementation programs in the General Plan concerning seismic and geologic hazards

Section 8.2, Flood Hazards

- Updated the findings section to reflect more recent flooding events
- Included a discussion on western Fresno County communities that experience flood related events
- Updated the list of flood control facilities and stream systems per 2018 HMP
- Updated list of dams that have potential to cause floods per 2018 HMP

Section 8.3, Fire Hazards

- Updated the findings section to reflect more recent fire events
- Updated fire maps from CAL FIRE
- Updated common ignition sources and wildland fire past events per 2018 HMP
- Updated regulatory setting to reflect changes in State law

Section 8.4, Aviation Hazards

- Updated references to various Airport Land Use Compatibility Plans
- Updated description and clarified role of the Fresno County Airport Land Use Commission

CHAPTER 8: HAZARDS AND SAFETY

- Updated the number of hazardous materials generators in the County
- Updated the number of known leaking underground storage tanks, Superfund sites, and National Priorities List sites in the County

CHAPTER 9: CLIMATE CHANGE

- Updated expected temperature change for Fresno County through 2100
- Updated expected precipitation changes for the County through 2100

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BACKGROUND REPORT

PUBLIC REVIEW DRAFT
APRIL 2023

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The Fresno County General Plan Review and Revision was a multi-year process. Many elected and appointed officials and members of the public participated in this update. Their contributions are appreciated.

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CHAPTER 1: INTRODUCTION

INTRODUCTION

This chapter describes the purpose and organization of the General Plan and provides an overview of what a General Plan is, why it is prepared, and why it is important. This chapter also provides an overview of the purpose, format, and organization of the General Plan Background Report.

This chapter is organized into the following sections:

- What is a General Plan? (Section 1.1)
- Using the General Plan (Section 1.2)
- Regional Setting and Planning Boundaries (Section 1.3)
- Purpose of the Background Report (Section 1.4)
- Organization and Format of the Background Report (Section 1.5)

SECTION 1.1 WHAT IS A GENERAL PLAN?

California state law requires each city and county in the state to adopt a general plan "for the physical development of the county or city, and of any land outside its boundaries which bears relation to its planning." A general plan serves as the jurisdiction's "constitution" or "blueprint" for future decisions concerning a variety of issues, including land use, health and safety, and resource conservation. All specific plans, area plans, subdivisions, public works projects, and zoning decisions must be consistent with the local jurisdiction's general plan. The Fresno County General Plan contains the goals and policies upon which the Board of Supervisors and Planning Commission base their land use decisions. Typically, the time horizon for a general plan ranges from 15- to 25-years. The horizon year for Fresno County's General Plan Update is 2040 and thus, will have a planning horizon of 20 years.

A general plan has four defining features:

- **General.** As the name implies, a general plan provides general guidance for future land use, transportation, environmental, and resource decisions.
- **Comprehensive.** A general plan addresses a wide range of social, economic, infrastructure, and natural resource topics. These topics include land use, urban development, housing, transportation, public facilities and services, recreation, agriculture, biological resources, and many other issues that impact the community.
- **Long-Range.** A general plan provides guidance on achieving a long-range vision of future growth and development for a jurisdiction. To achieve this vision, the general plan includes goals, policies, and implementation programs that address both near-term and long-term needs.
- **Integrated and Coherent.** The goals, policies, and implementation programs in a general plan present a comprehensive, unified approach to development, resource conservation, and other issues that impact the health and wellness of the community. A general plan uses a consistent set of assumptions and projections to assess future demands for housing, employment, and public services (e.g., infrastructure). For instance, projections prepared at the State level (California

Department of Finance) or regional level (SCAG) provide the basis for assessing potential demand for different uses. Land use density and intensity standards specify clearly how the County expects land to develop and what the holding capacity of the land is (in dwelling units or square footage). This information is combined with unit-based assumptions for employment and population (e.g., square footage per employee, population per household) to provide the basis for determining how well a plan is addressing potential demand. A general plan has a coherent set of policies and implementation programs that enables citizens to understand the vision of the County and enables landowners, businesses, and industry to be more certain about how policies will be implemented.

A general plan is made up of a collection of "elements," or chapters, of which seven are mandatory. The nine State-mandated elements are (1) land use, (2) circulation, (3) housing, (4) conservation, (5) open space, (6) noise, (7) safety, (8) air quality, and (9) environmental justice. Jurisdictions may include other elements that address issues of particular local concern, such as agriculture or climate change. Jurisdictions can also organize their general plan any way they choose, as long as the required topics are addressed.

SECTION 1.2 USING THE GENERAL PLAN

The Board of Supervisors, Planning Commission, and county staff use the General Plan on a daily basis to make decisions with direct or indirect land use implications. The General Plan also provides a framework for inter-jurisdictional coordination of planning efforts among officials and staff of the county and other government agencies (e.g., federal, state, and local). County residents, property owners, and businesses also use the General Plan for guidance on county policies for particular geographic areas or for particular subjects of interest to them.

The General Plan is the basis for a variety of regulatory measures and administrative procedures. California planning law requires consistency between the general plan and its implementing tools, such as zoning and subdivision ordinances, capital improvement programs, specific plans, area plans, environmental impact assessment procedures, and building codes. That said, a general plan should not be confused with zoning. Although both a general plan and zoning ordinances designate how land may be developed, they do so in different ways. The general plan has a long-term outlook. It identifies the types of development that will be allowed, the spatial relationships among land uses, and the general pattern of future development. Zoning regulates development through specific standards such as lot size, building setback, and allowable uses. The land uses shown on general plan diagrams will, however, typically be reflected in local zoning maps as well, as they are required to be consistent with one another per state law. Development must not only meet the specific requirements of a zoning ordinance, but also the broader policies set forth in a general plan.

The Fresno County Zoning Ordinance is officially known as Division VI of the Ordinance Code of the County of Fresno, or simply the Zoning Division of the County of Fresno. Its stated purpose is "to classify and regulate the highest and best use of buildings, structures, and land located in the unincorporated area of the County of Fresno in a manner consistent with the Fresno County General Plan." The Zoning Ordinance establishes 12 residential districts, 10 commercial districts, 3 industrial districts, and 11 other districts that are mainly related to agriculture, timber, and other resource-related land uses. The zoning districts follow specific property lines and road alignments that generally correspond with the applicable General Plan categories. Working with the zoning classifications, the text of the Zoning Ordinance provides detailed regulations for the development and use of land.

The Fresno County General Plan is made up of two documents: the Background Report and the Policy Document, which are further described below.

- **Background Report.** The Background Report takes a "snapshot" of existing conditions and trends in Fresno County. Baseline data was originally based on 2016 data, but key components have been updated to more recently published data to reflect 2019 and 2020 conditions. It is divided into 12 chapters that cover of a wide range of topics within the county, such as demographic and economic conditions, land use, public facilities, and environmental resources. Unlike the Policy Document, the Background Report is objective and policy-neutral and provides decision-makers, the public, and local agencies with context for making policy decisions. The Background Report also serves as the basis for the "Environmental Setting" section of the Environmental Impact Report (EIR) for the General Plan.
- **Policy Document.** The Policy Document is the essence of the General Plan. It contains the goals and policies that will guide future decisions within the county. It also identifies a set of implementation programs that will ensure the goals and policies in the General Plan are carried out.

Over time the county's population will increase, its goals will evolve, and the physical environment will change. In order for the county's General Plan to be a useful document, it must be monitored and periodically revised to respond to and reflect changing conditions, needs and priorities.

A general plan should be reviewed annually. A more comprehensive and thorough review and revision should be done every five to ten years to assess whether it needs to be refined to reflect changes in local conditions, new local priorities, or state law. State law permits a general plan to be amended up to four times in any calendar year, unless special conditions apply as defined by Government Code Sections 65358(c) and (d). Each amendment may contain more than one change to the general plan.

As part of the Fresno County General Plan Review and Revision process, the county will also prepare an environmental impact report (EIR) that presents detailed information about the General Plan's environmental effects, includes options for minimizing significant environmental impacts, and presents reasonable alternatives that could lessen environmental impacts. The analysis presented in the EIR must comply with the requirements of the California Environmental Quality Act (Sections 15126, 15175, and 15176 of the CEQA Guidelines). The Planning Commission and Board of Supervisors will review the EIR to understand potential environmental implications associated with implementation of the General Plan and to identify feasible mitigation measures.

SECTION 1.3 REGIONAL SETTING AND PLANNING BOUNDARIES

Fresno County is one of the eight counties that collectively form the greater San Joaquin Valley. It covers approximately 6,000 square miles stretching from the Coast Range mountains to the west to the Sierra Nevada Range to the east. Fresno County was established in 1856 and began as a cluster of small agricultural centers that grew gradually until the end of the century as the agricultural industry took shape. The City of Fresno incorporated in 1885 as the county's first city and established itself as the economic focal point of the county. Beginning in the early 1900s, other cities began to incorporate and the population continued to expand. The county's population grew rapidly in the mid-1900s, leading to the outward growth of the Fresno/Clovis metropolitan area, while many outlying communities remained

small with little to no growth in population. This has led to a drastic difference in the sizes of the communities that make up Fresno County.

Beyond the geographical and political boundaries, Fresno County has internal planning boundaries as well. The County has 15 incorporated cities, with the City of Fresno being the largest at 575,000 and the City of San Joaquin being the smallest with a population of just over 4,000 as of 2015. For the purpose of the General Plan, the County has been divided into five geographic subareas to provide greater context. This is because Fresno County is diverse not only in the size of its communities, but also the vast geographic area it covers. These five subareas do not have any policy status but are useful for general orientation and for framing and describing geographically unique planning issues.

SECTION 1.4 PURPOSE OF THE BACKGROUND REPORT

The Background Report provides a "snapshot" in time of the County's existing conditions. It presents the physical, social, and economic resource information required to support the preparation of the General Plan. The data and information in the Report have a baseline date of January 2016. The Background Report serves as the foundation document from which subsequent planning policies and programs will be formulated. The document is also used as the "environmental setting" section of the General Plan EIR.

SECTION 1.5 ORGANIZATION AND FORMAT OF THE BACKGROUND REPORT

The Fresno County General Plan Background Report is divided into 10 chapters:

- **1: Introduction.** This chapter provides background information on the purpose of the General Plan, describes the regional setting, and outlines the organization and content of the General Plan.
- **2: Demographics and Employment.** This chapter describes the demographic conditions in Fresno County, including historic trends population and employment and projections for future change.
- **3: Land Use.** This chapter summarizes existing land use, describes local and regional land use plans, and explains land use designations in Fresno County.
- **4: Housing.** The County adopted its Housing Element in 2016; this chapter is a placeholder for the background documentation created for the Housing Element.
- **5: Transportation and Mobility.** This chapter describes the transportation networks in Fresno County, including roadways, active transportation, aviation facilities, and vehicle miles travelled.
- **6: Public Facilities and Services.** This chapter describes the facilities and services provided to serve the unincorporated area of Fresno County, including water supply, utilities, law enforcement, schools, and other local services.
- **7: Natural Resources.** This chapter provides an overview of water resources, air quality, biological resources, open space, scenic resources, recreation, mineral resources, energy resources, and cultural and paleontological resources in Fresno County.
- **8: Hazards and Safety.** This chapter describes hazards and safety issues associated with geology, seismicity, flood, fire, aviation operations, and hazardous materials in Fresno County.
- **9: Climate Change.** This chapter describes Fresno County's greenhouse gas emissions and the impact of climate change in Fresno County.

- **10: Noise.** This chapter describes the existing noise conditions, major noise sources (including ground transportation, aircraft, and non-transportation), and regulatory framework related to noise levels in the Fresno County.

Each of these chapter includes the following:

- **Introduction.** The introduction provides a brief description of the issues covered in the section.
- **Findings.** Each section contains a brief summary of key findings. The findings present key facts and preliminary issues from the section. These findings serve as the basis for the identification of issues to be addressed in the Policy Document.
- **Existing Conditions.** This section describes existing conditions for each resource or issue area.
- **Regulatory Setting.** Each section summarizes the laws and regulations pertaining to the topics identified. Federal, State, and local regulations are described, as applicable. In the case of local regulations, each section cites where relevant content can be found in the County's current General Plan.
- **Key Terms.** Each section contains a list of terms that are unique to the topical areas within each chapter in the Background Report.
- **References.** Each section contains a list of documents and websites referenced and persons consulted in preparing the Background Report.

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CHAPTER 2: DEMOGRAPHICS AND EMPLOYMENT

INTRODUCTION

This section summarizes the demographics and economic trends of Fresno County. Since economics and demographics frequently go beyond city/county boundaries, this analysis uses Fresno County (including its incorporated cities) and California as a whole for comparative analysis. These points of reference provide comparisons and perspective to highlight distinguishing qualities of Fresno County. Demographic information is used to identify trends and changes that may affect the demands of Fresno County's future population. Industry trends in Fresno County and the surrounding region are summarized, showing the economic strengths and potential areas of growth.

This chapter is organized into the following sections:

- Population and Households Trends (Section 2.1)
- Employment and Industry Trends (Section 2.2)

SECTION 2.1 POPULATION AND HOUSEHOLD TRENDS

INTRODUCTION

This section describes and analyzes past, current, and projected Fresno County demographic information. Analyzing demographic information shows shifts in county service demand, changes that could influence land use policy as families have fewer or more children, and changes in economic conditions as ethnic demographics shift over time. This section analyzes U.S. Census and California Department of Finance data to identify the trends and conditions that are of importance to Fresno County's future.

FINDINGS

- Between 1960 and 2015, the population of unincorporated Fresno County decreased by11,670 from 182,120 to 170,450, a reduction of 6.4 percent.
- Since 1960, Fresno County's population has shifted from the county's unincorporated area to the county's cities, with the incorporated-unincorporated split changing from 50.2% to 49.8% in 1960 to 82.5% to 17.5% in 2015.
- Fresno County's population and population growth are mostly concentrated in the county's cities. The Fresno metropolitan area has absorbed much of the county's population growth, either through annexations or new development. Over 53 percent of the county's population now resides in the City of Fresno and almost 11 percent resides in Clovis.
- Fresno County's population is projected to grow by 606,200 over the 45-year period, an increase of 61.8 percent overall and an average annual rate of 1.1 percent. The county's rate falls between the San Joaquin Valley (76.1 % overall and 1.4% annually) and California (32.8% overall and 0.6% annually) (California Department of Finance).

- Overall, Fresno County has a younger population than the rest of California. Minors (under 18) account for 29.3 percent of the population, while seniors (age 65 and above) account for 10.6 percent of the population. Approximately 30.6 percent of the population in Fresno County cities is under 18, compared with 26.2 percent in unincorporated areas (U.S. Census Bureau, 2014 American Community Survey).
- Fresno County residents have completed less formal education than residents of California as a whole, with 50.6 percent of the population in Fresno County attaining education levels beyond a high school diploma, compared with 60.8 percent of the population in California (U.S. Census Bureau, 2014 American Community Survey).

EXISTING CONDITIONS

HISTORIC POPULATION CHANGE

The California Department of Finance (DOF) and the U.S. Census Bureau collect and analyze demographic data for cities and counties throughout California. DOF then uses the data to estimate population and develop future projections. Table 2-1 shows population change in Fresno County and its cities from 1960 to 2010, including the percentage of the county's population within each city and the share of county population within the unincorporated area and the incorporated cities. Fresno County's population in 1960 was approximately 366,000 and grew to approximately 972,300 by 2015, an increase of 606,300 or 166 percent. It is notable that during this period, the population of the unincorporated area actually decreased by 11,670, from 182,120 to 170,450, a reduction of 6.4 percent. This reflected a decided shift in population from the county's unincorporated area to the county's cities, with the incorporated-unincorporated split changing from 50.2%-49.8% in 1960 to 82.5%-17.5% in 2015. Figure 2-1 depicts this change graphically.

As Table 2-1 and Table 2-2 show, Fresno County's population and population growth are mostly concentrated in the county's cities. In particular, the Fresno metropolitan area has absorbed much of the county's population growth, either through annexations or new development. Over 53 percent of the county's population now resides in the city of Fresno and almost 11 percent resides in Clovis. According to the DOF, between 2000 and 2015, the incorporated areas grew by 26.2 percent, accounting for 96.4 percent of the total growth in Fresno County. Unincorporated parts of the county grew between 2000 and 2005, then declined between 2005 and 2010, and then grew again from 2010 to 2015; overall, between 2000 and 2015 the unincorporated population grew by 6,310, or 3.6 percent. In incorporated parts of the county, the City of Fresno experienced the greatest increase in growth in the county, increasing by 21.6 percent (92,510) from 2000 to 2015. The City of Fresno's growth mirrors the rest of Fresno County with the same (21.6) percentage growth between 2000 and 2015 and the same average annual growth rate of 1.3 percent. Kerman experienced the greatest amount of growth, at 67.4 percent (5,760) from 2000-2015. Coalinga experienced the least amount of growth (320 or 2.0 percent) between 2000 and 2015.

FIGURE 2-1
UNINCORPORATED AND INCORPORATED POPULATION PERCENTAGES

Fresno County
1960-2015

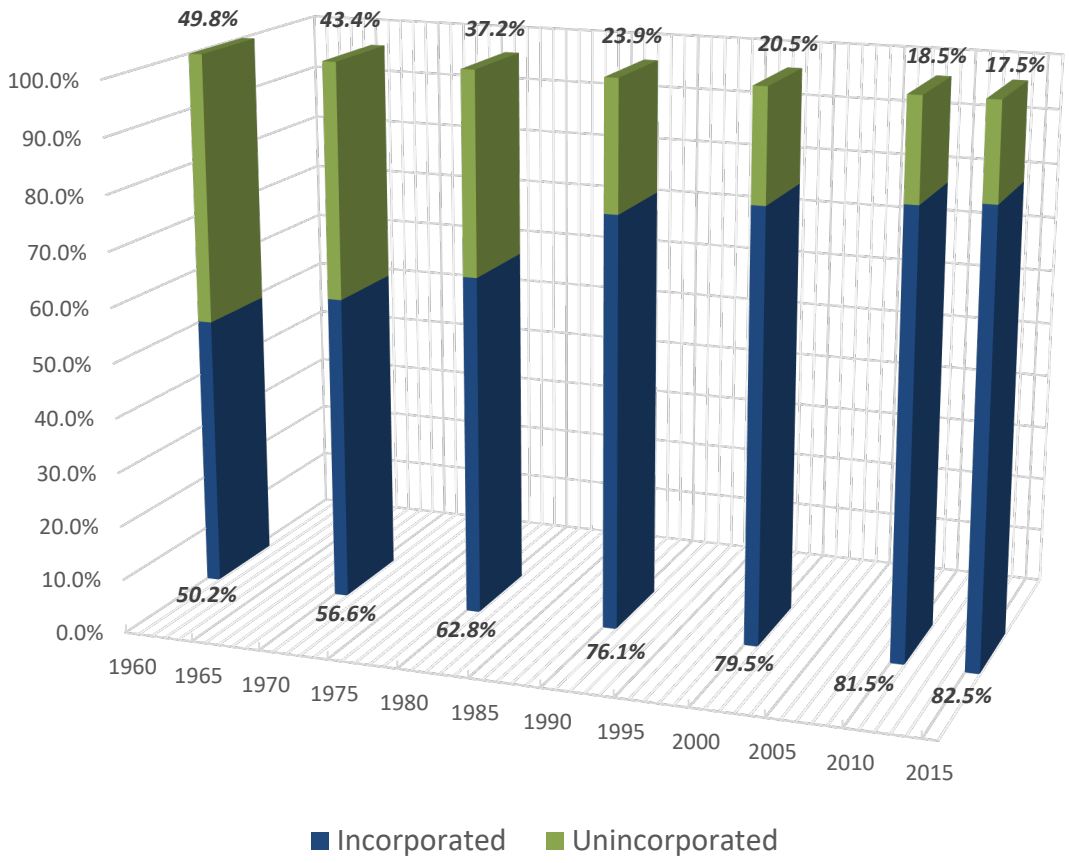


TABLE 2-1
POPULATION CHANGE: 1960 TO 2015
PERCENTAGE OF COUNTY POPULATION
Fresno County and Cities

City/Area	1960		1970		1980		1990		2000		2010		2015	
	Pop	% of County	Pop	% of County	Pop	% of County	Pop	% of County	Pop	% of County	Pop	% of County	Pop	% of County
Clovis	5,550	1.5%	13,860	3.4%	33,020	6.4%	50,320	7.5%	68,470	8.6%	95,630	10.3%	104,340	10.7%
Coalinga	5,970	1.6%	6,160	1.5%	6,590	1.3%	8,210	1.2%	16,210	2.0%	13,380	1.4%	16,530	1.7%
Firebaugh	2,070	0.6%	2,520	0.6%	3,740	0.7%	4,430	0.7%	5,740	0.7%	7,550	0.8%	7,780	0.8%
Fowler	1,890	0.5%	2,240	0.5%	2,500	0.5%	3,210	0.5%	3,980	0.5%	5,570	0.6%	5,960	0.6%
Fresno	133,930	36.6%	165,660	40.1%	217,130	42.2%	354,200	53.1%	427,650	53.5%	494,670	53.2%	520,160	53.5%
Huron	1,270	0.3%	1,530	0.4%	2,770	0.5%	4,770	0.7%	6,310	0.8%	6,750	0.7%	6,820	0.7%
Kerman	1,970	0.5%	2,670	0.6%	4,000	0.8%	5,450	0.8%	8,550	1.1%	13,540	1.5%	14,310	1.5%
Kingsburg	3,090	0.8%	3,840	0.9%	5,120	1.0%	7,210	1.1%	9,200	1.2%	11,380	1.2%	11,710	1.2%
Mendota	2,100	0.6%	2,710	0.7%	5,040	1.0%	6,820	1.0%	7,890	1.0%	11,010	1.2%	11,210	1.2%
Orange Cove	2,890	0.8%	3,390	0.8%	4,030	0.8%	5,600	0.8%	7,720	1.0%	9,080	1.0%	9,360	1.0%
Parlier	1,370	0.4%	1,990	0.5%	2,900	0.6%	7,940	1.2%	11,150	1.4%	14,490	1.6%	15,100	1.6%
Reedley	5,850	1.6%	8,130	2.0%	11,070	2.2%	15,790	2.4%	20,760	2.6%	24,190	2.6%	25,490	2.6%
San Joaquin	880	0.2%	1,510	0.4%	1,930	0.4%	2,310	0.3%	3,270	0.4%	4,000	0.4%	25,130	2.6%
Sanger	8,070	2.2%	10,090	2.4%	12,540	2.4%	16,840	2.5%	18,930	2.4%	24,270	2.6%	4,040	0.4%
Selma	6,930	1.9%	7,460	1.8%	10,940	2.1%	14,760	2.2%	19,440	2.4%	23,220	2.5%	23,910	2.5%
Incorporated	*183,830*	*50.2%*	*233,760*	*56.6%*	*323,320*	*62.8%*	*507,860*	*76.1%*	*635,270*	*79.5%*	*758,730*	*81.5%*	801,850	82.5%
Unincorporated	*182,120*	*49.8%*	*179,570*	*43.4%*	*191,300*	*37.2%*	*159,630*	*23.9%*	*164,140*	*20.5%*	*171,720*	*18.5%*	170,450	17.5%
Fresno County	**365,950**	**100.0%**	**413,330**	**100.0%**	**514,620**	**100.0%**	**667,490**	**100.0%**	**799,410**	**100.0%**	**930,450**	**100.0%**	**972,300**	**100.0%**

Source: California Department of Finance 1960-2015.

TABLE 2-2
POPULATION CHANGE: 1960 TO 2015
PERCENTAGE CHANGE BY DECADE
Fresno County and Cities

City/Area	1960	1970	1960-1970	1980	1970-1980	1990	1980-1990	2000	1990-2000	2010	2000-2010	2015	2000-2015
Clovis	5,550	13,860	149.7%	33,020	138.2%	50,320	52.4%	68,470	36.1%	95,630	39.7%	104,340	9.1%
Coalinga	5,970	6,160	3.2%	6,590	7.0%	8,210	24.6%	16,210	97.4%	13,380	-17.5%	16,530	23.5%
Firebaugh	2,070	2,520	21.7%	3,740	48.4%	4,430	18.4%	5,740	29.6%	7,550	31.5%	7,780	3.0%
Fowler	1,890	2,240	18.5%	2,500	11.6%	3,210	28.4%	3,980	24.0%	5,570	39.9%	5,960	7.0%
Fresno	133,930	165,660	23.7%	217,130	31.1%	354,200	63.1%	427,650	20.7%	494,670	15.7%	520,160	5.2%
Huron	1,270	1,530	20.5%	2,770	81.0%	4,770	72.2%	6,310	32.3%	6,750	7.0%	6,820	1.0%
Kerman	1,970	2,670	35.5%	4,000	49.8%	5,450	36.3%	8,550	56.9%	13,540	58.4%	14,310	5.7%
Kingsburg	3,090	3,840	24.3%	5,120	33.3%	7,210	40.8%	9,200	27.6%	11,380	23.7%	11,710	2.9%
Mendota	2,100	2,710	29.0%	5,040	86.0%	6,820	35.3%	7,890	15.7%	11,010	39.5%	11,210	1.8%
Orange Cove	2,890	3,390	17.3%	4,030	18.9%	5,600	39.0%	7,720	37.9%	9,080	17.6%	9,360	3.1%
Parlier	1,370	1,990	45.3%	2,900	45.7%	7,940	173.8%	11,150	40.4%	14,490	30.0%	15,100	4.2%
Reedley	5,850	8,130	39.0%	11,070	36.2%	15,790	42.6%	20,760	31.5%	24,190	16.5%	25,490	5.4%
San Joaquin	880	1,510	71.6%	1,930	27.8%	2,310	19.7%	3,270	41.6%	4,000	22.3%	4,040	1.0%
Sanger	8,070	10,090	25.0%	12,540	24.3%	16,840	34.3%	18,930	12.4%	24,270	28.2%	25,130	3.5%
Selma	6,930	7,460	7.6%	10,940	46.6%	14,760	34.9%	19,440	31.7%	23,220	19.4%	23,910	3.0%
Incorporated	*183,830*	*233,760*	*27.2%*	*323,320*	*38.3%*	*507,860*	*57.1%*	*635,270*	*25.1%*	*758,730*	*19.4%*	801,850	5.7%
Unincorporated	*182,120*	*179,570*	*-1.4%*	*191,300*	*6.5%*	*159,630*	*-16.6%*	*164,140*	*2.8%*	*171,720*	*4.6%*	170,450	-0.7%
Fresno County	**365,950**	**413,330**	**12.9%**	**514,620**	**24.5%**	**667,490**	**29.7%**	**799,410**	**19.8%**	**930,450**	**16.4%**	**972,300**	**4.5%**

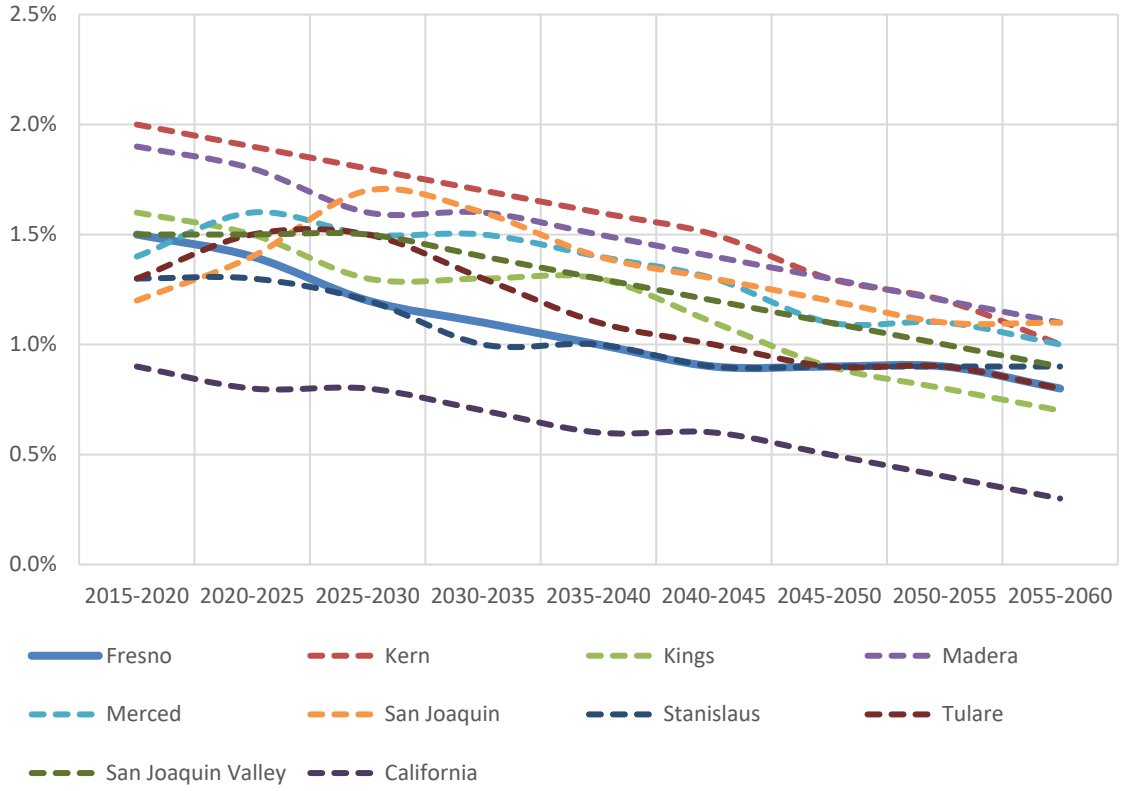
Source: California Department of Finance 1960-2015.

PROJECTED POPULATION GROWTH

SAN JOAQUIN VALLEY COUNTIES

Table 2-3 shows California Department of Finance (DOF) population forecasts from 2015 through 2060 for the eight counties in the San Joaquin Valley and for California overall. Fresno County's population is projected to grow by 606,200 over the 45-year period, an increase of 61.8 percent overall and an average annual rate of 1.1 percent. The growth rate is expected to be higher over the first few decades before tapering-off in the later decades. Fresno County's rate falls between the San Joaquin Valley (76.1 % overall and 1.4% annually) and California (32.8% overall and 0.6% annually). The rate of growth is similar for the Valley and for the state, with decreasing rates over time. Fresno County's growth rate through 2060 is expected to be lower than all other San Joaquin Valley counties, except Stanislaus County (59.0% overall and 1.0% annually). Figure 2-2 depicts the relative rates of growth.

FIGURE 2-2
FORECAST ANNUAL POPULATION GROWTH RATES
San Joaquin Valley Counties and California
2015-2060



Source: California Department of Finance, Population Estimates (2010, 2015) and Projections (2014).

TABLE 2-3
CALIFORNIA AND SAN JOAQUIN VALLEY COUNTY POPULATION FORECASTS (2015 TO 2060)

County/Region	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
Fresno	981,700	1,055,100	1,130,400	1,200,700	1,269,700	1,332,900	1,396,800	1,464,400	1,528,400	1,587,900
Avg Annual Change	-	1.5%	1.4%	1.2%	1.1%	1.0%	0.9%	0.9%	0.9%	0.8%
Kern	894,500	989,800	1,088,700	1,189,000	1,291,900	1,396,300	1,501,900	1,604,400	1,703,000	1,793,200
Avg Annual Change	-	2.0%	1.9%	1.8%	1.7%	1.6%	1.5%	1.3%	1.2%	1.0%
Kings	155,100	167,500	180,400	192,600	205,200	218,400	230,200	240,600	250,500	259,500
Avg Annual Change	-	1.6%	1.5%	1.3%	1.3%	1.3%	1.1%	0.9%	0.8%	0.7%
Madera	157,700	173,100	189,300	205,000	221,800	238,500	255,100	272,400	288,800	304,700
Avg Annual Change	-	1.9%	1.8%	1.6%	1.6%	1.5%	1.4%	1.3%	1.2%	1.1%
Merced	269,600	289,000	313,100	337,800	364,300	389,900	414,900	439,100	463,100	485,700
Avg Annual Change	-	1.4%	1.6%	1.5%	1.5%	1.4%	1.3%	1.1%	1.1%	1.0%
San Joaquin	723,500	766,600	822,800	893,400	966,900	1,037,800	1,104,900	1,171,400	1,239,300	1,306,300
Avg Annual Change	-	1.2%	1.4%	1.7%	1.6%	1.4%	1.3%	1.2%	1.1%	1.1%
Stanislaus	538,700	573,800	611,400	648,100	681,700	714,900	748,300	783,000	819,600	856,700
Avg Annual Change	-	1.3%	1.3%	1.2%	1.0%	1.0%	0.9%	0.9%	0.9%	0.9%
Tulare	467,200	498,600	537,000	578,900	616,500	650,800	683,500	715,700	747,900	779,800
Avg Annual Change	-	1.3%	1.5%	1.5%	1.3%	1.1%	1.0%	0.9%	0.9%	0.8%
San Joaquin Valley	4,188,000	4,513,500	4,873,100	5,245,500	5,618,000	5,979,500	6,335,600	6,691,000	7,040,600	7,373,800
Avg Annual Change	-	1.5%	1.5%	1.5%	1.4%	1.3%	1.2%	1.1%	1.0%	0.9%
California	38,897,000	40,619,300	42,373,300	44,085,600	45,747,600	47,233,200	48,574,100	49,779,400	50,817,800	51,663,800
Avg Annual Change	-	0.9%	0.8%	0.8%	0.7%	0.6%	0.6%	0.5%	0.4%	0.3%

Source: California Department of Finance, Population Estimates (2015) and Projections (2014).

FRESNO COUNTY

In May 2017, the Fresno Council of Governments (FCOG) completed growth projections through 2050 to assist with updating the Regional Transportation Plan (RTP) and the Sustainable Communities Strategy (SCS). The FCOG projections cover the spheres of influence (SOIs) of each of the county's 15 cities and the unincorporated area outside city SOIs. FCOG's overall county population projection is lower than both the existing DOF projections and the previous FCOG projections for 2050 (prepared in 2012). This is because those projections significantly overestimated recent population growth and exceeded the actual 2015 population reported by DOF by 9,400 and 38,000, respectively. To support the RTP/SCS process, FCOG disaggregated the countywide population projection to the city SOI level using a population cohort survival model that accounted for age- and race-adjusted birthrate and death rate factors to estimate the natural change in population, as well as in-migration and out-migration patterns. FCOG also accounted for each city's long-term development capacity based on adopted general plans.

Table 2-4 shows FCOG's RTP/SCS population projections in five-year increments from 2015 through 2050. It also shows the population distribution among cities and the unincorporated area as a percentage of the county total and the overall and annualized growth rates for each city and the unincorporated area. As noted above, the city-based projections are for SOIs, which includes areas that have not yet been annexed, but are expected to be prior to development. As a result, the city totals for 2015 shown in Table 2-4 are higher than those shown in Table 2-1 and Table 2-2, which account for population only within the current city limits of each city. In terms of the rate of population growth, the unincorporated area will lag far behind the overall city rate. Population growth from 2015 through 2050 will be 15.0 percent in the unincorporated area and 52.7 percent in the cities, and the annualized rate will be 0.4 percent in the unincorporated area and 1.2 percent in the cities.

As Table 2-4 shows, the FCOG projections suggest a continuation of the historic trend of an increasing percentage of population growth occurring in Fresno County's cities, compared with the unincorporated areas. Between 2015 and 2050, 96.9 percent of the population change is projected to occur in city SOIs. This will result in only 7.9 percent of the county's population residing in the unincorporated area by 2050.

TABLE 2-4 FRESNO COUNTY POPULATION FORECASTS (2015 TO 2050)								
Cities (within SOIs)	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
Clovis	114,770	126,850	136,350	145,050	153,490	161,580	169,220	177,210
Coalinga	16,530	17,350	18,170	18,920	19,650	20,350	21,010	21,700
Firebaugh	7,780	8,370	8,880	9,340	9,790	10,220	10,630	11,060
Fowler	6,580	7,240	7,890	8,490	9,070	9,630	10,160	10,710
Fresno	574,590	624,040	676,820	725,120	772,030	816,980	859,410	903,790
Huron	6,820	7,430	7,600	7,750	7,900	8,050	8,180	8,330
Kerman	14,880	15,900	16,930	17,860	18,770	19,650	20,470	21,330
Kingsburg	12,750	13,670	14,590	15,440	16,260	17,050	17,790	18,570
Mendota	11,210	11,920	12,630	13,280	13,920	14,520	15,090	15,690
Orange Cove	9,360	9,540	9,710	9,880	10,030	10,190	10,330	10,480
Parlier	15,100	15,870	16,640	17,350	18,040	18,700	19,330	19,980
Reedley	25,570	27,150	28,740	30,200	31,610	32,960	34,240	35,580
Sanger	26,310	27,860	29,410	30,840	32,220	33,540	34,790	36,100
San Joaquin	4,040	4,310	4,580	4,830	5,070	5,310	5,520	5,750
Selma	26,680	28,250	29,810	31,250	32,640	33,980	35,240	36,550
Subtotal Cities	**872,970**	**945,750**	**1,018,750**	**1,085,600**	**1,150,490**	**1,212,710**	**1,271,410**	**1,332,830**
Unincorporated	99,330	101,710	104,080	106,250	108,350	110,370	112,280	114,270
Total County	**972,300**	**1,047,460**	**1,122,830**	**1,191,850**	**1,258,840**	**1,323,080**	**1,383,690**	**1,447,100**

Cities (within SOIs)	**2015**	**2015 % of Total**	**2050**	**2050 % of Total**	**'15 to '50 Change**	**Change % of Total**	**'15 to '50 Percent Change**	**'15 to '50 Annual Rate**
Clovis	114,770	11.8%	177,210	12.2%	62,440	13.2%	54.4%	1.2%
Coalinga	16,530	1.7%	21,700	1.5%	5,170	1.1%	31.3%	0.8%
Firebaugh	7,780	0.8%	11,060	0.8%	3,280	0.7%	42.2%	1.0%
Fowler	6,580	0.7%	10,710	0.7%	4,130	0.9%	62.8%	1.4%
Fresno	574,590	59.1%	903,790	62.5%	329,200	69.3%	57.3%	1.3%
Huron	6,820	0.7%	8,330	0.6%	1,510	0.3%	22.1%	0.6%
Kerman	14,880	1.5%	21,330	1.5%	6,450	1.4%	43.3%	1.0%
Kingsburg	12,750	1.3%	18,570	1.3%	5,820	1.2%	45.6%	1.1%
Mendota	11,210	1.2%	15,690	1.1%	4,480	0.9%	40.0%	1.0%
Orange Cove	9,360	1.0%	10,480	0.7%	1,120	0.2%	12.0%	0.3%
Parlier	15,100	1.6%	19,980	1.4%	4,880	1.0%	32.3%	0.8%
Reedley	25,570	2.6%	35,580	2.5%	10,010	2.1%	39.1%	0.9%
Sanger	26,310	2.7%	36,100	2.5%	9,790	2.1%	37.2%	0.9%
San Joaquin	4,040	0.4%	5,750	0.4%	1,710	0.4%	42.3%	1.0%
Selma	26,680	2.7%	36,550	2.5%	9,870	2.1%	37.0%	0.9%
Subtotal Cities	**872,970**	**89.8%**	**1,332,830**	**92.1%**	**459,860**	**96.9%**	**52.7%**	**1.2%**
Unincorporated	99,330	10.2%	114,270	7.9%	14,940	3.1%	15.0%	0.4%
Total County	**972,300**	**100.0%**	**1,447,100**	**100.0%**	**474,800**	**100.0%**	**48.8%**	**1.1%**

Source: Fresno Council of Governments, 2050 Projections Final Report, May 4, 2017

POPULATION CHARACTERISTICS

The following sections describe the population characteristics of Fresno County. It includes identifying the distribution of age groups, including senior citizens and children, gender, and ethnicity.

AGE

Table 2- shows the distribution of age groups and compares them between the incorporated and unincorporated areas of the county, and to the total county population. Table 2-5 suggests that Fresno County has a significant portion of the population between the ages 18 and 64. The incorporated areas have a slightly higher percentage of the population in this age group, at 60.4 percent, than the unincorporated area, which has 58.9 percent.

TABLE 2-5
POPULATION BY AGE
Fresno County
2014

Age Group	Incorporated Cities		Unincorporated Areas		Fresno County Total	
	Number	Percent	Number	Percent	Number	Percent
0-4	68,029	8.7%	11,584	6.9%	79,613	8.4%
5-17	165,912	21.2%	32,302	19.3%	198,214	20.9%
18-64	471,738	60.4%	98,715	58.9%	570,453	60.1%
65 and Older	75,661	9.7%	24,903	14.9%	100,564	10.6%
Total	**781,340**	**100.0%**	**167,504**	**100.0%**	**948,844**	**100.0%**

Source: U.S. Census Bureau, 2014 American Community Survey.

Table 2-6 shows the population growth by age group for Fresno County and California, as defined in the 2010 and 2014 American Community Survey. Comparatively, Fresno County has a younger population than the rest of the state. Minors (under 18) account for 29.3 percent of the population, while seniors (age 65 and above) account for 10.6 percent of the population. There are proportionally more seniors and 18-64 year olds in California, 12.1 and 63. 7 percent respectively, than in Fresno County. The fastest growing age group in the county and the state from 2010 to 2014 are seniors, with an average annual growth rate of 2.9 percent and 3.3 percent respectively.

TABLE 2-6 POPULATION BY AGE Fresno County and California 2010-2014						
	Fresno County			California		
Age Group	2010	2014	AAGR	2010	2014	AAGR
0-4 Years						
Population	77,569	79,613	0.6%	2,545,065	2,521,299	-0.2%
Percent	8.5%	8.4%	--	7.0%	6.6%	--
5-17 Years						
Population	196,768	198,214	0.2%	6,780,264	6,690,989	-0.3%
Percent	21.7%	20.9%	--	18.5%	17.6%	--
18-64 Years						
Population	544,848	570,453	1.2%	30,031,629	24,236,725	-5.2%
Percent	60.0%	60.1%	--	82.0%	63.7%	--
65 and Older						
Population	89,645	100,564	2.9%	4,060,596	4,617,907	3.3%
Percent	9.9%	10.6%	--	11.1%	12.1%	--
Total	**908,830**	**948,844**	**1.1%**	**36,637,290**	**38,066,920**	**0.96%**

Table 2-7 provides a breakdown of the distribution of children in each of Fresno County's incorporated cities. For the purposes of this analysis, children are all persons less than 18 years of age. Collectively, approximately 30.6 percent of the population of the cities is under the age of 18. The unincorporated area of the county has a lower percentage of children (26.2 percent). Countywide, children are approximately 29.3 percent of the population.

TABLE 2-7 CHILDREN POPULATION (UNDER 18) Fresno County 2014			
Location	**Children Population**	**Total Population**	**Percent Children**
Clovis	27,897	98,815	28.2%
Coalinga	4,374	17,235	25.4%
Firebaugh	2,622	7,935	33.0%
Fowler	1,910	5,908	32.3%
Fresno	149,913	506,132	29.6%
Huron	2,570	6,777	37.9%
Kerman	5,080	14,110	36.0%
Kingsburg	3,058	11,582	26.4%
Mendota	3,803	11,360	33.5%
Orange Cove	3,608	9,473	38.1%
Parlier	5,221	14,750	35.4%
Reedley	7,483	24,858	30.1%
Sanger	7,582	24,587	30.8%
San Joaquin	1,704	4,010	42.5%
Selma	7,116	23,808	29.9%
Incorporated	233,941	781,340	*30.6%*
Unincorporated	43,886	167,504	*26.2%*
County Total	**277,827**	**948,844**	**29.3%**

Source: U.S. Census Bureau, 2014 American Community Survey.

Table 2-8 summarizes the distribution of children in the incorporated and unincorporated areas of Fresno County as well as California. For the purposes of this analysis, children are all persons less than 18 years of age. The percentage of children in Fresno County decreased from 30.2 percent in 2010 to 29.3 percent in 2014. Fresno County as a whole has higher percentage of children than the state average, 29.3 percent and 24.2 percent respectively. Fresno County's children population grew at an average annual rate of 0.3 percent while the statewide population of children declined at an average annual rate of -0.3 percent. The incorporated areas of the county, especially Coalinga, Fowler, and Kerman, the population of children grew rapidly over the period. Other incorporated cities saw some decline in the population of children, including Huron, Kingsburg, Mendota, Sanger, and Selma. The unincorporated county had a slight increase in the population of children between 2010 and 2014, an average annual growth rate of 0.4 percent.

TABLE 2-8
CHILDREN POPULATION AND CHANGE
Fresno County
2010 and 2014

Location	2010			2014			Average Annual Growth 2010-2014	
	Children Population	Total Population	Percent Children	Children Population	Total Population	Percent Children	Children Population	Total Population
Clovis	25,322	91,166	27.8%	27,897	98,815	28.2%	2.5%	2.0%
Coalinga	2,697	13,086	20.6%	4,374	17,235	25.4%	12.8%	7.1%
Firebaugh	2,578	7,373	35.0%	2,622	7,935	33.0%	0.4%	1.9%
Fowler	1,505	5,305	28.4%	1,910	5,908	32.3%	6.1%	2.7%
Fresno	148,011	484,008	30.6%	149,913	506,132	29.6%	0.3%	1.1%
Huron	3,040	6,691	45.4%	2,570	6,777	37.9%	-4.1%	0.3%
Kerman	4,064	12,708	32.0%	5,080	14,110	36.0%	5.7%	2.7%
Kingsburg	3,421	11,041	31.0%	3,058	11,582	26.4%	-2.8%	1.2%
Mendota	3,884	10,459	37.1%	3,803	11,360	33.5%	-0.5%	2.1%
Orange Cove	3,361	8,718	38.6%	3,608	9,473	38.1%	1.8%	2.1%
Parlier	5,003	13,928	35.9%	5,221	14,750	35.4%	1.1%	1.4%
Reedley	7,239	23,669	30.6%	7,483	24,858	30.1%	0.8%	1.2%
Sanger	7,606	23,370	32.5%	7,582	24,587	30.8%	-0.1%	1.3%
San Joaquin	1,643	3,927	41.8%	1,704	4,010	42.5%	0.9%	0.5%
Selma	7,724	22,617	34.2%	7,116	23,808	29.9%	-2.0%	1.3%
Incorporated	*227,098*	*738,066*	*30.8%*	*229,892*	*751,438*	*29.9%*	0.7%	1.4%
Unincorporated	*47,239*	*170,764*	*27.7%*	*47,935*	*197,406*	*26.2%*	-1.8%	-0.5%
County Total	**274,337**	**908,830**	**30.2%**	**277,827**	**948,844**	**29.3%**	**0.3%**	**1.1%**
California	**9,325,329**	**36,637,290**	**25.5%**	**9,212,288**	**38,066,920**	**24.2%**	**-0.3%**	**1.0%**

Source: U.S. Census Bureau, 2014 and 2010 American Community Survey.

Table 2-9 compares the senior populations in the incorporated and unincorporated areas of Fresno County. Seniors, for the purpose of this report, are all persons that have reached the standard retirement age of 65. Fresno County has a slightly smaller percentage of seniors (10.6 percent) than California (12.1 percent). Fresno County's senior population grew at an average annual rate of 2.9 percent, compared to 3.3 percent for California. Unincorporated Fresno County has a higher percentage of seniors (14.9 percent) than the whole of Fresno County (10.6 percent), and higher than any of the individual incorporated cities. Huron experienced the highest average annual growth in the senior population, at a rate of 27.3 percent. The incorporated cities of Kerman, Reedley, and San Joaquin were the only cities to experience a negative average annual growth rate among the senior population.

TABLE 2-9
SENIOR POPULATION (65 AND ABOVE)
Fresno County
2010 and 2014

Location	2010			2014			Average Annual Growth	
	65 and Older	Total Population	Percent Elderly	65 and Older	Total Population	Percent Elderly	Elderly Population (2010-2014)	Total Population (2010-2014)
Clovis	5,559	91,166	6.1%	11,232	98,815	11.4%	19.2%	2.03%
Coalinga	744	13,086	5.7%	1,268	17,235	7.4%	14.3%	7.13%
Firebaugh	436	7,373	5.9%	507	7,935	6.4%	3.8%	1.85%
Fowler	480	5,305	9.0%	554	5,908	9.4%	3.6%	2.73%
Fresno	43,399	484,008	9.0%	48,764	506,132	9.6%	3.0%	1.12%
Huron	161	6,691	2.4%	423	6,777	6.2%	27.3%	0.32%
Kerman	1,200	12,708	9.4%	1,008	14,110	7.1%	-4.3%	2.65%
Kingsburg	1,153	11,041	10.4%	1,567	11,582	13.5%	8.0%	1.20%
Mendota	436	10,459	4.2%	606	11,360	5.3%	8.6%	2.09%
Orange Cove	536	8,718	6.1%	620	9,473	6.5%	3.7%	2.10%
Parlier	793	13,928	5.7%	807	14,750	5.5%	0.4%	1.44%
Reedley	3,121	23,669	13.2%	2,661	24,858	10.7%	-3.9%	1.23%
Sanger	2,157	23,370	9.2%	2,713	24,587	11.0%	5.9%	1.28%
San Joaquin	219	3,927	5.6%	177	4,010	4.4%	-5.2%	0.52%
Selma	2,127	22,617	9.4%	2,754	23,808	11.6%	6.7%	1.29%
Incorporated	*66,514*	*738,066*	9.0%	*75,661*	781,340	9.7%	3.3%	1.43%
Unincorporated	*23,131*	*170,764*	13.5%	*24,903*	*167,504*	14.9%	1.9%	-0.48%
County Total	**89,645**	**908,830**	**9.9%**	**100,564**	**948,844**	**10.6%**	**2.9%**	**1.08%**
California	**4,060,596**	**36,637,290**	**11.1%**	**4,617,907**	**38,066,920**	**12.1%**	**3.3%**	**0.96%**

Source: U.S. Census Bureau, 2014 and 2010 American Community Survey.

GENDER

Table 2-10 compares gender composition of Fresno County, incorporated cities in Fresno County, unincorporated Fresno County, and California. The percentages of men and women in Fresno County are approximately equal, with slightly more women (50.1 percent) than men (49.9 percent). This is generally true for the incorporated and unincorporated areas; however, Coalinga has a higher proportion of men to women, with 56.3 percent men. The statewide gender makeup is similar to that of the county with 49.7 percent men and 50.3 percent women.

TABLE 2-10
POPULATION BY GENDER
Fresno County
2014

Cities	Male	Percent	Female	Percent
Clovis	47,821	48.4%	50,994	51.6%
Coalinga	9,705	56.3%	7,530	43.7%
Firebaugh	4,163	52.5%	3,772	47.5%
Fowler	3,020	51.1%	2,888	48.9%
Fresno	249,242	49.2%	256,890	50.8%
Huron	3,233	47.7%	3,544	52.3%
Kerman	6,988	49.5%	7,122	50.5%
Kingsburg	5,622	48.5%	5,960	51.5%
Mendota	5,961	52.5%	5,399	47.5%
Orange Cove	4,589	48.4%	4,884	51.6%
Parlier	7,497	50.8%	7,253	49.2%
Reedley	12,492	50.3%	12,366	49.7%
Sanger	11,759	47.8%	12,828	52.2%
San Joaquin	1,978	49.3%	2,032	50.7%
Selma	11,944	50.2%	11,864	49.8%
Incorporated	386,014	49.4%	395,326	50.6%
Unincorporated	87,413	52.2%	80,091	47.8%
County Total	**473,427**	**49.9%**	**475,417**	**50.1%**
California	**18,911,519**	**49.7%**	**19,155,401**	**50.3%**

Source: U.S. Census Bureau, 2014 American Community Survey.

ETHNICITY

According to the 2014 ACS, Hispanic (51.2 percent) and Caucasian (31.6 percent) are the largest ethnic groups in Fresno County. The remaining four ethnic group categories represent approximately 17 percent of the total population of the county, with African Americans at five percent, Asians 10 percent, and American Indians at less than one percent. Table 2-11 shows the ethnic composition in the county.

TABLE 2-11
TOTAL POPULATION BY ETHNICITY

Fresno County
2014

Ethnicity	Persons	Percent
White (Not Hispanic)	300,279	31.6%
Hispanic Origin (of any race)	485,914	51.2%
Asian (Not Hispanic)	90,465	9.5%
African American (Not Hispanic)	45,398	4.8%
American Indian (Not Hispanic)	4,635	0.5%
Some other race(s) (Not Hispanic)	22,153	2.3%

Source: U.S. Census Bureau, 2014 American Community Survey.

The percentage of the Hispanic population in the incorporated areas of the county is higher than in the unincorporated areas of the county, 53.3 and 46.1 percent respectively. Among the incorporated cities there is a wide range in the amount of population that is Hispanic. There are five cities with a population that is over 90 percent Hispanic: Mendota (98.0 percent); Huron (97. 9 percent); Parlier (96.9 percent); San Joaquin (95.6 percent); and Orange Cove (93.6 percent). Table 2-12 shows the distribution of Hispanic persons in the county and compares it to the countywide population.

TABLE 2-12 HISPANIC POPULATION Fresno County 2014			
Cities	**Hispanic Population**	**Total Population**	**Percent**
Clovis	27,273	98,815	27.6%
Coalinga	9,228	17,235	53.5%
Firebaugh	7,249	7,935	91.4%
Fowler	4,007	5,908	67.8%
Fresno	243,091	506,132	48.0%
Huron	6,634	6,777	97.9%
Kerman	10,743	14,110	76.1%
Kingsburg	4,771	11,582	41.2%
Mendota	11,132	11,360	98.0%
Orange Cove	8,868	9,473	93.6%
Parlier	14,262	14,750	96.7%
Reedley	19,177	24,858	77.1%
Sanger	20,077	24,587	81.7%
San Joaquin	3,833	4,010	95.6%
Selma	18,427	23,808	77.4%
Incorporated	408,772	781,340	52.3%
Unincorporated	77,142	167,504	46.1%
County Total	**485,914**	**948,844**	**51.2%**

Source: U.S. Census Bureau, 2014 American Community Survey.

Table 2-13 shows the historical and projected populations by race/ethnicity. Implicit in all of the population forecasts are changes that will make Fresno County's future population more Hispanic and older than it is today. The share of the Hispanic population is expected to increase about 67.4 percent between 2010 and 2040, while the White population is expected to drop from 32.8 percent in 2010 to 22.9 percent in 2040. Figure 2-3 illustrates the change in population among racial/ethnic groups in Fresno County, including significant growth of Fresno County's Hispanic population and also among Black, Asian, and Multiracial racial/ethnic groups.

FIGURE 2-3
HISTORIC AND PROJECTED POPULATION BY RACE/ETHNICITY

Fresno County
1990-2040

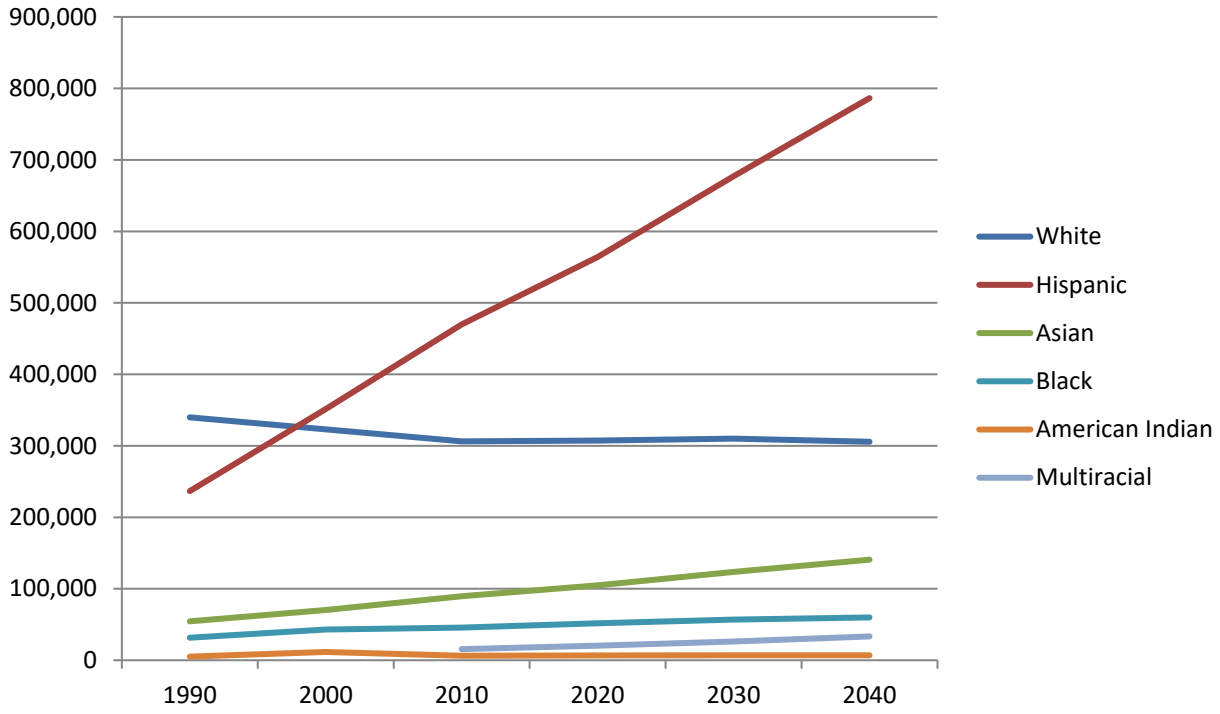


TABLE 2-13
POPULATION BY RACE/ETHNICITY
Fresno County
1990-2040

	Historical Population			Projected Population					Percent Change	
Race/Ethnicity	1990	% of Total 1990	2000	2010	2020	2030	2040	% of Total 2040	1990-2010	2010-2040
White	339,794	50.9%	323,102	306,216	307,439	310,124	305,659	22.9%	-9.9%	-0.2%
Hispanic	236,637	35.5%	351,435	469,789	564,098	677,096	786,406	59.0%	98.5%	67.4%
Asian	54,444	8.2%	70,356	88,459	103,567	122,208	139,154	10.4%	62.5%	57.3%
Pacific Islander[1]	--	--	--	1,108	1,251	1,395	1,537	0.1%	--	38.7%
Black	31,524	4.7%	42,945	45,671	51,602	56,827	59,888	4.5%	44.9%	31.1%
American Indian	5,091	0.8%	11,569	6,175	6,740	6,905	6,962	0.5%	21.3%	12.7%
Multiracial[2]	--	--	--	15,551	20,409	26,111	33,307	2.5%	--	114.2%
Total	**667,490**	**100.0%**	**799,407**	**932,969**	**1,055,106**	**1,200,666**	**1,332,913**	**100.0%**	**39.8%**	**42.9%**

[1]For 1990 and 2000 Pacific Islander is included in "Asian."

[2]Not designated in 1990 and 2000 Census.

Source: Department of Finance, 1990-2000 Historic, 2010-2060 Projections

PLACE OF BIRTH

Table 2-14 illustrates the place of birth for Fresno County and California residents. Fresno County closely mirrors California's population. Fresno County has a higher percentage (78.3 percent) of native-born residents than California (73.0 percent), while California has a higher percentage (17.3 percent) of residents born out-of-state than Fresno County (11.7 percent). Both California and Fresno County have a large number of foreign-born residents 27.0 (10,290,636) and 21.7 percent (206,325) respectively.

TABLE 2-14
PLACE OF BIRTH
2014

Place of Birth	Fresno County		California	
	Population	Percentage	Population	Percentage
Native	742,519	78.3%	27,776,284	73.0%
Born in state of residence	624,231	65.8%	20,706,782	54.4%
Born in other state in the U.S.	110,758	11.7%	6,600,428	17.3%
Born Outside the U.S.	7,530	0.8%	469,074	1.2%
Puerto Rico, U.S. Island areas, or born abroad to Americans	7530	0.8%	469,074	1.2%
Foreign born	206,325	21.7%	10,290,636	27.0%
Total:	948,844	100.0%	38,066,920	100.0%

Source: U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates

EDUCATIONAL ATTAINMENT

Figure 2-4 and Table 2-15 show that Fresno County residents have completed less formal education than residents of California as a whole, with 50.6 percent of the population in Fresno County attaining education levels beyond a high school diploma, compared to 60.8 percent of the population in California. There is also a significant difference in the proportional distribution of population with a bachelor's degree or higher between Fresno County and California, with 19.5 percent and 31.0 percent, respectively, as of 2014.

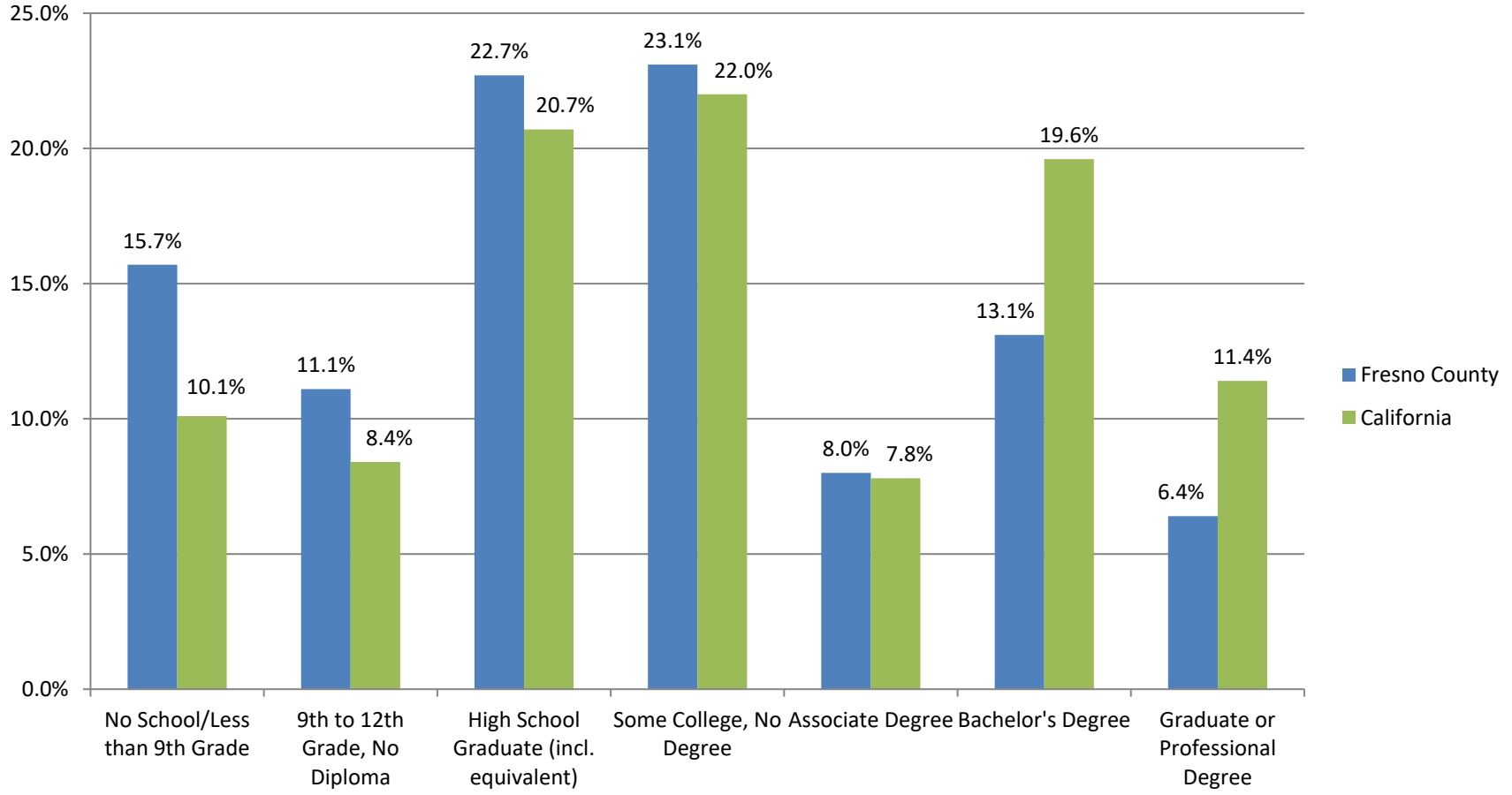
The percentage of the population with a bachelor's degree or higher in Fresno County has dropped slightly, from 19.7 percent in 2010 to 19.5 percent in 2014. The percentage distribution of residents with no school or less than a 9th grade education dropped from 16.1 percent in 2010 to 15.7 percent in 2014. The percentage distribution of the people with a 9th to 12th grade education without a high school diploma rose from 10.8 percent in 2010 to 11.1 percent in 2014. The percentage distribution of the population in Fresno County with a high school diploma has slightly dropped from 23.2 percent in 2010 to 22.7 percent in 2014. The percentage distribution of the county population with some college education, but no degree, has increased from 22.6 percent in 2010 to 23.1 percent in 2014. The percentage distribution of the Fresno County population with a graduate or professional degree increased slightly from 6.3 percent in 2010 to 6.4 percent in 2014. A resident workforce with higher levels of education is important to note when looking at the employment outlook. This information also identifies potential workforce assets for local businesses.

TABLE 2-15
EDUCATIONAL ATTAINMENT FOR POPULATION 25 YEARS AND OVER
Fresno County and California

	Fresno County				California			
Education Level Attained	**2010**	**Percent**	**2014**	**Percent**	**2010**	**Percent**	**2014**	**Percent**
No School/Less than 9th Grade	85,271	16.1%	88,230	15.7%	2,442,541	10.4%	2,523,377	10.1%
9th to 12th Grade, No Diploma	57,362	10.8%	62,471	11.1%	2,097,207	8.9%	2,079,609	8.4%
High School Graduate (incl. GED)	123,075	23.2%	127,519	22.7%	5,049,169	21.5%	5,153,257	20.7%
Some College, No Degree	119,414	22.6%	129,913	23.1%	5,043,595	21.5%	5,465,764	22.0%
Associate Degree	40,005	7.6%	44,962	8.0%	1,801,743	7.7%	1,934,950	7.8%
Bachelor's Degree	71,055	13.4%	73,566	13.1%	4,516,776	19.2%	4,870,524	19.6%
Graduate or Professional Degree	33,176	6.3%	36,047	6.4%	2,546,914	10.8%	2,838,385	11.4%
Total	**529,358**	**100.0%**	**562,708**	**100.0%**	**23,497,945**	**100.0%**	**24,865,866**	**100.0%**

Source: U.S. Census Bureau, 2010 and 2014 American Community Surveys.

FIGURE 2-4
EDUCATIONAL ATTAINMENT
Fresno County and California
2014



REGULATORY SETTING

There is no regulatory setting for this section.

KEY TERMS

The following key terms used in this chapter are defined as follows:

Census. Periodic official tally of the population with details as to age, sex, occupation, etc. U.S. Federal censuses have been taken every 10 years starting in 1790.

Estimate. An approximate judgment or calculation.

Projection. A prediction of future setting based on extrapolations from past observations.

SECTION 2.2 INDUSTRY AND EMPLOYMENT TRENDS

INTRODUCTION

This section explores how Fresno County's changing demographics, real estate markets, and job markets may affect future growth. It evaluates population and employment projections for the county and presents data analyses regarding the market forces and trends likely to affect the next 20 years of development and growth in Fresno County. Population and employment projections by planning area and industry sector will help guide future County land use decisions as well as provide direction for identifying potential strategies related to economic development and quality of life issues.

Since economic transactions and linkages frequently go beyond political-administrative boundaries, this analysis uses the eight-county San Joaquin Valley as a comparative region. This region includes the following counties: Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare Counties. To a lesser extent, the economy of California as a whole is also used as a benchmark. These points of reference provide a sense of scale and perspective, and serve to highlight the distinctive qualities of Fresno County's economic base.

FINDINGS

- As of December 2015, all counties in the San Joaquin Valley had unemployment rates significantly higher than that of the state average of 5.8 percent. Within the Valley, San Joaquin County had the lowest unemployment rate (8.8 percent) and Tulare County had the highest (12.2 percent), with Fresno County falling in between (10.3 percent).
- Fresno County farm employment represents 13.2 percent of the total countywide employment, compared to 2.5 percent of statewide employment. Total farm employment represents 13.7 percent of total employment in the San Joaquin Valley overall.
- Fresno County has slightly more service-related employment than the rest of the San Joaquin Valley. The total goods-producing employment (e.g., mining, construction, and manufacturing) represented 12.3 percent of the total nonfarm employment, which is just slightly lower than the state and also lower than that of the San Joaquin Valley, at 12.7 and 13.8 percent, respectively.
- Since 1990, the percentage of agriculture-related jobs Fresno County has continuously fallen. In 1990 agriculture-related jobs accounted for over 50 percent of the total jobs within the top ten raking industries. By 2000, there was a decrease, with agriculture-related jobs falling to approximately 47 percent of those total jobs. By 2013, the percentage had decreased to approximately 36 percent.
- The healthcare field has shown robust growth in Fresno County. Between 1990 and 2013, employment in ambulatory health services more than doubled, with an average annual growth rate of 3.4 percent. The hospital sector has also grown, with an annual growth rate of 1.4 percent from 1990 to 2013.
- Employment in the administrative and support services sector increased at an average annual rate of 3.9 percent between 1990 to 2013.
- Employment in support activities for agriculture and forestry and hospital sectors grew at 5.2 and 5.0 percent, respectively, between 2000 and 2013.

- Projected job growth in Fresno County through 2022 indicates that the fastest-growing sectors will be construction (3.8 percent annually), professional and business services (3.1 percent annually), and educational services, health care, and social assistance (3.2 percent annually).

EXISTING CONDITIONS

REGIONAL EMPLOYMENT TRENDS AND UNEMPLOYMENT

Fresno County makes up about 40 percent of employment in the southern San Joaquin Valley, the highest ranked in the area. When looking at total employment within the entire Valley, Fresno County ranked highest, with 33 percent of total employment, followed by Kern and San Joaquin counties with 30 and 23 percent, respectively. Though Fresno County has the highest percentage of jobs, the number of jobs grew much faster in other counties, at 1.6 percent average annual growth rate between 2010 and 2014, in comparison to Kern, Madera, and Merced counties which during the same period grew at rates of 3.0 percent, 2.3 percent and 2.0 percent, respectively.

While Fresno County's total employment was the highest among San Joaquin Valley counties, the unemployment rate fell in the middle. As Table 2-16 shows, San Joaquin County had the lowest unemployment rate in December 2015 (8.8 percent) and Tulare County had the highest (12.2 percent), with Fresno County at 10.3 percent, a rate very similar to other counties in the Valley. All counties in the San Joaquin Valley had unemployment rates significantly higher than that of the state average of 5.8 percent. Figure 2-5 shows the difference between the Fresno County and state unemployment rate between 1995 and 2015.

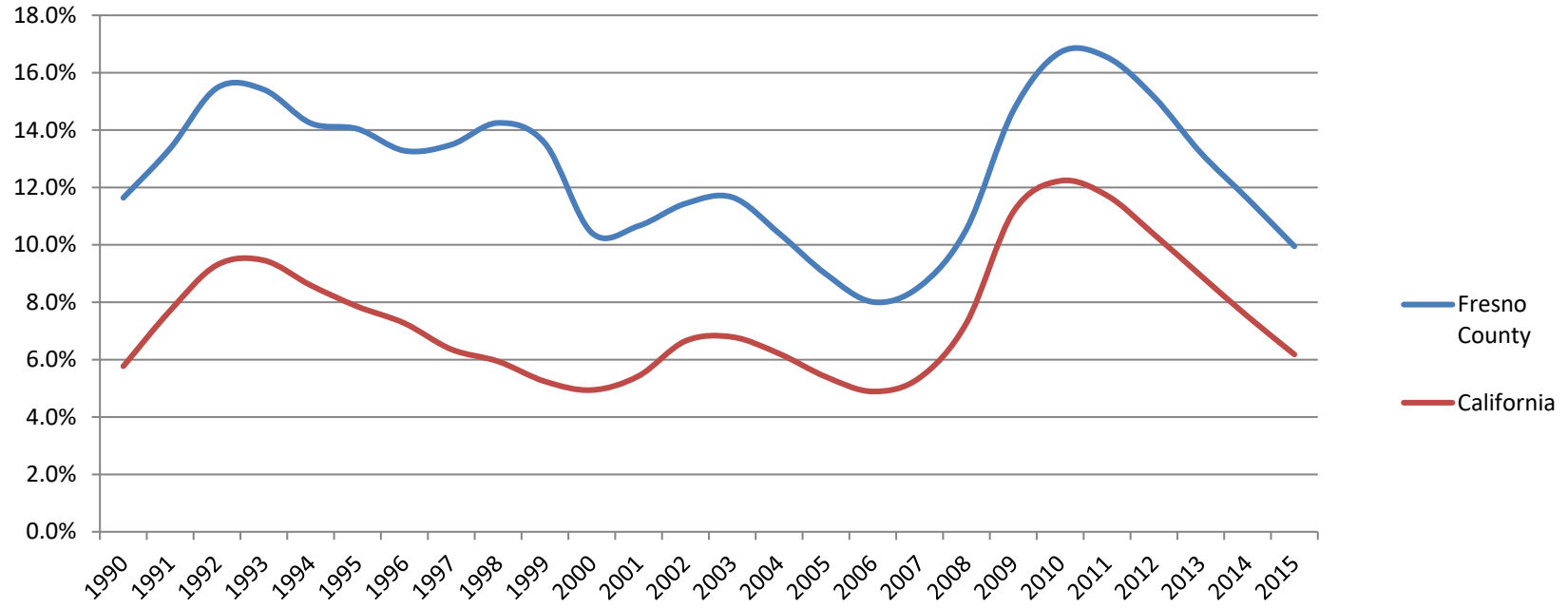
TABLE 2-16
EMPLOYMENT TRENDS
San Joaquin Valley and California

County/Region	Employment					Average Annual Growth 2010-2014	December 2014 Unemployment Rate	December 2015 Unemployment Rate
	1995	2000	2005	2010	2014			
San Joaquin Valley								
North Valley								
Madera	43,100	50,200	57,000	51,300	56,200	2.3%	11.4	10.1
Merced	68,600	81,700	88,900	92,900	100,600	2.0%	12.8	11.9
San Joaquin	210,500	241,100	261,300	259,800	278,000	1.7%	10.0	8.8
Stanislaus	162,400	191,700	207,600	201,800	214,400	1.5%	10.4	9.1
Subtotal North Valley	*484,600*	*564,700*	*614,800*	*605,800*	*649,200*	*1.7%*	--	--
South Valley								
Fresno	318,000	348,200	370,600	365,500	389,800	1.6%	11.2	10.3
Kern	233,400	269,600	299,400	313,700	353,600	3.0%	10.0	10.2
Kings	35,700	44,300	48,800	49,800	50,500	0.4%	11.7	10.9
Tulare	132,900	154,100	166,000	168,200	172,400	0.6%	13.0	12.2
Subtotal South Valley	*720,000*	*816,200*	*884,800*	*897,200*	*966,300*	*1.9%*	--	--
Total San Joaquin Valley	**888,600**	**1,014,600**	**1,099,600**	**1,115,200**	**1,189,200**	**1.6%**	**--**	**--**
California	**14,048,200**	**16,033,200**	**16,582,700**	**16,091,900**	**17,397,100**	**2.0%**	**7.1**	**5.8**

Source: California Employment Development Department (EDD)

FIGURE 2-5
UNEMPLOYMENT RATE

Fresno County and California
1990-2015



Source: California Employment Development Department.

JOB AND POPULATION BALANCE

To accommodate estimated population changes, employment should reflect similar trends as a population to maintain or achieve a healthy economy. Population growth without corresponding employment growth is an indication of market forces, for example, housing affordability or cost of living issues, or policy-related barriers to economic development. The projections show an imbalance between jobs and population growth in Fresno County; population growth is occurring without corresponding employment growth. This may also indicate a need of affordable housing for workers employed in high-cost locations or, conversely, lower-cost housing in an area where there are fewer jobs.

By identifying the ratio of population to jobs, the ability of Fresno County to provide employment opportunities to its residents can be compared to neighboring counties. A higher ratio shows a more unbalanced number of residents living in an area when compared to the number of jobs within the same area. Residents then must commute outside the area to work. Caltrans projections show that Fresno County would have a lower population-jobs ratio than all other counties in the San Joaquin Valley; however, Fresno County had a higher ratio than the State (see Table 2-17). Figure 2-6 also depicts the faster population growth in the County compared to employment. The steeper slope of the projected population shows that the number of residents is expected to increase faster than the number of jobs.

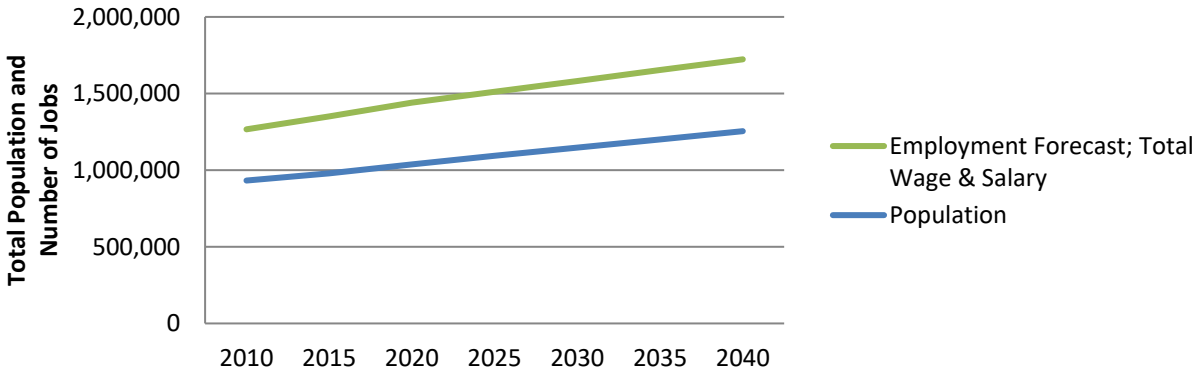
TABLE 2-17
POPULATION-JOBS RATIO
Fresno County and Selected Areas
2015-2040

Location	2015	2020	2025	2030	2035	2040
Fresno	2.63	2.58	2.62	2.64	2.65	2.68
Kern	2.71	2.73	2.83	2.90	2.94	2.98
Kings	3.38	3.30	3.31	3.33	3.34	3.33
Madera	3.09	3.00	3.00	2.98	2.97	2.96
Merced	3.44	3.48	3.59	3.68	3.75	3.81
San Joaquin	3.12	3.05	3.06	3.05	3.03	3.00
Stanislaus	2.96	2.88	2.90	2.91	2.91	2.89
Tulare	3.04	3.04	3.13	3.20	3.24	3.26
SJ Valley	2.89	2.86	2.91	2.95	2.96	2.98
California	2.36	2.32	2.33	2.31	2.29	2.27

Source: California Department of Transportation.

FIGURE 2-6
HISTORICAL AND PROJECTED POPULATION AND EMPLOYMENT TRENDS

Fresno County
2010-2040



Source: California Department of Transportation (Caltrans).

INDUSTRY SECTOR EMPLOYMENT

The economy of the San Joaquin Valley has historically been agricultural-based, particularly in crop production, food manufacturing, and other supportive industries. Fresno County has a similar agricultural composition.

Employment data typically excludes farm-related industries due to the seasonal and part-time nature of the work; however, including farm employment as part of total employment provides a clearer picture of the county's employment characteristics. Fresno County farm employment represents 13.2 percent of the total countywide employment, compared to 2.5 percent of statewide employment. The county's balance of farm and nonfarm employment is only slightly lower than that of the Valley as a whole, where total farm employment represents 13.7 percent of total employment.

Fresno County's economic base has slightly more service-related employment than the rest of the San Joaquin Valley. The total goods-producing employment (e.g., mining, construction, and manufacturing) represented 12.3 percent of the total nonfarm employment, which is just slightly lower than the state and also lower than that of the San Joaquin Valley, at 12.7 and 13.8 percent, respectively (see **Error! Reference source not found.**).

Fresno County's service sector represents 67.8 percent of the total nonfarm employment, and these jobs are well-represented in two categories:

- **Government**. Employees working for public agencies, including State, local, school districts, and special districts would be included in this category.
- **Educational and Health Services.** This category is well-represented by educational institutions, such as universities, as well as K-12 school districts and the hospitals and medical clinics in the county.

TABLE 2-18
ANNUAL EMPLOYMENT BY INDUSTRY[1]
California, Fresno County, San Joaquin Valley
2012

Sector/Industry	California		Fresno		San Joaquin Valley[2]	
	Avg Emp	% of Total	Avg Emp	% of Total	Avg Emp	% of Total
Total Farm	399,100	2.5%	48,900	13.2%	196,400	13.7%
Total Nonfarm	**14,706,300**	**90.3%**	**292,600**	**79.2%**	1,124,100	**78.6%**
Goods Producing						
Mining and Logging[3]	30,500	**0.2%**	300	**0.1%**	51,800	**4.6%**
Construction	589,900	**4.0%**	12,200	**4.2%**		
Manufacturing	1,252,100	**8.5%**	23,600	**8.1%**	103,300	**9.2%**
Subtotal Goods Producing	**1,872,500**	**12.7%**	**36,100**	**12.3%**	155,100	**13.8%**
Trade, Transportation, and Utilities						
Wholesale Trade	675,700	**4.6%**	12,800	**4.4%**	44,900	**4.0%**
Retail Trade	1,572,300	**10.7%**	33,800	**11.6%**	137,900	**12.3%**
Transportation, Warehousing, Utilities	487,300	**3.3%**	11,600	**4.0%**	52,500	**4.7%**
Subtotal Trade, Transportation, Utilities	2,735,300	**18.6%**	58,200	**19.9%**	235,300	**20.9%**
Service Providing						
Information	435,100	**3.0%**	3,800	**1.3%**	11,500	**1.0%**
Financial Activities	**773,500**	**5.3%**	**12,800**	**4.4%**	41,600	**3.7%**
Professional and Business Services	2,238,200	**15.2%**	28,000	**9.6%**	102,000	**9.1%**
Edu Serv (Priv), Health Care, Social Assistance	2,172,100	**14.8%**	51,100	**17.5%**	174,000	**15.5%**
Leisure and Hospitality	1,598,700	**10.9%**	28,000	**9.6%**	101,200	**9.0%**
Other (excluding Private Household Workers)	**504,700**	**3.4%**	**10,600**	**3.6%**	35,100	**3.1%**
Government	2,376,300	**16.2%**	64,100	**21.9%**	256100	**22.8%**
Subtotal Service Producing	10,098,600	**68.7%**	198,400	**67.8%**	721,500	**64.2%**
Total Employment	**16,281,000**	**100.0%**	**369,300**	**100.0%**	1,430,500	**100.0%**

[1]Employment reflects number of jobs. Data is not seasonally adjusted.

[2]Includes Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare Counties.

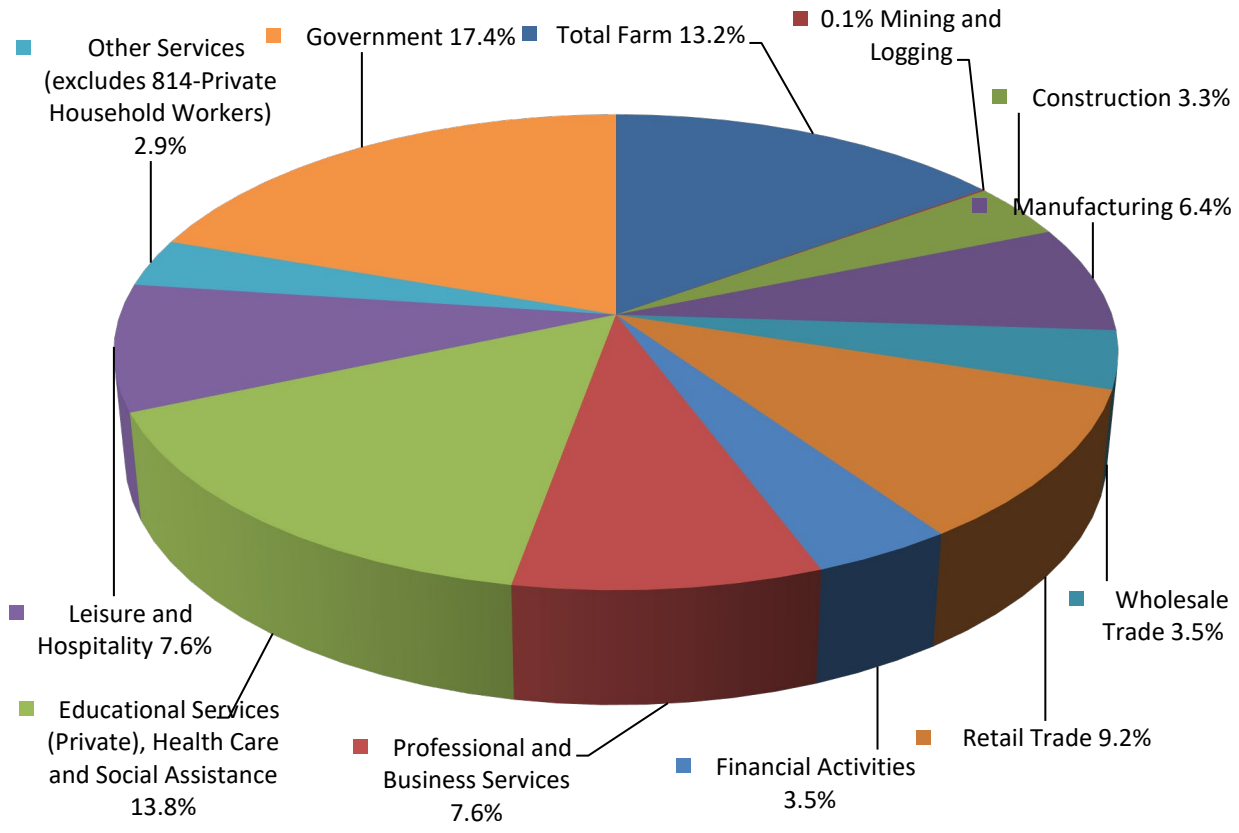
[3]The total number and percentage for San Joaquin Valley is higher than the actual estimate; numbers for Kern, Fresno, and San Joaquin County included construction numbers separately from Mining and Logging but the other five counties did not. Therefore the total for Mining and Logging jobs in San Joaquin Valley also includes construction jobs.

Source: California Employment Development Department, 2012.

Industry sectors that are not as active in the county include information, financial activities, and professional and business services; all categories which are below the Statewide employment. Figure 2-7 shows the total breakdown of County employment by sector.

FIGURE 2-7
EMPLOYMENT BY SECTOR

Fresno County
2012



AGRICULTURAL EMPLOYMENT

Fresno County has a strong agricultural base that is reflected by its numerous agricultural-related industries. Agricultural production and processing employs 17.4 percent of the County's workforce and has continued to serve as a top employer. Of total wage and salary jobs, Fresno County had a slightly higher percentage of agriculture employment than the San Joaquin Valley total, at 17.3 percent.

TABLE 2-19
AGRICULTURE EMPLOYMENT SPECIALIZATIONS
San Joaquin Valley and Fresno County
2013

NAICS Code	Industry	San Joaquin Valley[1]		Fresno County	
		Jobs	Percent of Total	Jobs	Percent of Total
111	Crop Production[2]	59,745	4.4%	16,127	4.6%
112	Animal Production	20,154	1.5%	2,171	0.6%
115	Support Activities for Agriculture and Forestry	106,263	7.8%	31,049	8.9%
311	Food Manufacturing	48,966	3.6%	11,434	3.3%
Subtotal Employment		*235,128*	17.3%	*60,781*	17.4%
Total Employment[3]		**1,357,400**	**100.0%**	**349,000**	**100.0%**

[1]San Joaquin Valley is defined here to include the following counties: Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare.

[2]Kings County did not have data for this category; therefore, the total for San Joaquin estimate may be lower than the actual number.

[3]Total Wage and Salary, December 2013.

Source: California Employment Development Department, 2013.

Agricultural industries have become less dominant in the county as an employment generator over the past 20 years. The top agricultural industries in the county are support activities for agriculture and forestry, crop production, and food manufacturing. These industries reflected the top 10 largest employers in the County between 1990 and 2013 (Table 2-22), making up over 50 percent of the employment of the top 10 industries in 1990. In 1990 and 2000 these three industries were in the top five industries, with support for agriculture and forestry and crop producing being the top two in 1990 and 2000; however, over the next 13 years there was a shift in employment in these categories. By 2013 support activities for agriculture and forestry remained the top ranking industry, but dropped from over 34,000 jobs in 2000 to just over 31,000 in 2013. During this same time period, crop production remained in the top ten largest industries, but fell in ranking from second to fifth, even though the number of crop production jobs increased from over 11,000 to over 16,000. Also during this same time period, food manufacturing fell in ranking from fifth to seventh, but experienced a slight increase in jobs from an estimate of 11,300 jobs in 2000 to 11,400 jobs in 2013.

Since 1990 the percentage of agriculture-related jobs within the top ten ranking industries has continuously fallen (see Table 2-22). In 1990 agriculture-related jobs accounted for over 50 percent of the total jobs within the top ten raking industries. By 2000, there was a decrease, with agriculture-related jobs falling to approximately 47 percent of those total jobs. By 2013, the percentage had decreased to approximately 36 percent.

Consequently, Fresno County has moved from a predominantly agricultural economy to a more diversified economy that includes a significant trade, transportation, education, health services, and business services economic base. Table 2-22 depicts the 10 largest industry sectors in the County for 1990, 2000 and 2013. Ambulatory health services, food services and drinking places, administrative and support services, and professional, scientific, and technical services showed strong growth from 1990 to 2013. The ambulatory health services and professional, scientific, and technical sectors have much higher wages than the agricultural-related industries, while the food services and drinking and administrative and support sectors generally have lower or as low wages as the agricultural-related industries.

The healthcare field has shown robust growth. Ambulatory health services have more than doubled since 1990, with an average annual growth rate of 3.4 percent from 1990 to 2013 and a 3.5 average annual growth rate from 2000 to 2013. The hospital sector has also grown, with an annual growth rate of 1.4 percent from 1990 to 2013 and a 1.3 percent average annual growth rate from 2000 to 2013.

Also of note is growth in the administrative and support services sector which increased at an average annual rate of 3.9 percent between 1990 to 2013 and an average annual rate of 3.0 between 2000 and 2013.

The support activities for agriculture and forestry and hospital sectors had the highest average annual growth rates in wages, at 5.2 and 5.0 percent, respectively, between 2000 and 2013. The industry with the next highest growth rate in wages was crop production, at 4.0 percent during the same time period.

PROJECTED EMPLOYMENT GROWTH

In May 2017, the Fresno Council of Governments (FCOG) published growth projections through 2050 to assist with updating the Regional Transportation Plan (RTP) and the Sustainable Communities Strategy (SCS). The FCOG projections address countywide employment growth by sector (Table 2-20), as well total employment disaggregated to city spheres of influence (SOIs) and the unincorporated area outside city SOIs (Table 2-21).

Table 2-21 shows FCOG's RTP/SCS employment projections in five-year increments from 2015 through 2050. It also shows the distribution among cities and the unincorporated area as a percentage of the county total and the overall and annualized growth rates for each city and the unincorporated area. In terms of the rate of employment growth, the unincorporated area will lag far behind the overall city rate. Employment growth from 2015 through 2050 will be 14.8 percent in the unincorporated area and 41.2 percent in the cities, and the annualized rate will be 0.4 percent in the unincorporated area and 1.0 percent in the cities.

As Table 2-21 shows, the FCOG projections indicate an increasing percentage of employment growth occurring in Fresno County's cities, compared with the unincorporated areas. Between 2015 and 2050, 91.8 percent of the employment growth is projected to occur in city SOIs. This will result in 16.8 percent of the county's employees being located in the unincorporated area by 2050.

TABLE 2-20
FRESNO COUNTY EMPLOYMENT PROJECTIONS BY SECTOR (2015 TO 2050)

Job Sector	2015	2020	2025	2030	2035	2040	2045	2050	CAGR
Agriculture	47,500	48,000	48,500	49,400	50,000	50,400	50,500	50,400	0.2%
Mfg./Mining	26,000	26,000	26,000	26,000	26,000	25,800	25,600	25,400	-0.1%
Other Industrial	52,200	56,500	60,400	64,000	67,700	71,300	74,300	77,500	1.1%
Retail	36,100	40,750	42,200	44,400	46,900	49,000	50,800	52,800	1.1%
Office	46,000	49,600	53,600	56,400	58,800	61,200	63,300	65,200	1.0%
Education	40,000	42,200	44,500	47,100	51,000	53,600	55,800	58,200	1.1%
Health Services	59,000	66,300	74,500	78,100	81,500	85,000	88,600	92,300	1.3%
Hospitality	32,700	35,400	38,500	41,400	43,500	44,800	45,700	46,500	1.0%
Government	32,900	33,300	33,800	34,400	34,700	35,700	36,700	38,000	0.4%
Total	**372,400**	**398,050**	**422,000**	**441,200**	**460,100**	**476,800**	**491,300**	**506,300**	**0.9%**
Total CAGR		1.3%	1.2%	0.9%	0.8%	0.7%	0.6%	0.6%	

Source: Fresno Council of Governments, 2050 Projections Final Report, May 4, 2017

TABLE 2-21
FRESNO COUNTY EMPLOYMENT PROJECTIONS BY JURISDICTION (2015 TO 2050)

Cities (within SOIs)	2015	2020	2025	2030	2035	2040	2045	2050
Clovis	32,400	34,680	36,640	38,560	40,460	42,270	43,970	45,740
Coalinga	2,820	3,050	3,160	3,290	3,420	3,540	3,660	3,780
Firebaugh	1,140	1,260	1,280	1,340	1,410	1,470	1,520	1,580
Fowler	2,400	2,770	2,890	3,030	3,170	3,300	3,420	3,540
Fresno	231,560	248,500	266,150	278,370	291,470	303,650	314,730	326,450
Huron	730	840	840	860	870	890	900	910
Kerman	2,680	2,890	3,130	3,290	3,440	3,580	3,720	3,860
Kingsburg	3,540	3,970	4,190	4,390	4,600	4,790	4,960	5,150
Mendota	890	900	910	950	990	1,030	1,060	1,100
Orange Cove	540	630	660	670	690	700	710	720
Parlier	2,230	2,380	2,530	2,630	2,720	2,810	2,890	2,970
Reedley	5,770	7,010	7,570	7,940	8,310	8,660	8,990	9,330
Sanger	5,490	5,940	6,260	6,520	6,770	7,010	7,220	7,450
San Joaquin	500	520	560	590	610	640	660	690
Selma	5,550	6,330	6,620	6,920	7,210	7,460	7,680	7,910
Subtotal Cities	**298,240**	**321,670**	**343,390**	**359,350**	**376,140**	**391,800**	**406,090**	**421,180**
Unincorporated	74,160	76,380	78,610	81,840	83,970	85,010	85,210	85,120
Total County	**372,400**	**398,050**	**422,000**	**441,190**	**460,110**	**476,810**	**491,300**	**506,300**

Cities (within SOIs)	2015	2015 % of Total	2050	2050 % of Total	'15 to '50 Change	Change % of Total	'15 to '50 Percent Change	'15 to '50 Annual Rate
Clovis	32,400	8.7%	45,740	9.0%	13,340	10.0%	41.2%	1.0%
Coalinga	2,820	0.8%	3,780	0.7%	960	0.7%	34.0%	0.8%
Firebaugh	1,140	0.3%	1,580	0.3%	440	0.3%	38.6%	0.9%
Fowler	2,400	0.6%	3,540	0.7%	1,140	0.9%	47.5%	1.1%
Fresno	231,560	62.2%	326,450	64.5%	94,890	70.9%	41.0%	1.0%
Huron	730	0.2%	910	0.2%	180	0.1%	24.7%	0.6%
Kerman	2,680	0.7%	3,860	0.8%	1,180	0.9%	44.0%	1.0%
Kingsburg	3,540	1.0%	5,150	1.0%	1,610	1.2%	45.5%	1.1%
Mendota	890	0.2%	1,100	0.2%	210	0.2%	23.6%	0.6%
Orange Cove	540	0.1%	720	0.1%	180	0.1%	33.3%	0.8%
Parlier	2,230	0.6%	2,970	0.6%	740	0.6%	33.2%	0.8%
Reedley	5,770	1.5%	9,330	1.8%	3,560	2.7%	61.7%	1.4%
Sanger	5,490	1.5%	7,450	1.5%	1,960	1.5%	35.7%	0.9%
San Joaquin	500	0.1%	690	0.1%	190	0.1%	38.0%	0.9%
Selma	5,550	1.5%	7,910	1.6%	2,360	1.8%	42.5%	1.0%
Subtotal Cities	**298,240**	**80.1%**	**421,180**	**83.2%**	**122,940**	**91.8%**	**41.2%**	**1.0%**
Unincorporated	74,160	19.9%	85,120	16.8%	10,960	8.2%	14.8%	0.4%
Total County	**372,400**	**100.0%**	**506,300**	**100.0%**	**133,900**	**100.0%**	**36.0%**	**0.9%**

Source: Fresno Council of Governments, 2050 Projections Final Report, May 4, 2017

LABOR FORCE

The labor supply, the skills of the labor supply, and the dynamics of the labor market are major factors that influence the performance and growth of the local economy. Labor supply characteristics, including occupational category, employment level, and training are some of the key factors that site-selection experts consider in choosing new locations for companies.

In relation to the state and neighboring counties, Fresno County has a lower population to jobs ratio, which may indicate a lack of available jobs to match the skills of the county's residents or reflect the number of residents who work outside the county but who can afford the cost of housing in the County as opposed to the higher cost housing in the Bay Area (see Table 2-17 for population to job ratios). Education levels are also lower; approximately 20 percent of the county population with a bachelor's degree or higher, compared to over 30 percent of the statewide population.

A comparison can be made between the proportion of Fresno County with higher education, measured at 20 percent, and with employment estimates of high-wage management and professional occupations (see Table 2-22). Employment estimates from the California Employment Development Department show that 16.2 percent of the employed population was in positions that made an average salary of $65,000 or more, within the occupational categories of management occupations, business and financial operations occupations, and healthcare practitioners and technical occupations. The occupational category of education, training, and library occupations makes up 8.9 percent of the employed population in Fresno County; this occupational category can also require a higher education and pays the next highest average salary of $57,000.

TABLE 2-22
ANNUAL EMPLOYMENT AND AVERAGE PAY FOR THE 10 LARGEST INDUSTRIES[1]
Fresno County
1990, 2000, 2013

	1990			2000			2013		
Rank	Industry	Annual Employment	Average Annual Pay	Industry	Annual Employment	Average Annual Pay	Industry	Annual Employment	Average Annual Pay
1	Support Activities for Agriculture and Forestry	24,206	10,554	Support Activities for Agriculture and Forestry	34,536	12,052	Support Activities for Agriculture and Forestry	31,049	23,323
2	Crop Production	26,529	10,199	Crop Production	19,666	16,205	Food Services and Drinking Places	23,599	14,912
3	Food Services and Drinking Places	14,650	7,876	Food Services and Drinking Places	19,266	10,001	Administrative and Support Services	17,692	24,258
4	Administrative and Support Services	7,298	13,626	Administrative and Support Services	12,112	18,608	Social Assistance	16,363	14,076
5	Food Manufacturing	9,563	23,009	Food Manufacturing	11,277	26,728	Crop Production	16,127	27,122
6	Ambulatory Health Care Services	7,265	35,460	Ambulatory Health Care Services	10,006	44,429	Ambulatory Health Care Services	15,662	66,037
7	Specialty Trade Contractors	9,484	22,606	Specialty Trade Contractors	9,886	29,562	Food Manufacturing	11,434	35,807
8	Hospitals	7,849	24,394	Hospitals	9,065	34,226	Hospitals	10,788	64,279
9	Professional, Scientific, and Technical Services	7,253	28,514	Professional, Scientific, and Technical Services	8,067	36,760	Professional, Scientific, and Technical Services	10,095	53,132
10	General Merch Stores	6,376	12,941	General Merch Stores	6,164	15,772	Specialty Trade Contractors	8,546	44,689
Total Jobs		**120,473**			**140,045**			**161,355**	
Total Ag-Related Jobs[2]		60,298			65,479			58,610	
Percent Ag-Related Jobs		50.1%			46.8%			36.3%	

[1]Size of industries is measured by number of employees.

[2]Ag-related industries include: Support Activities for Agriculture and Forestry, Crop Production, and Food Manufacturing.

Source: California Employment Development Department, Regional Economies Series.

SUPPLY AND DEMAND

Of the County's total population in 2010, 73.7 percent were of working age (16 years and older). The County has had a lower percentage of its population that is of working age than the Statewide population and populations of adjacent counties (Kings and Madera Counties), except for that of Tulare County. Furthermore, according to the 2014 ACS, the County experienced the second to highest employment-to-population ratio among neighboring counties, at 66.8 percent, only lower than Tulare County, at 67.9 percent. Fresno County and neighboring counties all had lower employment-to-population ratios than that of the state, at 71.5 percent.

The County had a slightly lower unemployment rate than neighboring counties, and equal to that of Madera County in 2015. Fresno Counties and neighboring counties had higher unemployment rates than the state.

TABLE 2-23
LABOR FORCE INDICATORS
Fresno County and Selected Areas

Area	Percentage of Population of Working Age[1]	Employment to Population Ratio[2]	Unemployment Rate[3]
Fresno County	73.7%	66.8%	10.5%
Kings County	75.2%	60.7%	11.3%
Madera County	74.9%	59.6%	10.5%
Tulare County	71.1%	67.9%	11.7%
California	78.1%	71.5%	6.2%

[1]Population of working age 16 years and older.

[2]Represents the proportion of the employed population and the population of working age 16 to 64.

[3]Unemployment rate represents the number of unemployed people as a percentage of the civilian labor force.

Source: U.S. Census 2010; U.S. American Community Survey, 2010-2014; California Employment Development Department 2016.

SKILLED WORKFORCE

The presence of a skilled workforce provides more diverse employment and business recruitment opportunities, as well as greater opportunities for increased income and economic mobility of the County's residents. As noted earlier, in Table 2-15, the county in 2014 had a higher proportion of people aged 25 and over without a high school diploma than the State. The share of people with bachelor's (13.4 percent) or graduate or professional degrees (6.3 percent) in the County was less than the 19.6 and 11.4 percent share statewide, respectively. From 2010 to 2014 the distribution of the County's population obtaining higher levels of education did increase for some college or more, except at the bachelor's degree level it fell slightly from 13.4 percent to 13.1 percent.

INCOME AND WAGES

Apart from being an indicator of the availability of certain job skills in the workforce, the distribution of employment by occupation has implications for overall earnings. A higher concentration of workers in high-wage occupations translates to higher average earnings per worker. Average wages by occupation in the County in 2015 show that management, healthcare practitioners and technical occupations were the highest paid, while farming, food preparation and serving-related occupations were the lowest (Table 2-24), earning less than a third of the management, healthcare practitioner and technical occupations.

Projected job growth in Fresno County through 2022 indicates that the fastest-growing sectors will be construction (3.8 percent annually), professional and business services (3.1 percent annually), and educational services, health care, and social assistance (3.2 percent annually).

The median household income for the County has increased over the past nine years, from about $41,900 in 2005 to $43,400 in 2014, a slight average annual increase of 0.4 percent. In comparison with other San Joaquin Valley counties, the median household income is neither notably high nor low (Table 2-25). The County falls significantly short of the state median household income ($61,900), as well as other counties in the San Joaquin Valley ($52,000 in San Joaquin County and $51,000 in Stanislaus County).

TABLE 2-24
AVERAGE WAGES BY OCCUPATIONAL CATEGORY
Fresno County

Occupational Category	2010-2011		2012-2013		2014-2015	
	Employment Estimates[1]	Average Annual Wages[2]	Employment Estimates[1]	Average Annual Wages[2]	Employment Estimates[1]	Average Annual Wages[2]
Management Occupations	12,500	$96,851	13,010	$97,215	14,320	$98,284
Business and Financial Operations	13,680	$58,497	12,510	$62,907	12,870	$65,026
Education, Training, and Library	25,920	$54,222	26,020	$55,193	24,710	$56,985
Healthcare Practitioners and Technical	15,200	$85,794	15,790	$84,546	17,630	$88,479
Food Preparation and Serving-Related	25,170	$21,103	25,740	$21,323	27,370	$22,910
Sales and Related Occupations	28,430	$34,192	29,250	$33,966	31,880	$35,532
Office and Administrative Support	52,630	$34,133	50,500	$35,012	52,100	$35,985
Farming, Fishing, and Forestry	26,270	$19,441	28,740	$19,350	29,470	$19,974
Construction and Extraction	10,040	$46,418	8,300	$45,919	10,920	$44,396
Installation, Maintenance, and Repair	11,600	$42,308	12,340	$43,151	12,090	$44,215
Production	18,000	$29,446	16,610	$31,231	16,690	$30,922
Transportation and Material Moving	21,390	$31,639	24,560	$30,225	26,120	$30,978

[1]Employment represents the estimate of total wage and salary employment in an occupation across the industries in which it was surveyed. In some cases, employment estimates could not be provided.

[2]Average annual wage is the estimated total wages for an occupation divided by its weighted survey employment. For some occupations workers may not work full-time all year-round, thus, the annual wage estimates may not represent the actual annual pay received by the employee.

Source: California Employment Development Department, Occupational Employment Statistics and Wages, 2011, 2013, 2015.

TABLE 2-25 MEDIAN HOUSEHOLD INCOME[1] Fresno County, San Joaquin Valley Counties[2], and California					
Area	**2005**	**2010**	**2014**	**Absolute Change (2005-2014)**	**Average Annual Change (2005-2014)**
Fresno County	**$41,899**	**$45,221**	**$43,423**	**$1,524**	**0.4%**
Kern County	$40,224	$45,524	$47,644	$7,420	1.9%
Kings County	$41,095	$44,609	$42,784	$1,689	0.4%
Madera County	$46,787	$48,268	$42,433	($4,354)	-1.1%
Merced County	$40,281	$42,449	$44,084	$3,803	1.0%
San Joaquin County	$49,391	$50,011	$51,659	$2,268	0.5%
Stanislaus County	$47,525	$48,044	$51,084	$3,559	0.8%
Tulare County	$38,722	$43,397	$42,611	$3,889	1.1%
California	**$53,629**	**$57,708**	**$61,933**	**$8,304**	**1.6%**

[1]2005 median income shown in 2005 inflation-adjusted dollars; 2010 median income shown in 2010 inflation-adjusted dollars; 2014 median income shown in 2014 inflation-adjusted dollars.
[2]San Joaquin Valley includes Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare Counties.

Source: 2005, 2010, 2014 American Community Survey.

TRENDS IN AGRICULTURE

Fresno County is the third largest agricultural county in the state. With a total gross production value of over $7 billion, agriculture is Fresno County's largest industry and agricultural jobs represent 17.4 percent of total employment (see Table 2-22). The county leads the State in tomato processing, accounting for over 30 percent of the State's total production, and chickens, with nearly 50 percent of the State's total production, followed by Merced with 26 percent. Fresno County ranks second in production of almonds, with 17 percent of the State's total production, grapes, with 13 percent, cattle and calves, with 13 percent, pistachios, with 23 percent, and tangerines, with 32 percent.

The ten leading crops ranked by their dollar value in 2014 is shown in Table 2-26. The Fresno County Agricultural Commissioner reports an annual summary of the acreage, production, and value of Fresno County's agricultural products (measuring gross return to the producer and not a reflection of actual net profit). The report provides a summary of crops broken into the following categories: field crops, seed crops, vegetable crops, fruit and nut crops, nursery products, livestock and poultry, livestock and poultry products, apiary products and pollination services, and industrial crops. Some fluctuations in profit between 2013 and 2014 are explained, often caused by a change in price or acres harvested. Figure 2-8 shows the breakdown of the total value of the 2014 crop year by crop category.

The 2014 Fresno County Agricultural Commissioner's Report also includes a comparison of gross production value of crops by year. Table 2-27 shows the breakdown provided by the Agricultural Commissioner's Report in terms of percentage of total profits each category accounts for by year. This

breakdown shows that field crops and fruit and nut crops experienced the most dramatic change in the percentage of total profits between 1994 and 2014. From 1994 to 2014, field crops dropped from 21.4 to 4.6 percent of the total gross production value of crops harvested, and during that same period fruit and nut crops grew from 32.2 to 49.0 percent.

FIELD CROPS

The list of field crops includes the following: barley, dry beans, corn (grain and silage), cotton (upland lint, upland seed, pima lint, and pima seed), hay (alfalfa, wheat, and other), pasture and range (rangeland grazing), wheat (grain and silage), and other. Field crops saw a decrease of 36.2 percent of total gross returns, due to decreases in harvested average of cotton, wheat, and dry beans. Of all 2014 crops, field crops accounted for 4.6 percent of the total value (see Table 2-27).

SEED CROPS

The category of seed crops includes the following crops: alfalfa, cotton, vegetable (including arugula, endive, garbanzo, lettuce, misc. vegetable, mustard, and onion), and other. Seed crops saw a decrease of 14.7 percent in total gross returns between 2013 and 2014. Cotton ranked tenth out of the ten leading crops in Fresno County in 2014, despite there being no certified cotton seed in 2014. Of all 2014 crops, seed crops accounted for 0.5 percent of the total value (see Table 2-27).

VEGETABLE CROPS

The vegetable crop category includes: asparagus, bell peppers, broccoli, sweet corn, eggplant, garlic, lettuce, melons, onions, oriental vegetables, squash, tomatoes, and other. The total value for all vegetable crops increased slightly from 2013 to 2014. Throughout the category there was a mixture of fluctuation in profit among the crops; tomatoes and garlic, two of the county's top ten leading crops (see Table 2-26), both experienced and increase in profit over the same time period. Of all 2014 crops, vegetable crops accounted for 16.9 percent of the total value (see Table 2-27).

FRUIT AND NUT CROPS

The fruit and nut crop category includes: almonds, apples, apricots, blueberries, cherries, lemons, oranges, other citrus, grapes, kiwifruit, nectarines, peaches, pears, persimmons, pistachios, plums, pluots, pomegranates, walnuts, and other. The total gross value of fruit and nut crops increased by 13.2 percent between 2013 and 2014. From this category of crops, almonds, grapes, pistachios, and peaches are all in the top ten leading crops in Fresno County. Almonds and grapes have ranked first and second, respectively, among Fresno County ten leading crops in both 2013 and 2014. In 2014 the total gross value of almonds surpassed a billion dollars for the second time. Table grapes experienced an increased yield, but the decrease in yield of raisin and wine grapes resulted in a decrease of 13.3 percent in the overall value of grapes. Pistachios remained ranked seventh in both 2013 and 2014. Peaches climbed in ranking from eleventh to ninth place from 2013 to 2014 (see Table 2-26). Of all 2014 crops, fruit and nut crops accounted for 49.0 percent of the total value (see Table 2-27).

NURSERY PRODUCTS

Nursery products, including herbaceous ornamentals, ornamental trees and shrubs, and other, saw an increase in value between 2013 and 2014, with all categories experiencing over 100 percent increase in

value, except ornamental trees and shrubs which decreased in total value by 55 percent. Of all 2014 crops, nursery products accounted for 0. 9 percent of the total value (see Table 2-27).

LIVESTOCK AND POULTRY

The livestock and poultry category includes cattle and calves for beef and dairy, hogs and pigs, sheep and lambs, and poultry and other miscellaneous (including chickens, ducks, fish, game birds, geese, goats, insects, turkeys, and vermiculture). The livestock and poultry category experienced a 31.5 percent increase in total gross returns between 2013 and 2014. Poultry was ranked third in the 2014 top ten leading crops of Fresno County, and the category of cattle and calves was ranked fifth (See Table 2-12). Cattle and calves, hogs and pigs, and sheep and lambs all increased in value between 2013 and 2014 due to increased selling prices despite a slight decrease in the overall number of head marketed. Of all 2014 crops, livestock and poultry accounted for 17.9 percent of the total value (see Table 2-27).

LIVESTOCK AND POULTRY PRODUCTS

The livestock and poultry products category includes manure, milk, wool, and eggs. Milk, manure, and wool production all saw increases in total value, while eggs decreased; overall, livestock and poultry products experienced an increase of 22 percent in total value between 2013 and 2014. Of all 2014 crops, livestock and poultry products accounted for 0.1 percent of the total value (see Table 2-27).

APIARY PRODUCTS AND POLLINATION SERVICES

Apiary products, including honey and beeswax, and pollination services, went up in gross returns between 2013 and 2014. Honey experienced an increase in production and a 25 percent increase in value. Beeswax experienced a decrease in production and a 26 percent decrease in value. Pollination services decreased in value for all crop categories except tree fruit and nut crops, which experienced an 18 percent increase. Of all 2014 crops, apiary products and pollination services accounted for 1.0 percent of the total value (see Table 2-27).

INDUSTRIAL PRODUCTS

Industrial crops include timber, firewood, and other. From 2013 to 2014 industrial crops saw a 107 percent increase in value. The largest increase was in the other category, which includes compost, ground cover, limbs, mulch, pomace, poles, posts, and wood chips, which experienced a 283 percent increase from 2013 to 2014. Of all 2014 crops, industrial products accounted for 0.1 percent of the total value (see Table 2-27).

TABLE 2-26 10 LEADING CROPS Fresno County						
Crop	2014 Rank	2014 Dollar Value	Percent of Total Top 10 2014	2013 Rank	2004 Rank	1994 Rank
Almonds	1	$1,302,866,000	23.7%	1	4	6
Grapes	2	$905,099,000	16.4%	2	1	2
Poultry*	3	$654,760,000	11.9%	3	7	3
Milk	4	$636,534,000	11.6%	4	5	4
Cattle & Calves	5	$574,875,000	10.4%	6	6	5
Tomatoes	6	$524,349,000	9.5%	5	3	3
Pistachios	7	$378,286,000	6.9%	7	17	35
Garlic	8	$202,710,000	3.7%	8	12	8
Peach	9	$193,114,000	3.5%	11	10	12
Cotton	10	$135,089,000	2.5%	9	2	1

Note: *Includes Turkeys, Chickens, Ducks, Geese & Gamebirds.

Source: The 2014 Fresno County Agricultural Crop and Livestock Report, Agricultural Commissioner.

TABLE 2-27
COMPARISON OF GROSS PRODUCTION VALUE OF CROPS HARVESTED

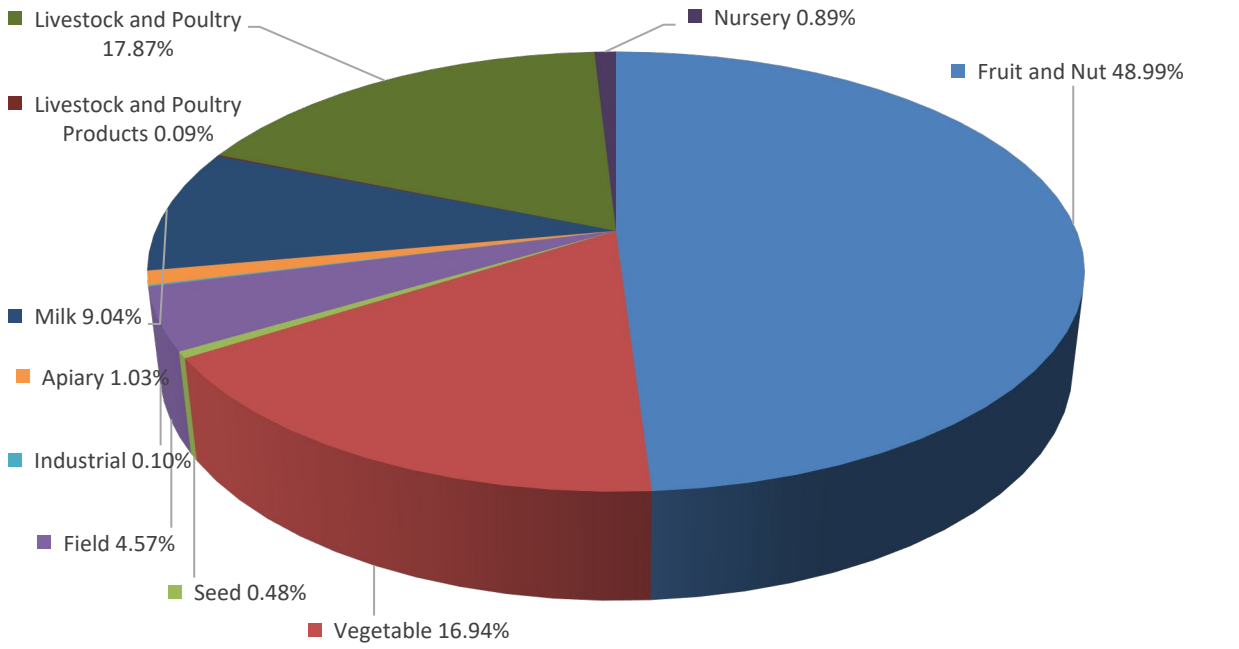
Fresno County

Crops	1994 Percent of Total	2004 Percent of Total	2011 Percent of Total	2012 Percent of Total	2013 Percent of Total	2014 Percent of Total	Percent Change 1994-2014	Percent Change 2004-2014
Field	21.4%	12.9%	9.9%	8.7%	6.4%	4.6%	-16.9%	-8.4%
Seed	1.2%	0.4%	0.5%	0.7%	0.6%	0.5%	-0.8%	0.1%
Vegetable	21.9%	25.8%	22.4%	17.5%	18.4%	16.9%	-4.9%	-8.9%
Fruit and Nut	32.2%	39.2%	43.9%	47.2%	49.8%	49.0%	16.8%	9.8%
Nursery	0.8%	0.8%	0.5%	0.6%	0.7%	0.9%	0.1%	0.1%
Livestock (et al.)	21.8%	20.5%	21.8%	24.4%	23.0%	28.3%	6.5%	7.8%
Apiary	0.2%	0.3%	0.8%	0.9%	1.0%	1.0%	0.8%	0.8%
Industrial	0.5%	0.1%	0.1%	0.1%	0.1%	0.1%	-0.4%	0.0%

Source: The 2014 Fresno County Agricultural Crop and Livestock Report, Agricultural Commissioner.

FIGURE 2-8
TOTAL VALUE FOR 2014 CROP YEAR

Fresno County



Source: 2014 Fresno County Agricultural Commissioner's Report.

TRENDS IN DISTRIBUTION OF AGRICULTURAL LAND

The county has approximately 1.8 million acres of agricultural land, with pastures taking up almost half of the total acreage. Of the total crop acres cultivated, field crops (including pastures and range) account for over 56 percent, followed by fruit and nut crops at just over 30 percent, vegetable crops at 13 percent, seed crops at 1.2 percent, and nursery crops accounting for less than 0.1 percent (Table 2-28).

TABLE 2-28 DISTRIBUTION OF AGRICULTURAL LAND Fresno County				
Commodities	**2005**	**2010**	**2014**	**Percent Growth 2005-2015**
Total Acres Harvested[1]	**2,094,498**	**1,984,432**	**1,783,713**	**-14.8%**
Field Crops	**469,190**	**343,130**	**205,590**	**-56.2%**
Percentage of Total Acres	*22.4%*	*17.3%*	*11.5%*	--
Pasture and Range	**917,900**	**887,300**	**840,000**	**-8.5%**
Percentage of Total Acres	*43.8%*	*44.7%*	*47.1%*	--
Vegetable Crops	**273,850**	**258,220**	**187,940**	**-31.4%**
Percentage of Total Acres	*13.1%*	*13.0%*	*10.5%*	--
Fruit and Nut Crops	**421,591**	**471,037**	**537,352**	**27.5%**
Percentage of Total Acres	*20.1%*	*23.7%*	*30.1%*	--
Seed Crops	**10,580**	**24,030**	**12,120**	**14.6%**
Percentage of Total Acres	*0.5%*	*1.2%*	*0.7%*	--
Nursery Products	**1,387**	**715**	**711**	**-48.7%**
Percentage of Total Acres	*less than 0.1%*	*less than 0.1%*	*less than 0.1%*	--

[1]Total Acres Harvested is drastically different from the acreage identified in the Land Use Chapter designation of Agricultural/Resource Land due to the inclusion of open space land.

Source: Fresno County Agricultural Commissioner Report 2014, 2010, 2005.

Trends over the last nine years show increase in cultivated acreage for fruit and nut crops and seed crops, but all other categories of crops experienced a decline in acreage between 2005 and 2014 (shown in Table 2-28). In comparison with the gross production value of crops harvested, shown in Table 2-27, there is a correlation between the increase in acreage of fruit and nut crops and increase in profits.

CHAPTER 3: LAND USE

INTRODUCTION

This chapter provides an overview of land use planning within Fresno County. It includes an overview of planning within the county boundaries, for both unincorporated and incorporated areas, with an emphasis on existing uses and anticipated development patterns and trends. This chapter is organized into the following sections:

- Planning Boundaries (Section 3.1)
- Annexation and Development Trends (Section 3.2)
- Existing Land Uses (Section 3.3)
- General Plan Sections and Community Plans (Section 3.4)
- Existing Zoning (Section 3.5)
- Development Potential (Section 3.6)
- City General Plans (Section 3.7)
- Surrounding County General Plans (Section 3.8)
- Regional, State, and Federal Plans and Policies (Section 3.9)
- Military Institutions and Installations (Section 3.10)
- Disadvantaged Unincorporated Communities (Section 3.11)
- Environmental Justice (Section 3.12)

SECTION 3.1 PLANNING BOUNDARIES

INTRODUCTION

This section describes both the geographic borders and boundaries of both incorporated and unincorporated areas within Fresno County. These boundaries overall influence the development patterns and future growth in Fresno County.

FINDINGS

- Fresno County covers approximately 3,833,600 acres or about 6,000 square miles. Out of that total acreage, 114,700 is part of an incorporated city, while the remaining is unincorporated.

EXISTING SETTING

Fresno County is one of the eight counties that collectively form the greater San Joaquin Valley. Fresno County covers approximately 6,000 square miles stretching from the Coast Range mountains to the west to the Sierra Nevada Range to the east. The County has a population of over 970,000, with 60 percent living in the Fresno/Clovis metropolitan area, which serves as the County seat and the cultural and

economic center. Fresno County is primarily an agriculturally based county with farming and agricultural processing and production serving as the economic driver.

Fresno County was established in 1856 and began as a cluster of small agricultural centers that grew gradually until the end of the century as the agricultural industry took shape. The City of Fresno incorporated in 1885 as the county's first city and established itself as the economic focal point of the county. Beginning in the early 1900s, other cities began to incorporate and the population continued to expand. The county's population grew rapidly in the mid-1900s, leading to the outward growth of the Fresno/Clovis metropolitan area, while many outlying communities remained small with little to no growth in population. This has led to a drastic difference in the sizes of the communities that make up Fresno County.

Beyond the geographical and political boundaries, Fresno County has internal planning boundaries as well. The County has 15 incorporated cities, with the City of Fresno being the largest at 575,000 and the City of San Joaquin being the smallest with a population of just over 4,000 as of 2015. The incorporated cities are important to the planning boundaries within the County since they are main driver of development encroaching into unincorporated lands. The Fresno County Local Agency Formation Commission, otherwise known as LAFCo, that evaluates and approves requests for changes in organization (e.g., annexations, incorporations, consolidations). In doing so, LAFCo must consider a wide range of land use and growth factors, although it does not have any land use regulatory authority. LAFCo's role in Fresno County land use planning is discussed further in Section 3.3, Annexation and Development Trends.

For the purpose of the General Plan, the County has been divided into five geographic subareas to provide greater context. This is because Fresno County is diverse not only in the size of its communities, but also the vast geographic area it covers. These five subareas do not have any policy status but are useful for general orientation and for framing and describing geographically unique planning issues. Figure 3-1 shows the five subareas.

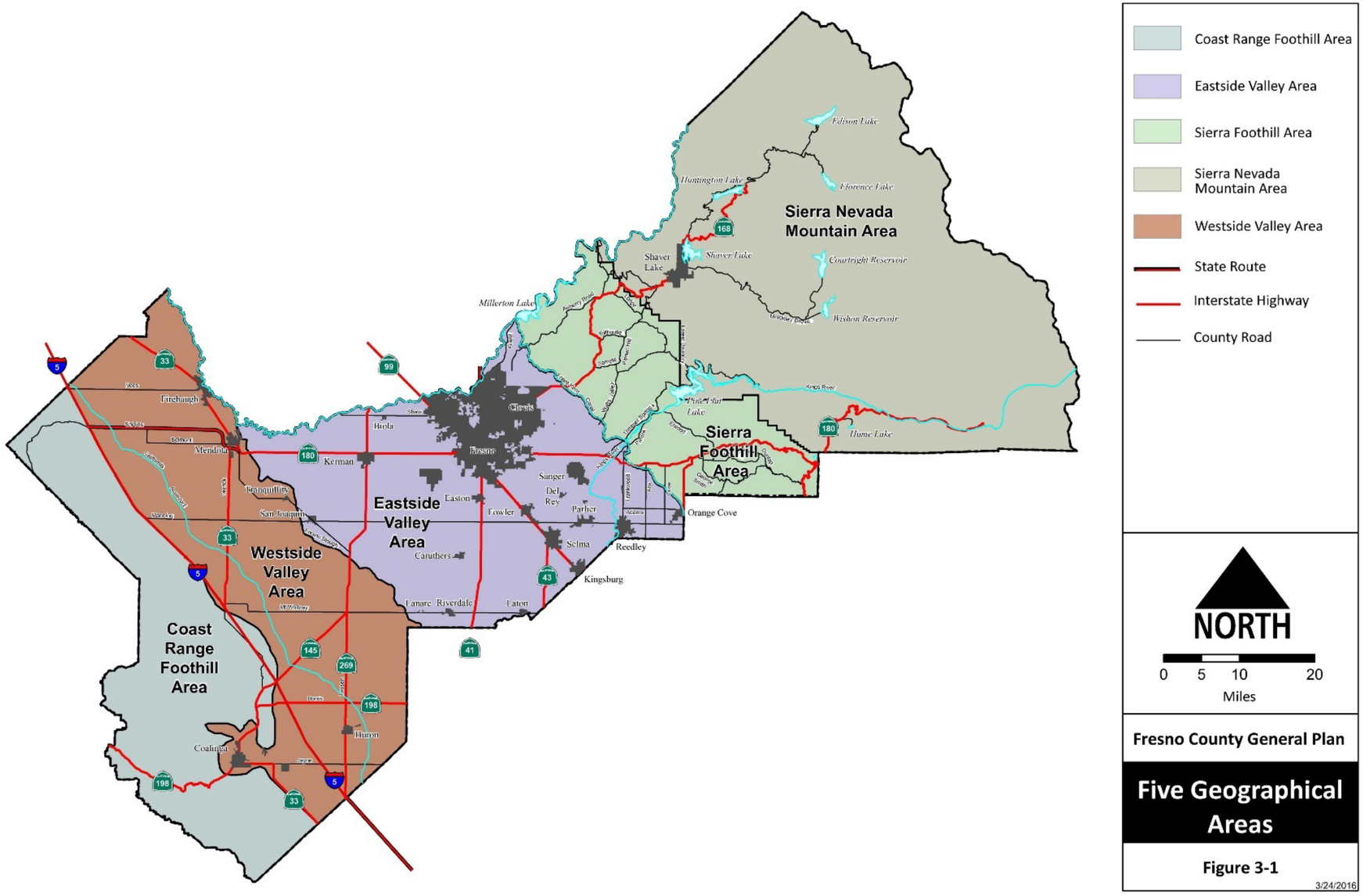
COAST RANGE FOOTHILLS AREA

The Coast Range Foothills geographic area is located in the far west side of Fresno County, sharing its borders with Monterey and San Benito counties. This area primarily lies west of the Interstate 5 corridor and is mainly agriculture, grazing land, and open space. The Coast Range Foothills Area does not include any incorporated cities.

WESTSIDE VALLEY AREA

The Westside Valley geographic area is located adjacent to Interstate 5 and stretches east to Fresno Slough. The land use in this area is primarily agriculture with open space. The Westside Valley encompasses four incorporated cities: Coalinga, Huron, Mendota, and Firebaugh.

FIGURE 3-1 GEOGRAPHIC SUBAREAS



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EASTSIDE VALLEY AREA

The Eastside Valley geographic area is the most populated area within Fresno County. It is located in the center of county in between the Westside Valley and Sierra Foothills. The land uses in the Eastside Valley vary from agriculture, rural residential, residential, industrial, and some commercial. Many of the more intensive land uses are located on the fringe of the 11 incorporated cities: Fresno, Clovis, Sanger, San Joaquin, Fowler, Selma, Kerman, Parlier, Kingsburg, Orange Cove, and Reedley. In addition to the incorporated communities, there are a number of unincorporated communities, including Friant, Laton, Riverdale, Easton, Caruthers, Lanare, Tranquillity, Del Rey, and Biola.

SIERRA FOOTHILL AREA

The Sierra Foothills geographic area is located east of the Fresno/Clovis metropolitan area adjacent to the Friant-Kern Canal. To the east of the Sierra Foothill area is primarily state and federal owned lands, which are part of multiple National Parks and National Forests. The dominant land use is agriculture and open space. There are numerous pockets of rural residential and a few unincorporated communities. The Sierra Foothills area does not include any incorporated cities.

SIERRA NEVADA MOUNTAIN AREA

The Sierra Nevada Mountain geographic area is located in the far eastern part of Fresno County, adjacent to Inyo and Mono counties. The mountainous terrain in this area limits development, although there are a few rural residential areas located in the far northwest portion. The predominant land use type in this area is open space, primarily state and federally owned lands. There are no incorporated cities in this area.

REGULATORY SETTING

- **California Government Code Section 65300, et seq.** Section 65300, et seq., of the Government Code requires a general plan to address the geographic territory of the local jurisdiction and any other territory outside its boundaries that bears relation to the planning of the jurisdiction. The jurisdiction may exercise their own judgment in determining what areas outside of its boundaries to include in the Planning Area. The State of California General Plan Guidelines states that the Planning Area for a city should include (at minimum) all land within the city limits and all land within the city's Sphere of Influence.
- **Cortese Knox Hertzberg Local Government Reorganization Act of 2000 (CKH Act).** The Cortese Knox Hertzberg Local Government Reorganization Act established procedures for local agency changes of organization, including city incorporation, annexation to a city or special district, and consolidation of cities or special districts (Section 56000, et seq.) While LAFCo does not have any direct land use authority, the CKH Act assigns LAFCos a significant role in planning issues by requiring them to consider a wide range of land use and growth factors when they consider proposed boundary changes. California Government Code Section 56001 specifically states that "the logical formation and determination of local agency boundaries is an important factor in promoting orderly development and in balancing that development with sometimes competing State interests of discouraging urban sprawl, preserving open space and prime agricultural lands, [and] efficiently extending government services."

KEY TERMS

City Limits. A political boundary that defines land that has been incorporated into a city.

County Line. A political boundary that defines land that lies within the boundaries of a county.

General Plan. A compendium of a city's or county's policies regarding its long-term development, in the form of maps and accompanying text. The general plan is a legal document required of each local agency by the State of California Government Code Section 65301 and adopted by the City Council or Board of Supervisors. In California, the general plan has seven mandatory elements (circulation, conservation, housing, land use, noise, open space, safety and seismic safety) and may include any number of optional elements (such as air quality, economic development, hazardous waste, and parks and recreation). The general plan may also be called a "city plan", "comprehensive plan", or "master plan."

Local Agency Formation Commission (LAFCo). A commission within each county that reviews and evaluates all proposals for formation of special districts, incorporation of cities, annexation to special districts or cities, consolidation of districts, and merger of districts with cities. Each county's LAFCo is empowered to approve, disapprove, or conditionally approve such proposals. This commission is made up of two members of the County Board of Supervisors, two City Council members, and a public member.

Municipal Service Review (MSR). A study conducted for a city, county, or special district that examines all public service needs for the area and recommends action to promote the efficient provision of public services.

Planning Area. The area directly addressed by a jurisdiction's general plan. The Planning Area generally encompasses all incorporated and unincorporated territory that bears a relationship to the long-term planning of the jurisdiction. Planning Areas for counties typically encompass all unincorporated areas in the County and the incorporated areas that are within the surrounding city and/or town Sphere of Influence.

Sphere of Influence (SOI). The probable physical boundaries and service area of a local agency, as determined by the Local Agency Formation Commission (LAFCo).

Unincorporated Areas. Areas of the county outside of the city limits over which Merced County has direct land use jurisdiction.

Urban Growth Boundary. A boundary, sometimes parcel-specific, located to mark the outer limit beyond which urban development will not be allowed. It has the aim of discouraging urban sprawl by containing urban development during a specified period, and its location may be modified over time.

SECTION 3.2 ANNEXATION AND DEVELOPMENT TRENDS

INTRODUCTION

This section provides an overview to the annexation history in Fresno County with a focus on the period since adoption of the existing General Plan in 2000.

FINDINGS

- Since 1963 Fresno County has received approximately 2,440 requests to LAFCo, either to annex new land for development, create a special district, incorporate a community, or other boundary changes.
- The City of Fresno on average has the largest number of annexations. The Southeast Development Area (SEDA) and the Southwest Specific Plan, both noted as New Growth Areas (NGA) in the City's General Plan, will continue development up the City's Sphere of Influence (SOI) boundary, requiring further annexation of prime agricultural land.
- The City of Fresno has identified future growth opportunities within its sphere of influence that will accommodate approximately 250,000 new residents through 2035, while Clovis anticipates an increase of approximately 180,000 residents through 2035. Together, Fresno and Clovis would account for approximately 88 percent of the forecast population growth (492,000) in Fresno County through 2035. This would leave the county's 13 other cities and the unincorporated area to accommodate the balance of projected population growth, which amounts to just over 60,000 through 2035.

EXISTING SETTING

ANNEXATION HISTORY

Fresno County has had an extensive annexation history, with records of application dating back to 1963. On average the Fresno Local Agency Formation Commission (LAFCo) has received 24 applications a year, with 382 applications filed since 2000. Of those applications, 94 percent were approved with conditions. The numerous agencies, districts, and individuals that have applied through LAFCo over the past 50 years have varied. Due to the substantial amount of information, this section focuses on development trends that have led or will lead to future annexations. A majority of the growth and development in the county, including a high percentage of the annexations and boundary changes, have taken place around the large urban centers that are situated along Highway 99, including Fresno and Clovis. The rapid growth in population starting in the early 1970s in Fresno County spurred the movement to expand cities to accommodate the growth. This led to the urban centers encroaching into prime farmland used for agricultural purposes. The City of Fresno, out of the 15 incorporated cities has the most annexations, which date back to the city's incorporation in 1885. The growth in the City of Fresno has led to the trend of expanding development outward from the downtown core to the northeast, northwest, and southeast. The annexation trend in the City of Fresno can be seen in Figure 3-2.

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PLANNING AND DEVELOPMENT TRENDS

As described above and in Chapter 2, Demographics and Employments, a vast majority of the growth and development in Fresno County has occurred in the county's cities, and most of that has occurred in the Fresno/Clovis Metropolitan Area. Between 2000 and 2015, 96.4 percent of the county's population growth occurred in incorporated areas and 74.3 percent of the county's growth has occurred in Fresno and Clovis. This reflects a longstanding trend in the county of deferring to the cities to accommodate growth.

As discussed in Section 3.8, City General Plans, the City of Fresno General Plan (adopted 2014) has identified future growth opportunities within the City's sphere of influence that will accommodate approximately 250,000 new residents through 2035. Similarly, the City of Clovis General Plan (adopted 2014) anticipates an increase of approximately 180,000 residents through 2035. Together, Fresno and Clovis would account for approximately 88 percent of the forecast population growth (492,000) in Fresno County through 2035 (see discussion of population projections in Section 2.2, Population and Household Trends, of Chapter 2 of this Background Report). This would leave the county's 13 other cities and the unincorporated area to accommodate the balance of projected population growth, which amounts to just over 60,000 through 2035.

REGULATORY SETTING

Cortese Knox Hertzberg Local Government Reorganization Act of 2000 (CKH Act). The Cortese Knox Hertzberg Local Government Reorganization Act established procedures for local agency changes of organization, including city incorporation, annexation to a city or special district, and consolidation of cities or special districts (Section 56000, et seq.) While LAFCo does not have any direct land use authority, the CKH Act assigns LAFCos a significant role in planning issues by requiring them to consider a wide range of land use and growth factors when they consider proposed boundary changes. California Government Code Section 56001 specifically states that "the logical formation and determination of local agency boundaries is an important factor in promoting orderly development and in balancing that development with sometimes competing State interests of discouraging urban sprawl, preserving open space and prime agricultural lands, [and] efficiently extending government services."

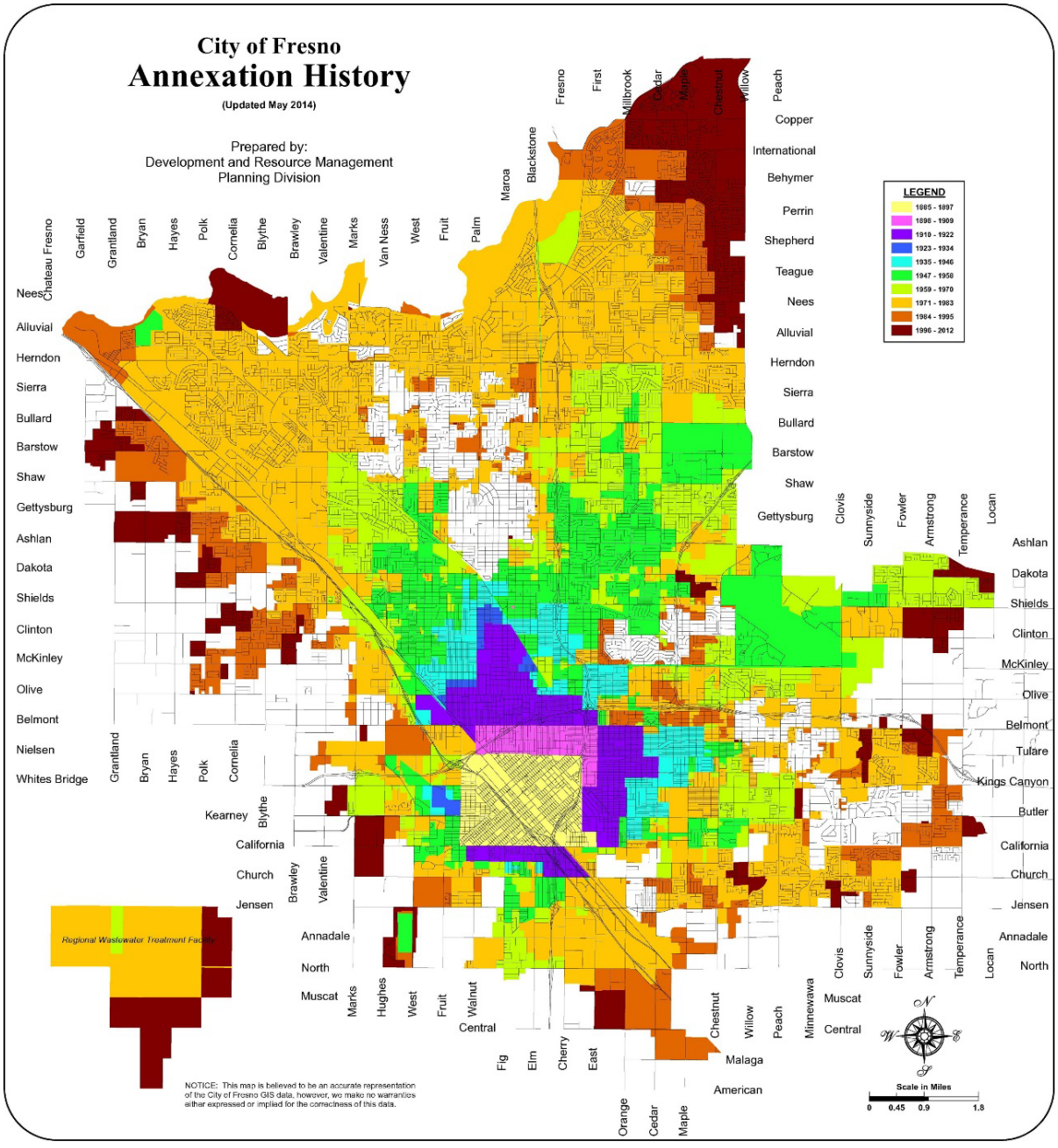
KEY TERMS

Annexation. The inclusion, attachment, or addition of territory to a city or county.

Local Agency Formation Commission (LAFCo). A commission within each county that reviews and evaluates all proposals for formation of special districts, incorporation of cities, annexation to special districts or cities, consolidation of districts, and merger of districts with cities. Each county's LAFCo is empowered to approve, disapprove, or conditionally approve such proposals. This commission is made up of two members of the County Board of Supervisors, two City Council members, and a public member.

Sphere of Influence (SOI). The probable physical boundaries and service area of a local agency, as determined by the Local Agency Formation Commission (LAFCo).

FIGURE 3-2 ANNEXATION HISTORY, CITY OF FRESNO



Source: City of Fresno, http://www.fresno.gov/Government/DepartmentDirectory/DARM/DevelopmentServices/MapGallery.htm, 2016.

SECTION 3.3 EXISTING LAND USES

INTRODUCTION

This section describes and outlines existing land uses and their distribution within unincorporated Fresno County. The mapping of different types of land uses is based on Fresno County's geographic information system (GIS) to. Data analysis on existing land uses is based on the Fresno County Assessor Database and Fresno County's GIS.

FINDINGS

- The most common existing land use classification in Fresno County is agriculture. Roughly 50 percent of the land is used for agricultural purposes, equaling approximately 1,833,500 acres.
- Commercial and industrial uses within the unincorporated areas of the county account for less than 1 percent of the total acreage each as shown in Table 3-1.
- The 15 incorporated cities in Fresno County account for 3% of all acreage within the County boundaries, approximating 114,700 acres.

EXISTING SETTING

RESIDENTIAL USES

The types of residential uses reviewed by this Background Report include: rural residential, detached single-family homes; multi-family housing including duplexes, apartments, and all structures containing two or more housing units regardless of whether they are individually owned or rented; planned unit developments and condominiums; and mobile homes. The County contains approximately 32,000 acres of existing rural residential. Nearly all this development exists in three geographic areas: Eastside Valley, Sierra Foothill, and Sierra Nevada Mountain Areas. Within the Eastside Valley, the majority of the rural residential areas occur just outside the Fresno-Clovis metropolitan area on the west and east sides (as depicted

Figure 3-3). The Sierra Foothills have the largest percentage of rural residential land with large clusters of this development near the northern (near Auberry) and southern (near Squaw Valley) county border. The Sierra Nevada Mountain Area contains the third largest amount of rural residential development with a large cluster just west of Shaver Lake. See Figure 3-4 for the location of rural residential lands.

COMMERCIAL LAND USES

Commercial land uses can be differentiated into a variety of specific uses. For purposes of this analysis, however, commercial uses will include offices, retail establishments, and outdoor uses such as car sales, lumber yards, and plant nurseries. Commercial businesses in the unincorporated county are distributed along major transportation corridors (I-5 and State Route 99), and near the incorporated cities of Fresno, Clovis and Sanger. Limited commercial land uses are also located within the small, rural communities on the valley floor as well as in the Sierra foothills. The majority of commercial enterprises are retail establishments, followed by outdoor sales and golf courses.

INDUSTRIAL LAND USES

For purposes of this analysis, Industrial uses include light industrial establishments such as warehouses and mini-storage businesses, and heavy industrial uses involved in the manufacturing of large items and/or using large manufacturing equipment. As shown in Figure 3-5, Industrial uses are located along the State Route 99 corridor with a major concentration at the southerly border of the city of Fresno. Industrial land uses are also distributed throughout the agricultural land between the Sierra foothills and I-5. Most industrial land is devoted to heavy industrial operations in support of agricultural operations.

AGRICULTURAL LAND USES

As with residential, commercial and industrial uses, land uses that are related to agriculture, forestry, mining, or other activities involving the preservation, use, extraction, or processing of natural resources can be differentiated into a number of specific land use categories. For example, the general category of agriculture includes such activities as irrigated row crop production, dry land farming, orchards and vineyards, and grazing of livestock. Each activity is important and distinct because they have different characteristics of operation and resource consumption.

REGULATORY SETTING

There are no regulations related to existing land use.

KEY TERMS

Density, Residential - The number of permanent residential dwelling units per acre of land. Densities specified in the general plan may be expressed in units per gross acre or per net developable acre.

Developable Land. Land that is suitable as a location for structures and that can be developed free of hazards to, and without disruption of, or significant impact on, public safety and health hazards and natural resource areas.

Development. A human-created change to improve unimproved land, including: subdividing land; construction and alteration of buildings, structures, and roads; utilities; mining; dredging; filing; grading; paving; excavating; and drilling.

Growth Management - The use by a community of a wide range of techniques in combination to determine the amount, type, and rate of development desired by the community and to channel that growth into designated areas. Growth management policies can be implemented through growth rates, zoning, capital improvement programs, public facilities ordinances, urban limit lines, standards for levels of service, and other programs.

Land Use Classification. A system for classifying and designating the use of properties.

TABLE 3-1 EXISTING LAND USE, UNINCORPORATED FRESNO COUNTY												
	Fresno Eastside Valley		Westside Valley		Sierra Nevada Mountain		Sierra Foothill		Coast Range Foothill		Total Unincorporated	
Primary Use	**Acres**	**% of Total**	**Acres**	**% of Total**	**Acres**	**% of Total**	**Acres**	**% of Total**	**Acres**	**% of Total**	**Acres**	**% of Total**
Residential												
Single-Family	37,450	6.2%	600	0.1%	5,390	17.4%	21,430	7.0%	100	<0.1%	64,970	3.5%
Multi-Family/Apts	290	0.0%	80	<0.1%	-	-	-	-	-	-	370	<0.1%
Manufac/Mobile Homes	2,630	0.4%	160	<0.1%	460	1.5%	8,070	2.6%	60	<0.1%	11,380	0.6%
Subtotal	**40,370**	**6.6%**	**840**	**0.1%**	**5,850**	**18.9%**	**29,500**	**9.6%**	**160**	<0.1%	**76,720**	**4.1%**
Commercial	1,430	**0.2%**	430	**0.1%**	200	**0.6%**	340	**0.1%**	40	<0.1%	**2,440**	**0.1%**
Industrial												
Light Industrial	1,560	0.3%	280	<0.1%	-	-	80	<0.1%	-	-	1,920	0.1%
Industrial	2,380	0.4%	590	0.1%	-	-	20	<0.1%	10	<0.1%	3,000	0.2%
Subtotal	**3,940**	**0.7%**	**870**	**0.1%**	**-**	**-**	**100**	**<0.1%**	**10**	**<0.1%**	**4,920**	**0.3%**
Recreation	**1,450**	**0.2%**	**290**	**0.0%**	**560**	**1.8%**	**310**	**0.1%**	**220**	**0.1%**	**2,830**	**0.2%**
Public-Quasi-Public	**940**	**0.2%**	**3,370**	**0.6%**	**290**	**0.9%**	**230**	**0.1%**	**240**	**0.1%**	**5,070**	**0.3%**
Agriculture												
Field Crops	103,430	17.2%	350,840	59.4%	-	-	2,340	0.8%	13,590	3.9%	470,200	25.1%
Orchard	229,870	38.3%	189,770	32.1%	10	<0.1%	16,830	5.5%	22,930	6.6%	459,410	24.5%
Vineyard	165,780	27.6%	21,550	3.6%	-	-	210	0.1%	1,140	0.3%	188,680	10.1%
Livestock/Dairy/Poultry	18,240	3.0%	3,720	0.6%	-	-	340	0.1%	600	0.2%	22,900	1.2%
Production	1,590	0.3%	840	0.1%	-	-	20	0.0%	-	-	2,450	0.1%
Subtotal	**518,910**	**86.4%**	**566,720**	**95.8%**	**10**	**0.0%**	**19,740**	**6.5%**	**38,260**	**11.0%**	**1,143,640**	**61.0%**
Mineral Resource	**1,720**	**0.3%**	**9,510**	**1.6%**	**70**	**0.2%**	**10**	**<0.1%**	**17,400**	**5.0%**	**28,710**	**1.5%**
Open Space												
Pasture/Grazing	17,830	3.0%	6,660	1.1%	14,780	47.8%	240,610	78.2%	288,470	83.5%	568,350	30.3%
Timberland	-	-	-	-	2,120	6.9%	30	<0.1%	-	-	2,150	0.1%
Subtotal	**17,830**	**3.0%**	**6,660**	**1.1%**	**16,900**	**54.7%**	**240,640**	**78.2%**	**288,470**	**83.5%**	**570,500**	**30.4%**
Vacant	**14,110**	**2.3%**	**1,820**	**0.3%**	**7,060**	**22.8%**	**16,910**	**5.5%**	**630**	**0.2%**	**40,530**	**2.2%**
Total Acres	**600,700**	**100.0%**	**590,510**	**100.0%**	**30,940**	**100.0%**	**307,780**	**100.0%**	**345,430**	**100.0%**	**1,875,360**	**100.0%**
Total Square Miles	**938.6**		**922.7**		**48.3**		**480.9**		**539.7**		**2,930.3**	

Source: County of Fresno GIS, 2016.

FIGURE 3-3 RESIDENTIAL LAND
UNINCORPORATED FRESNO/CLOVIS METROPOLITAN AREA

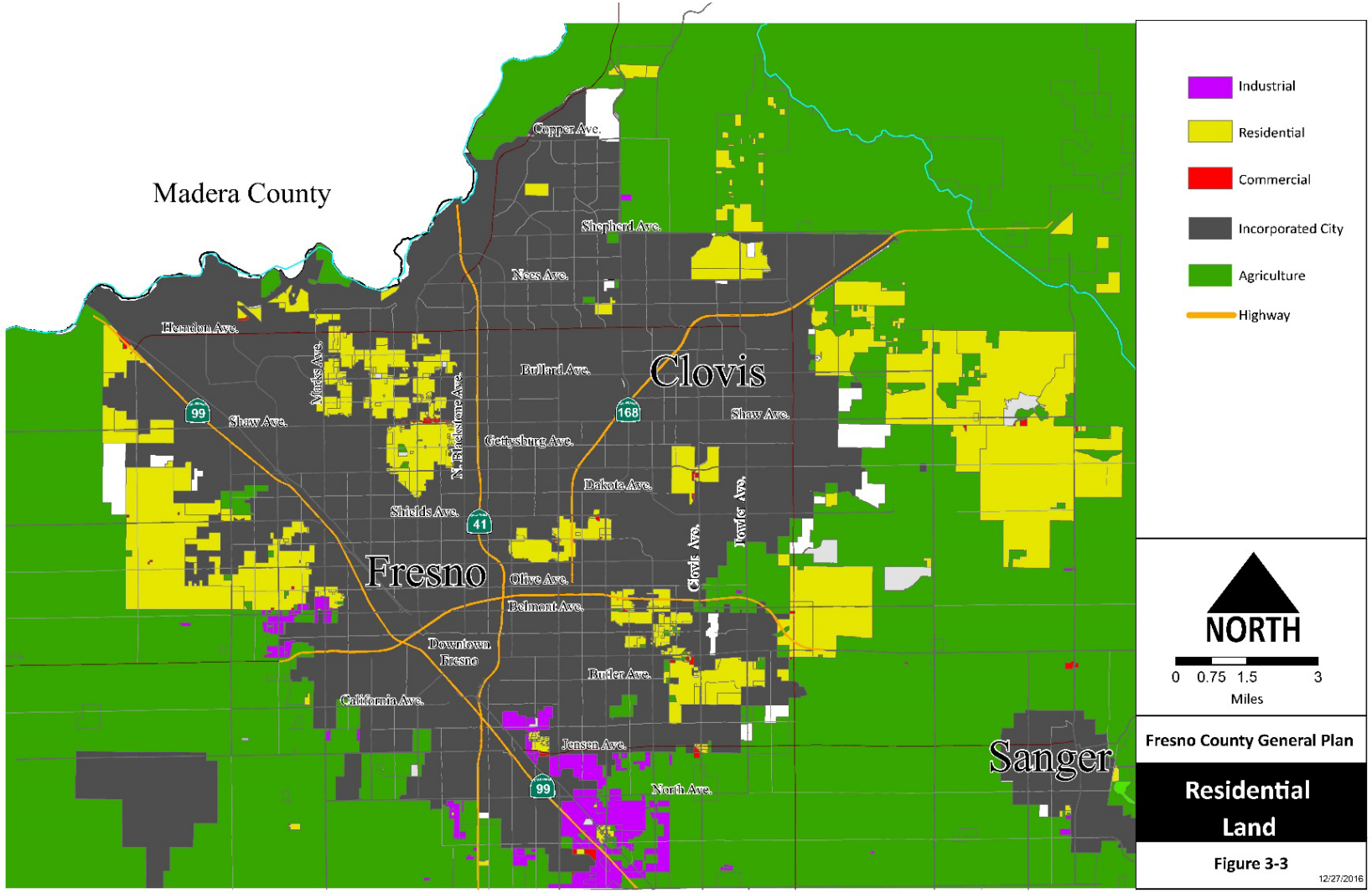


FIGURE 3-4 RURAL RESIDENTIAL LAND

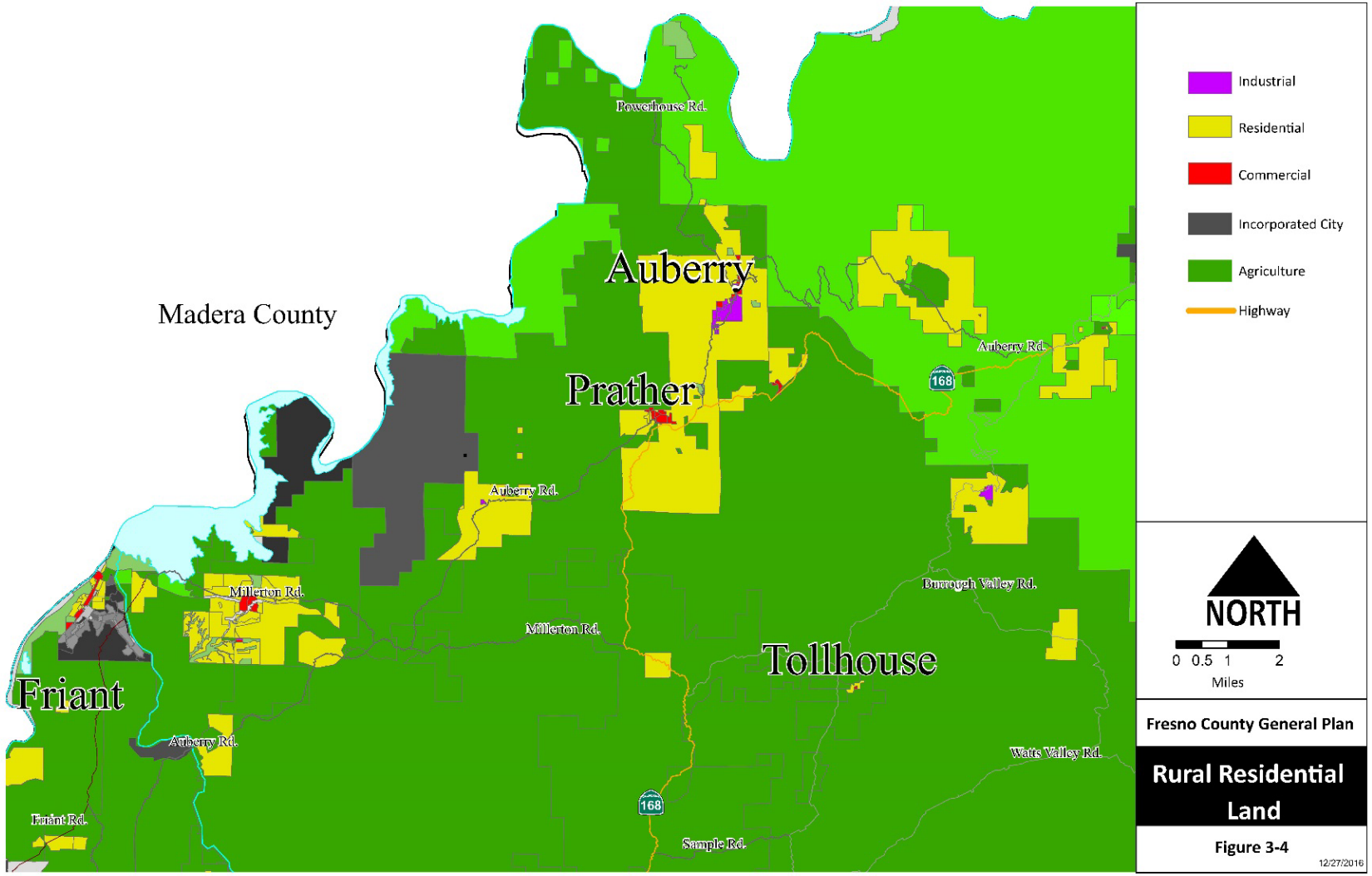
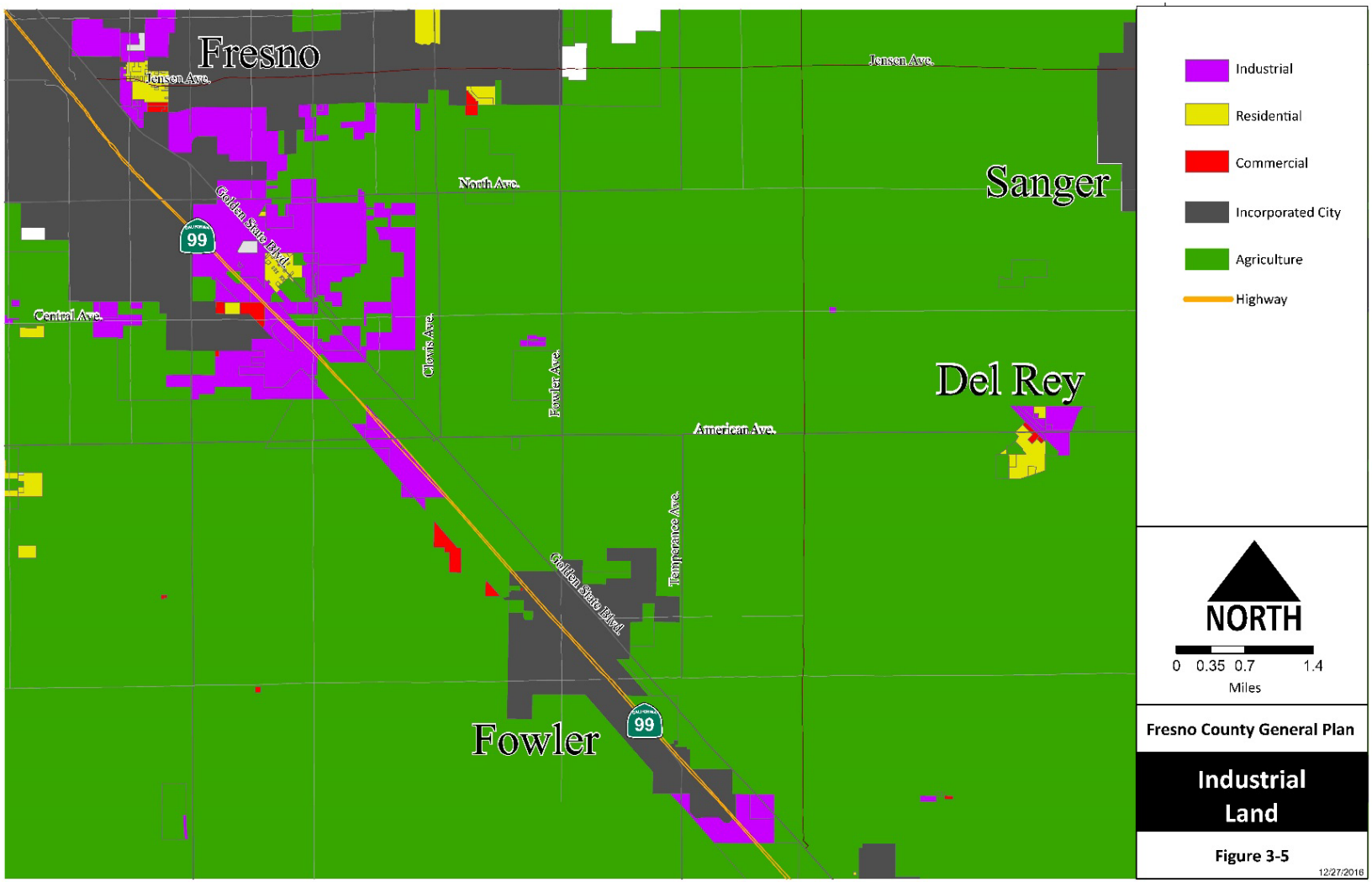


FIGURE 3-5 INDUSTRIAL LAND



SECTION 3.4 GENERAL PLAN DESIGNATIONS AND COMMUNITY PLANS

INTRODUCTION

The following discussion is an overview of the various official County planning documents and their policies that affect land use in Fresno County. The section includes summary reviews and evaluations of four different levels of plans: elements of the present *General Plan* that address county-wide issues; elements of the four regional plans; the various community plans; and specific plans that have been adopted as part of the *Fresno County General Plan*. The purpose is to provide a summary of existing County land use plans and policies and to determine the implications of each plan on growth and development in the unincorporated areas. Later sections of this chapter evaluate the implications of the general plans of each of the incorporated cities, county-wide functional plans undertaken within the county, and the policies of regional governmental agencies that may affect growth in Fresno County.

EXISTING SETTING

THE FRESNO COUNTY GENERAL PLAN

The last comprehensive revision of the *Fresno County General Plan* was completed in October, 2000. The Plan consists of seven elements: Economic Development; Agriculture and Land Use; Transportation and Circulation; Public Facilities and Services; Open Space and Conservation; Health and Safety; and Housing.

PLAN ORGANIZATION

The *General Plan* is organized into a hierarchy of increasingly detailed plans for subareas of the county, as follows:

The individual general plan elements provide goals, policies, and programs that apply generally throughout the county. Four regional plans are provided for areas outside incorporated cities and community plan areas. The general plan also includes land use plans for the unincorporated areas surrounding all fifteen incorporated cities in the county. There are also separate plans for unincorporated communities and neighborhoods and six specific plan areas. Together, the regional, community, and specific plans form a mosaic that governs land use for the unincorporated areas of Fresno County. Each of these plan categories are discussed in greater detail below.

LAND USE DESIGNATIONS

Table 3-2 describes the land use designations applied by the General Plan in the unincorporated areas of the county.

TABLE 3-2
FRESNO COUNTY GENERAL PLAN LAND USE DESIGNATIONS

Land Use Designations	Description	Location	Density
Agriculture	Land designated for the production of crops and livestock, agriculture processing centers	Valley floor between Friant-Kern Canal and the coast ranges	1 unit per 20 acres
Irrigated Agriculture	Production of crops and agriculture processing facilities	East of the Friant-Kern Canal	1 unit per 20 acres
Westside Rangeland	Land designated for grazing and other agricultural operations; mining; oil and gas development; open space	Western Fresno County in the coast ranges	1 unit per 40 acres
Eastside Rangeland	Land designated for grazing and other agricultural operations; open space	Eastern Fresno County east of the Friant-Kern Canal	1 unit per 40 acres
Open Space	Land or water areas which are essentially unimproved and planned to remain open in character	Non-agricultural and mountain areas	1 unit per 40 acres
Public Lands and Open Space	Unimproved and planned to remain open in character	Various locations east of the Friant-Kern Canal	1 unit per 40 acres
Rural Residential	Rural homesites	Various locations on the valley floor	1 unit per 5 acres to 1 unit per 2 acres
Mountain Residential	Recreation oriented residential	Mountain communities	1 unit per 5 acres to 14.5 units per acre
Foothill Rural Residential	Rural homesites	Various locations east of the Friant-Kern Canal	1 unit per 5 acres to 1 unit per 2 acres
Low Density Residential	Residential development	Various locations, Community Plans	0.9-2.8 units per acre
Medium Density Residential	Residential development	Various locations, Community Plans	2.8-5.8 units per acre
Medium High-Density Residential	Residential development	Various locations, Community Plans	5.8-14.5 units per acre
Mountain Urban	Various intensities of residential, commercial and other land uses	Mountain communities	1 unit per 5 acres to 14.5 units per acre

TABLE 3-2 FRESNO COUNTY GENERAL PLAN LAND USE DESIGNATIONS			
Land Use Designations	**Description**	**Location**	**Density**
Mountain Commercial	Mixed retail, service, heavy commercial, and residential uses in mountain areas	Mountain communities	FAR 1.0
Rural Settlement Area/ Planned Rural Community	Land designated for the adoption of a specific plan for low- and medium-density residential land uses	Semi-rural areas	1 unit per 2 acres to 2 units per acre
Neighborhood Commercial	Commercial activities serving a local area	Community Plans	5.8-14.5 units per acre
Office Commercial	Land designated for administrative, business, medical, professional and general offices	Community Plans	5.8-14.5 units per acre
Community Commercial	Land designated for development of a unified retail center located on the periphery of a community	Community Plans.	5.8-14.5 units per acre
Central Business Commercial	Land designated for commercial centers that carry a full range of products and offices	Community Plans	5.8-14.5 units per acre
Regional Commercial	Land for regional commercial center serving 50,000 persons or more	Community Plans	N/A
Highway Commercial	Land designated for one-stop concentrated service nodes for the traveling public	Freeway interchanges	N/A
Service Commercial	Land designated for general commercial uses that require large building sites	Community Plans	5.8-14.5 units per acre
Special Commercial	Commercial that does not fit into any of the other commercial categories		N/A
Limited Industry	Restricted, non-intensive manufacturing, and storage businesses	Community Plans	N/A
General Industry	Full range of manufacturing, processing, and storage	Community Plans	N/A
Public Facilities	Land designated for services and facilities which are necessary for a community	Schools, civic centers, parks, etc.	N/A

Source: County of Fresno, 2000 General Plan.

REGIONAL PLANS

Regional plans have been prepared for four sub-areas of the county where more precise policies and standards are needed to address specific resource issues such as open space and agricultural land preservation. Regional plan areas are shown in Figure 3-6. Each Plan covers three primary topics: land use, transportation, and environmental resource management.

SIERRA-NORTH REGIONAL PLAN

The Sierra-North Regional Plan covers northeastern Fresno County and land within the Sierra Nevada lying east of the Friant-Kern Canal and north of the Kings River. The Plan covers an area of about 2,270 square miles which is more than one-third of the land in Fresno County. The area within the community of Shaver Lake governed by the Shaver Lake Community Plan and the area covered by the Kings River Regional Plan are excluded. About 84 percent of the land within the planning area is owned by the federal government in the form of national parks and forests. Private ownership consists primarily of grazing and timber holdings.

The Sierra-North Regional Plan covers a timeframe of 10 years and was prepared in response to growing development pressures within the foothills and mountain communities. The land use element discusses a wide range of issues, including constraints to development, rural residential development, public facilities and services, and population forecasts. The Plan projected a five percent annual population growth rate through 1990, the last year for which projections were to be made, and a buildout population of about 14,000 persons. The Land Use Element provides policies for non-intensive (open space and rangeland) and intensive (residential, commercial, and industrial) land uses and includes guidance for the location of new towns.

COALINGA REGIONAL PLAN

The Coalinga Region is located in the southwestern portion of the county and includes about 580 square miles bounded on the east by Interstate 5, township 19 to the north, and the county line to the south and west, and excluding the area within the Coalinga Community Plan. The Coalinga region is diverse and includes agricultural and range land, the foothills of the coast ranges, mineral resource mining sites, oil fields, as well as fragile environmental resources. The Plan covers a timeframe of about twenty years during which the population of the area is expected to decline slightly. Included in the planning area is the proposed Coalinga Air Cargo Port which is expected to generate a substantial number of jobs as the airport is developed into a regional export center for agricultural products.

Limitations to development of the area include local and regional policies relating to the preservation of agricultural and range land; natural hazards such as flooding and earthquakes; the availability of water; local and regional policies intended to preserve sensitive natural plant and animal habitats; and expanded oil field operations.

The Land Use Element provides goals and policies, as well as development standards and criteria for residential, commercial, industrial, and open space/agricultural land uses. The Environmental Resources Management Element emphasizes the need for groundwater management and the need for sensitive development of expanded oil and mineral resource extraction operations.

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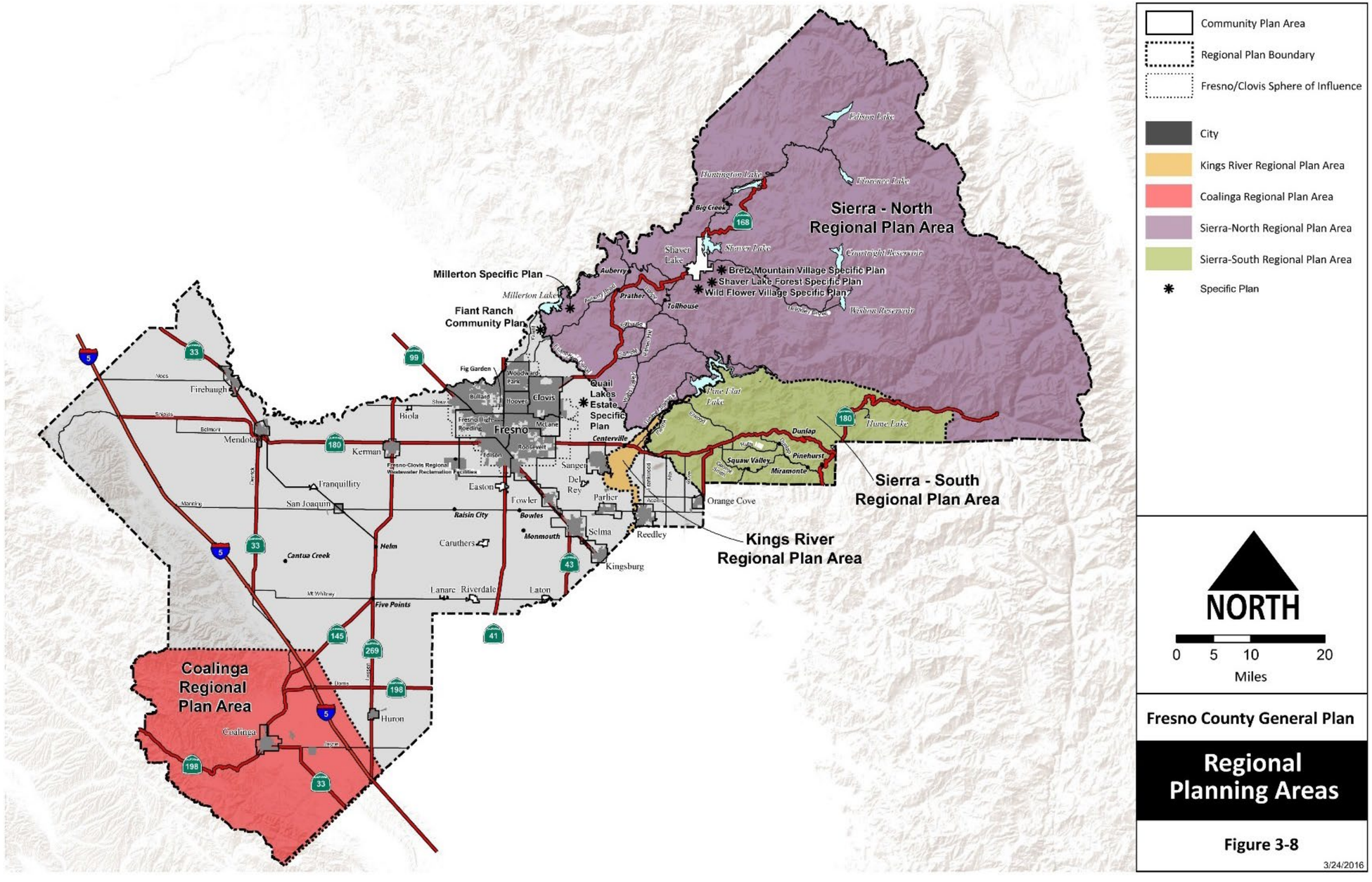
FIGURE 3-6 REGIONAL PLANNING AREAS



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KINGS RIVER REGIONAL PLAN

The Kings River originates in the high Sierra Nevada and flows to the San Joaquin Valley where it has deposited rich alluvial soils that have contributed greatly to the agricultural economy of Fresno County. This unique river area is rich in natural resources such as natural woodland and riparian vegetation; valuable rock, sand, and gravel resources; and abundant water. The planning area consists of about 19,500 acres located in east-central Fresno County along the Kings River extending from Pine Flat Dam to the Fresno-Tulare County line near Reedley. The planning area includes all of the land within the river valley proper and within one-quarter mile on each side of the river channel. No specific timeframe is provided.

The primary objectives of the Plan are to protect the sensitive biological and agricultural resources along the river, to protect people and property from flood damage, and to provide for the conservation, utilization, and development of mineral resources while minimizing impacts from the extraction activities. The Plan provides policies and standards intended to preserve large lot agriculture and open space along the river, and to limit the expansion of residential and other intensive uses to areas where impacts on the river system and surrounding resources will be minimized.

SIERRA-SOUTH REGIONAL PLAN

The Sierra-South Regional Plan covers an area bounded by the Kings River Regional Plan on the northwest, the South Fork of the Kings River to the north, Kings Canyon National Park on the east, Tulare County to the south, and the Friant-Kern Canal to the west. The planning area includes the foothills of the Sierra and covers a timeframe of about ten years.

Land uses within the planning area include agriculture, rangeland, rural homesites, and timber harvesting. As with the Sierra-North planning area, the federal government is the largest land owner. Most of the remaining private land is included within land conservation contracts. The main objectives of the plan are to preserve the scenic open space character of the area and to concentrate new development in appropriate locations where impacts to the area's sensitive resources can be minimized.

Constraints to development include water supply; sensitive natural habitat; wildfire hazard; and expansive soils.

PLANS FOR UNINCORPORATED COMMUNITIES

Due to the diverse geography and land uses within the county (ranging from highly urbanized areas, to the intensive agricultural uses on the San Joaquin Valley floor, to the High Sierra), individual community plans have been prepared within the framework of the overall county plan to address the unique issues and concerns arising in the different unincorporated areas. The community plans supplement the countywide general plan for the areas that they cover, addressing land use, circulation, housing, public services, and other issues in much the same way that the general plans of the incorporated cities address such issues, although not to the same level of detail. The plans contain specific goals, policies, and programs that apply to each particular community and area.

The characteristics of the unincorporated areas with community plans are summarized on Table 3-3.

TABLE 3-3 UNINCORPORATED COMMUNITY PLANS			
Community Plan	**Year of Adoption**	**Most Recent Update**	**2010 Population**
Biola	1976	1990	1,623
Caruthers	1959	1993	2,497
Del Rey	1976	1976	1,639
Friant	1964	2011	509
Lanare	1977	1982	589
Laton	1969	2012	1,824
Riverdale	1960	1992	N/A
Shaver Lake	1978	1986	634
Tranquillity	1967	1984	799

SPECIFIC PLANS

Specific Plans have been prepared for six areas of the County where more precise development guidance is required to address unique circumstances. The specific plans were prepared to address the requirements of Government Code Section 65450. Thus, each plan contains elements that correspond to those in the overall *Fresno County General Plan*: land use, conservation, open space, seismic safety, circulation, scenic highways, noise, and housing, and include a separate element relating to public services and facilities. Most of the plans were prepared in the 1980s and have been amended several times since. Each specific plan element contains policies that guide development and preservation of resources within the planning area that supersede the County *General Plan*. In this sense, each specific plan is the general plan for a particular area. Table 3-4 shows a listing of Fresno County Specific Plans, adoption dates, as well as the most recent amendment or update.

SHAVER LAKE FOREST SPECIFIC PLAN

The *Shaver Lake Forest Specific Plan* was adopted in 1978 and amended in 1993. The specific plan project area consists of about 2.6 square miles adjacent to Shaver Lake in eastern Fresno County about 50 miles east of the city of Fresno. The *Specific Plan* is designed to accommodate limited residential, commercial, recreation and public/quasi-public land uses within the planning area of about 1,681 acres. The *Plan* accommodates a population of about 1,700 year-round residents and a peak summer population of about 8,600. Constraints to full development include slope and topography; traffic; sewer and water supply limitations; wildfire hazard; and air quality.

BRETZ MOUNTAIN VILLAGE SPECIFIC PLAN

The *Bretz Mountain Village Specific Plan* was adopted in 1982 and governs an area south of Shaver Lake just east of Highway 168. The Village is intended to be developed as a recreation residential area with 977 dwelling units on 610 acres. Buildout population is expected to be about 2,500 residents, of which 635 will be year-round and 1,906 would be seasonal. Lot sizes range in size from 12,500 square feet to 31,000 square feet. In addition to residences, the Plan provides for limited local-serving commercial uses, open space, and public/quasi-public development such as recreational facilities. About 330 acres, or 54 percent of the planning area, is designated as open space.

New development is required to connect to a community sewer and water system and served by County Service Area No.31. Expansion of the sewage treatment plant serving CSA No. 31 will be needed to accommodate additional development.

WILDFLOWER VILLAGE SPECIFIC PLAN

Wildflower Village is located about two miles southwest of Shaver Lake and abuts the *Shaver Lake Community Plan* area. Similar to the other mountain community specific plans, Wildflower Village is intended to accommodate primarily seasonal residential and recreational land uses on lots ranging in size from 19,000 square feet to about 29,000 square feet. The *Plan* designates a substantial amount of open space (340 acres, or 54 percent). The *Plan* will accommodate about 1,600 residents at buildout, of which about 435 will be year-round residents.

The *Plan* calls for the construction of community water and sewer systems to serve the project and to be annexed into County Service Area No. 41.

Limitations to development would include infrastructure capacity and financing of improvements, in addition to the other constraints affecting mountain communities.

MILLERTON SPECIFIC PLAN

The *Millerton Specific Plan* area consists of 820 acres located two miles east of the community of Friant along both sides of Millerton Road just south of Millerton Lake State Recreation Area. The Plan was adopted in 1984 to accommodate an expected buildout population of between 8,000 to 10,000 residents. Land is designated for limited residential, commercial, public/quasi-public and open space land uses.

A community water and sewer system is required for new development. Other services and utilities will be provided by the County or other service provider through a County Service Area, community services district or other mechanism. Limitations to development include the ability to finance infrastructure improvements; water supply limitations; air quality; and local and regional efforts to preserve open space.

QUAIL LAKE SPECIFIC PLAN

The *Quail Lake Specific Plan* is the most recent of the specific plans adopted by the County (1994). The Plan addresses land use, circulation, housing, environmental resources, public facilities, and community design. The planning area is located east of the city of Clovis on 375 acres. Land use is primarily residential, although limited commercial and public/quasi-public land uses are also designated in the *Specific Plan*. Densities range from 4,000 square foot "patio style" homes to estate lots of 20,000 square feet or more. The Plan could accommodate as many as 2,000 residents at buildout.

The community is proposed to be served by a community water and sewer system. Financing infrastructure improvements appears to be a major constraint to development. Other constraints include the availability of a reliable water supply, the presence of vernal pools and wetlands, traffic and air quality concerns.

FRIANT RANCH SPECIFIC PLAN

The community of Friant is located approximately five miles north of the cities of Fresno and Clovis. The 2010 population of Friant was 509 and the community has vacant parcels available for residential development. On December 7, 2015, the Fresno County Board of Supervisors adopted the Friant Community Plan Update, which increased the community plan boundary by adding the 942-acre Friant Ranch Specific Plan Area. The Friant Ranch Specific Plan provides for future development of up to 2,500 dwelling units in a master planned community.

Currently, existing residential dwellings within the Friant Community Plan are serviced by individual septic systems. However, on May 20, 2014, the Fresno County Board of Supervisors approved a conditional use permit application to allow the construction of a tertiary-level wastewater treatment facility to treat wastewater from the Friant Ranch Project Specific Plan Area as well as existing developments within the community of Friant.

TABLE 3-4
SPECIFIC PLAN ADOPTIONS, AMENDMENTS, AND UPDATES

Specific Plan	Year of Adoption	Most Recent Amendment
Quail Lake	1994	
Del Rio	1989	
Millerton	1984	
Wildflower Village	1982	
Bretz Mountain Village	1982	
Shaver Lake Forest	1973	1993
Friant Ranch	2011	

REGULATORY SETTING

General Plan Law (California Government Code Section 65300, et seq.). California Government Code Section 65300, et seq., specifies the substantive and topical requirements of general plans. State law requires each city and county to 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 California Supreme Court has called the general plan the "constitution for future development." The general plan expresses the community's development goals and embodies public policy relative to the distribution of future land uses, both public and private.

KEY TERMS

Community Plan. A subset of the General Plan covering a specific area of the county typically smaller than a regional plan.

Density Residential. The number of permanent residential dwelling units per acre of land. Densities specified in the general plan may be expressed in units or gross acre or per net developable acre.

Dwelling Unit. A room or group of rooms (including sleeping, eating, cooking, and sanitation facilities, but not more than one kitchen), which constitutes an independent housekeeping unit, occupied or intended for occupancy by one household on a long-term basis.

Floor Area Ratio (FAR). The ratio of interior building space on a property to the total square footage of the property. FAR = Square footage of building/square footage of property.

General Plan. A compendium of a city's or county's policies regarding its long-term development, in the form of maps and accompanying text. The general plan is a legal document required of each local agency by the State of California Government Code Section 65301 and adopted by the City Council or Board of Supervisors. In California, the general plan has seven mandatory elements (circulation, conservation, housing, land use, noise, open space, safety and seismic safety) and may include any number of optional elements (such as air quality, economic development, hazardous waste, and parks and recreation). The general plan may also be called a "city plan", "comprehensive plan", or "master plan."

Gross Acreage. The total amount of land to be developed, without subtracting the area that might be needed for public improvements such as roads, schools, or parks.

Land Use Classifications. A system for classifying and designating the appropriate use of properties.

Specific Plan. A legal tool authorized by Article 8 of the Government Code (Section 65450 et seq.) for the systematic implementation of the General Plan for a defined area of the unincorporated county or city.

Sphere of Influence - The probable physical boundaries and service area of a local agency, as determined by the Local Agency Formation Commission (LAFCo).

SECTION 3.5 EXISTING ZONING

INTRODUCTION

This section summarizes the Fresno County Zoning Ordinance, which is the primary tool used by Fresno County to implement the General Plan.

EXISTING SETTING

Fresno County's first Zoning Ordinance was adopted in 1938 as Ordinance 322. The current Fresno County Zoning Ordinance (Division VI of Part VII of the Ordinance Code of the County of Fresno) was adopted in 1960 and covers all of the unincorporated county.

This Background Report discusses the Fresno County Zoning Ordinance because zoning regulations clearly indicate the extent and type of development that can occur in the unincorporated areas (and hence holding capacity and buildout potential). A major difference between the general plan and zoning is that the General Plan provides guidance on the location, type, density, and timing of new growth and development over the long-term, while zoning determines what development can occur on a day-to-day basis. Both the land use designations of the general plan and the zoning classifications and development standards of the zoning ordinance have the effect of determining the holding capacity and buildout potential of the county. Holding capacity and buildout potential are measures of the ultimate population size and extent of development that could be allowed by the County based on current policies and regulations. Knowledge of what is possible under existing zoning is important in formulating the new general plan because the consequences of new land use proposals can best be understood when compared to the type and extent of development that is now possible.

FRESNO COUNTY ZONING ORDINANCE

The Fresno County Zoning Ordinance is officially known as Division VI of the Ordinance Code of the County of Fresno, or simply the Zoning Division of the County of Fresno. Its stated purpose is "to classify and regulate the highest and best use of buildings, structures, and land located in the unincorporated area of the County of Fresno in a manner consistent with the Fresno County General Plan." The Zoning Ordinance establishes 12 residential districts, 10 commercial districts, 3 industrial districts, and 11 other districts that are mainly related to agriculture, timber, and other resource-related land uses. The zoning districts follow specific property lines and road alignments that generally correspond with the applicable General Plan categories. Working with the zoning classifications, the text of the Zoning Ordinance provides detailed regulations for the development and use of land.

Table 3-5 lists each of the zoning classifications, together with the minimum lot area allowed by the zone for new subdivisions of land, and the acreage of land in the unincorporated areas to which each zone is applied. The minimum lot area requirements are expressed in acreage or square footage, and represent the smallest lot size that could be approved in a new subdivision in the applicable zone. However, it is important to note that some zone districts have requirements for specific land uses that establish minimum lot areas larger than the minimum allowed in the zone. The Zoning Ordinance should be consulted for more information.

ZONING ORDINANCE TEXT

The text of the Zoning Ordinance contains the regulations that govern development and land use in the zoning classifications shown on the zoning maps. The Ordinance text includes three main components: detailed descriptions of each zoning classification in terms of the type of land uses that are allowed in each zone; standards for the development of new land uses within each zone (building height limits, setback requirements, off-street parking and sign requirements, minimum parcel size, etc.); and procedural requirements for the processing of land use permit applications and the administration of the ordinance itself. The minimum parcel size determines the density of residential development (i.e., the number of dwellings per acre), and establishes a direct relationship between the size of commercial and industrial parcels and the extent of development that may be allowed on them.

REGULATORY SETTING

California Government Code Section 65860. In counties, general law cities, and charter cities with a population of more than two million, zoning provisions must be consistent with the general plan. Charter cities with a population of under two million are exempt from the zoning consistency requirement unless their charters provide otherwise.

KEY TERMS

Overlay District. The division of a city or county by legislative regulations into areas, or zones, which specify allowable uses for real property and size restrictions for buildings within these areas; a program that implements policies of the general plan.

Zoning. The division of a city or county by legislative regulations into areas, or zones, which specify allowable uses for real property and size restrictions for buildings within these areas; a program that implements policies of the general plan.

Zoning District. A designated section of the county for which prescribed land use requirements and building and development standards are uniform.

Zoning Ordinance. The adopted zoning and planning regulations of a city or county.

TABLE 3-5 ZONING DISTRICTS					
Zone District	**Map Code**	**Purpose**	**Typical Use**	**Minimum Parcel Size**	**Acres Zoned**
Rural Residential	R-R	Provide for rural residential and limited agricultural activity	Homes, crops and certain farm animals	2 acres	28,821
Single Family Residential Agricultural	R-A	Provide for single family residential homes in a semi-rural environment	Homes. Farming, cows, horse, goats, sheep, poultry and rabbits, schools, churches, kennels	36,000 sq. ft.	538
Single Family Residential	R-1-A (H)	Provide for single family residential homes on large suburban lots	Homes, crops, schools, churches, horses included	20,000 sq. ft.	636
Single Family Residential Estate	R-1-E+R-1-EH	Provide for single family homes at a semi-rural density	Homes, crops, schools, churches, horses	37,500 sq. ft.	475
Single Family Residential	R-1-B	Provide for single family homes in a suburban setting	Homes, home occupations, schools, churches, parks	12,500 sq. ft.	5,195
Single Family Residential	R-1-C	Provide for single family homes in a non-intensive environment	Homes, home occupations, schools, churches	9,000 sq. ft.	1,218
Single Family Residential	R-1	Provide for single family homes on small urban lots	Homes, home occupations, schools, churches, parks	6,000 sq. ft.	3,606
Low Density Multiple Family Residential	R-2 +R-2-A	Provide for multiple family residences, 1 story in height limitation in R-2A	Homes, duplexes, triplexes, etc. day nursery (limit 12 children), sanitariums, hospitals	6,600 sq. ft.	491
Medium Density Multiple Family Residential	R-3R-3-A	Provide for multiple family residences, 1 story in height limitation in R-3-A	Homes, multi-dwellings, fraternities, clubs, nursery schools, rest homes, hospitals	7,500 sq. ft.	5
High Density Multi-Family Residential	R-4	Provide for multiple family residences	Homes, multi-dwellings, fraternities, clubs, nursery schools, rest homes (limit 24 patients), hospitals, lodges	10,000 sq. ft.	0
Trailer Park Residential	T-P	Provide exclusive mobile home development	Mobile home parks and mobile home planned developments	3 acres	1645
Residential and Professional Office	R-P	Provide a transitional district between residential and other districts	Single and multiple family dwellings, business and professional offices, studios, libraries	7,500 sq. ft.	50
Off-Street Parking	P	For permanent parking areas and parking structures	Boat and RV storage and off-street parking	No minimum required.	24
Administrative and Professional Office	C-P	Provide an integrated professional district with multiple housing, offices and public institutions	Multiple dwellings, business and professional offices, studios, clubs, lodges, laboratories, pharmacies, banks, S&Ls	10,000 sq. ft.	26
Neighborhood Shopping Center	C-1	Provide for small unified centers for neighborhood shopping	Grocery stores, drug stores, barber, beauty, cafe, clothing, hardware, gas station, nursery, cleaners, self-serve laundry	No minimum required.	49

TABLE 3-5 ZONING DISTRICTS					
Zone District	**Map Code**	**Purpose**	**Typical Use**	**Minimum Parcel Size**	**Acres Zoned**
Community Shopping Center	C-2	Provide for larger unified shopping centers serving a community of several neighborhoods	All C-1 uses, appliance sales, banks, bars, bowling, furniture, pets	No minimum required.	57
Regional Shopping Center	C-3	Provide for regional shopping centers serving a wide area usually more than one community	All C-1 and C-2 uses, auto parts, auto sales, hotels, and motels	No minimum required.	25
Central Trading District	C-4	Provide commercial activity for the downtown areas of unincorporated communities	All C-1, C-2 and C-3 uses, mortuaries, second hand stores, auto repair, boat sales	No minimum required.	196
General Commercial	C-6	Provide for many commercial uses which do not belong in shopping centers or downtown areas and which are usually found along major thoroughfares	Most C-1, C-2, C-3, and C-4 uses, animal hospitals, drive-in restaurants, truck sales, body and fender, equipment rentals, feed and fuel stores	No minimum required.	572
Agricultural Commercial	AC	Provide for commercial centers serving the agricultural communities	Agricultural equipment and supplies, grocery stores, drug stores, bars, service stations, restaurants	60,000 sq. ft.	107
Rural Commercial Center	RCC	To provide locations for commercial centers serving rural residential communities	Service station, barber, grocery stores, hardware, plant nurseries, restaurants	1 acre	28
Commercial Recreation	C-R	Provide for planned integrated recreation centers including related service and commercial	Bowling, skating, miniature golf, swimming, clubs, lodges, bars, restaurants	No minimum required.	13
Commercial and Light Manufacturing	C-M	To permit a close relationship between warehousing, wholesaling, general retailing, and light manufacturing	Automotive work, warehousing, machinery shop, retail lumber, contractor, storage yards, light manufacturing, cabinet shops, welding	9,000 sq. ft.	245
Light Manufacturing	M-1	Light industries which are generally not noisy or obnoxious	Most C-M uses, truck terminals, light manufacturing, used materials yards, blacksmiths, sheet metal, electric motor rebuilding, bulk petroleum	9,000 sq. ft.	981
General Industrial	M-2	Provide for a wider range of manufacturing and storage, including heavier uses	All M-1 uses, cotton compress and storage, ready mix concrete, wholesale limber	9,000 sq. ft.	91
Heavy Manufacturing	M-3	To provide for all manufacturing including heaviest and most intensive uses.	Heavy industrial uses, auto wrecking, rubble, solid waste disposal facilities.	9,000 sq. ft.	3,648

TABLE 3-5 ZONING DISTRICTS					
Zone District	**Map Code**	**Purpose**	**Typical Use**	**Minimum Parcel Size**	**Acres Zoned**
Exclusive Railroad District	RRE	Preserve railroad corridors for rail facilities, and to preserve railroad rights-of-way.	Railroad infrastructure, temporary agricultural uses, and non-rail facilities or ancillary activities to be used for rail purposes.	No minimum required.	N/A
Resource Conservation	R-C	Provide for the conservation and protection of natural resources and natural habitat areas.	Grazing, growing and harvesting of timber, watershed management, wildlife preserves, low intensity parks.	40, 80, 160 acres	1,386,621
Timberland Preserve	TPZ	Preserve timberland for timber production.	Timber production, temporary lodging camps, sawmills, timber products processing plants.	40 acres	16,922
Recreation	R-E	Provide for the proper development of recreational areas.	Forest stations and lookout stations, grazing and other agricultural uses	2 acres	2,290
Mountain Overlay	M	To be applied to all zoning districts except Open Conservation and Exclusive Agriculture. Uses are compatible with Mountain Residential and Mountain Commercial.	Uses are those of the underlying zoning district.	Requirements of underlying zone district apply	1,106**This total is counted separately since it's a zoning overlay.*
Open Conservation	O	Provide permanent open space or to limit development in dangerous areas such as floodplains.	Agriculture, freeways, ponding basins, quarries (including sand and gravel), recreation areas.	5 acres	3,028
Exclusive Agriculture	AE	Protect farming areas by permitting agricultural uses only and preserving agricultural lot sizes.	Farming, livestock, processing of agricultural products, ag. -related businesses, labor camps.	5, 20, 40, 80, 160, 320, or 640 acres	2,258,008
Limited Agriculture	AL	Preserve existing non-urban areas planned for urban expansion.	Farms and other non-intensive agricultural uses, labor camps, public buildings, churches.	20, 40, 80, 160, 320, or 640 acres	61,057
Agriculture	A1	Provide for the development of those unincorporated lands which are not included in other District classifications	Various	100,000 sq. ft.	385
General Agricultural	A-2	Protect farming areas but does permit industry or golf course, etc., allows division of land for non-farm residential purposes	Farming and livestock, homes, stables, feed lots, limited processing of agricultural products, golf courses, private clubs and lodges	100,000 sq. ft.	92
Rural Settlement	R-S	To provide for the basic living needs of the county's rural settlement areas	Homes, agriculture, churches, public facilities, grocery stores, service stations, restaurants, general merchandise	2 acres	252

Source: County of Fresno Zoning Ordinance.

TABLE 3-6
ZONING BY SUBAREA
(UNINCORPORATED FRESNO COUNTY)

Zone District	Map Code	Fresno East Valley		Westside Valley		Sierra Nevada		Sierra Foothill		Coast Range		Total	
		Acres	% Tot	Acres	% Tot	Acres	% Tot	Acres	% Tot	Acres	% Tot	Acres	% of Total
Rural Res	R-R	14,840	2.3%	4	<0.1%	2,621	0.3%	8,060	2.5%	-	-	25,524	0.9%
SF Res Agricultural	R-A	291	<0.1%	-	-	-	-	-	-	-	-	291	<0.1%
SF Res	R-1-A (H)	1,153	0.2%	-	-	256	<0.1%	-	-	-	-	1,410	<0.1%
SF Res Estate	R-1-E+R-1-EH	123	<0.1%	1	<0.1%	-	-	96	<0.1%	-	-	220	<0.1%
SF Res	R-1-B	1,887	0.3%	-	-	571	0.1%	244	0.1%	-	-	2,702	0.1%
SF Res	R-1-C	285	<0.1%	-	-	387	<0.1%	47	<0.1%	-	-	719	<0.1%
SF Res	R-1	1,826	0.3%	75	<0.1%	192	<0.1%	28	<0.1%	-	-	2,122	0.1%
Low Density MF Res	R-2 +R-2-A	159	<0.1%	2	<0.1%	-	-	2	<0.1%	-	-	162	<0.1%
Trailer Park Res	T-P	31	<0.1%	4	<0.1%	48	<0.1%	-	-	-	-	82	<0.1%
Res/Prof Office	R-P	9	<0.1%	-	-	4	<0.1%	3	<0.1%	-	-	16	<0.1%
Admin and Prof Office	C-P	4	<0.1%	-	-	1	<0.1%	-	-	-	-	5	<0.1%
Neigh Shopping Center	C-1	13	<0.1%	-	-	1	<0.1%	-	-	-	-	14	<0.1%
Commun Shopping Center	C-2	10	<0.1%	-	-	-	-	8	<0.1%	-	-	18	<0.1%
Central Trading District	C-4	42	<0.1%	3	<0.1%	15	<0.1%	28	<0.1%	-	-	88	<0.1%
General Commercial	C-6	165	<0.1%	3	<0.1%	-	-	58	<0.1%	-	-	227	<0.1%
Agricultural Commercial	AC	24	<0.1%	8	<0.1%	-	-	3	<0.1%	-	-	35	<0.1%
Rural Commercial Center	RCC	3	<0.1%	-	-	1	<0.1%	7	<0.1%	-	-	11	<0.1%
Commercial Recreation	C-R	7	<0.1%	-	-	-	-	-	-	-	-	7	<0.1%
Comm'l and Light Manuf	C-M	25	<0.1%	3	<0.1%	24	<0.1%	33	<0.1%	-	-	84	<0.1%
Light Manufacturing	M-1	435	0.1%	14	<0.1%	-	-	10	<0.1%	-	-	459	<0.1%
General Industrial	M-2	65	<0.1%	-	-	-	-	-	-	-	-	65	<0.1%
Heavy Manufacturing	M-3	2,173	0.3%	-	-	-	-	107	<0.1%	-	-	2,280	0.1%
Resource Conservation	R-C	1,545	0.2%	3,615	0.5%	668,967	84.5%	8,369	2.6%	-	-	682,496	23.1%
Timberland Preserve	TPZ	-	0.0%	-	-	8,820	1.1%	-	-	-	-	8,820	0.3%
Recreation	R-E	159	<0.1%	-	-	159	0.0%	316	0.1%	-	-	634	<0.1%
Open Conservation	O	458	0.1%	3	<0.1%	-	-	44	<0.1%	-	-	506	<0.1%
Exclusive Agriculture	AE	547,163	86.1%	646,954	91.1%	1,558	0.2%	222,469	68.5%	465,413	94.7%	1,883,557	63.8%
Limited Agriculture	AL	13,786	2.2%	776	0.1%	588	0.1%	19,782	6.1%	1	<0.1%	34,932	1.2%
Agriculture	A1	128	<0.1%	2	<0.1%	15	<0.1%	27	<0.1%	-	-	173	<0.1%
General Agricultural	A-2	-	0.0%	-	-	-	-	22	<0.1%	-	-	22	<0.1%
Rural Settlement	R-S	125	<0.1%	-	-	-	-	50	<0.1%	-	-	174	<0.1%
No Zone		48,540	7.6%	58,921	8.3%	107,814	13.6%	65,106	20.0%	25,841	5.3%	306,222	10.4%
Total		**635,476**	**100.0%**	**710,388**	**100.0%**	**792,042**	**100.0%**	**324,919**	**100.0%**	**491,255**	**100.0%**	**2,954,079**	**100.0%**

SECTION 3.6 DEVELOPMENT POTENTIAL

In conjunction with the Fresno County Multi-Jurisdictional Housing Element (MJHE), County staff prepared an analysis of vacant land to determine the residential development potential in the unincorporated areas of the county. The intent of the analysis was to demonstrate the County's ability to meet its share of the regional housing needs allocation (RHNA). Table 3-7 summarizes the findings of this analysis according to categories of General Plan designation. As the table shows, as of 2015, the unincorporated areas of the county had the capacity to accommodate almost 13,500 new housing units on just under 5,800 acres and approximately 1,900 parcels.

TABLE 3-7
RESIDENTIAL DEVELOPMENT POTENTIAL
(UNINCORPORATED FRESNO COUNTY)

General Plan Land Use Category	Parcels	Acres	Units
Rural Residential	697	3,239.7	3,055
Low Density Residential	736	1,377.9	4,916
Medium Density Residential	341	650.8	1,715
Trailer Park Residential	2	52.6	182
Commercial	79	50.9	696
Industrial	4	10.6	77
Friant Ranch SP	3	359.4	2,500
Shaver Lake Forest Specific Plan	1	-	189
Agriculture	23	17.6	97
Open Space	2	2.2	11
Total	**1,888**	**5,761.7**	**13,438**

SECTION 3.7 CITY GENERAL PLANS

INTRODUCTION

Fresno County contains 15 incorporated cities which account for 801,838 residents according to the 2015 Department of Finance (DOF) figures, about 82 percent of the total county population. Half of the incorporated cities are small, rural communities with a population less than 15,000. These cities primarily service the agricultural industry and are surrounded by ongoing agricultural operations. Consequently, one of the biggest issues facing the expansion of such communities is the conversion of agricultural land to provide additional housing, businesses, and other urban land uses, and the inevitable tension that arises between urban and agricultural land uses.

Each city has an adopted general plan that addresses land use and development goals, policies and programs that guide land use decisions. This section describes the areas covered by each city general plan, constraints on development, and the policy focus of each plan, including issues regarding city growth, annexation of land, and the ultimate size of the city, both geographically and population. Table 3-8 shows the 15 cities and their percentage of Fresno County population as of 2015.

TABLE 3-8
INCORPORATED CITIES
POPULATION AND PERCENTAGE

Incorporated Cities	2015 Population	Percent of County
Clovis	104,339	10.7%
Coalinga	16,529	15.8%
Firebaugh	7,779	0.8%
Fowler	5,957	0.6%
Fresno	520,159	53.5%
Huron	6,817	0.7%
Kerman	14,314	1.5%
Kingsburg	11,711	1.2%
Mendota	11,211	1.2%
Orange Cove	9,358	1.0%
Parlier	15,095	1.6%
Reedley	25,488	2.6%
Sanger	25,128	2.6%
San Joaquin	4,041	0.4%
Selma	23,912	2.5%
Total	**801,838**	

Source: Department of Finance (DOF), 2016.

FINDINGS

- The primary constraints to continued buildout under the city general plans is air quality and traffic; infrastructure limitations; county policies to protect land used to produce food and fiber; and county tax sharing agreement and annexation policies.
- Constraints to continued urban and rural development in the unincorporated county include farmland preservation policies; traffic; water supply and quality; air quality; existing land use patterns; and the ability of the various service districts to fund needed infrastructure improvements.

FRESNO COUNTY CITIES GENERAL PLAN STATUS

CLOVIS GENERAL PLAN

Clovis is the second most populous city in Fresno County (after the city of Fresno) and an emerging center for employment. The city is located immediately east of Fresno on State Route 168 (Shaw Avenue) which provides the primary link between Clovis and the Fresno urban area.

The *Clovis General Plan* was adopted in August 2014 and covers a timeframe of about 20 years. The Plan projects an aggressive rate of growth during the period to a buildout population of about 294,300 residents and over 107,100 dwelling units. This translates into a population increase of approximately 180,000, for an average annual increase of 4.8 percent. The Plan concentrates the expansion of the city to areas east and north of the present city boundaries (generally north of Shields and east of Willow), with over half of the assumed growth (96,700) occurring within the City's General Plan Planning Area, but outside of the City's SOI.

Policies of the *General Plan* foresee the expansion of the city through a network of urban villages composed of neighborhoods of about 160 acres. A mixed-use village center would provide public services and neighborhood shopping needs. The Plan also emphasizes mixed-use development to help mitigate potential traffic and air quality impacts. The Plan also identifies three urban center specific plan areas where major new development is proposed: the Loma Vista Urban Center, the Northwest Urban Center, and the Northeast Urban Center. These areas are depicted in Figure 3-7.

Factors that could constrain continued development of the city include water supply; sewer capacity, air quality; competition for jobs and housing from other urban areas (especially the city of Fresno); local and regional efforts to preserve agricultural land; and traffic congestion.

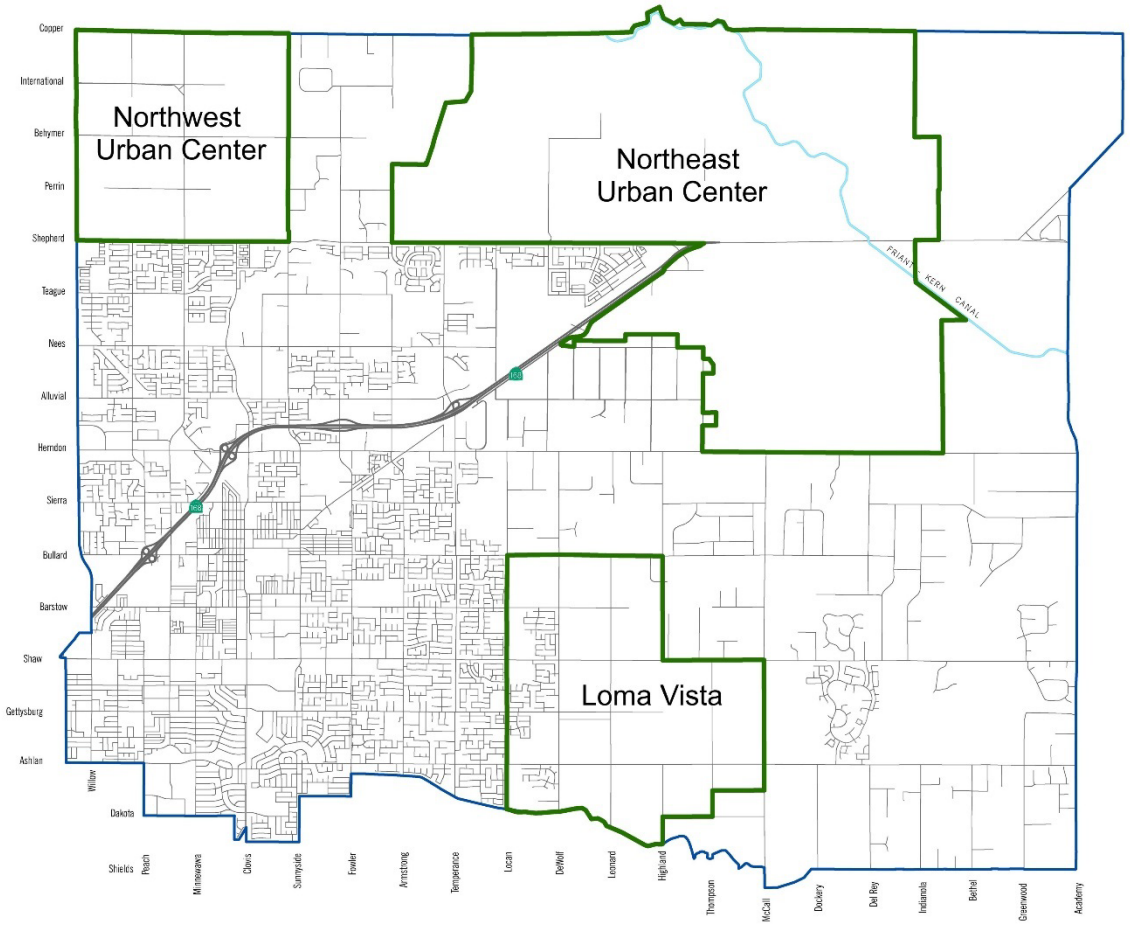
COALINGA GENERAL PLAN

Coalinga is located in western Fresno County between Interstate 5 and the Coast Range. The city is a regional service center for oil production operations in the area and provides shopping and housing for area residents. The General Plan was adopted in 2009 and covers a timeframe of 20 years (to the year 2025). The update was prompted by the growing demand of development beyond the northern corporate limits and Sphere of Influence. The Plan is organized into six chapters: The General Plan Overview, Land Use Element, Open Space and Conservation, Circulation, the Safety, Air Quality, and Noise Element, and the Public Facilities and Services Element. Buildout population is projected to be about 22,188 residents, with an average annual growth rate of three percent. The projected planning area

(existing city plus sphere of influence) is set to include about 19.4 square miles. Most of the land outside the city limits and within the sphere of influence is designated for single family residential development, business parks, and open space.

The Plan also contains an Area of Interest (AOI) which was established by the Local Agency Formation Commission (LAFCo) with aid of Fresno County and Fresno City. The AOI is a large geographical area including 83.9 square miles, which has been deemed an area of concern when it relates to future planning endeavors and development patterns.

FIGURE 3-7 GENERAL PLAN URBAN CENTERS, CITY OF CLOVIS



FIREBAUGH GENERAL PLAN

The city of Firebaugh is located on State Route 33 at the northwestern edge of Fresno County, about 35 miles west of the Fresno-Clovis Metropolitan Area. The *Firebaugh General Plan* was adopted in 2009 and covers a planning area of about 5.3 square miles and a time frame of about twenty years, extending to 2030. The Plan projects a buildout population between 10,435 – 16,570 residents in the year 2030. Potential limitations to future development include water supply; air quality; changes in the local and national economy; policies that seek to protect productive agricultural land, and whether the Highway 180 Expressway is constructed.

FOWLER GENERAL PLAN

Fowler is a small farming community located on SR 99 between Fresno and Selma. The *Fowler General Plan* was adopted in 2004 to guide the growth and development of the city through the year 2025. The Plan designates additional land for future residential and commercial development and provides guidance for the annexation of land designated for urban development. Buildout population in the plan is projected to be about 6,100 residents in 2025. However, the State Department of Finance estimated the city's 2015 population at about 5,957, which has the potential to surpass the 2025 projections if the demand of housing continues.

FRESNO GENERAL PLAN

The city of Fresno is by far the largest city in Fresno County and is one of California's major metropolitan areas. With a population of over 520,000, Fresno is the center of employment, higher education, commerce, and government for the central San Joaquin Valley. The Fresno General Plan was adopted in December of 2014 with a General Plan Horizon benchmark of 2035.

The present Sphere of Influence (SOI) covers 100,480 acres (157 square miles) of which about 72,000 acres (72 percent) are within the current city limits. According to the *General Plan*, the present SOI will not be expanded in order to complete development in areas already deemed for growth (i.e., west and southwest of State Route 99). Not expanding the SOI will also allow development to take place in the Southeast Development Area (SEDA), which was enacted through the adoption of a Specific Plan. The SEDA is expected to commence development by the General Plan Horizon year of 2035, but the full buildout of the development area will not reach its capacity until 2050 or even farther in the future.

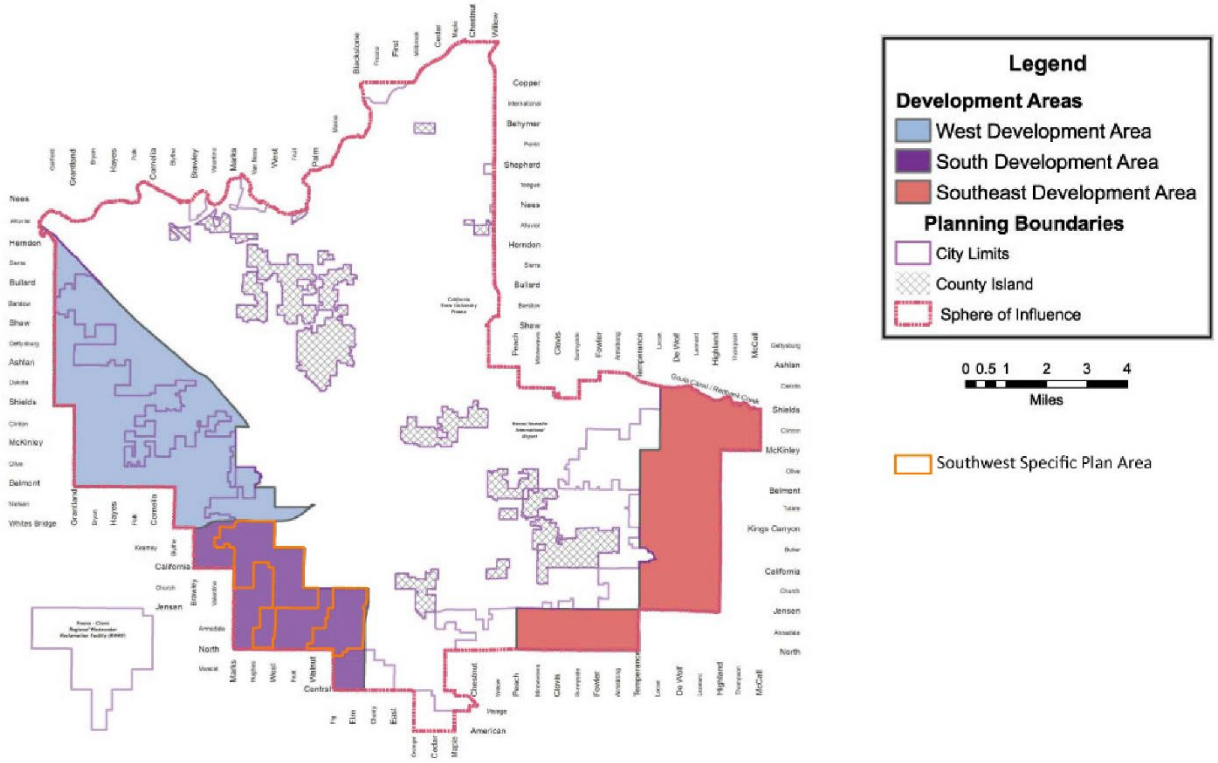
In light of projected growth in specific development areas, not reaching its full capacity by the General Plan Horizon year of 2035, the Fresno General Plan elected to analyze projected growth under two levels; the General Plan Horizon 2035 and General Plan Buildout (beyond 2035). The General Plan horizon benchmark foresees development concentrated along Fresno's primary corridors, revitalizing them into a series of mixed-use development hubs, providing a wide array of housing options and employment opportunities. The 2035 Plan calls for all new residential development to be divided in half between city limits and designated New Growth Areas (NGAs) on the edge of the city. Under the Horizon benchmark, the population is projected to increase to 771,000, with the addition of 76,000 dwelling units, pushing the total dwelling unit capacity to over 267,000. Even though this pattern of growth is quite modest, it is anticipated to leave a majority of the SOI undeveloped, based on focus areas for residential development.

The General Plan Buildout which focuses beyond 2035, picks up where the General Plan Horizon left off with anticipated undeveloped land in the SOI. The Buildout accounts for continued development within

the SOI, projecting an additional capacity of 145,000 dwelling units leading to an increase in population to 970,000.

Factors that could limit buildout in accordance with the proposed Plan include traffic and air quality issues; water supply and quality and the funding of other needed infrastructure; local and regional efforts to preserve prime agricultural land; and the proximity of the city of Clovis and the San Joaquin River.

FIGURE 3-8 GENERAL PLAN DEVELOPMENT AREAS, CITY OF FRESNO



Source: City of Fresno, Southwest Fresno Specific Plan, Existing Conditions, 2016.

HURON GENERAL PLAN

Huron is a small farming community located in southwest Fresno County on SR 269, nine miles east of Interstate 5. The city updated its General Plan in July of 2007. The city's population is expected to grow modestly in the future, according to the Department of Finance (DOF), the population in 2015 exceeded 6,000 residents. Policies of the General Plan encourage infill of existing vacant or underutilized properties before annexing the productive farmland that surrounds the city. The city's sphere of influence covers 1,170 acres, in comparison to the existing city limits (1,041 acres)

KERMAN GENERAL PLAN

Kerman is located 15 miles west of the city of Fresno and 17 miles south of the city of Madera on SR 145. The *Kerman General Plan* was adopted in 2007 and divided into two parts. The first part focuses on an overview of the Kerman, while the second part includes the required seven elements broken down into four chapters: Human Environment, Physical Environment, Resources, and Risk of Upset. The timeframe for the Plan is 20 years (until the year 2027) and covers a planning area of about 5,736 acres. At buildout of the Plan, the city's population is expected to grow to between 26,613 – 40,561 residents. To achieve this goal, the Plan designates about 3,131 acres for urban development and proposes to expand the city's sphere of influence accordingly. The Plan also encourages infill of existing vacant and underutilized land before annexing new land for development.

Factors that may constrain the full buildout of the city in accordance with the proposed plan relate to funding for the provision of needed infrastructure; water supply; air quality; and local and regional efforts to preserve prime agricultural land.

KINGSBURG GENERAL PLAN

Kingsburg is located south of the city of Fresno on SR 99. The city last completed a comprehensive update of its *General Plan* in July, 1992. The Plan proposes to expand the city's sphere of influence to the east and west by about one-half mile into productive agricultural land. Policies in the Plan seek to limit the rate of population growth to three percent when factored over a continuous five-year period. Using this policy as a guide, the Plan projects a buildout population of about 13,800 residents in the year 2012, while the population in 2015 was lower than the projected buildout at 11,711.

Factors that could constrain the future growth include the timing and funding of needed infrastructure; air quality and traffic considerations; and local and regional efforts to preserve prime agricultural land.

MENDOTA GENERAL PLAN

The city of Mendota is located about ten miles south of the city of Firebaugh and about 35 miles west of the city of Fresno. The Mendota airport is located about three miles east of the central business district and lies within the city limits. The population in 2008 was approximately 9,700 residents. The DOF projects a buildout population of between 22,434 residents in the year 2025, an increase of 12,646 residents.

The *Mendota General Plan* was last updated in 2009 and includes policies to guide the growth and development of the city for twenty years. The Plan designates a substantial amount of land within the sphere of influence for additional medium density residential and heavy industrial land uses Policies of the Plan seek to maintain an orderly pace of development through the timeframe of the *General Plan* by

annexing new land as needed to accommodate anticipated residential and industrial demand. The Plan appears to be market driven; there are no specific policies that regulate the pace, location, or amount of new development to be accommodated. Potential constraints to development include water and sewer service limitations and regional policies to preserve productive agricultural land.

ORANGE COVE GENERAL PLAN

Orange Cove is a small farming community located near the foothills of the Sierra Nevada. The town covers about 1,500 acres of mostly flat agricultural land along the Friant-Kern Canal. No timeframe or projected buildout population is suggested in the *General Plan*, which is a modest compilation of policies accompanied by a map of land use designations. Since 1990, the city's population grew by 1,000 from about 5,600 to about 6,700 in 1996. As of 2015, the population in Orange Grove was 9,358. Constraints to future development in Orange Cove include air quality; adequate water supply; access to housing; preservation of agricultural land; and funding for needed infrastructure improvements.

PARLIER GENERAL PLAN

The *Parlier General Plan* was adopted in 1985 and covers a planning area of about 1,650 acres located between the cities of Selma and Reedley in east-central Fresno County. The Plan provides guidance for buildout of the community with a population of about 14,000 in the year 2005. The Plan appears to be market driven and expects the most recent pace of development to continue into the future.

Constraints to development include air quality; water supply; policies intended to preserve productive agricultural land; and funding for needed infrastructure improvements.

REEDLEY GENERAL PLAN

Reedley is situated along the Kings River in southeast Fresno County, about 12 miles east of SR 99. The *Reedley General Plan* was adopted in 2013 and covers a timeframe of about 20 years to 2030. In 2013, the total area within the corporate limits was about 3,133 acres, with the SOI containing approximately 4,760 acres. The *General Plan* proposes to expand the sphere of influence to include about 2,860 acres for a total planning area of just over 7,900 acres. Areas within the sphere and outside the city limits are designated primarily for residential, commercial, and industrial land uses. The *General Plan* anticipates an annual average population growth of about three percent during the timeframe of the Plan, for a buildout population of 47,369 residents.

Policies of the *General Plan* describe the process through which future annexations will be considered. The Plan emphasizes the need to provide infrastructure for new annexations and encourages infill of existing land before new annexations will be considered. Factors that may limit the continued development of the city include the Kings River and the Tulare County line which act as barriers to the expansion of the city to the northwest and south, respectively; flood hazards associated with the River; and efforts to preserve productive agricultural lands.

SANGER GENERAL PLAN

The *Sanger General Plan* was adopted in November 2003. The Plan projects an annual average growth rate of about 2.3 percent to the year 2025. At that time, the city is projected to have a population of about 30,000 residents. Based on growth projections, the General Plan has determined that the LAFCo-set SOI will need to be expanded north of California Avenue and Kings Canyon Road by 2,100 acres.

Factors that could constrain future development include groundwater quality and quantity; sewage treatment and collection capacity; air quality; and local and regional efforts to preserve agricultural land.

SAN JOAQUIN GENERAL PLAN (2014)

The City of San Joaquin adopted its General Plan in July 2014. The Plan covers a timeframe of 20 years and a 2,020-acre planning area that coincides with the City's sphere of influence, which was expanded with the 2014 General Plan update. The *General Plan* assumes a population holding capacity of approximately 18,000, which is more than four times the city's 2015 population (4,040). Factors that could constrain buildout of the city include funding for the provision of needed infrastructure; water supply; air quality; and local and regional efforts to preserve prime agricultural land.

SELMA GENERAL PLAN

The city of Selma is located about 16 miles southeast of the city of Fresno, along the Highway 99 corridor. The City of Selma adopted the *Selma General Plan* in July 2010, with a planning horizon of 2035. The population in 2009 was approximately 23,301 residents. The Plan projects buildout based on two growth rates (three percent and four percent). Based on these projections, the buildout population of Selma would be either 50,250 or 64,600. As of 2010, the Selma city limits covered approximately 5.1 square miles, the existing SOI covered 12.9 square miles, and the Planning Area covered 23.7 square miles. The General Plan does not anticipate any changes to the boundaries. Factors that may constrain expansion of the city into the proposed sphere include the configuration and capacity of interchanges on SR 99 and efforts to preserve prime agricultural land.

Table 3-9 compares each of the 15 incorporated city general plans and the expected buildout capacity within each (where specified in the general plan).

TABLE 3-9 2015 POPULATION AND BUILDOUT POPULATION OF CITY GENERAL PLANS				
City	**2015 Population**	**Buildout Population**	**Population Added**	**Target Year for Buildout**
Clovis	104,339	294,300	189,961	2035
Coalinga	16,529	22,188	5,569	2025
Firebaugh	7,779	16,570	8,791	2030
Fowler	5,957	6,100	143	2025
Fresno	520,159	771,000 (2035) 970,000 (2050)	250,841 (2035) 449,841 (2050)	2035 2050
Huron	6,817	N/A	N/A	2025
Kerman	14,314	40,561	26,247	2027
Kingsburg	11,711	N/A	N/A	N/A
Mendota	11,211	22,434	11,223	2025
Orange Cove	9,358	N/A	N/A	N/A
Parlier	15,095	N/A	N/A	N/A
Reedley	25,488	47,369	21,881	2030
Sanger	25,128	30,000	4,872	2025
San Joaquin	4,041	18,000	13,959	N/A
Selma	23,912	64,600	40,688	2035
Total	**801,838**			

REGULATORY SETTING

General Plan Law (California Government Code Section 65300, et seq.). California Government Code Section 65300, et seq., specifies the substantive and topical requirements of general plans. State law requires each city and county to 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 California Supreme Court has called the general plan the "constitution for future development." The general plan expresses the community's development goals and embodies public policy relative to the distribution of future land uses, both public and private.

KEY TERMS

Buildout; Build-out - Development of land to its full potential or theoretical capacity as permitted under current or proposed planning or zoning designations.

City - City, with a capital "C," generally refers to the government or administration of a city. City, with a lower case "c" may mean any city or may refer to the geographical area of a city (*e.g.*, the city's bikeway system.)

General Plan - A compendium of a city's or a county's policies regarding its long-term development, in the form of maps and accompanying text. The general plan is a legal document required of each local agency by the State of California Government Code Section 65301 and adopted by the City Council or Board of Supervisors. In California, the general plan has seven mandatory elements (circulation, conservation, housing, land use, noise, open space, safety and seismic safety) and may include any number of optional elements (such as air quality, economic development, hazardous waste, and parks and recreation).

Planning Area - The planning area is the land area addressed by the general plan. Typically, the planning area boundary coincides with a sphere of influence which encompasses land both within the city limits and potentially annexable land.

Zoning. The division of a city or county by legislative regulations into areas, or zones, which specify allowable uses for real property and size restrictions for buildings within these areas; a program that implements policies of the general plan.

Zoning District. A designated section of the county for which prescribed land use requirements and building and development standards are uniform.

Zoning Ordinance. The adopted zoning, development, and planning regulations of a city or county.

SECTION 3.8 SURROUNDING COUNTY GENERAL PLANS

INTRODUCTION

Fresno County shares borders with eight counties: Tulare, Kings, Monterey, San Benito, Merced, Madera, Mono, and Inyo. Although land use decisions in other counties are beyond Fresno County's direct control, close coordination of the general plan update process with the general plans of these surrounding counties can help minimize potential conflicts with land use designations and policies in the Fresno County General Plan.

SURROUNDING COUNTY GENERAL PLAN STATUS

KINGS COUNTY GENERAL PLAN

Kings County borders Fresno County to the south and west. The county is almost entirely prime agricultural land outside of the four cities and four unincorporated communities. The General Plan was last updated in 2010 with a buildout year of 2030 and projects modest growth in the unincorporated areas over that timeframe. The Plan encourages urban development within cities and existing urban areas and maintains large (40 acres or more) parcel sizes outside city expansion areas. There do not appear to be any new or expanded developments proposed in Kings County that could adversely affect the Fresno County General Plan.

MADERA COUNTY GENERAL PLAN

Madera County borders Fresno County to the north and shares a common boundary of over one hundred miles. Madera County shares many common attributes with Fresno County. Madera County stretches from the eastern slopes of the coast ranges to the crest of the Sierra Nevada, with fertile agricultural lands in between. Madera County is more rural, with just under 152,400 residents. The policies of Madera County General Plan are designed to preserve the rural, agricultural character of the county while improving the county's economy.

Madera County adopted a comprehensive update of its general plan in October 1995. Of particular relevance to Fresno County is Madera County's designation of three new major growth areas along the Fresno County border in the vicinity of Millerton Lake and SR 41. Specific plans for these three areas, known as Rio Mesa, Gunner Ranch, and Castle-Cook, will be prepared in the future, and Madera County expects that all three plans will accommodate housing and local-serving commercial land uses.

MERCED COUNTY GENERAL PLAN

Merced County borders Fresno County on the northwest. The Merced County General Plan was updated in 2014 and projects a year 2030 population of about 437,900 residents, concentrated in the county's urban areas and cities. Merced County is also an agricultural county and has adopted policies that encourage urban development in cities and existing urban areas where services are available. The plan designates areas adjacent to Fresno County for agricultural use. There do not appear to be major new or expanded urban developments proposed near the shared border with Fresno County.

MONTEREY COUNTY GENERAL PLAN

Monterey County borders Fresno County to the west in the coast ranges west of the city of Coalinga. The Monterey County General Plan Update was adopted in October of 2010 and includes policies applicable on a county-wide basis, as well as more specific policies and programs that govern 10 sub-regional planning areas. The Plan covers a timeframe of approximately 25 years and projects a population of about 479,487 in the year 2030, which is derived from the Association of Monterey Bay Area Governments (AMBAG). Unincorporated Monterey County, as with Fresno County, is composed primarily of agricultural lands and open space. According to the General Plan, 60 percent of the county is designated for agricultural uses, which constitutes the largest sector of the county's economy. Not surprisingly, policies and programs of the Plan encourage the preservation of productive farmland by concentrating new urban development within existing urban areas and where urban services are available. The County's growth management policy establishes criteria for the location of new urban development and discourages such development outside of urban service areas.

The portion of Monterey County that shares a border with Fresno County is designated entirely for grazing and agricultural use. The area does not appear to meet the criteria established by the County for new urban development. Thus, the potential for conflicts with the Fresno County General Plan appear small.

INYO COUNTY AND MONO COUNTY GENERAL PLANS

Fresno County borders a small portion of Inyo and Mono counties, which are located in the eastern portion of the State along the Nevada/California border. Both counties are largely rural and consist primarily of public lands managed by the U.S. Forest Service, Bureau of Land Management, National Park Service, and other federal and state agencies. The border shared with Fresno County is located in a remote portion of the Sierra Nevada and consists largely of public lands, such as Sierra and Sequoia National Forests and Kings Canyon National Park. The General Plans for both counties reflect the public ownership and rural, open space nature of the lands within the jurisdiction. The Inyo County General Plan completed a comprehensive update in 2001, while Mono County completed its update in 2009.

The potential for conflict between the Plans for Fresno County and those for Inyo and Mono Counties appears small. One area of potential concern relates to the need for coordination among the counties with the U.S. Forest Service and National Park Service regarding national forest and park plans especially as they relate to the preservation of wilderness areas, watersheds, and cultural resources.

SAN BENITO COUNTY GENERAL PLAN

San Benito County borders Fresno County on the west in the coast ranges which form the western boundary of the San Joaquin Valley. The area consists of range land and grazing and has little potential for other types of development; there are no cities or unincorporated communities in the area. The San Benito County General Plan was last updated in 2015 and includes policies for the preservation of productive agricultural and grazing land through 2035. The General Plan encourages continual urban development to occur adjacent to the two incorporated cities of Hollister and San Juan Bautista.

TULARE COUNTY GENERAL PLAN

Tulare County shares the southern border of Fresno County. The Tulare County General Plan was updated in 2012 to provide general land use and development guidance for the unincorporated areas. No specific time horizon is indicated. The main goals of the Plan are to preserve the agricultural economy, promote business and retail trade, and provide housing and jobs.

Tulare County has also adopted a number of area plans that affect lands near Fresno County. These plans include the Rural Valley Lands Plan (revised 1995), the Kings River Plan (1982), and the Foothill Growth Management Plan (1981). Each of these plans provides more precise guidance for land use management in specific areas of the county. The primary goal of these plans is to preserve sensitive resources, especially agricultural land. New development is encouraged to locate in areas that do not contain prime farmlands or other sensitive resources, and where services are already available.

REGULATORY SETTING

General Plan Law (California Government Code Section 65300, et seq.). California Government Code Section 65300, et seq., specifies the substantive and topical requirements of general plans. State law requires each city and county to 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 California Supreme Court has called the general plan the "constitution for future development." The general plan expresses the community's development goals and embodies public policy relative to the distribution of future land uses, both public and private.

KEY TERMS

County Line. A political boundary that defines land that lies within the boundaries of a county.

General Plan. A compendium of a city's or a county's policies regarding its long-term development, in the form of maps and accompanying text. The general plan is a legal document required of each local agency by the State of California Government Code Section 65301 and adopted by the City Council or Board of Supervisors. In California, the general plan has seven mandatory elements (circulation, conservation, housing, land use, noise, open space, safety and seismic safety) and may include any number of optional elements (such as air quality, economic development, hazardous waste, and parks and recreation).

SECTION 3.9 REGIONAL, STATE, AND FEDERAL PLANS AND POLICIES

INTRODUCTION

State and Federal law require Fresno County and numerous regional agencies to undertake planning efforts within the county that address a variety of issues that transcend local political boundaries. This section discusses the regional, State and Federal policies and or plans that can affect the overall planning process. These are critical in Fresno County since there are regional policies that affect the growth and development, specifically related to agriculture, flood control, water, and air quality. State and Federal policies and plans primarily dictate the uses of specific public lands such as the National Forests in the eastern half of the county. Typically, State and Federal agencies are not subject to local government adopted policies and plans, but in order to create a cohesive and transparent planning process, it is crucial there is a clear understanding of the County's planning procedures for all vested parties.

FINDINGS

- Sequoia National Forest covers approximately 1,173,200 acres, with 12 percent or 140,784 acres of the forest located in the southeast portion of the County. USFS completed the *Draft Revised Land Management Plan for the Sequoia National Forest* in May 2016. As of the publication of this Background Report, that plan had not been adopted.
- Fresno County has tax sharing agreements with each of the 15 cities in the county. The agreements with Clovis and Fresno, which are the most influential with respect to planning, were entered into in 1990 and 2003, respectively, and are set to expire in June 2017 (Clovis) and January 2018 (Fresno).

RELEVANT AGENCIES, PLANS, AND AGREEMENTS

FRESNO COUNCIL OF GOVERNMENTS (FCOG)

The Fresno Council of Governments provides population projections based on DOF estimates to use in regional transportation and housing planning. As required by State law, FCOG administers the apportionment of housing allocation requirements for various income and housing categories for all cities and the County of Fresno. These are based on DOF and census data, and also on data received from each city and the County.

FCOG also prepares and coordinates numerous regional transportation planning services and studies including: The *Regional Transportation Plan (RTP)*; Central Valley Ridesharing through Valleyrides; and Traffic and Air Quality Modeling.

MASTER TAX SHARING AGREEMENTS

State law mandates that a property tax share agreement be executed between a city and county prior to annexation of lands to a city. In Fresno County, these agreements are essential to ensuring orderly development and sensible utilization of County and city resources. Fresno County has executed tax sharing agreements with each of the 15 cities in the county. The agreements with Clovis and Fresno were

entered into in 1990 and 2003, respectively, and are set to expire in June 2017 (Clovis) and January 2018 (Fresno). The other 13 agreements are scheduled to expire between 2020 and 2026.

The County's agreement with the City of Clovis includes the addition of three growth areas in the southeast, northeast, and northwest areas of the city and a requirement that 60 percent of the Loma Vista Specific Plan be committed to development before other areas are made available for development. The agreement with the City of Fresno includes the addition of two growth areas in the southeast and northern areas of the city, as well as a requirement that 60 percent of certain existing community plan areas be committed to development before other areas are made available. Both agreements include provisions to share three percent of additional sales tax revenue from newly annexed areas with the County.

CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS)

The California Department of Transportation (Caltrans) has authority over all State highway and freeway rights-of-way, including easements, and undeveloped rights-of-way that have been acquired in anticipation of future construction. Any project that proposes to construct a road connection or perform earthwork within a State highway or freeway right-of-way must obtain an encroachment permit from Caltrans.

AIRPORT LAND USE POLICY PLANS

Airport land use plans are important to the *Fresno County General Plan* update process because the general plan of any city or county must be consistent with the applicable airport land use plan in areas covered by the land use plan. Airport land use plans regulate land around airports to insure the continued viability of each facility. The plans each contain policies and regulations that discourage land uses that would be inconsistent with safe airport operations. The plans prohibit high-occupancy land uses (such as apartments, hospitals and schools) and land uses sensitive to noise (such as residences) within zones around each airport based on the expected noise exposure and the likelihood of an accident.

There are eight public and private airports within Fresno County. These include six public airports (Fresno-Yosemite International Airport, Fresno Chandler Downtown Airport, Coalinga Airport, Firebaugh Municipal Airport, Mendota Municipal Airport and Reedley Municipal Airport) and three private airports (Selma Aerodrome, Harris Ranch Airport, and Sierra Sky Park).

FRESNO-YOSEMITE INTERNATIONAL

The busiest airport in the county and the region is Fresno-Yosemite International (FYI) which is owned and operated by the city of Fresno. Located approximately 6 miles northeast of Fresno City Hall in the Roosevelt Community Plan area, FYI is the county's primary passenger airport. The *Fresno Yosemite International Airport Compatibility Land Use Plan* (Adopted June 4, 2012) guides land use decisions within the vicinity of the Airport to insure compatibility.

FRESNO CHANDLER DOWNTOWN AIRPORT

Fresno-Chandler Downtown Airport (FCH) is located west of the State Highway 99 in the city of Fresno and is owned and operated by the City. The Airport is guided by the *Fresno-Chandler Downtown Airport Land Use Policy Plan* which was last revised in February 2000 and the *Fresno Chandler Downtown Environs Specific Plan* (City of Fresno, 1981). Acting as a reliever airport to Fresno-Yosemite International Airport. FCH occupies a 200-acre site in the Edison Community Plan, one and one-half

miles southwest of downtown Fresno. According to the 1981 Plan, the major land uses in the vicinity of FCH are agriculture, residential (mostly single-family), public, and industrial.

COALINGA AIRPORT

The *Coalinga Airport Land Use Policy Plan* was adopted in November 1994. Coalinga Airport is on 1,080 acres located northwest of the intersection of Calaveras and Phelps Avenues. The Coalinga City Council adopted the *Airport Master Plan* for the Coalinga Airport in January 1990. Surrounding county land is designated for agriculture and wildlife conservation area uses that prohibit urban development which could conflict with airport operations. The Federal Aviation Administration (FAA) and the U.S. Fish and Wildlife Service have developed a formal agreement which accepts the city of *Coalinga's Mitigation Plan* and the *Pleasant Valley Habitat Conservation Plan* as acceptable means for ensuring that airport or urban development does not encroach on lands adjacent to the airport.

OTHER FRESNO COUNTY AIRPORTS

The *Fresno County Airports Land Use Policy Plan* (January 1983) guides development around Firebaugh Municipal Airport, Mendota Municipal Airport, Reedley Municipal Airport, and the Selma Aerodrome.

Firebaugh Municipal Airport, owned and operated by the city of Firebaugh, is located on the north side of Nees Avenue, west of the Main Canal. The *Fresno County Firebaugh Community Plan* designates unincorporated land around the airport for agricultural use, industrial use, and open space reserve. The open space designation has been applied at areas at both ends of the Airport because they are considered to be hazardous areas.

Reedley Municipal Airport is located on a 138-acre site approximately five miles north of the city. The Airport property is a noncontiguous portion of the city of Reedley; the surrounding area is unincorporated portions of Fresno County. Uses surrounding Reedley Municipal Airport are generally agricultural land (including orchards and vineyards) and rural residential in all directions. The Great Western School, an elementary school, is located south of the airport, on the south side of American Avenue.

The Selma Aerodrome is a privately owned and operated facility located approximately two miles west of State Route 99 between Huntsman Avenue and Floral Avenue. According to the City of Selma's 2010 *General Plan 2035*, the aerodrome is within the City's Sphere of Influence (SOI), covering approximately 22 acres.

Development around Harris Ranch Airport is guided by the *Harris Ranch Airport Land Use Policy Plan* (October 1995). This Airport is located in the southeast quadrant of the intersection of the Interstate 5 Freeway and State Route 198 (Doris Avenue) interchange. The city of Coalinga is located ten miles to the southwest along State Route 198. The Fresno-Clovis area is located 35 miles to the northeast. Harris Ranch Airport is outside of any incorporated city's sphere of influence.

Sierra Sky Park is located in northern portion of the county near the Fresno/Madera County line. Development in the vicinity of the Airport is guided by the *Sierra Sky Park Land Use Policy Plan* (Revised October 16, 1995).

NATIONAL FOREST LAND RESOURCE MANAGEMENT PLANS

Fresno County contains portions of two national forests: Sierra National Forest, which makes up much of the eastern portion of the county north of the Kings River, and Sequoia National Forest, which makes up a small portion of the county south of the Kings River. National forests are managed by the United States Forest Service (USFS), which is part of the U.S. Department of Agriculture.

Land use decisions and resource management within National Forests are outside the jurisdiction of Fresno County, although the USFS seeks County input on major land use and policy decisions. Activities and land use decisions within the National Forests can, however, affect Fresno County in a number of ways, especially to the extent that economic use and enjoyment of the Forest contributes to the economy and quality of life in Fresno County.

In an effort to establish long-range planning and management of the national forests, Congress passed the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA), and the National Forest Management Act of 1976 (NFMA), that amended the RPA. These laws require comprehensive, long-range forest plans to be prepared for each national forest that details, among other things, how the resources within the forest will be managed and used. The management plans stress "multiple use" strategies that encourage the economic use of resources within the forest. Such resources include timber, water, and mineral resources, as well as recreation.

SIERRA NATIONAL FOREST

Sierra National Forest is located on the west side of the central Sierra Nevada Range in Fresno, Madera, and Mariposa Counties. The forest's administrative boundary encompasses 1,395,553 acres, of which 109,493 acres are non-federal. The private holdings were patented under various laws such as the Timber and Stone Act, Homestead Act, or 1872 Mining Act. The pattern of private holding is generally irregular and scattered along the forest's western boundary at the lower and mid-elevations. The Sierra National Forest Plan is currently undergoing an update process with public meetings scheduled for 2016.

Several small communities are located within the Forest boundary. These include:

- Pine Ridge
- Mono Hot Springs
- Vermillion Valley
- Florence Lake
- Balch Camp
- Wishon Village
- Trimmer
- Camp Sierra
- Mountain Rest
- Sierra Cedars
- Cedar Crest
- Lakeshore
- Big Creek
- Huntington Lake
- Camp Chawanakee
- Shaver Lake
- Alder springs
- Meadowlakes

Management of the Sierra National Forest is guided by the *Forest Land and Resource Management Plan (1991)* and the most recent *Forest Land and Resource Management Plan Record of Decision (ROD) (2004)*. The goal of the *Forest Plan* is to provide a management program reflecting a mix of activities, allow use and protection of Forest resources, and fulfill legislative requirements while addressing local,

regional and National issues. The planning horizon is 50 years, however NFMA regulations require land and Resource Management Plans to be applicable for 10-15 years with projections for the following 40 years.

SEQUOIA NATIONAL FOREST

Sequoia National Forest is located at the southernmost end of the Sierra Nevada range within Tulare (62 percent), Kern (26 percent) and Fresno (12 percent) counties. Within the Forest boundary, there are 1,119,045 acres of National Forest land and 54,155 acres of other ownerships (private, county, state, etc.). Several small communities are located within the Forest boundary. These include Hume, Etheda Springs, and Cedarbrook. Management of the Sequoia National Forest is directed by the *Sequoia National Forest Land and Resource Management Plan* (Forest Plan) (1988). The Forest Plan provides a management program reflecting a mix of activities which allows use and protection of Forest resources. It also fulfills the legislative requirement for the Sequoia National Forest while addressing local, regional, and national issues. To accomplish this, the Forest Plan: allocates land uses, establishes the management direction and associated goals and objectives for the Forest specifying the standards, approximate timing and intensity of practices necessary to achieve that direction, and establishes the monitoring and evaluation requirements needed to ensure that the direction is being carried out and to determine how well outputs and effects were predicted. USFS completed the *Draft Revised Land Management Plan for the Sequoia National Forest* in May 2016. As of the publication of this Background Report, that plan had not been adopted.

U.S. DEPARTMENT OF INTERIOR, NATIONAL PARK SERVICE

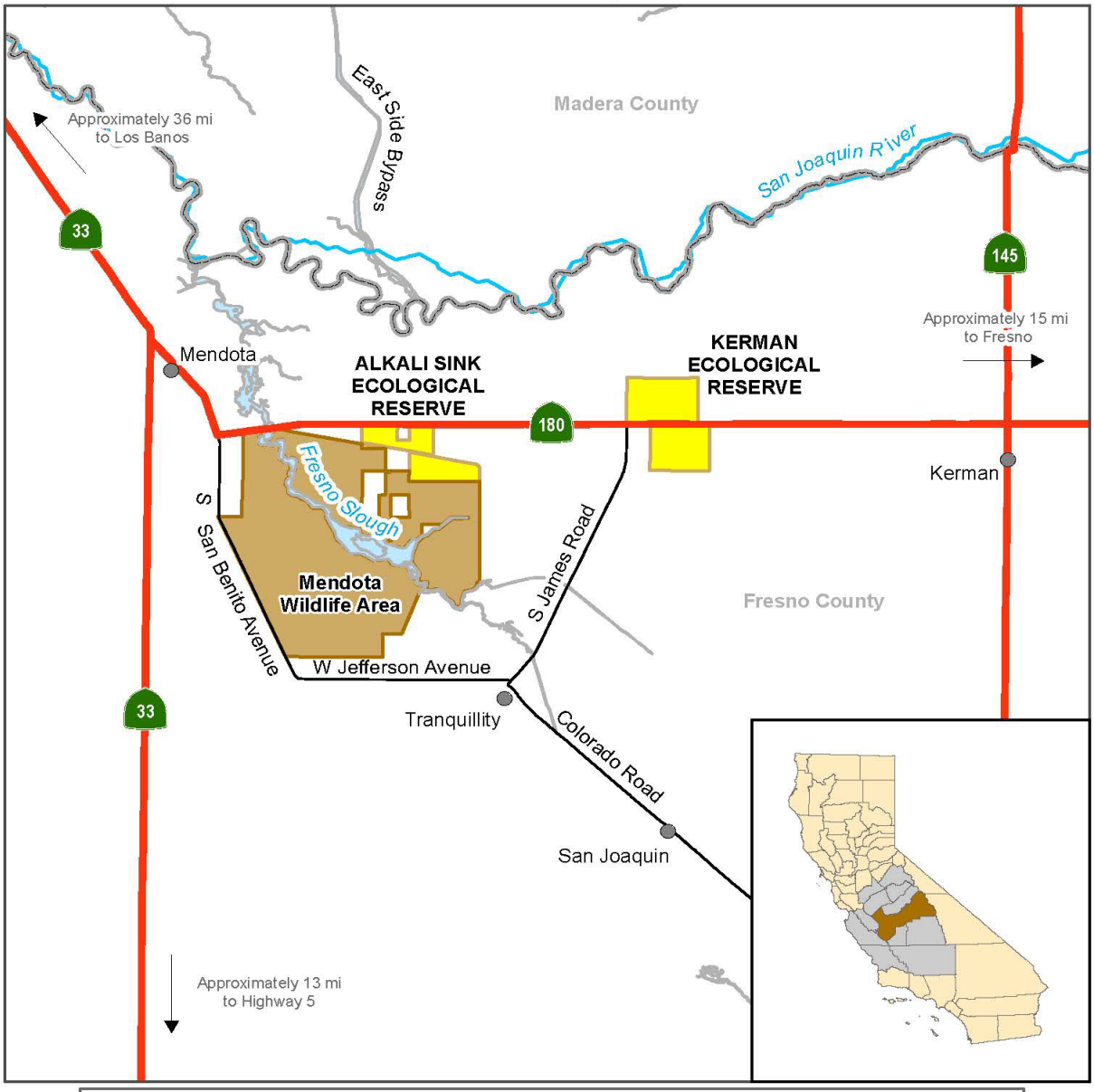
Kings Canyon National Park encompasses a portion of southeastern Fresno County. Management of this area is by the National Park Service, an agency of the U.S. Department of the Interior. The *Natural Resource Management Plan* (National Park Service, 1999) for Sequoia and Kings Canyon National Parks, guides overall management of the parks. The Plan addresses broad resource topics including vegetation, wildlife, fire ecology, water resources, and impact of human use.

STATE OF CALIFORNIA

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

The California Department of Fish and Wildlife (CDFW) operates the wildlife area, Mendota Wildlife Area, and two ecological areas, the Kerman Ecological Reserve and the Alkali Sink Ecological Reserve in Fresno County as shown in Figure 3-9. The San Joaquin River (divided into four units) is also within CDFW's jurisdiction as well as other lands in Fresno County which have not yet been designated. The Mendota Wildlife Area is located approximately three miles south of the city of Mendota near Whites Bridge. The CDFW currently is responsible for the management of approximately 640 acres of the Allen Ranch. The City of Coalinga has purchased 490 acres adjacent to and near the CDFW property as a land conservation bank for the Coalinga Habitat Conservation Plan.

FIGURE 3-9 ALKALI SINK ECOLOGICAL RESERVE, KERMAN ECOLOGICAL RESERVE, AND MENDOTA WILDLIFE AREA



Disclaimer: Boundaries are approximate.
Maps are intended for general purposes only.

February 2015 - WLB

CALIFORNIA STATE LANDS COMMISSION

The State acquired sovereign ownership of all tidelands and submerged lands and beds of navigable waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all the people of the State for statewide Public Trust purposes that include: waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space.

California holds a fee ownership in the beds of the San Joaquin and the Kings River between the two ordinary low water marks. Each of these waterways between the ordinary high-water marks is subject to a Public Trust Easement. Both easement and fee owned lands are under the jurisdiction of the California State Lands Commission. The landward boundaries of the State's sovereign interests are often based upon the ordinary high-water marks of these waterways as they existed prior to man-made influences such as channelization, dams, and diversions. Thus, such boundaries may not be readily apparent from present day site inspections. A lease from the Commission is required for any portion of a project extending onto State-owned lands that are under its exclusive jurisdiction. Use of lands underlying the State's easement must be consistent with Public Trust needs in the area.

CALIFORNIA STATE PARKS AND RECREATION DEPARTMENT

The California Department of Parks and Recreation administers State Park land within the San Joaquin River district. In Fresno County, the primary holding of the State Park system is Millerton Lake State Recreational Area.

SAN JOAQUIN RIVER PARKWAY

In 1990, the Governor and State Legislature recognized the unique qualities of the San Joaquin River corridor by establishing a Task Force to advise in the formation of the San Joaquin River Parkway. The Task Force's duty was to oversee the formation a parkway plan that enhances recreational opportunities and balances the many land uses along the river, such as urban uses, wildlife habitat, mineral extraction, and agriculture. Fresno County worked with the Task Force, non-profit organizations, Madera County, the City of Fresno, other affected local agencies, appropriate State and federal agencies, and the general public to review and provide input on the San Joaquin River Parkway Plan (San Joaquin Parkway Task Force Plan), which was adopted in May of 1992.

The San Joaquin River Conservancy is a state agency that was authorized by State legislation in 1992 and established by the Counties of Fresno and Madera and the City of Fresno in 1993. Its purpose is to acquire and manage lands within the San Joaquin River Parkway with the goals of protecting biological diversity, cultural resources, and natural resources, and providing for low-impact recreational and educational opportunities. The Conservancy has no zoning, land use, or taxing authority, but it can receive public funding and donations from all public and private sources. The Conservancy is governed by a thirteen-member regional board that includes elected officials of Fresno County, Madera County, the City of Fresno, and the City of Madera; three citizen members; and representatives of State and local agencies.

The Conservancy is the managing entity for the San Joaquin River Parkway and as such is responsible for acquisition and management activities for the Parkway. However, Fresno County has a role to play in the development of the Parkway in terms of the exercise of its police authority for land use issues. The Conservancy adopted a San Joaquin River Parkway Master Plan in July of 2000.

SECTION 3.10 MILITARY INSTITUTIONS AND INSTALLATIONS

INTRODUCTION

This section describes the influence of active military installations in and around Fresno County. The operations associated with these installations can greatly affect the land use pattern and future development.

FINDINGS

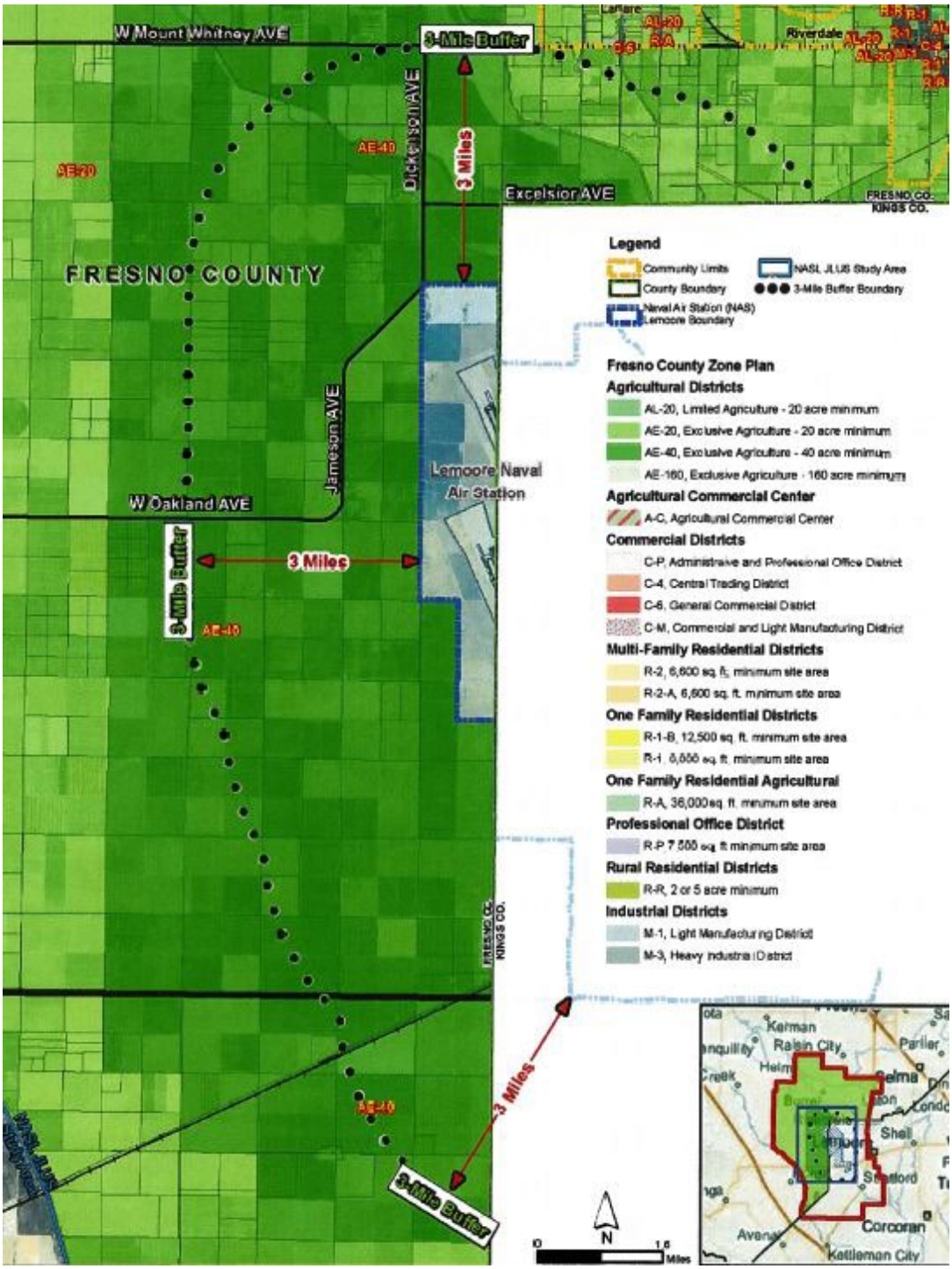
- Lemoore Naval Air Station (NAS), though not based in Fresno County, has two extensions of the station's primary runway system that cross the Kings County line measuring between 2,500 and 4,400 feet.

EXISTING SETTING

Fresno County does not have any active military installations within the unincorporated county. Lemoore Naval Air Station, located in Kings County just beyond the southern border of Fresno County, does, however, have two runways that extend approximately 2,500 feet and 4,400 feet into Fresno County. Even though Lemoore NAS is not completely located within the county boundaries, the County does note the impacts associated with the aircraft crossover in both the noise and safety elements of the General Plan. In 2011 a Joint Land Use Study (JLUS) was completed that involved the counties and communities surrounding the installation. The JLUS highlighted particular areas of concern regarding noise, light, and potential safety hazards. Fresno County, due to its location at the end of two of the active runways, focused heavily on the impacts of incoming and outgoing aircraft. One of the main concerns for the County is potential encroachment of development onto the facility. In order to limit incompatible uses and to preserve security, a three-mile buffer was placed around the operations area. This buffer, shown in Figure 3-10, extends into the south central portion of Fresno County, to just south of Lanare and west of Jameson Avenue. The buffer limits land use designation types to Agricultural operations with a minimum parcel size of 20 acres.

In the City of Fresno, the California National Guard operates its 144th Fighter Wing on the property of the Fresno Yosemite International Airport. The 144th Fighter Wing is an extension of the California National Guard based at Mather Field in Sacramento and conducts yearly training drills over the San Joaquin Valley.

FIGURE 3-10
LEMOORE NAVAL AIR STATION THREE-MILE BUFFER



Source: NAS Lemoore Joint Land Use Study, Fresno County, 2011.

KEY TERMS

Approach Zone. The air space at each end of a landing strip that defines the glide path or approach path of an aircraft and which should be free from obstruction.

Clear Zone. That section of an approach zone of an airport where the plane defining the glide path is 50 feet or less above the centerline of the runway. The clear zone ends where the height of the glide path above ground level is above 50 feet. Land use under the clear zone is restricted.

Military Installation. A base, camp, post, station, yard, center, homeport facility for any ship, or other activity under the jurisdiction of the U.S. Department of Defense.

REGULATORY SETTING

Senate Bill 1468/California Government Code Section 65302 (a) (2). Pursuant to Government Code section 65302 (a) (2), the land use element "shall consider the impact of new growth on military readiness activities carried out on military bases, installations, and operating and training areas, when proposing zoning ordinances or designating land uses covered by the general plan for land, or other territory adjacent to military facilities, or underlying designated military aviation routes and airspace." Any development that seriously impacts or hinders the capacity of military bases, installations, and operating and training areas to carry out their routine activities is considered "encroachment" or incompatible land use.

SECTION 3.11 DISADVANTAGED UNINCORPORATED COMMUNITIES

INTRODUCTION

Senate Bill No. 244 - Wolk (SB 244) was passed in 2011, requiring municipalities to address inequalities between unincorporated communities. The Bill sought to obtain an assessment of access to vital public services and evaluation of current states of infrastructure upon which identified communities rely. Government Code (GC) Section 65302.10, subd. (a). states that each city and county review and update the land use element of its general plan, based on available data, including, but not limited to, the data and analysis developed pursuant to GC Section 56430, regarding unincorporated island, fringe, or legacy communities inside or near its boundaries.

SB 244 requires, on or before the next due date for the next adoption of its housing element, that counties include in their general plan land use elements identification and analysis of underserved disadvantaged unincorporated communities (DUCs) within their unincorporated areas and outside city spheres of influence (SOIs). A DUC is defined as an inhabited and unincorporated community that includes 10 or more dwelling units in proximity or where 12 or more registered voters reside and has an annual median household income that is 80 percent or less of the statewide median housing income. In unincorporated county areas outside of SOIs, the only type of DUC is a legacy community which is at least 50 years old.

For identified communities, the general plan must include a description of the community; a map designating its location; an analysis of water, wastewater, stormwater drainage, and structural fire protection needs or deficiencies; and an analysis of benefit assessment districts or other financing alternatives that could make the extension of services financially feasible. It also requires that on or before the due date for each subsequent revision of its housing element, each city and county review, and amend if necessary, its general plan to update this analysis.

This section provides an overview of the DUC communities in Fresno County. This information was presented to the Planning Commission on September 10, 2020 and by the Board of Supervisors on October 20, 2010. Details on each community and analysis of water, wastewater, stormwater drainage, and structural fire protection are included in Appendix A, Disadvantaged Unincorporated Communities.

DUC IDENTIFICATION METHODOLOGY

SB 244 describes the general characteristics of DUCs but does not provide specific guidance on how to identify them. To assist local governments in addressing the requirements of SB 244, the Governor's Office of Planning and Research (OPR) published a technical advisory memo in February 2013. The memo recommended data sources for identifying the income status of communities and mapping sources for identifying "communities" as defined by SB 244. It also referenced methodological guidance prepared by PolicyLink in collaboration with California Rural Legal Assistance. Based on the guidance provided by OPR and PolicyLink, the County identified DUCs in the Fresno County area by focusing on a combination of income status and parcel density.

Methodology Summary:

- Preliminary DUC determination was initiated with a County-retained consultant
- A methodology similar to Merced County's 2016 SB 244 effort was used by the consultant
- An American Community Survey five-year estimate of a $57,444 income level was arrived at using 80% of the $71,805 Median Household Income
- Potential communities were identified by a computer mapping/analysis program
- County-modified mapping/analysis resulted in identifying additional communities

LOW INCOME STATUS

The County identified unincorporated communities that were 80 percent below the statewide median household income (MHI) and used Disadvantaged Communities shapefiles from the California Environmental Protection Agency (SB 535), Census Block Groups, and Census Designated Places (CDP). As stated above, the shapefile income data was based on the American Community Survey (ACS) 5-Year 2013-2017 Census. During 2013-2017, the statewide median household income was $71,805.

PARCEL DENSITY

The County selected parcels that were outside of the spheres of influence of the fifteen cities within Fresno County, focusing on groupings of parcels that approximate the density of suburban and urban communities, with parcels that are small and close together defining what constitutes suburban or urban development. To estimate density, the County calculated the number of parcels per square mile to identify development clusters similar in density to existing Census Designated Places (CDPs). Parcel densities were calculated using the centroid (or middle point) of each parcel. The XY coordinates were extracted from the Fresno Parcel geodatabase layer, creating a new point layer from them.

The County then calculated parcel density using the ArcGIS spatial analyst kernel density tool. As a benchmark, the County relied on a density calculation methodology from the Community Equity Initiative (CEI) to establish a minimum threshold value for community density. This calculation was based on the developed portions of CDPs, which often have large undeveloped areas. Based on this methodology, the County selected unincorporated areas that were at least as dense as current Fresno County CDPs (approximately 250 parcels per square mile), which is consistent with CEI findings.

Some very small rural communities such as Camden Avenue Community and the East Adams Avenue Community were not originally identified based purely on the GIS-based methodology, so the County used available mapping aerial data and the centroid density layer to identify other areas that had 10 or more dwelling units in close proximity (per the Government Code definition of DUCs).

COMBINING THE DATA

After identifying areas that met the density threshold, the County added the low-income data layer to these areas. A new shapefile to identify DUCs was created by selecting areas that met both density and low-income thresholds. If a DUC did not have a known name, the County assigned a name based on associated CDPs. For communities outside of CDPs, the County used nearby roadway names or numbered County Service Areas as identifiers.

The results of the initial analysis were verified by using the Density-based Clustering tool in ArcGIS for both parcel density and address point density, and heat map visualization. With these tools, density was reanalyzed using 50 units per half-mile and 25 units per quarter-mile, to prevent anomalies in the analysis resulting from very large parcels in the western side of the County. The result was identification of six additional DUCs beyond the 30 previously identified with the methodology.

COMMUNITIES IDENTIFIED

All the DUCs that the County identified are Legacy Communities, as defined by SB 244. Many of the communities fall within CDP boundaries and are identified accordingly. Table 3-10 lists the DUCs in Fresno County by size (in acres) and the number of parcels in each community. **Figure 3-11.** shows the location of each DUC identified.

TABLE 3-10
IDENTIFIED DISADVANTAGED UNINCORPORATED COMMUNITIES

Name	Size (acres)	Parcels
1. Ashlan Avenue Community	57	18
2. Biola Community	242	335
3. Britten Avenue/Cherry Avenue Community	20	26
4. Burrel Community	12	26
5. Camden Avenue Community	4	1
6. Carillo Avenue Community	20	28
7. Caruthers Community	453	787
8. Chestnut Avenue Community – Shady Lakes	26	2
9. Church Avenue/Floyd Avenue Community	44	36
10. Cornelia Avenue/Floral Avenue Community	60	38
11. CSA 30 Community – El Porvenir	29	61
12. CSA 32 Community – Cantua Creek	80	79
13. CSA 39 Zone A Community	19	52
14. CSA 39 Zone B Community	51	111
15. CSA 43 Community – Raisin City	38	75
16. CSA 49 Community – O'Neill Farms/Westside	93	15
17. Del Rey Community	108	316
18. East Adams Avenue Community	9	18
19. Easton Community	701	522
20. Five Points Community	16	3
21. Flamingo Mobile Home Community	9	1
22. Hayes Road Community/Perrin Colony	54	42
23. Hughes Avenue/Magnolia Avenue Community	40	30
24. Lanare Community	51	346
25. Laton Community	251	510
26. Lost Hills Community	172	162

TABLE 3-10 IDENTIFIED DISADVANTAGED UNINCORPORATED COMMUNITIES		
Name	**Size (acres)**	**Parcels**
27. Madera Avenue Community	22	27
28. Malaga Community	72	232
29. Monmouth Community	15	36
30. Parlier Avenue/Elm Avenue Community	36	30
31. Riverdale Community	501	1,042
32. Russell Avenue Community	158	51
33. Tombstone Territory	57	50
34. Tranquillity Community	157	296
35. Whitesbridge Community	139	24
36. Yuba Avenue Community	633	118

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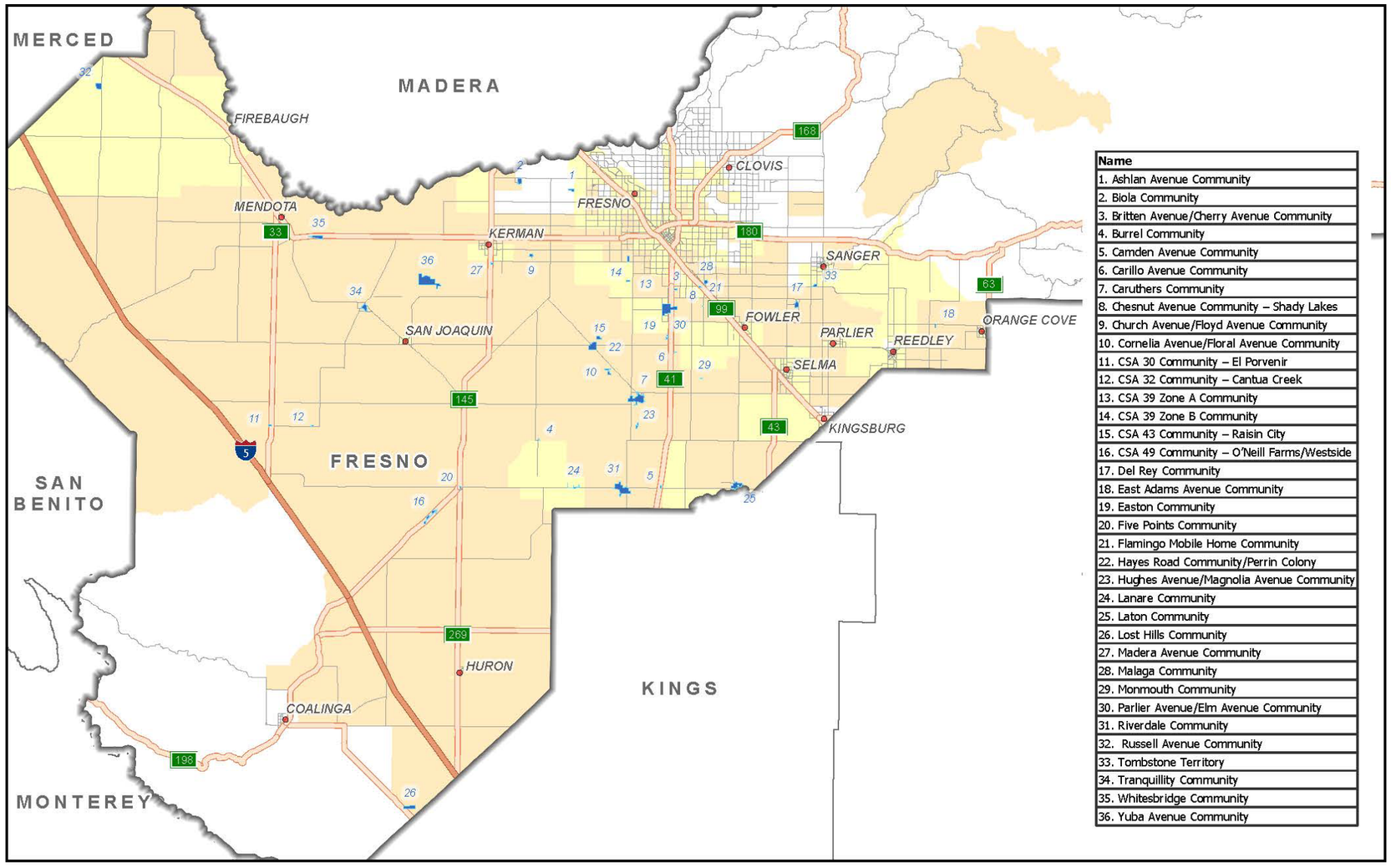
FIGURE 3-11 DISADVANTAGED UNINCORPORATED COMMUNITIES



Name
1. Ashlan Avenue Community
2. Biola Community
3. Britten Avenue/Cherry Avenue Community
4. Burrel Community
5. Camden Avenue Community
6. Carillo Avenue Community
7. Caruthers Community
8. Chesnut Avenue Community – Shady Lakes
9. Church Avenue/Floyd Avenue Community
10. Cornelia Avenue/Floral Avenue Community
11. CSA 30 Community – El Porvenir
12. CSA 32 Community – Cantua Creek
13. CSA 39 Zone A Community
14. CSA 39 Zone B Community
15. CSA 43 Community – Raisin City
16. CSA 49 Community – O'Neill Farms/Westside
17. Del Rey Community
18. East Adams Avenue Community
19. Easton Community
20. Five Points Community
21. Flamingo Mobile Home Community
22. Hayes Road Community/Perrin Colony
23. Hughes Avenue/Magnolia Avenue Community
24. Lanare Community
25. Laton Community
26. Lost Hills Community
27. Madera Avenue Community
28. Malaga Community
29. Monmouth Community
30. Parlier Avenue/Elm Avenue Community
31. Riverdale Community
32. Russell Avenue Community
33. Tombstone Territory
34. Tranquillity Community
35. Whitesbridge Community
36. Yuba Avenue Community

Figure 1
Fresno County
Disadvantaged Unincorporated Communities

0 3 6 12
Miles

Fresno County
Disadvantaged Unincorporated Communities
ACS 2017 Census Block Groups with MHI less than 80%
SB 535 Disadvantaged Communities 2017

N

October 2, 2019

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INFRASTRUCTURE ANALYSIS

SB 244 requires an analysis of infrastructure services for each DUC. This section first provides an overview of service providers in the County that provide one or more services in the DUCs and then describes public services within each DUC consistent with the requirements of SB244.

OVERVIEW OF SERVICE PROVIDERS IN UNINCORPORATED FRESNO COUNTY

SB 244 calls for "an analysis of water, wastewater, stormwater drainage, and structural fire protection needs or deficiencies" for all identified DUCs. In Fresno County, these services are provided by special districts, with the exception of the Madera Avenue Community, which receives water from the City of Kerman. Where public water and wastewater services are not provided, onsite systems (e.g., private wells and septic systems) are used. Many private wells and septic systems were not evaluated in this report. Chapter 6, Public Facilities and Services, of this Background Report includes descriptions of all services for the unincorporated area of Fresno County. Chapter 6 includes sections on Water Supply, Treatment, and Delivery (Section 6.1); Wastewater Collection and Treatment (Section 6.2); Storm Drainage and Flood Protection (Section 6.3); and Fire Protection (Section 6.8). The following refer to these discussions for summaries of service providers and their facilities and operations. Following is an overview of how services are provided to the DUCs in Fresno County.

WATER

Potable water service in DUCs in Fresno County is provided primarily by small special districts, although several areas are reliant on individual wells. Special districts that provide water include:

- Biola Community Services District
- Caruthers Community Service District
- City of Kerman Public Utilities
- County Service Area No. 30
- County Service Area No. 32
- County Service Area No. 39AB
- County Service Area No. 43
- County Service Area No. 49
- Del Rey Community Service District
- Lanare Community Service District
- Laton Community Service District
- Malaga County Water District
- Riverdale Public Utilities District
- Tranquility Irrigation District

WASTEWATER

Wastewater collection and treatment services are provided to Fresno County DUCs through a combination of special districts and onsite septic systems. Special districts that provide wastewater include:

- Biola Community Services District
- Caruthers Community Service District
- County Service Area No. 30
- County Service Area No. 32
- Del Rey Community Service District
- Laton Community Service District
- Malaga County Water District
- Riverdale Public Utilities District
- Tranquility Irrigation District

STORMWATER DRAINAGE

Storm drainage services are provided to Fresno County DUCs by the following special districts:

- Biola Community Services District
- Caruthers Community Services District
- County Service Area No. 30
- County Service Area No. 32
- Del Rey Community Services District
- Easton Community Services District
- Fresno Metropolitan Flood Control District
- Tranquility Irrigation District

FIRE PROTECTION

Fire protection services for Fresno County are provided by Fresno County Fire Protection District, North Central Fire Protection District, and Laton Community Service District.

DUC SERVICE PROFILES

For each of the identified DUCs, the County conferred with Fresno LAFCo and individual service providers to determine how water, wastewater, drainage, and fire protection services are being provided. The Fresno LAFCo information was drawn primarily from Municipal Service Reviews (MSR) and SOI update reports. In addition, the County drew upon the findings of the 2013 Kings Basin Disadvantaged Communities Pilot Project Study (KBDAC Study) to supplement Fresno LAFCo's findings. The KBDAC Study was a collaboration between the Kings Basin Water Authority (KBWA) and the California Department of Water Resources (DWR) that included extensive community outreach and partnering with key stakeholder groups, including California Rural Legal Assistance (CRLA). Summaries of how each DUC is being served are provided in Appendix A.

POTENTIAL INFRASTRUCTURE FUNDING SOURCES

The County's SB 244 document (Appendix A) lists potential funding mechanisms for infrastructure extension or improvement, including funding for existing community deficiencies and funding for expansion related to new development. For existing deficiencies, many funding options require some form of assessment or repayment by property owners or the larger community. These mechanisms may include the following.

- Assessment Districts
- Certificates of Participation
- General Obligation Bonds
- Infrastructure Financing Districts
- Mello-Roos Community Facilities Districts
- Revenue Bonds
- Tax Allocation Bonds
- User Rate Increases – with No Financing
- User Rate Increases – with Loans

New development infrastructure financing also often involves fees or taxes on property owners, although they can be isolated to those new properties receiving the benefit. Such funding mechanisms may include:

- Assessment Districts
- Developer-assisted Extensions
- Infrastructure Financing Districts
- Mello-Roos Community Facilities Districts

Table 3 of the SB 244 Analysis (Appendix A) document lists a number of Federal and State funding programs. Program status and funding availability varies though, and some programs have no additional funding available at this this time. Some examples of funding options include:

- Community Development Block Grants (CDBG) (1974) (grants)
- United States Department of Agriculture Rural Development Program grants
- Safe Drinking Water State Revolving Fund grants and loans

Also, there are a few examples noted in the document of community service providers which have applied for or have utilized some of these programs for repair or replacement. Examples include:

- Biola received approximately $11.4 million in grants to fund water system upgrades.
- Caruthers has sought assistance through Proposition 84 to assist with a new production well.
- County Service Area No. 30 El Porvenir sought state grants for a well water supply system and has been working toward completing its Fresno County Westside Groundwater Project, including construction of another potable water well, well site improvements, and water meter and valve replacements.
- For Tombstone Territory, Self-Help Enterprises prepared a preliminary engineering report to examine the feasibility of connecting the community to the City of Sanger for potable water; the study was funded by a grant from the California State Water Resources Board Division of Financial Assistance.

In 2016 the City of Kerman received $3,230,000 through Proposition 1 and Drinking Water State Revolving Funds to connect the Double L Mobile Ranch Park located in the Church/Floyd community to the City's potable water system.

SECTION 3.12 ENVIRONMENTAL JUSTICE

INTRODUCTION

According to California Code section 65040.12, "environmental justice" is the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies." In California, some communities with lower incomes, lower levels of education, and higher proportions of minority residents bear a disproportionate burden of environmental hazards. These environmental inequities are largely a result of inappropriate zoning (e.g., residential uses located adjacent to industrial uses) and higher levels of exposure to air and water pollution in lower income communities. Environmental justice laws seek to eliminate these inequities.

Environmental justice policies and laws have been established to ensure that all people have equal protection from environmental hazards where they live, work and play. Furthermore, all people including those who live in disadvantaged communities should have the equal ability to participate in the decision-making process regarding environmental regulations.

As outlined in the California General Plan Guidelines, environmental justice is a subject that needs to be addressed in the General Plan either through integration into the seven mandatory elements of the plan, or as an optional element. The environmental justice goals, policies, and objectives are to be adopted or reviewed upon the adoption or revision of two or more elements concurrently on or after January 1, 2018.These objectives and policies should prioritize improvements and programs that address the needs of disadvantaged communities.

The County has elected to emphasize the importance of ensuring environmental equity for disadvantaged communities in Fresno County through adoption of a separate Environmental Justice Element. As provided by California General Plan law, the Element has the same weight as the mandatory elements of the general plan and must be internally consistent with the other elements. This element is a component of the General Plan to address environmental justice through a set of objectives and policies aimed at increasing the influence of target populations in the public decision-making process and reducing their exposure to environmental hazards. Staff, The

SB 244 vs. SB 1000

SB 244 and SB 1000 both address equity concerns in disadvantaged communities, however there are two fundamental differences. First, SB 244 addresses equity concerns related to infrastructure deficits in disadvantaged unincorporated communities, while SB 1000 addresses equity concerns related reducing unique or compounded risks in disadvantaged communities. Second, SB 244 and SB 1000 use different methodologies and criteria to identify and define disadvantaged communities, which may lead to distinct sets of disadvantaged communities. For example, SB 244 uses parcel density while SB 1000 does not, meaning that communities with homes that are more spread apart may not be a part of the SB 244 analysis, but would be a part of the SB 1000 analysis. Further, SB 1000 includes communities within identified SOIs, which is not required under SB 244.

Ultimately, while the two analyses aim to identify and address inequities, they do so in different ways and for potentially different communities. To read more about the SB 244 methodology, please see the Land Use Chapter of this Background Report. To read more about the SB 1000 methodology, please read the Environmental Justice Methodology section of this chapter.

Planning Commission, The Board of Supervisors, developers, the public and those who are planning for the physical development of the County, will use the Element.

The State of California has developed a screening methodology and mapping tool called CalEnviroScreen to identify communities that are disproportionately burdened by pollution. The majority of these communities are located in the San Joaquin Valley, including a large area of Fresno County. Census tracts in western Fresno County have some of the highest pollution burden scores in the state.

MAJOR FINDINGS

These major findings serve as a foundation for policy development. These are as follows:

- Western Fresno County has higher rates of disproportionate environmental hazard exposure, relative to the rest of the state, according to CalEnviroScreen 3.0.
- Socioeconomic disadvantage does not prove causation of pollution burden or health risk, though a general correlation does exist.
- CalEnviroScreen is the best-available tool for measuring environmental justice indicators; however, the use of census tracts places limitations on the data for identifying communities experiencing a combination of socioeconomic and environmental burdens when two differing communities share the same census tract.

EXISTING CONDITIONS

Environmental justice ensures that people of all socioeconomic backgrounds are treated equitably in the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies. Hazardous waste sites, truck routes, industrial facilities, and other sources of pollution are often located near communities with lower levels of education and income, and higher proportions of minority residents. Socioeconomically disadvantaged communities already disproportionally experience higher rates of health concerns, and environmental justice strives to remedy the inequity of the pollution burden.

HISTORY OF ENVIRONMENTAL JUSTICE

Although the California requirement for addressing environmental justice in general plans is relatively new, the issue has been a topic of national concern since the 18th century. In the 1960s, Cesar Chavez organized the implementation of workplace protections for California farmworkers, such as efforts to increase protection from toxic pesticides. In the 1980s, the concept of "environmental racism" gained national attention when residents from a rural, low-income, and primarily African-American North Carolina town staged six weeks of protests against the siting of a hazardous waste landfill and its impacts on their community. In 1988, residents of Kettleman City, California protested a toxic waste incinerator that was proposed in the predominately low-income farmworker and primarily Latino community. Along with these anecdotal examples, several studies in the 1980s found race as a factor in the processes leading to the location of a disproportionately higher number of hazardous waste and toxic-producing facilities in poor and communities with more residents of racial minority groups.

In 1990, the Federal government, through the Environmental Protection Agency (EPA), began addressing environmental justice issues by establishing the Environmental Equity Workgroup, followed by the establishment of the Office of Environmental Equity (now the Office of Environmental Justice) in 1992. In 1994, President Clinton signed Executive Order 12898, directing Federal agencies to develop strategies for addressing environmental and human health impacts in low-income and minority communities.

STATEWIDE EFFORT TO ADDRESS SOCIAL JUSTICE

California was the first state to address environmental justice in law, initiated when Governor Davis signed Senate Bill 115 (SB 115) in 1999. The bill defined environmental justice and directed CalEPA to develop and implement environmental justice laws. Following SB 115, California has since instituted a series of laws protecting communities from environmental injustices, requiring consideration of the issue in policies, programs, and activities. Most recently (2016), in response to increasing concerns about vulnerable communities in California experiencing environmental injustice, the State Legislature passed Senate Bill 1000 (SB 1000). SB 1000 requires general plans adopted after January 2018 to include an environmental justice element, or related goals, policies, and objectives integrated in other elements. The law requires general plans to do the following:

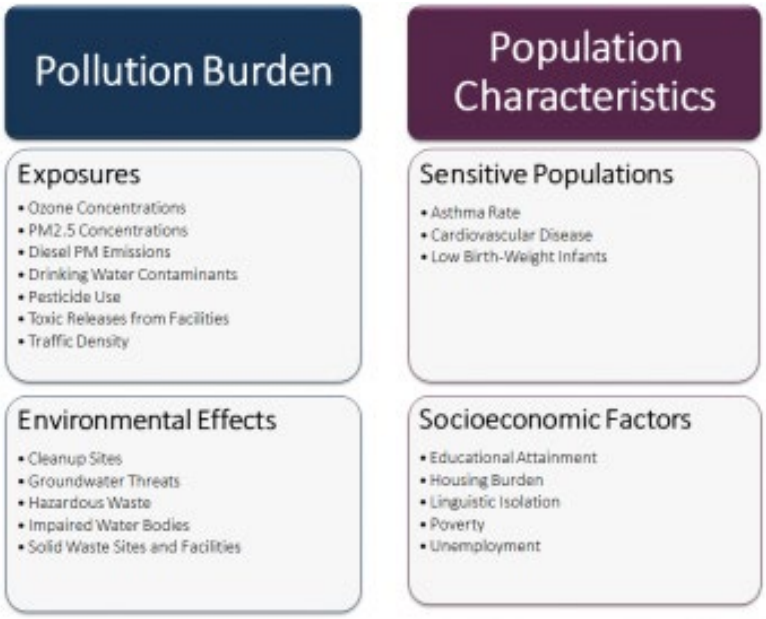
- Identify disadvantaged communities within the area covered by the general plan of a city, county, or city and county.
- Identify the policies to reduce health risks in disadvantaged communities, including reduction of pollution exposure; air quality improvement; and the promotion of public facilities, access to healthy food, safe and sanitary homes, and physical activity.
- Identify objectives and policies to promote civil engagement in the public decision-making process.

Adoption of environmental justice goals, policies, and objectives, either in an environmental justice element or in other elements of the general plan. This requirement is triggered by the concurrent adoption or revision of two or more elements of the general plan on or after January 1, 2018. These objectives and policies should prioritize improvements and programs that address the needs of disadvantaged communities.

ENVIRONMENTAL JUSTICE METHODOLOGY

CalEnviroScreen is a screening and mapping tool developed by the California Environmental Protection Agency's (CalEPA) Office of Environmental Health Hazard Assessment (OEHHA). This tool identifies communities that are most affected by pollution by measuring environmental, health, and socioeconomic data, and is the primary tool used to identify disadvantaged communities as defined by SB 1000. The tool produces a numerical score for each census tract in the state. These scores are displayed on maps that enable a relative comparison of community pollution burden. The CalEnviroScreen score is not a measure of health risk but is only intended to show relative pollution burden vulnerability. A higher score indicates a greater environmental burden. The most recent version, CalEnviroScreen 3.0, was released in January 2017. The State of California uses this tool to identify burdened and vulnerable communities when prioritizing resources, allocating grants, and making targeted investments from programs such as the State's cap-and-trade program.

The CalEnviroScreen model measures 20 indicators of pollution burden and population characteristics indicating vulnerability. These 20 indicators are used to create a CalEnviroScreen score and fall into two categories: Pollution Burden and Population Characteristics. These two categories are further divided into four more categories: exposures, environmental effects, sensitive populations, and socioeconomic factors. The individual indicators for each category are listed and described below:



- Pollution Burden
  - Exposures:
    - **Ozone:** Ozone is the main component of smog. It is among the most widespread and significant health threats in California.
    - **PM 2.5:** Fine particulate matter (PM) 2.5 is very small particles in the air measuring 2.5 micrometers or less in diameter. Small particles can be dangerous because they move deeper into the lungs and can cause serious health effects such as heart and lung disease.
    - **Diesel PM**: Diesel particulate matter comes from exhaust from trucks, buses, trains, ships, and any other equipment with diesel engines. Diesel PM contains hundreds of different chemicals, causing a number of health problems ranging from irritation of the eyes, notes, and throat, to heart and lung disease, as well as lung cancer.
    - **Pesticide Use:** Pesticides are chemicals used to control insects, weeks, plant diseases, and animal diseases. They are applied to agricultural fields by air, farm machinery, or farmworkers on the ground. Exposure to high levels of certain pesticides can cause immediate health problems or even birth defects or cancer later in life. Farmworkers and anyone living near agricultural fields are most exposed to pesticides.
    - **Traffic:** Traffic density measures the number of vehicles on the road in an area. Communities with high traffic density are exposed to air and noise pollution. Exhaust fumes from automobiles contain toxic chemicals that can cause cancer, asthma, and pregnancy complications.
    - **Drinking Water Contaminants:** While most drinking water in California meets health and safety requirements, sometimes drinking water becomes contaminated with chemicals or bacteria. A number of chemicals and bacterial contaminants are routinely detected in the drinking water in California. Depending on the contaminant, drinking contaminated water can cause blue baby syndrome, birth defects, miscarriages, and cancer.
    - **Toxic Releases from Facilities:** Facilities that make or use toxic chemicals can release these chemicals into the air, which can sometimes be detected in the air of nearby

communities. Those who live near these types of facilities may be more likely to regularly breathe in contaminated air, increasing their risk for certain diseases.

- Environmental Effects:
  - **Solid Waste Sites and Facilities:** Solid waste facilities are places where household garbage and other types of waste are collected, processed, or stored. Sites that violate regulations may harm the environment and expose nearby communities to hazardous chemicals. Facilities can release toxic gases into the air even after they are closed. Chemicals from the waste can also leach into the soil around the facilities, posing a health risk to nearby communities. Composting, recycling, and waste treatment facilities can produce unpleasant odors, attract pests, and increase local truck traffic.
  - **Cleanup Sites:** Cleanup sites are places that have been contaminated with harmful chemicals and need to be cleaned up. Communities living near these sites are more likely to be exposed to chemicals that have contaminated the site. Chemicals in the buildings, soil, or water at contaminated sites can move into nearby communities through air or water. Additionally, contaminated land may take years or decades to clean up, reducing its usability and benefits to the community. Studies have found toxic metals and pesticides in the blood of those who live near contaminated sites.
  - **Groundwater Threats:** Because hazardous chemicals are often stored in containers that rest on land or in underground storage tanks, leaks from these containers can contaminate soil and pollute groundwater. Typical pollutants include gasoline and diesel fuel from gas stations, solvents, heavy metals, and pesticides. Once polluted, land and groundwater may take years to clean up. Those who live close to contaminated groundwater may be exposed to chemicals moving from the soil into the air inside their homes.
  - **Impaired Water Bodies:** When water is contaminated by pollutants, the water bodies are considered impaired. Impairments can not only prevent recreational and other uses of the water body, but also harm wildlife habitats, and expose those who consume fish and shellfish to toxic substances.
  - **Hazardous Waste Generators and Facilities:** Waste created by different commercial or industrial activity contains chemicals that may be dangerous or harmful to health, although are different from cleanup sites. Hazardous waste generated from businesses are transported to permitted facilities for recycling, treatment, storage, or disposal. Contamination of air, water, soil resulting from the operation of these facilities can harm both the environment and human health.

- Population Characteristics:
  - Sensitive Populations:
    - **Asthma:** Asthma is a disease that affects the lungs and makes it hard to breathe. The causes of asthma are unknown but genetic and environmental factors can be involved. Outdoor air pollution can trigger asthma attacks or make asthma worse. Those with asthma are especially susceptible to other illness such as pneumonia or the seasonal flu.
    - **Cardiovascular Disease:** Cardiovascular disease refers to conditions that involve blocked or narrowed blood vessels that can lead to a heart attack or other heart problems. A heart attack is the most common cardiovascular event. Risk factors for developing cardiovascular disease include diet, lack of exercise, smoking, and exposure to air pollution. Those with a history of cardiovascular disease my respond differently to

pollution. Even short-term exposure to pollution following a heart attack can increase the risk of death.

- **Low Birth-Weight Infants:** Newborns who weigh less than about five and a half pounds (2500 grams) at birth are considered to have low birth weight. Mothers exposed to pollution from traffic, industry, or agriculture are more likely to bear low-weight babies. Babies born underweight are more likely to develop chronic health problems later in life, including diabetes, heart disease, high blood pressure, intellectual and developmental disabilities, metabolic syndrome, and obesity.

- Socioeconomic Factors:
  - **Poverty:** Members of poor communities are more likely to be exposed to pollution and to suffer from adverse health outcomes as a result. Poor communities are often located in areas with high levels of pollution. Poverty is also linked with other indicators used in CalEnviroScreen 3.0, including unemployment, educational attainment, linguistic isolation, and housing burden.
  - **Unemployment:** People who are unemployed may have no health insurance or access to medical care. Poor health may make it difficult for someone to find work or keep a job. Additionally, stress from long-term unemployment may lead to chronic illnesses such as heart disease.
  - **Educational Attainment:** Educational attainment refers to the highest level of education a person has completed. People who have more education are more likely have better health and live longer. Studies have shown that people who are more educated are more likely to live in areas of less pollution. Conversely, those with less education experience more pollution-related health problems.
  - **Linguistic Isolation:** Linguistic isolation is a term used by the US Census Bureau for limited English-speaking households. More than 40 percent of Californians speak a language other than English at home. About half of those do not speak English well or at all. Adults who are not able to speak English well may not hear or understand important information when there is an emergency like an accidental chemical release or spill.
  - **Housing-Burdened Low-Income Households:** Housing-burdened low-income households are households that are both low income and highly burdened by housings costs. These types of households are more likely to be found in areas experiencing greater environmental burden.

A weighted scoring system uses measurements of these factors to generate the average pollution burden for each census tract. The final score is generated by multiplying the pollution burden score (between 1 and 10) and the population characteristics score (between 1 and 10) together (for a score out of 100). This score is not a measure of health risk. It is only intended to show relative pollution burden vulnerability. For more information about how the scores are calculated, visit http://oehha.ca.gov/calenviroscreen.

Figure EJ-1 shows the CalEnviroScreen scores by percentile for all census tracts in the state. Many census tracts in Fresno County have relatively higher scores, indicating a higher pollution burden and socioeconomic disadvantage.

While CalEnviroScreen is used by the State of California to develop and execute environmental justice efforts, the tool has some limitations on a local level. The tool uses census data and scores are distributed by census tract, which does not account for communities that may be disproportionately burdened by socioeconomic and environmental factors but share a census tract with a prosperous and less burdened community. In this situation, the census tract could receive a score that does not reflect the burden of the disadvantaged community in that census tract. In these instances, these disadvantaged communities may be excluded from state funding for certain environmental programs that use CalEnviroScreen to determine eligibility; however, staff at local jurisdictions can still accurately distinguish these communities through familiarity with the region.

Figure EJ-2 shows the CalEnviroScreen 3.0 aggregate pollution burden and socioeconomic scores for all Fresno County census tracts. Figure EJ-3 shows only the pollution burden scores and Figure EJ-4 shows only the population characteristics scores. The percentile score is displayed, which relates to the frequency of the actual score; a percentile score not only indicates high rates of pollution and disadvantage but shows that it is also high in comparison to communities in the rest of the state. Not every socioeconomically disadvantaged community experiences pollution burden and not every community with advantageous population characteristics are free of pollution burden. The CalEnviroScreen scoring system is designed to find the intersection between the two factors (environmental burden and socioeconomic disadvantage) to identify communities with the greatest needs. When viewing Figures EJ-3 and EJ-4 together, the data reveals that some census tracts are more burdened by either socioeconomic disparity or environmental concerns.

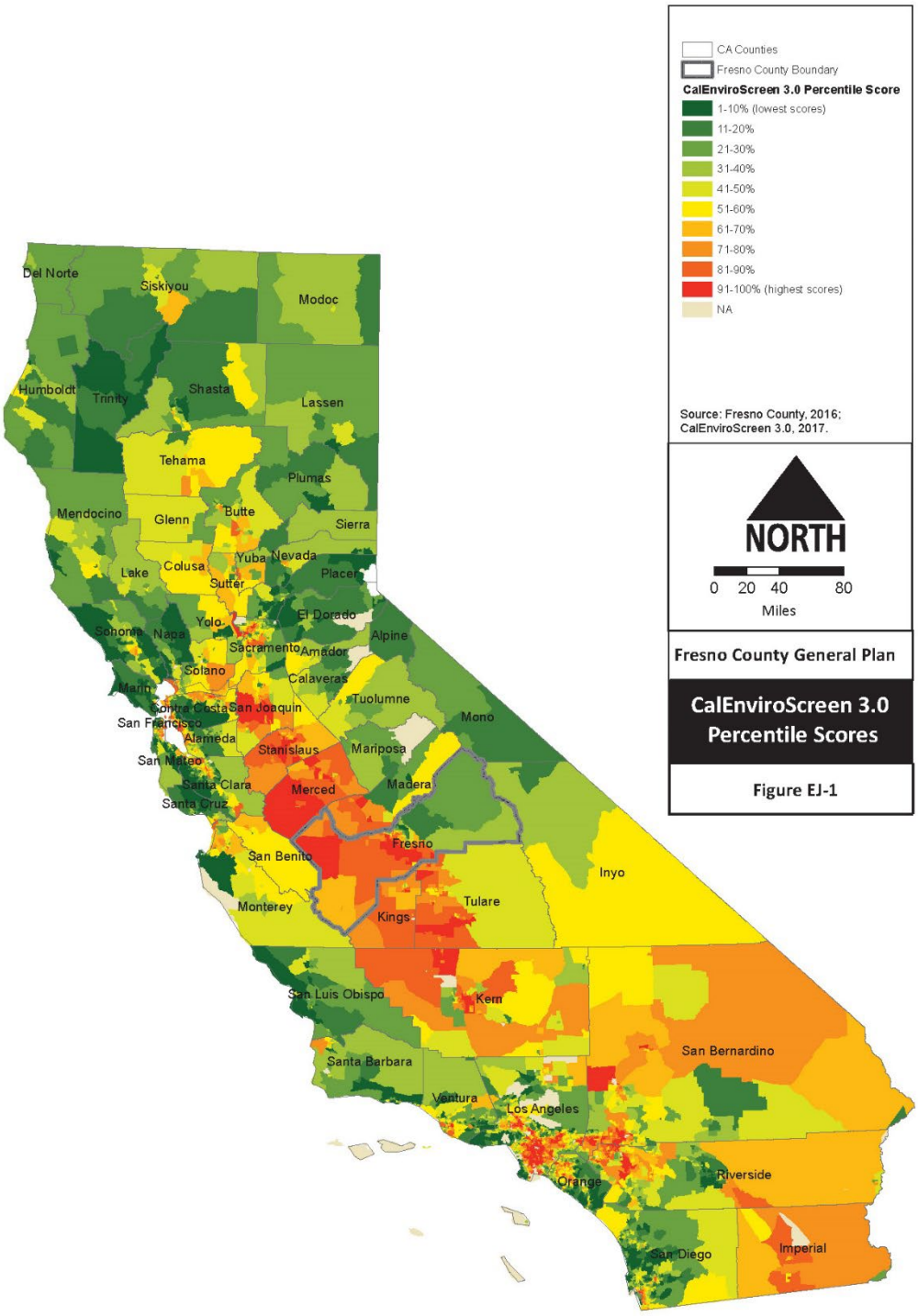
In 2013, the Environmental Justice Compliance and Enforcement Working Group was created by CalEPA. The group coordinates compliance assistance and enforcement activities in the state's most disadvantaged communities to mitigate environmental injustice. In 2013, the Working Group selected an area of Fresno County for its first initiative, due the area's high scores in CalEnviroScreen. This study included 18 census tracts in both incorporated and unincorporated areas, in an area that spans four miles along Highway 99 and includes western parts of the city of Fresno and a nearby unincorporated area of the county. All 18 census tracts in the designated area fell into the top five percent of the highest scoring census tracts according to CalEnviroScreen, making them some of the most-burdened areas in the state. The study found that businesses in the study area had a relatively high level of compliance with environmental regulations, and the Working Group provided compliance consultation to businesses that were not in compliance through educational materials, targeted outreach, and trainings.

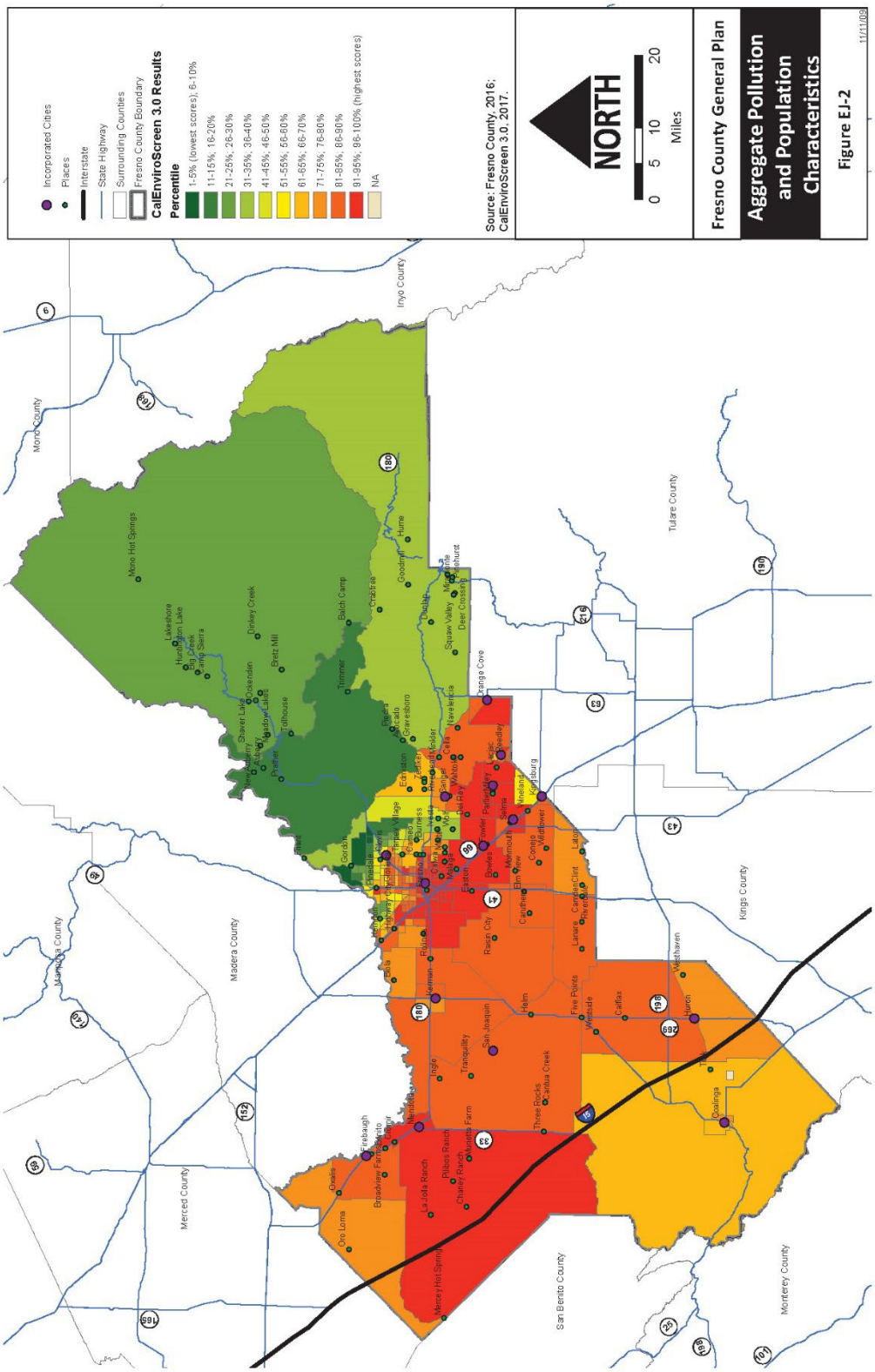
Disadvantaged communities are targeted by the State for investment from the cap-and-trade program. Senate Bill 535 outlines how the CalEPA will allocate these funds and relies on the CalEnviroScreen tool for making these decisions. In April 2017, CalEPA identified disadvantaged communities for the purpose of SB 535 by selecting the 25 percent highest scoring census tracts in CalEnviroScreen 3.0. Figure EJ-5 displays the 119 identified census tracts and the unincorporated communities and incorporated cities in the county. Table 3-11 lists the 59 unincorporated communities and census-designated places identified as disadvantaged per SB 1000. Communities that are included in both the SB 1000 and SB 244 analyses are denoted with an asterisk (*) in Table 3-11.

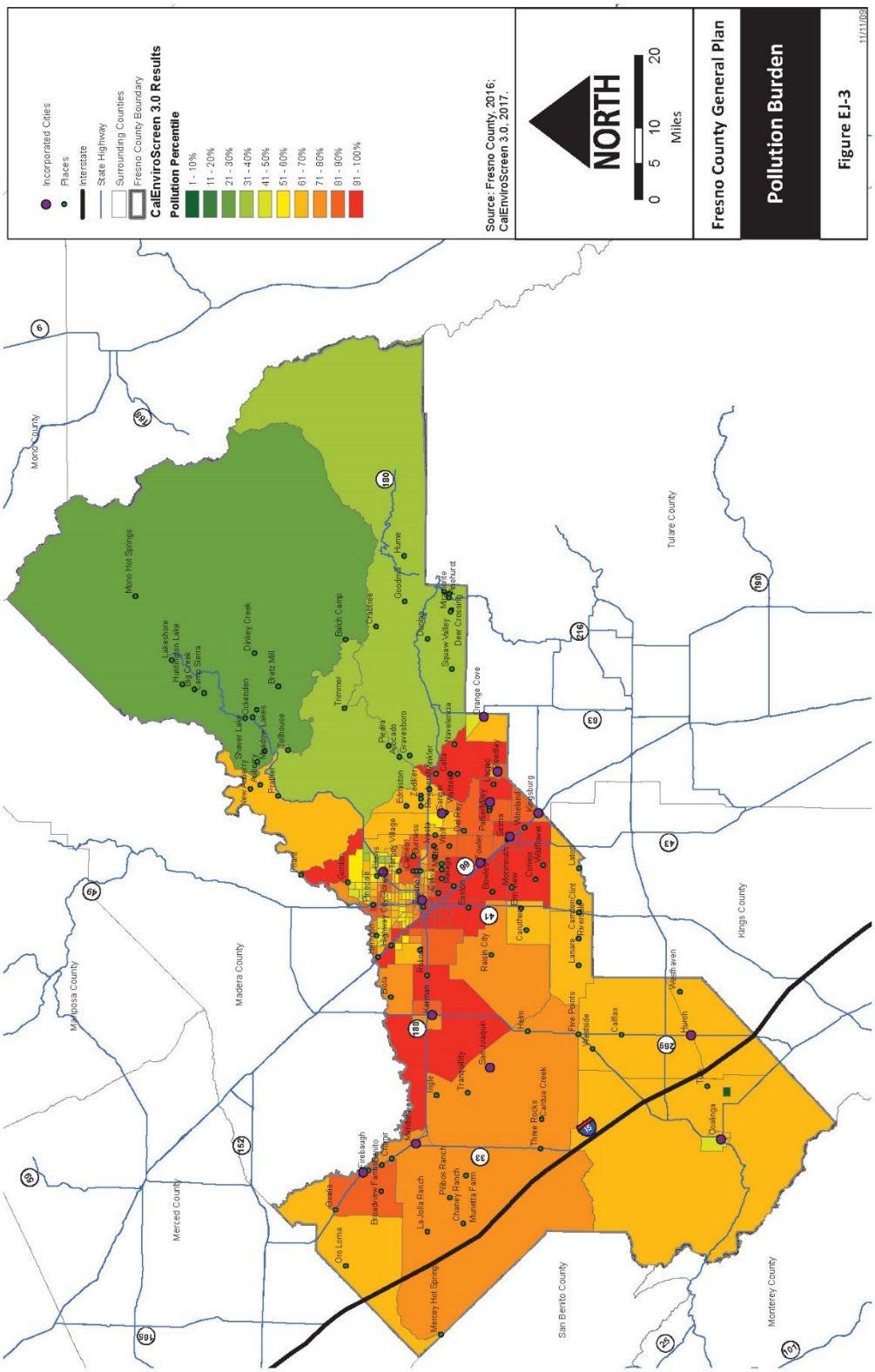
TABLE 3-11 DISADVANTAGED PLACES IDENTIFIED BY CALEPA

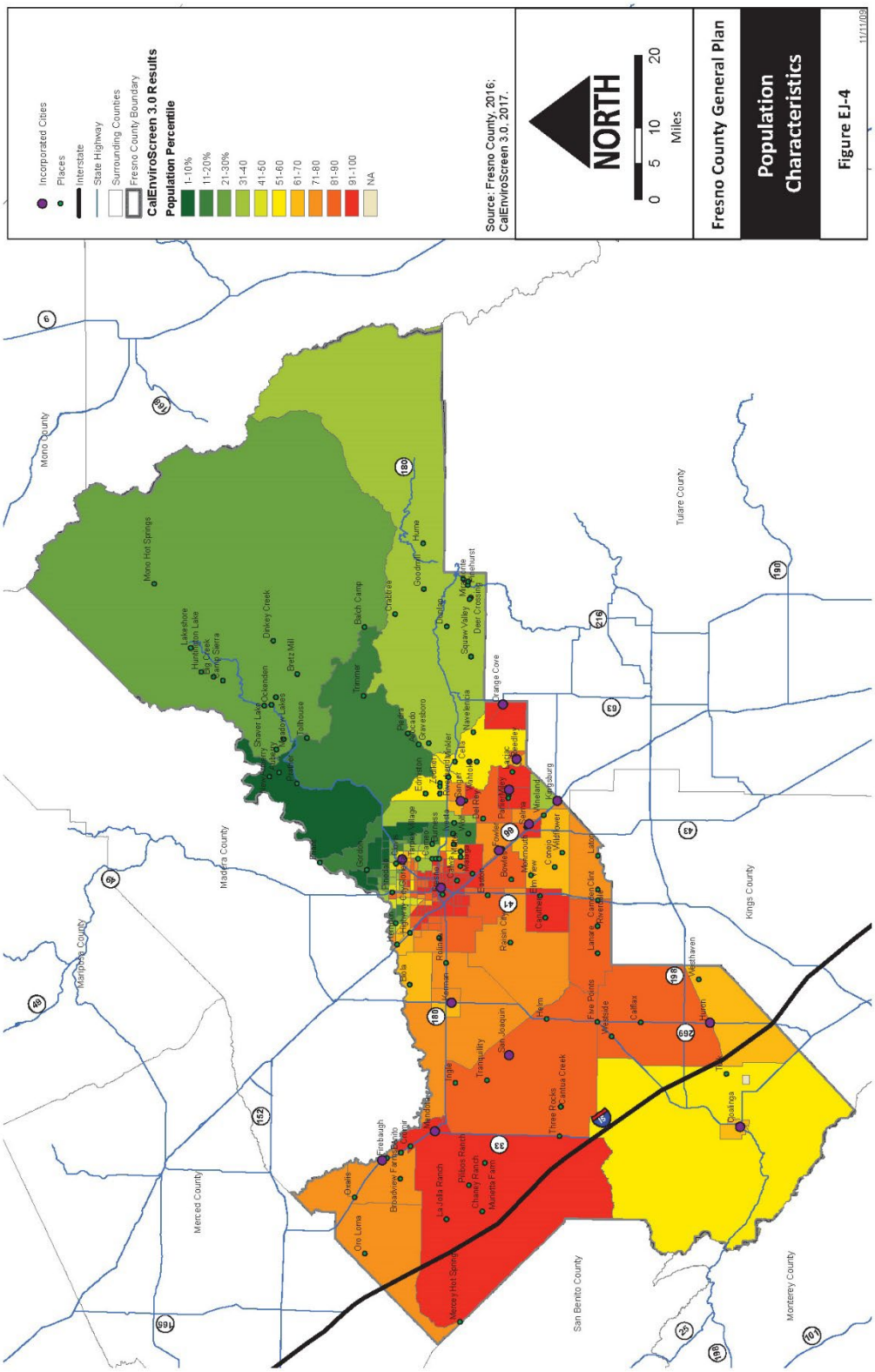
Census Tract	Unincorporated Community/ Census-Designated Place Name
6019001201	Calwa
6019001410	Cecile
6019001413	Locans Lone Star
6019001414	Lone Star
6019001500	Cecile Flamingo Mobile Home Community* Malaga*
6019001700	Bowles Monmouth* Shady Lakes Mobile Home Community*
6019001800	Britton/Cherry Avenue Community* Easton*
6019001900	CSA 39 Community – Zone A (Church/Valentine)* CSA 39 Community – Zone B/West Park* Pratton
6019003900	Church/Floyd Avenue Community* Ingle Madera Avenue Community* Rolinda Yuba Avenue Community*
6019006100	Tombstone Territory*
6019006300	East Adams Avenue Community* Minkler Navelencia Wahtoke
6019006802	Lacjac
6019006900	Del Rey*
6019007300	Conejo Monmouth* Wildflower
6019007400	Camden* Laton*
6019007500	Caruthers* Cornelia/Floral Avenue Community* Elm View Hughes/Magnolia Avenue Community*
6019007600	Burrel Community*

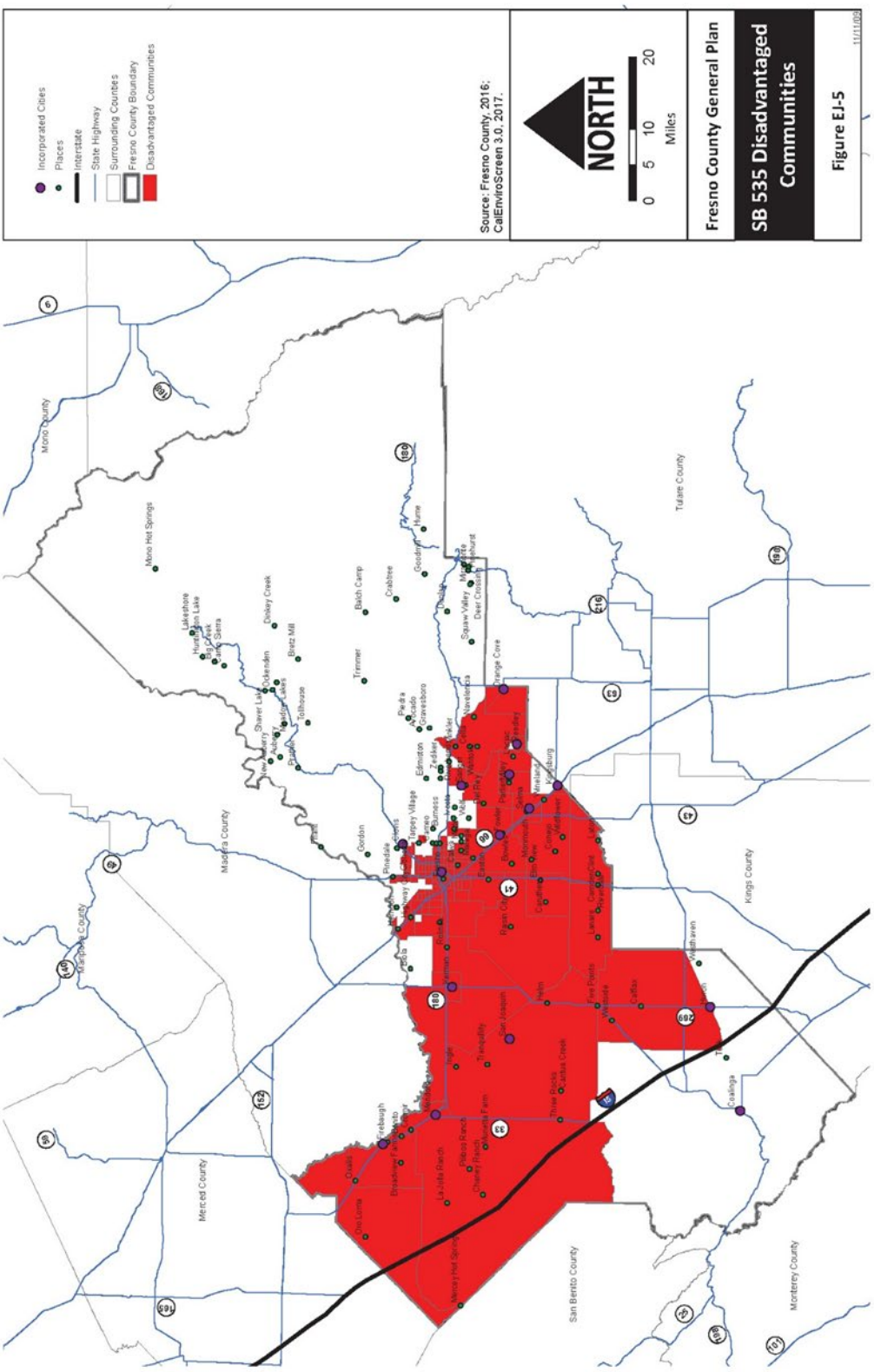
	Carillo Avenue Community* Cornelia/Floral Avenue Community* CSA 43 Community – Raisin City* Hayes Road/Perrin Colony Community* Parlier/Elm Avenue Community*
6019007700	Burrel Community* Camden* Lanare* Riverdale*
6019007802	Five Points* CSA 49 Community – O'Neil Farms/Westside*
6019008200	CSA 32 Community – Cantua Creek* Five Points* Helm Three Rocks Tranquillity*
6019008301	Benito
6019008302	Cromir CSA 30 Community – El Porvenir* La Jolla Ranch Murietta Farm Pilibos Ranch Three Rocks
6019008401	Benito Broadview Farms Cromir
6019008402	Russell Avenue Community* Oro Loma Oxalis
6019008502	Miley


CA Counties
Fresno County Boundary
CalEnviroScreen 3.0 Percentile Score
1-10% (lowest scores)
11-20%
21-30%
31-40%
41-50%
51-60%
61-70%
71-80%
81-90%
91-100% (highest scores)
NA
Source: Fresno County, 2016; CalEnviroScreen 3.0, 2017.
NORTH
0 20 40 80
Miles
Fresno County General Plan
CalEnviroScreen 3.0 Percentile Scores
Figure EJ-1
Del Norte
Siskiyou
Modoc
Humboldt
Trinity
Shasta
Lassen
Tehama
Plumas
Mendocino
Glenn
Butte
Sierra
Lake
Colusa
Yuba
Nevada
Sutter
Placer
Yolo
El Dorado
Sonoma
Napa
Sacramento
Amador
Alpine
Solano
Calaveras
Marin
Tuolumne
Contra Costa
San Joaquin
Mono
San Francisco
Alameda
Stanislaus
Mariposa
San Mateo
Santa Clara
Merced
Madera
Santa Cruz
Fresno
San Benito
Inyo
Monterey
Tulare
Kings
San Luis Obispo
Kern
San Bernardino
Santa Barbara
Ventura
Los Angeles
Orange
Riverside
San Diego
Imperial


Incorporated Cities
Places
Interstate
State Highway
Surrounding Counties
Fresno County Boundary
CalEnviroScreen 3.0 Results
Percentile
1-5% (lowest scores); 6-10%
11-15%; 16-20%
21-25%; 26-30%
31-35%; 36-40%
41-45%; 46-50%
51-55%; 56-60%
61-65%; 66-70%
71-75%; 76-80%
81-85%; 86-90%
91-95%; 96-100% (highest scores)
NA
Source: Fresno County, 2016; CalEnviroScreen 3.0, 2017.
NORTH
0 5 10 20
Miles
Fresno County General Plan
Aggregate Pollution and Population Characteristics
Figure EJ-2
Inyo County
Mono County
Tulare County
Kings County
Madera County
Merced County
San Benito County
Monterey County
Mono Hot Springs
Lakeshore
Huntington Lake
Big Creek
Dinkey Creek
Balch Camp
Pine Flat
Trimmer
Shaver Lake
Dunlap
Tollhouse
Prather
Auberry
Clovis
Fresno
Sanger
Reedley
Parlier
Selma
Kingsburg
Orange Cove
Dinuba
Visalia
Woodlake
Lindsay
Exeter
Farmersville
Porterville
Tulare
Hanford
Lemoore
Corcoran
Avenal
Coalinga
Huron
Kerman
Firebaugh
Mendota
Los Banos
Dos Palos
Gustine
Newman
Patterson
Crows Landing
Modesto
Turlock
Ceres
Riverbank
Oakdale
Waterford
Hughson
Denair
Keyes
Empire
Salida
Ripon
Manteca
Tracy
Lathrop
Stockton
Escalon
Lodi
Galt
Elk Grove
Sacramento
Davis
Woodland
Winters
Vacaville
Fairfield
Vallejo
Benicia
Martinez
Concord
Walnut Creek
Pleasant Hill
Antioch
Pittsburg
Brentwood
Oakley
Byron
Discovery Bay
Tracy
Livermore
Pleasanton
Dublin
San Ramon
Danville
Alamo
Lafayette
Orinda
Moraga
Piedmont
Oakland
Alameda
San Leandro
Hayward
Union City
Fremont
Newark
Milpitas
San Jose
Santa Clara
Sunnyvale
Mountain View
Palo Alto
Menlo Park
Redwood City
San Mateo
Burlingame
San Francisco
Daly City
South San Francisco
San Bruno
Millbrae
San Carlos
Belmont
Foster City
Half Moon Bay
Pacifica
Colma
Woodside
Portola Valley
Los Altos
Los Altos Hills
Cupertino
Saratoga
Los Gatos
Monte Sereno
Campbell
Morgan Hill
Gilroy
Hollister
San Juan Bautista
Watsonville
Capitola
Santa Cruz
Scotts Valley
Aptos
Soquel
Felton
Ben Lomond
Boulder Creek
Brookdale
Bonny Doon
Davenport
Bonny Doon
Big Basin
Saratoga
Los Gatos
Monte Sereno
Campbell
Morgan Hill
Gilroy
Hollister
San Juan Bautista
Watsonville
Capitola
Santa Cruz
Scotts Valley
Aptos
Soquel
Felton
Ben Lomond
Boulder Creek
Brookdale
Bonny Doon
Davenport
Bonny Doon
Big Basin


Incorporated Cities
Places
Interstate
State Highway
Surrounding Counties
Fresno County Boundary
CalEnviroScreen 3.0 Results
Pollution Percentile
1 - 10%
11 - 20%
21 - 30%
31 - 40%
41 - 50%
51 - 60%
61 - 70%
71 - 80%
81 - 90%
91 - 100%
Source: Fresno County, 2016; CalEnviroScreen 3.0, 2017.
NORTH
0 5 10 20
Miles
Fresno County General Plan
Pollution Burden
Figure EJ-3
11/11/2021
Mono County
Madera County
Merced County
Mariposa County
Tulare County
Kings County
San Benito County
Monterey County
Mono Hot Springs
Lakeshore
Huntington Lake
Big Creek
Camp Sierra
Dinkey Creek
Bretz Mill
Balch Camp
Trimmer
Tollhouse
Shaver Lake
Dockerdin
Meadow Lakes
Prather
Auberry
Pine Ridge
Cressman
Friant
Millerton
Table Mountain Rancheria
Squaw Valley
Deer Crossing
Orange Cove
Piedra
Alcalde
Sycamore
Edmiston
Tarpey Village
Gateway
Gaston
Malaga
Easton
Fowler
Parlier
Sanger
Del Rey
Selma
Kingsburg
Minkler
Caruthers
Raisin City
Laton
Herndon
Fresno
Clovis
Sunnyside
Tarpey Village
Cantua Creek
Five Points
Coalinga
Huron
Westhaven
Caliente
Lanare
Riverdale
Kettleman City
Avenal
Lemoore
Hanford
Armona
Corcoran
Stratford
Lemoore Naval Air Station
Laton
Burrel
Mendota
Firebaugh
Chowchilla
Madera
Oakhurst
Coarsegold
Ahwahnee
Yosemite Lakes
Oakhurst
Bass Lake
Wishon
Shaver Lake
Dinkey Creek
Balch Camp
Trimmer
Tollhouse
Auberry
Prather
Pine Ridge
Squaw Valley
Deer Crossing
Orange Cove
Piedra
Alcalde
Sycamore
Edmiston
Tarpey Village
Gateway
Gaston
Malaga
Easton
Fowler
Parlier
Sanger
Del Rey
Selma
Kingsburg
Minkler
Caruthers
Raisin City
Laton
Herndon
Fresno
Clovis
Sunnyside


Incorporated Cities
Places
Interstate
State Highway
Surrounding Counties
Fresno County Boundary
CalEnviroScreen 3.0 Results
Population Percentile
1-10%
11-20%
21-30%
31-40
41-50
51-60
61-70
71-80
81-90
91-100
NA
Source: Fresno County, 2016; CalEnviroScreen 3.0, 2017.
NORTH
0 5 10 20
Miles
Fresno County General Plan
Population Characteristics
Figure EJ-4
Mono County
Madera County
Merced County
Tulare County
Kings County
San Benito County
Monterey County
Mono Hot Springs
Lakeshore
Huntington Lake
Big Creek
Dinkey Creek
Shaver Lake
Tollhouse
Trimmer
Balch Camp
Hume
Orange Cove
Sanger
Reedley
Parlier
Selma
Kingsburg
Fowler
Caruthers
Raisin City
Kerman
Fresno
Clovis
Sunnyside
Fig Garden
Tarpey Village
Pinedale
Herndon
Bullard
Woodward Park
Friant
Millerton
Lanare
Camden
Riverdale
Laton
Hardwick
Conejo
Malaga
Biola
Pollasky
Jameson
Coalinga
Huron
Califlax
Five Points
Westside
San Joaquin
Tranquility
Helm
Ingle
Three Rocks
Cantua Creek
Dos Palos
Firebaugh
Mendota
Oro Loma
Dos Palos
Chaney Ranch
Panoche
Bloss
Bloss Ranch
La Jolla Ranch
Mercy Hot Springs
Monocline
Tollhouse
Squaw Valley
Meadow Lakes
Auberry
Prather
Tarpey Village
Pinedale
Herndon
Bullard
Woodward Park
Friant
Millerton
Lanare
Camden
Riverdale
Laton
Hardwick
Conejo
Malaga
Biola
Pollasky
Jameson
Coalinga
Huron
Califlax
Five Points
Westside
San Joaquin
Tranquility
Helm
Ingle
Three Rocks
Cantua Creek
Dos Palos
Firebaugh
Mendota
Oro Loma
Dos Palos
Chaney Ranch
Panoche
Bloss
Bloss Ranch
La Jolla Ranch
Mercy Hot Springs
Monocline
Tollhouse
Squaw Valley
Meadow Lakes
Auberry
Prather


Incorporated Cities
Places
Interstate
State Highway
Surrounding Counties
Fresno County Boundary
Disadvantaged Communities
Source: Fresno County, 2016; CalEnviroScreen 3.0, 2017.
NORTH
0 5 10 20
Miles
Fresno County General Plan
SB 535 Disadvantaged Communities
Figure EJ-5
Mono County
Madera County
Merced County
San Benito County
Monterey County
Kings County
Tulare County
Fresno

ENVIRONMENTAL JUSTICE COMMUNITY PROFILES

The following sections provide high-level profiles of the identified environmental justice disadvantaged communities as defined in SB 1000. These profiles include information about which census tract(s) cover the community and the percentile scores they received in all the indicators. A higher percentile score indicates greater burden relative to other communities around the state, while a lower percentile score indicates lower burden relative to other communities around the state. Although SB 1000 defines a disadvantage community as one whose cumulative score is at the 75th percentile or higher, these profiles aim to provide a broader view of the burdens within a community and call out indicators that scored at the 67th percentile or higher to give some weight to issues that may still have serious effects on a community. For the purposes of this discussion, scores 66 and below are characterized as contributing "some burden", scores between 67-74 are characterized as contributing "high burden" (indicated with a bold number), and scores between 75-100 are characterized as contributing "extremely high burden" (indicated with a bold number in a grey cell).

CalEnviroScreen 3.0 is an important tool in identifying areas of need, however, there are limits to the data. CalEnviroScreen 3.0 results are reported by census tracts, which do not necessarily line up with community boundaries. Some smaller unincorporated communities may straddle two or more larger census tracts or may be one of many small communities within a census tract. Additionally, environmental burdens from one census tract may also impact nearby communities in a different census tract. As a result, while the background information provided in this chapter can narrow down the areas of concern, some census tracts may not necessarily provide a complete illustration of burdens within smaller geographic areas. While, with the knowledge of local staff, it is possible to identify disadvantaged communities smaller than a census tract, a more detailed, nuanced, and technical analysis is necessary to understand the complex and unique combination of environmental burdens experienced by each community. This detailed level of analysis is not possible with the data provided by CalEnviroScreen 3.0.

BENITO

Benito is an unincorporated community in northwestern Fresno County, approximately 2.5 miles south of Firebaugh, and straddles the border between Census Tracts 6019008301 and 6019008401. The census tract on the east side (Census Tract 6019008301) experiences a high burden from pollution and an extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, groundwater threats, impaired water bodies, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, unemployment, and housing burden.

The census tract on the west side (Census Tract 6019008401) experiences an extremely high burden from pollution and a high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, groundwater threats, impaired water bodies, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, and unemployment. Table 3-12 provides the scores for each indicator for Census Tracts 6019008301 and 6019008401.

TABLE 3-12 INDICATOR PERCENTILES FOR BENITO

CalEnviroScreen 3.0 Indicators	Census Tract 6019008301	Census Tract 6019008401
CalEnviroScreen 3.0	*90-95*	*80-85*
POLLUTION BURDEN	**74**	**82**
Ozone	**82**	**82**
PM 2.5	**82**	**69**
Diesel	10	9
Pesticides	**90**	**91**
Toxic Releases	60	58
Traffic	17	5
Drinking Water	49	41
Cleanups	42	48
Groundwater Threats	**78**	**91**
Hazardous Waste	0	43
Impaired Water	**81**	**72**
Solid Waste	0	50
POPULATION CHARACTERISTICS	**96**	**74**
Asthma	**91**	66
Low Birth Weight	33	20
Cardiovascular	**95**	**78**
Education	**100**	**97**
Linguistic Isolation	**100**	**94**
Poverty	**97**	**84**
Unemployment	**99**	**67**
Housing Burden	**79**	44

Source: CalEnviroScreen 3.0, 2018

BOWLES

Bowles is a census-designated place in central Fresno County, 11 miles south of downtown Fresno, and is located in Census Tract 6019001700. This census tract experiences extremely high burden from both pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticide use, toxic releases, drinking water contaminants, solid waste sites, high rates of asthma, high rates of low birth-weight infants, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, and unemployment. Table 3-13 provides the scores for each indicator in Census Tract 6019001700.

TABLE 3-13 INDICATOR PERCENTILES FOR BOWLES

CalEnviroScreen 3.0 Indicators	Census Tract 6019001700
CalEnviroScreen 3.0	*95-100*
POLLUTION BURDEN	**97**
Ozone	**98**
PM 2.5	**97**
Diesel	42
Pesticides	**93**
Toxic Releases	**70**
Traffic	39
Drinking Water	**98**
Cleanups	56
Groundwater Threats	32
Hazardous Waste	47
Impaired Water	0
Solid Waste	**96**
POPULATION CHARACTERISTICS	**87**
Asthma	**85**
Low Birth Weight	**76**
Cardiovascular	**81**
Education	**77**
Linguistic Isolation	**69**
Poverty	**72**
Unemployment Percentile	**79**
Housing Burden Percentile	53

Source: CalEnviroScreen 3.0, 2018

BRITTEN/CHERRY AVENUE COMMUNITY

The Britten/Cherry Avenue Community is an unincorporated community just south of the City of Fresno and is located in Census Tract 6019001800. Although it is adjacent to the Fresno city limits, this community has not been annexed into the city. This census tract experiences extremely high burden from both pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, toxic releases, drinking water contaminants, cleanup sites, hazardous waste sites, solid waste sites, high rates of asthma, high rates of low birth-weight infants, high rates of cardiovascular disease, low levels of education, and unemployment. Table 3-15 provides the scores for each indicator for Census Tract 6019001800.

TABLE 3-14 INDICATOR PERCENTILES FOR BRITTEN/CHERRY AVENUE

CalEnviroScreen 3.0 Indicators	Census Tract 6019001800
CalEnviroScreen 3.0	*95-100*
POLLUTION BURDEN	**98**
Ozone	**98**
PM 2.5	**97**
Diesel	25
Pesticides	**93**
Toxic Releases	**73**
Traffic	11
Drinking Water	**99**
Cleanups	**87**
Groundwater Threats	59
Hazardous Waste	**88**
Impaired Water	0
Solid Waste	**100**
POPULATION CHARACTERISTICS	**85**
Asthma	**95**
Low Birth Weight	**83**
Cardiovascular	**89**
Education	**72**
Linguistic Isolation	55
Poverty	64
Unemployment Percentile	**68**
Housing Burden Percentile	31

Source: CalEnviroScreen 3.0, 2018

BROADVIEW FARMS

Broadview Farms is an unincorporated community in northwestern Fresno County, three miles southwest of Firebaugh, and is located in Census Tract 6019008401. This census tract experiences extremely high burden from pollution and high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticide use, groundwater threats, impaired water bodies, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, and unemployment. Table 3-15 provides the scores for each indicator for Census Tract 6019008401.

TABLE 3-15
INDICATOR PERCENTILES FOR BROADVIEW FARMS

CalEnviroScreen 3.0 Indicators	Census Tract 6019008401
CalEnviroScreen 3.0	*80-85*
POLLUTION BURDEN	**82**
Ozone	**82**
PM 2.5	**69**
Diesel	9
Pesticides	**91**
Toxic Releases	58
Traffic	5
Drinking Water	41
Cleanups	48
Groundwater Threats	**91**
Hazardous Waste	43
Impaired Water	**72**
Solid Waste	50
POPULATION CHARACTERISTICS	**74**
Asthma	66
Low Birth Weight	20
Cardiovascular	**78**
Education	**97**
Linguistic Isolation	**94**
Poverty	**84**
Unemployment	**67**
Housing Burden Percentile	44

Source: CalEnviroScreen 3.0, 2018

BURREL COMMUNITY

The Burrell Community is an unincorporated community in south-central Fresno County, northwest of Lanare, and straddles the border between Census Tracts 6019007600 and 6019007700. The community lies at the intersection of West Elkhorn Avenue and South Dower Avenue. The census tract on the north side (Census Tract 6019007600) experiences extremely high burden from pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, and poverty.

The census tract on the south side (Census Tract 6019007700) experiences some burden from both pollution and extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, and unemployment. Table 3-16provides the scores for each indicator for Census Tracts 6019007600 and 6019007700.

TABLE 3-16 INDICATOR PERCENTILES FOR BURREL

CalEnviroScreen 3.0 Indicators	Census Tract 6019007600	Census Tract 6019007700
CalEnviroScreen 3.0	*80-85*	*80-85*
POLLUTION BURDEN	**78**	64
Ozone	**91**	**91**
PM 2.5	**97**	**97**
Diesel	14	11
Pesticides	**95**	**91**
Toxic Releases	61	39
Traffic	1	2
Drinking Water	**95**	**87**
Cleanups	2	18
Groundwater Threats	**71**	0
Hazardous Waste	0	0
Impaired Water	0	41
Solid Waste	62	50
POPULATION CHARACTERISTICS	**77**	**85**
Asthma	**91**	**72**
Low Birth Weight	25	57
Cardiovascular	**86**	**92**
Education	**92**	**85**
Linguistic Isolation	**81**	**75**
Poverty	**94**	**89**
Unemployment	42	**84**
Housing Burden	35	35

Source: CalEnviroScreen 3.0, 2018

CALWA

Calwa is an unincorporated census-designated place in central Fresno County, and a county island within the City of Fresno. It is located within Census Tract 6019001201. This census tract experiences extremely high burden from both pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, diesel PM, toxic releases, drinking water contaminants, cleanup sites, groundwater threats, hazardous waste sites, solid waste sites, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, unemployment, and housing burden. Table 3-17 provides the scores for each indicator in Census Tract 6019001201.

TABLE 3-17 INDICATOR PERCENTILES FOR CALWA

CalEnviroScreen 3.0 Indicators	Census Tract 6019001201
CalEnviroScreen 3.0	*95-100*
POLLUTION BURDEN	**99**
Ozone	**98**
PM 2.5	**97**
Diesel	**81**
Pesticides	0
Toxic Releases	**98**
Traffic	16
Drinking Water	**81**
Cleanups	**99**
Groundwater Threats	**95**
Hazardous Waste	**96**
Impaired Water	0
Solid Waste	**97**
POPULATION CHARACTERISTICS	**98**
Asthma	**89**
Low Birth Weight	60
Cardiovascular	**92**
Education	**95**
Linguistic Isolation	**88**
Poverty	**94**
Unemployment	**96**
Housing Burden	**90**

Source: CalEnviroScreen 3.0, 2018

CAMDEN

Camden is an unincorporated community in Fresno County, 3.5 miles east of Riverdale and straddles the border between Census Tracts 6019007400 and 6019007700. The census tract on the east side (Census Tract 6019007400) experiences some burden from pollution and extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, high rates of low birth-weight infants, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, and unemployment.

The census tract on the west side (Census Tract 6019007700) experiences some burden from pollution and extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, and unemployment. Table 3-19 provides the scores for each indicator for Census Tracts 6019007400 and 6019007700.

TABLE 3-18 INDICATOR PERCENTILES FOR CAMDEN

CalEnviroScreen 3.0 Indicators	Census Tract 6019007400	Census Tract 6019007700
CalEnviroScreen 3.0	*75-80*	*80-85*
POLLUTION BURDEN	64	64
Ozone	**91**	**91**
PM 2.5	**98**	**97**
Diesel	14	11
Pesticides	**95**	**91**
Toxic Releases	41	39
Traffic	3	2
Drinking Water	**91**	**87**
Cleanups	0	18
Groundwater Threats	9	0
Hazardous Waste	0	0
Impaired Water	29	41
Solid Waste	50	50
POPULATION CHARACTERISTICS	**76**	**85**
Asthma	59	**72**
Low Birth Weight	**76**	57
Cardiovascular	**71**	**92**
Education	**87**	**85**
Linguistic Isolation	**74**	**75**
Poverty	**80**	**89**
Unemployment	**75**	**84**
Housing Burden	14	35

Source: CalEnviroScreen 3.0, 2018

CARILLO AVENUE COMMUNITY

The Carillo Avenue Community is an unincorporated community in central Fresno County, approximately nine miles south of downtown Fresno, and is located in Census Tract 6019007600. The community is located at the intersection of East Springfield Avenue and South Cherry Avenue. This census tract experiences extremely high burden from pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, and poverty. Table 3-19 provides the scores for each indicator for Census Tract 6019007600.

TABLE 3-19 INDICATOR PERCENTILES FOR CARILLO AVENUE

CalEnviroScreen 3.0 Indicators	Census Tract 6019007600
CalEnviroScreen 3.0	*80-85*
POLLUTION BURDEN	**78**
Ozone	**91**
PM 2.5	**97**
Diesel	14
Pesticides	**95**
Toxic Releases	61
Traffic	1
Drinking Water	**95**
Cleanups	2
Groundwater Threats	**71**
Hazardous Waste	0
Impaired Water	0
Solid Waste	62
POPULATION CHARACTERISTICS	**77**
Asthma	**91**
Low Birth Weight	25
Cardiovascular	**86**
Education	**92**
Linguistic Isolation	**81**
Poverty	**94**
Unemployment	42
Housing Burden	35

Source: CalEnviroScreen 3.0, 2018

CARUTHERS

Caruthers is a census-designated place in central Fresno County, 15 miles south of downtown Fresno, and is located in Census Tract 6019007500. This census tract experiences some burden from pollution and extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, solid waste sites, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, and unemployment. Table 3-20 provides the scores for each indicator for Census Tract 6019007500.

TABLE 3-20 INDICATOR PERCENTILES FOR CARUTHERS

CalEnviroScreen 3.0 Indicators	Census Tract 6019007500
CalEnviroScreen 3.0	*85-90*
POLLUTION BURDEN	65
Ozone	**91**
PM 2.5	**97**
Diesel	20
Pesticides	**94**
Toxic Releases	52
Traffic	2
Drinking Water	**94**
Cleanups	0
Groundwater Threats	0
Hazardous Waste	0
Impaired Water	0
Solid Waste	**68**
POPULATION CHARACTERISTICS	**92**
Asthma	**89**
Low Birth Weight	66
Cardiovascular	**92**
Education	**91**
Linguistic Isolation	**83**
Poverty	**82**
Unemployment	**87**
Housing Burden	36

Source: CalEnviroScreen 3.0, 2018

CECILE

Cecile is an unincorporated community in central Fresno County, just southeast of City of Fresno city limits, and straddles the border Census Tracts 6019001410 and 6019001500. The census tract on the north side (Census Tract 6019001410) experiences an extremely high burden from both pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, diesel PM, pesticides, toxic releases, drinking water contaminants, groundwater threats, hazardous waste sites, high rates of asthma, high rates of low birth-weight infants, high rates of cardiovascular disease, low levels of education, poverty, and unemployment.

The census tract on the south side (Census Tract 6019001500) experiences an extremely high burden from both pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, toxic releases, drinking water contaminants, cleanup sites, groundwater threats, hazardous waste sites, solid waste sites, high rates of asthma, high rates of cardiovascular disease, low levels of education, poverty, unemployment, and housing burden. Table 3-21 provides the scores for each indicator for Census Tracts 6019001410 and 6019001500.

TABLE 3-21 INDICATOR PERCENTILES FOR CECILE

CalEnviroScreen 3.0 Indicators	Census Tract 6019001410	Census Tract 6019001500
CalEnviroScreen 3.0	*95-100*	*95-100*
POLLUTION BURDEN	**98**	**100**
Ozone	**98**	**98**
PM 2.5	**97**	**97**
Diesel	**75**	58
Pesticides	**89**	**95**
Toxic Releases	**84**	**98**
Traffic	14	24
Drinking Water	**93**	**99**
Cleanups	11	**97**
Groundwater Threats	**76**	**92**
Hazardous Waste	**72**	**100**
Impaired Water	0	0
Solid Waste	65	**100**
POPULATION CHARACTERISTICS	**83**	**93**
Asthma	**81**	**90**
Low Birth Weight	**75**	39
Cardiovascular	**78**	**92**
Education	**83**	**91**
Linguistic Isolation	66	**74**
Poverty	**74**	**90**
Unemployment	**74**	**94**
Housing Burden	38	**84**

Source: CalEnviroScreen 3.0, 2018

CHESTNUT AVENUE/SHADY LAKES MOBILE HOME PARK

The Chestnut Avenue/Shady Lakes Mobile Home Park community is an unincorporated community in central Fresno County, about six miles southeast of downtown Fresno, and is located in Census Tract 6019001700. The community is located along South Chestnut Avenue, just south of East Jefferson Avenue. This census tract experiences extremely high burden from both pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticide use, toxic releases, drinking water contaminants, solid waste sites, high rates of asthma, high rates of low birth-weight infants, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, and unemployment. Table 3-22provides the scores for each indicator in Census Tract 6019001700.

TABLE 3-22 INDICATOR PERCENTILES FOR CHESTNUT AVE/SHADY LAKES

CalEnviroScreen 3.0 Indicators	Census Tract 6019001700
CalEnviroScreen 3.0	*95-100*
POLLUTION BURDEN	**97**
Ozone	**98**
PM 2.5	**97**
Diesel	42
Pesticides	**93**
Toxic Releases	**70**
Traffic	39
Drinking Water	**98**
Cleanups	56
Groundwater Threats	32
Hazardous Waste	47
Impaired Water	0
Solid Waste	**96**
POPULATION CHARACTERISTICS	**87**
Asthma	**85**
Low Birth Weight	**76**
Cardiovascular	**81**
Education	**77**
Linguistic Isolation	**69**
Poverty	**72**
Unemployment Percentile	**79**
Housing Burden Percentile	53

Source: CalEnviroScreen 3.0, 2018

CHURCH/FLOYD AVENUE COMMUNITY

The Church/Floyd Avenue Community is an unincorporated community in central Fresno County, located slightly over three miles southeast of Kerman, and is located in Census Tract 6019003900. The community is built around the intersection of West Church Avenue and South Floyd Avenue. This census tract experiences extremely high burden from pollution and high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, groundwater threats, solid waste sites, high rates of cardiovascular disease, low levels of education, linguistic isolation, and poverty. Table 3-23provides the scores for each indicator for Census Tract 6019003900.

TABLE 3-23 INDICATOR PERCENTILES FOR CHURCH/FLOYD AVE

CalEnviroScreen 3.0 Indicators	Census Tract 6019003900
CalEnviroScreen 3.0	*85-90*
POLLUTION BURDEN	**91**
Ozone	**85**
PM 2.5	**95**
Diesel	15
Pesticides	**95**
Toxic Releases	62
Traffic	3
Drinking Water	**99**
Cleanups	0
Groundwater Threats	**84**
Hazardous Waste	9
Impaired Water	55
Solid Waste	**96**
POPULATION CHARACTERISTICS	**72**
Asthma	66
Low Birth Weight	60
Cardiovascular	**82**
Education	**90**
Linguistic Isolation	**77**
Poverty	**83**
Unemployment	29
Housing Burden	22

Source: CalEnviroScreen 3.0, 2018

CONEJO

Conejo is an unincorporated community in central Fresno County, located 7.25 miles southwest of Selma, and is located in Census Tract 6019007300. This census tract experiences extremely high burden from pollution and high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, cleanup sites, solid waste sites, high rates of asthma, low levels of education, linguistic isolation, poverty, and unemployment. Table 3-24 provides the scores for each indicator for Census Tract 6019007300.

TABLE 3-24 INDICATOR PERCENTILES FOR CONEJO

CalEnviroScreen 3.0 Indicators	Census Tract 6019007300
CalEnviroScreen 3.0	*85-90*
POLLUTION BURDEN	**91**
Ozone	**98**
PM 2.5	**97**
Diesel	24
Pesticides	**94**
Toxic Releases	51
Traffic	8
Drinking Water	**93**
Cleanups	**75**
Groundwater Threats	39
Hazardous Waste	49
Impaired Water	0
Solid Waste	**68**
POPULATION CHARACTERISTICS	**68**
Asthma	**83**
Low Birth Weight	15
Cardiovascular	66
Education	**83**
Linguistic Isolation	**74**
Poverty	**82**
Unemployment	**72**
Housing Burden	38

Source: CalEnviroScreen 3.0, 2018

CORNELIA/FLORAL AVENUE COMMUNITY

The Cornelia/Floral Avenue Community is an unincorporated community in central Fresno County, slightly over two miles southeast of Raisin City, and straddles the border between Census Tracts 6019007500 and 6019007600. The census tract on the southeast side (Census Tract 6019007500) experiences some burden from pollution and extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, solid waste sites, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, and unemployment

The census tract that wraps around the south, west, and north sides (Census Tract 6019007600) experiences extremely high burden from pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, and poverty. Table 3-25 provides the scores for each indicator for Census Tracts 6019007500 and 6019007600.

TABLE 3-25 INDICATOR PERCENTILES FOR CORNELIA/FLORAL AVE

CalEnviroScreen 3.0 Indicators	Census Tract 6019007500	Census Tract 6019007600
CalEnviroScreen 3.0	*85-90*	*80-85*
POLLUTION BURDEN	65	**78**
Ozone	**91**	**91**
PM 2.5	**97**	**97**
Diesel	20	14
Pesticides	**94**	**95**
Toxic Releases	52	61
Traffic	2	1
Drinking Water	**94**	**95**
Cleanups	0	2
Groundwater Threats	0	**71**
Hazardous Waste	0	0
Impaired Water	0	0
Solid Waste	**68**	62
POPULATION CHARACTERISTICS	**92**	**77**
Asthma	**89**	**91**
Low Birth Weight	66	25
Cardiovascular	**92**	**86**
Education	**91**	**92**
Linguistic Isolation	**83**	**81**
Poverty	**82**	**94**
Unemployment	**87**	42
Housing Burden	36	35

Source: CalEnviroScreen 3.0, 2018

CROMIR

Cromir is an unincorporated community in northwest Fresno County, four miles southeast of Firebaugh, and is located in Census Tracts 6019008302 and 6019008401. Homes are generally located in the area bounded by Barstow Avenue, the Second Lift Canal, West Gettysburg Avenue, and State Highway 33. The census tract on the east side (Census Tract 6019008302) experiences high burden from pollution and extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, groundwater threats, high rates of asthma, high rates of low birth-weight infants, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, unemployment, and housing burden.

The census tract on the south side (Census Tract 6019001500) experiences an extremely high burden from pollution burden and high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, groundwater threats, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, and unemployment. Table 3-26 provides the scores for each indicator for Census Tracts 6019008302 and 6019008401.

TABLE 3-26 INDICATOR PERCENTILES FOR CROMIR

CalEnviroScreen 3.0 Indicators	Census Tract 6019008302	Census Tract 6019008401
CalEnviroScreen 3.0	*95-100*	*80-85*
POLLUTION BURDEN	**73**	**82**
Ozone	**78**	**82**
PM 2.5	**84**	**69**
Diesel	9	9
Pesticides	**91**	**91**
Toxic Releases	32	58
Traffic	10	5
Drinking Water	61	41
Cleanups	60	48
Groundwater Threats	**76**	**91**
Hazardous Waste	43	43
Impaired Water	49	**72**
Solid Waste	0	50
POPULATION CHARACTERISTICS	**99**	**74**
Asthma	**88**	66
Low Birth Weight	**71**	20
Cardiovascular	**93**	**78**
Education	**99**	**97**
Linguistic Isolation	**100**	**94**
Poverty	**100**	**84**
Unemployment	**99**	**67**
Housing Burden	**83**	44

Source: CalEnviroScreen 3.0, 2018

CSA 30 COMMUNITY – EL PORVENIR

The CSA 30 Community (El Porvenir) is located in unincorporated western Fresno County, approximately four miles west of Cantua Creek, and is located in Census Tract 6019008302. The community is located at the intersection of South Derrick Avenue and West Clarkson Avenue. This census tract experiences high burden from both pollution and extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, groundwater threats, high rates of asthma, high rates of low birth-weight infants, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, unemployment, and housing burden. Table 3-27 provides the scores for each indicator for Census Tract 6019006802.

TABLE 3-27 INDICATOR PERCENTILES FOR CSA 30 – EL PORVENIR

CalEnviroScreen 3.0 Indicators	Census Tract 6019008302
CalEnviroScreen 3.0	*95-100*
POLLUTION BURDEN	**73**
Ozone	**78**
PM 2.5	**84**
Diesel	9
Pesticides	**91**
Toxic Releases	32
Traffic	10
Drinking Water	61
Cleanups	60
Groundwater Threats	**76**
Hazardous Waste	43
Impaired Water	49
Solid Waste	0
POPULATION CHARACTERISTICS	**99**
Asthma	**88**
Low Birth Weight	**71**
Cardiovascular	**93**
Education	**99**
Linguistic Isolation	**100**
Poverty	**100**
Unemployment	**99**
Housing Burden	**83**

Source: CalEnviroScreen 3.0, 2018

CSA 32 COMMUNITY – CANTUA CREEK

The CSA 32 Community (Cantua Creek) is a census-designated place in western Fresno County, 11 miles southwest of Tranquillity, and is located in Census Tract 6019008200. This census tract experiences extremely high burden from both pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water, groundwater threats, high rates of cardiovascular disease, low levels of education, linguistic isolation, and poverty. Table 3-28 provides the scores for each indicator for Census Tract 6019008200.

TABLE 3-28 INDICATOR PERCENTILES FOR CSA 32 – CANTUA CREEK

CalEnviroScreen 3.0 Indicators	Census Tract 6019008200
CalEnviroScreen 3.0	*85-90*
POLLUTION BURDEN	**79**
Ozone	**82**
PM 2.5	**95**
Diesel	8
Pesticides	**93**
Toxic Releases	47
Traffic	2
Drinking Water	**81**
Cleanups	44
Groundwater Threats	**74**
Hazardous Waste	9
Impaired Water	49
Solid Waste	33
POPULATION CHARACTERISTICS	**82**
Asthma	54
Low Birth Weight	40
Cardiovascular	**88**
Education	**99**
Linguistic Isolation	**97**
Poverty	**97**
Unemployment	55
Housing Burden	62

Source: CalEnviroScreen 3.0, 2018

CSA 39 COMMUNITY – ZONE A

The CSA 39 Community (Zone A) is an unincorporated community in central Fresno County, about five miles southwest of downtown Fresno, and is located in Census Tract 6019001900. The community is located at the intersection of West Muscat Avenue and South Valentine Avenue. This census tract experiences extremely high burden from both pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, toxic releases, solid waste sites, high rates of asthma, high rates of low birth-weight infants, high rates of cardiovascular disease, low levels of education, poverty, and unemployment. Table 3-29 provides the scores for each indicator for Census Tract 6019001900.

TABLE 3-29 INDICATOR PERCENTILES FOR CSA 39 – ZONE A

CalEnviroScreen 3.0 Indicators	Census Tract 6019001900
CalEnviroScreen 3.0	*90-95*
POLLUTION BURDEN	**89**
Ozone	**91**
PM 2.5	**97**
Diesel	27
Pesticides	**94**
Toxic Releases	**74**
Traffic	3
Drinking Water	**91**
Cleanups	53
Groundwater Threats	14
Hazardous Waste	43
Impaired Water	0
Solid Waste	**80**
POPULATION CHARACTERISTICS	**86**
Asthma	**98**
Low Birth Weight	**69**
Cardiovascular	**97**
Education	**69**
Linguistic Isolation	46
Poverty	**78**
Unemployment	**84**
Housing Burden	26

Source: CalEnviroScreen 3.0, 2018

CSA 39 COMMUNITY – ZONE B/WEST PARK

The CSA 39 Community (Zone B/West Park) is an unincorporated community in central Fresno County, about four miles southwest of downtown Fresno, and is located in Census Tract 6019001900. The community is located along South Valentine Avenue, extending between West Church Avenue and West Jensen Avenue. This census tract experiences extremely high burden from both pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, toxic releases, solid waste sites, high rates of asthma, high rates of low birth-weight infants, high rates of cardiovascular disease, low levels of education, poverty, and unemployment. Table 3-30 provides the scores for each indicator for Census Tract 6019001900.

TABLE 3-30 INDICATOR PERCENTILES FOR CSA 39 – ZONE B/WEST PARK

CalEnviroScreen 3.0 Indicators	Census Tract 6019001900
CalEnviroScreen 3.0	*90-95*
POLLUTION BURDEN	**89**
Ozone	**91**
PM 2.5	**97**
Diesel	27
Pesticides	**94**
Toxic Releases	**74**
Traffic	3
Drinking Water	**91**
Cleanups	53
Groundwater Threats	14
Hazardous Waste	43
Impaired Water	0
Solid Waste	**80**
POPULATION CHARACTERISTICS	**86**
Asthma	**98**
Low Birth Weight	**69**
Cardiovascular	**97**
Education	**69**
Linguistic Isolation	46
Poverty	**78**
Unemployment	**84**
Housing Burden	26

Source: CalEnviroScreen 3.0, 2018

CSA 43 COMMUNITY – RAISIN CITY

The CSA 43 Community (Raisin City) is a census-designated place in central Fresno County, 13 miles southwest of downtown Fresno, and is located in Census Tract 6019007600. The community is located generally along South Henderson Road, between West Young Avenue and West Springfield Avenue. This census tract experiences extremely high burden from pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, and poverty. Table 3-31 provides the scores for each indicator for Census Tract 6019007600.

TABLE 3-31 INDICATOR PERCENTILES FOR CSA 43 – RAISIN CITY

CalEnviroScreen 3.0 Indicators	Census Tract 6019007600
CalEnviroScreen 3.0	*80-85*
POLLUTION BURDEN	**78**
Ozone	**91**
PM 2.5	**97**
Diesel	14
Pesticides	**95**
Toxic Releases	61
Traffic	1
Drinking Water	**95**
Cleanups	2
Groundwater Threats	**71**
Hazardous Waste	0
Impaired Water	0
Solid Waste	62
POPULATION CHARACTERISTICS	**77**
Asthma	**91**
Low Birth Weight	25
Cardiovascular	**86**
Education	**92**
Linguistic Isolation	**81**
Poverty	**94**
Unemployment	42
Housing Burden	35

Source: CalEnviroScreen 3.0, 2018

CSA 43 COMMUNITY – O'NEIL FARMS/WESTSIDE

The CSA 43 Community (O'Neil Farms/Westside) is an unincorporated community located in central Fresno County, 22 miles southwest of Kerman, and is located in Census Tract 6019007802. The community is located along Fresno-Coalinga Road (SR 145), spanning from West Excelsior Avenue to West Paige Avenue. This census tract experiences some burden form pollution and extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, groundwater threats, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, and unemployment. Table 3-32 provides the scores for each indicator for Census Tract 6019007802.

TABLE 3-32 INDICATOR PERCENTILES FOR CSA 43 – O'NEIL FARMS/WESTSIDE

CalEnviroScreen 3.0 Indicators	Census Tract 6019007802
CalEnviroScreen 3.0	*80-85*
POLLUTION BURDEN	61
Ozone	**85**
PM 2.5	**95**
Diesel	11
Pesticides	**96**
Toxic Releases	25
Traffic	4
Drinking Water	64
Cleanups	30
Groundwater Threats	**77**
Hazardous Waste	0
Impaired Water	0
Solid Waste	39
POPULATION CHARACTERISTICS	**87**
Asthma	**70**
Low Birth Weight	18
Cardiovascular	**93**
Education	**100**
Linguistic Isolation	**99**
Poverty	**100**
Unemployment	**82**
Housing Burden	65

Source: CalEnviroScreen 3.0, 2018

DEL REY

Del Rey is a census-designated place in central Fresno County, 3.5 miles southwest of Sanger, and is located in Census Tract 6019006900. This census tract experiences extremely high burden from both pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water, high rates of asthma, high rates of low birth-weight infants, low levels of education, linguistic isolation, poverty, and housing burden. Table 3-33 provides the scores for each indicator for Census Tract 6019006900.

TABLE 3-33 INDICATOR PERCENTILES FOR DEL REY

CalEnviroScreen 3.0 Indicators	Census Tract 6019006900
CalEnviroScreen 3.0	*90-95*
POLLUTION BURDEN	**86**
Ozone	**98**
PM 2.5	**97**
Diesel	18
Pesticides	**96**
Toxic Releases	65
Traffic	3
Drinking Water	**90**
Cleanups	**69**
Groundwater Threats	50
Hazardous Waste	0
Impaired Water	29
Solid Waste	33
POPULATION CHARACTERISTICS	**90**
Asthma	**68**
Low Birth Weight	**84**
Cardiovascular	48
Education	**95**
Linguistic Isolation	**92**
Poverty	**92**
Unemployment	**88**
Housing Burden	**69**

Source: CalEnviroScreen 3.0, 2018

EAST ADAMS AVENUE COMMUNITY

The East Adams Avenue Community is an unincorporated community located in central Fresno County, over four miles northeast of Reedley, and is located in Census Tract 6019006300. The community is located at the intersection of Navelencia Avenue and Adams Avenue. This census tract experiences extremely high burden from pollution and some burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, and unemployment. Table 3-34 provides the scores for each indicator for Census Tract 6019006300.

TABLE 3-34 INDICATOR PERCENTILES FOR EAST ADAMS AVENUE

CalEnviroScreen 3.0 Indicators	Census Tract 6019006300
CalEnviroScreen 3.0	*80-85*
POLLUTION BURDEN	**92**
Ozone	**98**
PM 2.5	**97**
Diesel	13
Pesticides	**97**
Toxic Releases	51
Traffic	5
Drinking Water	**94**
Cleanups	52
Groundwater Threats	51
Hazardous Waste	61
Impaired Water	29
Solid Waste	62
POPULATION CHARACTERISTICS	59
Asthma	66
Low Birth Weight	60
Cardiovascular	55
Education	62
Linguistic Isolation	47
Poverty	41
Unemployment	**68**
Housing Burden	40

Source: CalEnviroScreen 3.0, 2018

EASTON

Easton is a census-designated place in central Fresno County, located 7.5 miles south of downtown Fresno, and is located in Census Tract 6019001800. This census tract experiences extremely high burden from both pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, toxic releases, drinking water contaminants, cleanup sites, hazardous waste sites, solid waste sites, high rates of asthma, high rates of low birth-weight infants, high rates of cardiovascular disease, low levels of education, and unemployment. Table 3-35 provides the scores for each indicator for Census Tract 6019001800.

TABLE 3-35 INDICATOR PERCENTILES FOR EASTON

CalEnviroScreen 3.0 Indicators	Census Tract 6019001800
CalEnviroScreen 3.0	*95-100*
POLLUTION BURDEN	**98**
Ozone	**98**
PM 2.5	**97**
Diesel	25
Pesticides	**93**
Toxic Releases	**73**
Traffic	11
Drinking Water	**99**
Cleanups	**87**
Groundwater Threats	59
Hazardous Waste	**88**
Impaired Water	0
Solid Waste	**100**
POPULATION CHARACTERISTICS	**85**
Asthma	**95**
Low Birth Weight	**83**
Cardiovascular	**89**
Education	**72**
Linguistic Isolation	55
Poverty	64
Unemployment	**68**
Housing Burden	31

Source: CalEnviroScreen 3.0, 2018

ELM VIEW

Elm View is an unincorporated community in central Fresno County, located 15 miles south of downtown Fresno, and is located in Census Tract 6019007500. This census tract experiences some burden from pollution and extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, solid waste sites, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, and unemployment. Table 3-36 provides the scores for each indicator for Census Tract 6019007500.

TABLE 3-36 INDICATOR PERCENTILES FOR ELM VIEW

CalEnviroScreen 3.0 Indicators	Census Tract 6019007500
CalEnviroScreen 3.0	*85-90*
POLLUTION BURDEN	**65**
Ozone	**91**
PM 2.5	**97**
Diesel	20
Pesticides	**94**
Toxic Releases	52
Traffic	2
Drinking Water	**94**
Cleanups	0
Groundwater Threats	0
Hazardous Waste	0
Impaired Water	0
Solid Waste	**68**
POPULATION CHARACTERISTICS	**92**
Asthma	**89**
Low Birth Weight	66
Cardiovascular	**92**
Education	**91**
Linguistic Isolation	**83**
Poverty	**82**
Unemployment	**87**
Housing Burden	36

Source: CalEnviroScreen 3.0, 2018

FIVE POINTS

Five Points is an unincorporated community in central Fresno County, 25 miles north of Coalinga, and straddles the border between Census Tracts 6019008200 and 6019007802. The census tract on the north side (Census Tract 6019008200) experiences an extremely high burden from both pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, groundwater threats, high rates of cardiovascular disease, low levels of education, linguistic isolation, and poverty.

The census tract on the south side (Census Tract 6019007802) experiences some burden from pollution and extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, groundwater threats, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, and unemployment. Table 3-37 provides the scores for each indicator for Census Tracts 6019008200 and 6019007802.

TABLE 3-37 INDICATOR PERCENTILES FOR FIVE POINTS

CalEnviroScreen 3.0 Indicators	Census Tract 6019008200	Census Tract 6019007802
CalEnviroScreen 3.0	*85-90*	*80-85*
POLLUTION BURDEN	**79**	61
Ozone	**82**	**85**
PM 2.5	**95**	**95**
Diesel	8	11
Pesticides	**93**	**96**
Toxic Releases	47	25
Traffic	2	4
Drinking Water	**81**	64
Cleanups	44	30
Groundwater Threats	**74**	**77**
Hazardous Waste	9	0
Impaired Water	49	0
Solid Waste	33	39
POPULATION CHARACTERISTICS	**82**	**87**
Asthma	54	**70**
Low Birth Weight	40	18
Cardiovascular	**88**	**93**
Education	**99**	**100**
Linguistic Isolation	**97**	**99**
Poverty	**97**	**100**
Unemployment	55	**82**
Housing Burden	62	65

Source: CalEnviroScreen 3.0, 2018

FLAMINGO MOBILE HOME COMMUNITY

The Flamingo Mobile Home Community is an unincorporated community in central Fresno County, directly southeast of the City of Fresno, and is located in Census Tract 6019001500. The community is located slightly east of the East Central Avenue and South Maple Avenue intersection. This census tract experiences extremely high burden from both pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, toxic releases, drinking water contaminants, cleanup sites, groundwater threats, hazardous waste sites, solid waste sites, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, unemployment, and housing burden. Table 3-38 provides the scores for each indicator for Census Tract 6019001500.

TABLE 3-38 INDICATOR PERCENTILES FOR FLAMINGO MOBILE HOMES

CalEnviroScreen 3.0 Indicators	Census Tract 6019001500
CalEnviroScreen 3.0	*95-100*
POLLUTION BURDEN	**100**
Ozone	**98**
PM 2.5	**97**
Diesel	58
Pesticides	**95**
Toxic Releases	**98**
Traffic	24
Drinking Water	**99**
Cleanups	**97**
Groundwater Threats	**92**
Hazardous Waste	**100**
Impaired Water	0
Solid Waste	**100**
POPULATION CHARACTERISTICS	**93**
Asthma	**90**
Low Birth Weight	39
Cardiovascular	**92**
Education	**91**
Linguistic Isolation	**74**
Poverty	**90**
Unemployment	**94**
Housing Burden	**84**

Source: CalEnviroScreen 3.0, 2018

HAYES ROAD/PERRIN COLONY COMMUNITY

The Hayes Roald/Perrin Colony Community is an unincorporated community in central Fresno County, one mile northeast of Raisin City, and is located in Census Tract 6019007600. The community is located at the intersection of South Hayes Avenue and West Parlier Avenue. This census tract experiences extremely high burden from pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, and poverty. Table 3-39 provides the scores for each indicator for Census Tract 6019007600.

TABLE 3-39 INDICATOR PERCENTILES FOR HAYES ROAD/PERRIN COLONY

CalEnviroScreen 3.0 Indicators	Census Tract 6019007600
CalEnviroScreen 3.0	*80-85*
POLLUTION BURDEN	**78**
Ozone	**91**
PM 2.5	**97**
Diesel	14
Pesticides	**95**
Toxic Releases	61
Traffic	1
Drinking Water	**95**
Cleanups	2
Groundwater Threats	**71**
Hazardous Waste	0
Impaired Water	0
Solid Waste	62
POPULATION CHARACTERISTICS	**77**
Asthma	**91**
Low Birth Weight	25
Cardiovascular	**86**
Education	**92**
Linguistic Isolation	**81**
Poverty	**94**
Unemployment	42
Housing Burden	35

Source: CalEnviroScreen 3.0, 2018

HELM

Helm is an unincorporated community in central Fresno County, located 13 miles south of Kerman, and is located in Census Tract 6019008200. Homes are generally located along West Kamm Avenue and Lassen Avenue. This census tract experiences extremely high burden from both pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water, groundwater threats, high rates of cardiovascular disease, low levels of education, linguistic isolation, and poverty. Table 3-40 provides the scores for each indicator for Census Tract 6019008200.

TABLE 3-40 INDICATOR PERCENTILES FOR HELM

CalEnviroScreen 3.0 Indicators	Census Tract 6019008200
CalEnviroScreen 3.0	*85-90*
POLLUTION BURDEN	**79**
Ozone	**82**
PM 2.5	**95**
Diesel	8
Pesticides	**93**
Toxic Releases	47
Traffic	2
Drinking Water	**81**
Cleanups	44
Groundwater Threats	**74**
Hazardous Waste	9
Impaired Water	49
Solid Waste	33
POPULATION CHARACTERISTICS	**82**
Asthma	54
Low Birth Weight	40
Cardiovascular	**88**
Education	**99**
Linguistic Isolation	**97**
Poverty	**97**
Unemployment	55
Housing Burden	62

Source: CalEnviroScreen 3.0, 2018

HUGHES/MAGNOLIA AVENUE COMMUNITY

The Hughes/Magnolia Avenue Community is an unincorporated community in central Fresno County, about two miles south of Caruthers, and is located in Census Tract 6019007500. The community is located along South Hughes Avenue, between West Magnolia Avenue and West Clarkson Avenue. This census tract experiences some burden from pollution and extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, solid waste sites, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, and unemployment. Table 3-41 provides the scores for each indicator for Census Tract 6019007500.

TABLE 3-41 INDICATOR PERCENTILES FOR HUGHES/MAGNOLIA AVENUE

CalEnviroScreen 3.0 Indicators	Census Tract 6019007500
CalEnviroScreen 3.0	*85-90*
POLLUTION BURDEN	65
Ozone	**91**
PM 2.5	**97**
Diesel	20
Pesticides	**94**
Toxic Releases	52
Traffic	2
Drinking Water	**94**
Cleanups	0
Groundwater Threats	0
Hazardous Waste	0
Impaired Water	0
Solid Waste	**68**
POPULATION CHARACTERISTICS	**92**
Asthma	**89**
Low Birth Weight	66
Cardiovascular	**92**
Education	**91**
Linguistic Isolation	**83**
Poverty	**82**
Unemployment	**87**
Housing Burden	36

Source: CalEnviroScreen 3.0, 2018

INGLE

Ingle is an unincorporated community in northwestern Fresno County, located slightly over seven miles southeast of Mendota, and is located in Census Tract 6019003900. A handful of homes are located along West Whitesbridge Avenue and there is some overlap with the SB 244-iedntified community of Whitesbridge. This census tract experiences extremely high burden from pollution and high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, groundwater threats, solid waste sites, high rates of cardiovascular disease, low levels of education, linguistic isolation, and poverty. Table 3-42 provides the scores for each indicator for Census Tract 6019003900.

TABLE 3-42 INDICATOR PERCENTILES FOR INGLE

CalEnviroScreen 3.0 Indicators	Census Tract 6019003900
CalEnviroScreen 3.0	*85-90*
POLLUTION BURDEN	**91**
Ozone	**85**
PM 2.5	**95**
Diesel	15
Pesticides	**95**
Toxic Releases	62
Traffic	3
Drinking Water	**99**
Cleanups	0
Groundwater Threats	**84**
Hazardous Waste	9
Impaired Water	55
Solid Waste	**96**
POPULATION CHARACTERISTICS	**72**
Asthma	66
Low Birth Weight	60
Cardiovascular	**82**
Education	**90**
Linguistic Isolation	**77**
Poverty	**83**
Unemployment	29
Housing Burden	22

Source: CalEnviroScreen 3.0, 2018

LACJAC

Lacjac is an unincorporated community in central Fresno County, located two miles northwest of Reedley, and is located in Census Tract 6019006802. Homes are generally located south of Manning Avenue along South Lac Jac Avenue, as well as along Manning Avenue. This census tract experiences extremely high burden from both pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water, hazardous waste, solid waste sites, high rates of asthma, high rates of low birth-weight infants, high rates of cardiovascular disease, low levels of education, linguistic isolation, and poverty. Table 3-43 provides the scores for each indicator for Census Tract 6019006802.

TABLE 3-43 INDICATOR PERCENTILES FOR LACJAC

CalEnviroScreen 3.0 Indicators	Census Tract 6019006802
CalEnviroScreen 3.0	*95-100*
POLLUTION BURDEN	**95**
Ozone	**98**
PM 2.5	**98**
Diesel	27
Pesticides	**97**
Toxic Releases	60
Traffic	6
Drinking Water	**85**
Cleanups	61
Groundwater Threats	22
Hazardous Waste	**96**
Impaired Water	29
Solid Waste	**74**
POPULATION CHARACTERISTICS	**94**
Asthma	**90**
Low Birth Weight	**81**
Cardiovascular	**91**
Education	**87**
Linguistic Isolation	**78**
Poverty	**92**
Unemployment	NA
Housing Burden	42

Source: CalEnviroScreen 3.0, 2018

LA JOLLA RANCH

La Jolla Ranch is located in unincorporated western Fresno County, 12.5 miles southwest of Mendota at the corner of Millux and Brannon Avenues in Census Tract 6019008302. The community is comprised of farmworker housing. This census tract experiences high burden from both pollution and extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, groundwater threats, high rates of asthma, high rates of low birth-weight infants, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, unemployment, and housing burden. Table 3-44 provides the scores for each indicator for Census Tract 6019006802.

TABLE 3-44 INDICATOR PERCENTILES FOR LA JOLLA RANCH

CalEnviroScreen 3.0 Indicators	Census Tract 6019008302
CalEnviroScreen 3.0	*95-100*
POLLUTION BURDEN	**73**
Ozone	**78**
PM 2.5	**84**
Diesel	9
Pesticides	**91**
Toxic Releases	32
Traffic	10
Drinking Water	61
Cleanups	60
Groundwater Threats	**76**
Hazardous Waste	43
Impaired Water	49
Solid Waste	0
POPULATION CHARACTERISTICS	**99**
Asthma	**88**
Low Birth Weight	**71**
Cardiovascular	**93**
Education	**99**
Linguistic Isolation	**100**
Poverty	**100**
Unemployment	**99**
Housing Burden	**83**

Source: CalEnviroScreen 3.0, 2018

LANARE

Lanare is a census-designated place in south-central Fresno County, 24 miles southwest of downtown Fresno, and is located in Census Tract 6019007700. This census tract experiences some burden from pollution and extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, and unemployment. Table 3-45 provides the scores for each indicator for Census Tract 6019007700.

TABLE 3-45 INDICATOR PERCENTILES FOR LANARE

CalEnviroScreen 3.0 Indicators	Census Tract 6019007700
CalEnviroScreen 3.0	*80-85*
POLLUTION BURDEN	64
Ozone	**91**
PM 2.5	**97**
Diesel	11
Pesticides	**91**
Toxic Releases	39
Traffic	2
Drinking Water	**87**
Cleanups	18
Groundwater Threats	0
Hazardous Waste	0
Impaired Water	41
Solid Waste	50
POPULATION CHARACTERISTICS	**85**
Asthma	**72**
Low Birth Weight	57
Cardiovascular	**92**
Education	**85**
Linguistic Isolation	**75**
Poverty	**89**
Unemployment	**84**
Housing Burden	35

Source: CalEnviroScreen 3.0, 2018

LATON

Laton is a census-designated place in south-central Fresno County, 23 miles southeast of downtown Fresno, and is located in Census Tract 6019007400. This census tract experiences some burden from pollution and extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, high rates of low birth-weight infants, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, and unemployment. Table 3-46 provides the scores for each indicator for Census Tract 6019007400.

TABLE 3-46 INDICATOR PERCENTILES FOR LATON

CalEnviroScreen 3.0 Indicators	Census Tract 6019007400
CalEnviroScreen 3.0	*75-80*
POLLUTION BURDEN	64
Ozone	**91**
PM 2.5	**98**
Diesel	14
Pesticides	**95**
Toxic Releases	41
Traffic	3
Drinking Water	**91**
Cleanups	0
Groundwater Threats	9
Hazardous Waste	0
Impaired Water	29
Solid Waste	50
POPULATION CHARACTERISTICS	**76**
Asthma	59
Low Birth Weight	**76**
Cardiovascular	**71**
Education	**87**
Linguistic Isolation	**74**
Poverty	**80**
Unemployment	**75**
Housing Burden	14

Source: CalEnviroScreen 3.0, 2018

LOCANS

Locans is an unincorporated community in central Fresno County, adjacent to the eastern border of the Fresno city limits and is located in Census Tract 6019001413. Although it is adjacent to the Fresno city limits, this community has not been annexed into the city. This census tract experiences extremely high burden from pollution and some burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, toxic releases, drinking water contaminants, high rates of asthma, high rates of low birth-weight infants, and unemployment. Table 3-47 provides the scores for each indicator for Census Tract 6019001413.

TABLE 3-47 INDICATOR PERCENTILES FOR LOCANS

CalEnviroScreen 3.0 Indicators	Census Tract 6019001413
CalEnviroScreen 3.0	*75-80*
POLLUTION BURDEN	**81**
Ozone	**98**
PM 2.5	**97**
Diesel	63
Pesticides	**91**
Toxic Releases	**69**
Traffic	7
Drinking Water	**94**
Cleanups	60
Groundwater Threats	0
Hazardous Waste	0
Impaired Water	0
Solid Waste	0
POPULATION CHARACTERISTICS	64
Asthma	**72**
Low Birth Weight	**91**
Cardiovascular	62
Education	46
Linguistic Isolation	18
Poverty	36
Unemployment	**76**
Housing Burden	42

Source: CalEnviroScreen 3.0, 2018

LONE STAR

Lone Star is an unincorporated community in central Fresno County, directly southeast of the City of Fresno, and straddles the border between Census Tracts 6019001413 and 6019001414. Although it is adjacent to the Fresno city limits, this community has not been annexed into the city. The census tract on the east side (Census Tract 6019001413) experiences an extremely high burden from pollution and some burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, toxic releases, drinking water contaminants, high rates of asthma, high rates of low birth-weight infants, and unemployment.

The census tract on the west side (Census Tract 6019001414) experiences an extremely high burden from both pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, diesel PM, pesticides, toxic releases, drinking water contaminants, high rates of asthma, and high rates of cardiovascular disease. Table 3-48 provides the scores for each indicator for Census Tracts 6019001413 and 6019001414.

TABLE 3-48 INDICATOR PERCENTILES FOR LONE STAR

CalEnviroScreen 3.0 Indicators	Census Tract 6019001413	Census Tract 6019001414
CalEnviroScreen 3.0	*75-80*	*70-75*
POLLUTION BURDEN	**81**	**85**
Ozone	**98**	**98**
PM 2.5	**97**	**97**
Diesel	63	**75**
Pesticides	**91**	**93**
Toxic Releases	**69**	**74**
Traffic	7	17
Drinking Water	**94**	**97**
Cleanups	60	42
Groundwater Threats	0	6
Hazardous Waste	0	0
Impaired Water	0	0
Solid Waste	0	0
POPULATION CHARACTERISTICS	64	54
Asthma	**72**	**79**
Low Birth Weight	**91**	52
Cardiovascular	62	**75**
Education	46	44
Linguistic Isolation	18	40
Poverty	36	40
Unemployment	**76**	51
Housing Burden	42	7

Source: CalEnviroScreen 3.0, 2018

MADERA AVENUE COMMUNITY

The Madera Avenue Community is an unincorporated community in central Fresno County, under two miles southeast of the center of Kerman, and is located in Census Tract 6019003900. The community is located along South Madera Avenue, just south of West Jensen Avenue. This census tract experiences extremely high burden from pollution and high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, groundwater threats, solid waste sites, high rates of cardiovascular disease, low levels of education, linguistic isolation, and poverty. Table 3-49 provides the scores for each indicator for Census Tract 6019003900.

TABLE 3-49 INDICATOR PERCENTILES FOR MADERA AVENUE

CalEnviroScreen 3.0 Indicators	Census Tract 6019003900
CalEnviroScreen 3.0	*85-90*
POLLUTION BURDEN	**91**
Ozone	**85**
PM 2.5	**95**
Diesel	15
Pesticides	**95**
Toxic Releases	62
Traffic	3
Drinking Water	**99**
Cleanups	0
Groundwater Threats	**84**
Hazardous Waste	9
Impaired Water	55
Solid Waste	**96**
POPULATION CHARACTERISTICS	**72**
Asthma	66
Low Birth Weight	60
Cardiovascular	**82**
Education	**90**
Linguistic Isolation	**77**
Poverty	**83**
Unemployment	29
Housing Burden	22

Source: CalEnviroScreen 3.0, 2018

MALAGA

Malaga is a census-designated place in central Fresno County, directly southeast of the City of Fresno, and is located in Census Tract 6019001500. This census tract experiences extremely high burden from both pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, toxic releases, drinking water contaminants, cleanup sites, groundwater threats, hazardous waste sites, solid waste sites, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, unemployment, and housing burden. Table 3-50 provides the scores for each indicator for Census Tract 6019001500.

TABLE 3-50 INDICATOR PERCENTILES FOR MALAGA

CalEnviroScreen 3.0 Indicators	Census Tract 6019001500
CalEnviroScreen 3.0	*95-100*
POLLUTION BURDEN	**100**
Ozone	**98**
PM 2.5	**97**
Diesel	58
Pesticides	**95**
Toxic Releases	**98**
Traffic	24
Drinking Water	**99**
Cleanups	**97**
Groundwater Threats	**92**
Hazardous Waste	**100**
Impaired Water	0
Solid Waste	**100**
POPULATION CHARACTERISTICS	**93**
Asthma	**90**
Low Birth Weight	39
Cardiovascular	**92**
Education	**91**
Linguistic Isolation	**74**
Poverty	**90**
Unemployment	**94**
Housing Burden	**84**

Source: CalEnviroScreen 3.0, 2018

MILEY

Miley is an unincorporated community in central Fresno County, directly north of Parlier, and is located in Census Tract 6019008502. Home are located along South Mendocino and East South Avenues, just outside Parlier city limits. This census tract experiences extremely high burden from both pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, hazardous waste sites, high rates of asthma, high rates of low birth-weight infants, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, and unemployment. Table 3-52 provides the scores for each indicator for Census Tract 6019008502.

TABLE 3-51 INDICATOR PERCENTILES FOR MILEY

CalEnviroScreen 3.0 Indicators	Census Tract 6019008502
CalEnviroScreen 3.0	*95-100*
POLLUTION BURDEN	**93**
Ozone	**98**
PM 2.5	**98**
Diesel	26
Pesticides	**96**
Toxic Releases	65
Traffic	12
Drinking Water	**82**
Cleanups	63
Groundwater Threats	32
Hazardous Waste	**96**
Impaired Water	0
Solid Waste	50
POPULATION CHARACTERISTICS	**98**
Asthma	**93**
Low Birth Weight	**73**
Cardiovascular	**95**
Education	**96**
Linguistic Isolation	**95**
Poverty	**96**
Unemployment	**94**
Housing Burden	62

Source: CalEnviroScreen 3.0, 2018

MINKLER

Minkler is a census-designated place in eastern Fresno County, 5.5 miles northeast of Sanger, and is located in Census Tract 6019006300. This census tract experiences extremely high burden from pollution and some burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, and unemployment. Table 3-52 provides the scores for each indicator for Census Tract 6019006300.

TABLE 3-52 INDICATOR PERCENTILES FOR MINKLER

CalEnviroScreen 3.0 Indicators	Census Tract 6019006300
CalEnviroScreen 3.0	*80-85*
POLLUTION BURDEN	**92**
Ozone	**98**
PM 2.5	**97**
Diesel	13
Pesticides	**97**
Toxic Releases	51
Traffic	5
Drinking Water	**94**
Cleanups	52
Groundwater Threats	51
Hazardous Waste	61
Impaired Water	29
Solid Waste	62
POPULATION CHARACTERISTICS	59
Asthma	66
Low Birth Weight	60
Cardiovascular	55
Education	62
Linguistic Isolation	47
Poverty	41
Unemployment	**68**
Housing Burden	40

Source: CalEnviroScreen 3.0, 2018

MONMOUTH

Monmouth is a census-designated place in central Fresno County, seven miles west of Selma, and straddles the border between Census Tracts 6019007300 and 6019001700. The census tract on the north side (Census Tract 6019001700) experiences extremely high burden from pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, toxic releases, drinking water contaminants, solid waste sites, high rates of asthma, high rates of low birth-weight infants, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, and unemployment.

The census tract on the south side (Census Tract 6019007300) experiences an extremely high burden from pollution and high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, cleanup sites, solid waste sites, high rates of asthma, low levels of education, linguistic isolation, poverty, and unemployment. Table 3-53 provides the scores for each indicator for Census Tracts 6019001700 and 6019007300.

TABLE 3-53 INDICATOR PERCENTILES FOR MONMOUTH

CalEnviroScreen 3.0 Indicators	Census Tract 6019001700	Census Tract 6019007300
CalEnviroScreen 3.0	*95-100*	*85-90*
POLLUTION BURDEN	**97**	**91**
Ozone	**98**	**98**
PM 2.5	**97**	**97**
Diesel	42	24
Pesticides	**93**	**94**
Toxic Releases	**70**	51
Traffic	39	8
Drinking Water	**98**	**93**
Cleanups	56	**75**
Groundwater Threats	32	39
Hazardous Waste	47	49
Impaired Water	0	0
Solid Waste	**96**	**68**
POPULATION CHARACTERISTICS	**87**	**68**
Asthma	**85**	**83**
Low Birth Weight	**76**	15
Cardiovascular	**81**	66
Education	**77**	**83**
Linguistic Isolation	**69**	**74**
Poverty	**72**	**82**
Unemployment	**79**	**72**
Housing Burden	53	38

Source: CalEnviroScreen 3.0, 2018

MURIETTA FARM

Murietta Farm is an unincorporated community in eastern Fresno County, eight miles southwest of Mendota, in Census Tract 6019008302. It provides farmworker housing and is located slightly north of the South Washoe Avenue/West Lincoln Avenue intersection. This census tract experiences high burden from pollution and extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, groundwater threats, high rates of asthma, high rates of low birth-weight infants, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, unemployment, and housing burden. Table 3-54 provides the scores for each indicator for Census Tract 6019008302.

TABLE 3-54 INDICATOR PERCENTILES FOR MURIETTA FARM

CalEnviroScreen 3.0 Indicators	Census Tract 6019008302
CalEnviroScreen 3.0	*95-100*
POLLUTION BURDEN	**73**
Ozone	**78**
PM 2.5	**84**
Diesel	9
Pesticides	**91**
Toxic Releases	32
Traffic	10
Drinking Water	61
Cleanups	60
Groundwater Threats	**76**
Hazardous Waste	43
Impaired Water	49
Solid Waste	0
POPULATION CHARACTERISTICS	**99**
Asthma	**88**
Low Birth Weight	**71**
Cardiovascular	**93**
Education	**99**
Linguistic Isolation	**100**
Poverty	**100**
Unemployment	**99**
Housing Burden	**83**

Source: CalEnviroScreen 3.0, 2018

NAVELENCIA

Navelencia is an unincorporated community in central Fresno County, 5.5 miles northwest of Orange Cove, and is located in Census Tract 6019006300. This census tract experiences extremely high burden from pollution and some burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, and unemployment. Table 3-55 provides the scores for each indicator for Census Tract 6019006300.

TABLE 3-55 INDICATOR PERCENTILES FOR NAVELENCIA

CalEnviroScreen 3.0 Indicators	Census Tract 6019006300
CalEnviroScreen 3.0	*80-85*
POLLUTION BURDEN	**92**
Ozone	**98**
PM 2.5	**97**
Diesel	13
Pesticides	**97**
Toxic Releases	51
Traffic	5
Drinking Water	**94**
Cleanups	52
Groundwater Threats	51
Hazardous Waste	61
Impaired Water	29
Solid Waste	62
POPULATION CHARACTERISTICS	59
Asthma	66
Low Birth Weight	60
Cardiovascular	55
Education	62
Linguistic Isolation	47
Poverty	41
Unemployment	**68**
Housing Burden	40

Source: CalEnviroScreen 3.0, 2018

ORO LOMA

Oro Loma is an unincorporated community in northwestern Fresno County, 13 miles northwest of Firebaugh, and is located in Census Tract 6019008402. This census tract experiences some burden from pollution and extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, cleanup sites, groundwater threats, impaired water bodies, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, and poverty. Table 3-56 provides the scores for each indicator for Census Tract 6019008402.

TABLE 3-56 INDICATOR PERCENTILES FOR ORO LOMA

CalEnviroScreen 3.0 Indicators	Census Tract 6019008402
CalEnviroScreen 3.0	*75-80*
POLLUTION BURDEN	66
Ozone	**74**
PM 2.5	**69**
Diesel	9
Pesticides	**90**
Toxic Releases	41
Traffic	4
Drinking Water	61
Cleanups	**72**
Groundwater Threats	**72**
Hazardous Waste	0
Impaired Water	**72**
Solid Waste	0
POPULATION CHARACTERISTICS	**78**
Asthma	**85**
Low Birth Weight	35
Cardiovascular	**85**
Education	**93**
Linguistic Isolation	**91**
Poverty	**91**
Unemployment	66
Housing Burden	2

Source: CalEnviroScreen 3.0, 2018

OXALIS

Oxalis is an unincorporated community in northwestern Fresno County, 6.5 miles northwest of Firebaugh, and is located in Census Tract 6019008402. This census tract experiences some burden from pollution and extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, cleanup sites, groundwater threats, impaired water bodies, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, and poverty. Table 3-57 provides the scores for each indicator for Census Tract 6019008402.

TABLE 3-57 INDICATOR PERCENTILES FOR OXALIS

CalEnviroScreen 3.0 Indicators	Census Tract 6019008402
CalEnviroScreen 3.0	*75-80*
POLLUTION BURDEN	66
Ozone	**74**
PM 2.5	**69**
Diesel	9
Pesticides	**90**
Toxic Releases	41
Traffic	4
Drinking Water	61
Cleanups	**72**
Groundwater Threats	**72**
Hazardous Waste	0
Impaired Water	**72**
Solid Waste	0
POPULATION CHARACTERISTICS	**78**
Asthma	**85**
Low Birth Weight	35
Cardiovascular	**85**
Education	**93**
Linguistic Isolation	**91**
Poverty	**91**
Unemployment	66
Housing Burden	2

Source: CalEnviroScreen 3.0, 2018

PARLIER/ELM AVENUE COMMUNITY

The Parlier/Elm Avenue Community is an unincorporated community in central Fresno County, over two miles south of Easton, and is located in Census Tract 6019007600. The community is located at the intersection of West Parlier Avenue and South Elm Avenue. This census tract experiences extremely high burden from pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, and poverty. Table 3-58 provides the scores for each indicator for Census Tract 6019007600.

TABLE 3-58 INDICATOR PERCENTILES FOR PARLIER/ELM AVENUE

CalEnviroScreen 3.0 Indicators	Census Tract 6019007600
CalEnviroScreen 3.0	*80-85*
POLLUTION BURDEN	**78**
Ozone	**91**
PM 2.5	**97**
Diesel	14
Pesticides	**95**
Toxic Releases	61
Traffic	1
Drinking Water	**95**
Cleanups	2
Groundwater Threats	**71**
Hazardous Waste	0
Impaired Water	0
Solid Waste	62
POPULATION CHARACTERISTICS	**77**
Asthma	**91**
Low Birth Weight	25
Cardiovascular	**86**
Education	**92**
Linguistic Isolation	**81**
Poverty	**94**
Unemployment	42
Housing Burden	35

Source: CalEnviroScreen 3.0, 2018

PRATTON

Pratton is an unincorporated community in central Fresno County, just west of the City of Fresno, and is located in Census Tract 6019001900. Although it is adjacent to the Fresno city limits, this community has not been annexed into the city. This census tract experiences extremely high burden from both pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, toxic releases, solid waste sites, high rates of asthma, high rates of low birth-weight infants, high rates of cardiovascular disease, low levels of education, poverty, and unemployment. Table 3-59 provides the scores for each indicator for Census Tract 6019001900.

TABLE 3-59 INDICATOR PERCENTILES FOR PRATTON

CalEnviroScreen 3.0 Indicators	Census Tract 6019001900
CalEnviroScreen 3.0	*90-95*
POLLUTION BURDEN	**89**
Ozone	**91**
PM 2.5	**97**
Diesel	27
Pesticides	**94**
Toxic Releases	**74**
Traffic	3
Drinking Water	**91**
Cleanups	53
Groundwater Threats	14
Hazardous Waste	43
Impaired Water	0
Solid Waste	**80**
POPULATION CHARACTERISTICS	**86**
Asthma	**98**
Low Birth Weight	**69**
Cardiovascular	**97**
Education	**69**
Linguistic Isolation	46
Poverty	**78**
Unemployment	**84**
Housing Burden	26

Source: CalEnviroScreen 3.0, 2018

PILIBOS RANCH

Pilibos Ranch is an unincorporated community in western Fresno County, nine miles southwest of Mendota, and is located in Census Tract 6019008302. It provides farmworker housing, and is located at the corner of Annedale and South Newcomb Avenues. This census tract experiences high burden from pollution and extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, groundwater threats, high rates of asthma, high rates of low birth-weight infants, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, unemployment, and housing burden. Table 3-60 provides the scores for each indicator for Census Tract 6019008302.

TABLE 3-60 INDICATOR PERCENTILES FOR PILIBOS RANCH

CalEnviroScreen 3.0 Indicators	Census Tract 6019008302
CalEnviroScreen 3.0	*95-100*
POLLUTION BURDEN	**73**
Ozone	**78**
PM 2.5	**84**
Diesel	9
Pesticides	**91**
Toxic Releases	32
Traffic	10
Drinking Water	61
Cleanups	60
Groundwater Threats	**76**
Hazardous Waste	43
Impaired Water	49
Solid Waste	0
POPULATION CHARACTERISTICS	**99**
Asthma	**88**
Low Birth Weight	**71**
Cardiovascular	**93**
Education	**99**
Linguistic Isolation	**100**
Poverty	**100**
Unemployment	**99**
Housing Burden	**83**

Source: CalEnviroScreen 3.0, 2018

RIVERDALE

Riverdale is a census-designated place in central Fresno County, 23 miles south of Fresno, and is located in Census Tract 6019007700. This census tract experiences some burden from pollution and extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, and unemployment. Table 3-61 provides the scores for each indicator for Census Tract 6019007700.

TABLE 3-61 INDICATOR PERCENTILES FOR RIVERDALE

CalEnviroScreen 3.0 Indicators	Census Tract 6019007700
CalEnviroScreen 3.0	*80-85*
POLLUTION BURDEN	64
Ozone	**91**
PM 2.5	**97**
Diesel	11
Pesticides	**91**
Toxic Releases	39
Traffic	2
Drinking Water	**87**
Cleanups	18
Groundwater Threats	0
Hazardous Waste	0
Impaired Water	41
Solid Waste	50
POPULATION CHARACTERISTICS	**85**
Asthma	**72**
Low Birth Weight	57
Cardiovascular	**92**
Education	**85**
Linguistic Isolation	**75**
Poverty	**89**
Unemployment	**84**
Housing Burden	35

Source: CalEnviroScreen 3.0, 2018

ROLINDA

Rolinda is an unincorporated community in central Fresno county, 10 miles west of downtown Fresno, and is located in Census Tract 6019003900. This census tract experiences extremely high burden from pollution and high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, groundwater threats, solid waste sites, high rates of cardiovascular disease, low levels of education, linguistic isolation, and poverty. Table 3-62 provides the scores for each indicator for Census Tract 6019003900.

TABLE 3-62 INDICATOR PERCENTILES FOR ROLINDA

CalEnviroScreen 3.0 Indicators	Census Tract 6019003900
CalEnviroScreen 3.0	*85-90*
POLLUTION BURDEN	**91**
Ozone	**85**
PM 2.5	**95**
Diesel	15
Pesticides	**95**
Toxic Releases	62
Traffic	3
Drinking Water	**99**
Cleanups	0
Groundwater Threats	**84**
Hazardous Waste	9
Impaired Water	55
Solid Waste	**96**
POPULATION CHARACTERISTICS	**72**
Asthma	66
Low Birth Weight	60
Cardiovascular	**82**
Education	**90**
Linguistic Isolation	**77**
Poverty	**83**
Unemployment	29
Housing Burden	22

Source: CalEnviroScreen 3.0, 2018

RUSSELL AVENUE COMMUNITY

The Russell Avenue Community is an unincorporated community near the northwestern border of Fresno County, approximately four miles north of the Russell Avenue and Nees Avenue intersection and is located in Census Tract 6019008402. The community is located along Russell Avenue. This census tract experiences some burden from pollution and extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, cleanup sites, groundwater threats, impaired water bodies, high rates of asthma, high rates of cardiovascular disease, low levels of education, linguistic isolation, and poverty. Table 3-63 provides the scores for each indicator for Census Tract 6019008402.

TABLE 3-63 INDICATOR PERCENTILES FOR RUSSELL AVENUE

CalEnviroScreen 3.0 Indicators	Census Tract 6019008402
CalEnviroScreen 3.0	*75-80*
POLLUTION BURDEN	66
Ozone	**74**
PM 2.5	**69**
Diesel	9
Pesticides	**90**
Toxic Releases	41
Traffic	4
Drinking Water	61
Cleanups	**72**
Groundwater Threats	**72**
Hazardous Waste	0
Impaired Water	**72**
Solid Waste	0
POPULATION CHARACTERISTICS	**78**
Asthma	**85**
Low Birth Weight	35
Cardiovascular	**85**
Education	**93**
Linguistic Isolation	**91**
Poverty	**91**
Unemployment	66
Housing Burden	2

Source: CalEnviroScreen 3.0, 2018

THREE ROCKS

Three Rocks is a census-designated place in western Fresno County, 17 miles south of Mendota, and straddles the border between Census Tracts 6019008302 and 6019008200. The census tract on the west side (Census Tract 6019008302) experiences high burden from pollution and extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, groundwater threats, high rates of asthma, high rates of low birth-weight infants, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, unemployment, and housing burden.

The census tract on the east side (Census Tract 6019008200) experiences extremely high burden from both pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, groundwater threats, high rates of cardiovascular disease, low levels of education, linguistic isolation, and poverty. Table 3-64 provides the scores for each indicator for Census Tracts 6019008302 and 6019008200.

TABLE 3-64 INDICATOR PERCENTILES FOR THREE ROCKS

CalEnviroScreen 3.0 Indicators	Census Tract 6019008302	Census Tract 6019008200
CalEnviroScreen 3.0	*95-100*	*85-90*
POLLUTION BURDEN	**73**	**79**
Ozone	**78**	**82**
PM 2.5	**84**	**95**
Diesel	9	8
Pesticides	**91**	**93**
Toxic Releases	32	47
Traffic	10	2
Drinking Water	61	**81**
Cleanups	60	44
Groundwater Threats	**76**	**74**
Hazardous Waste	43	9
Impaired Water	49	49
Solid Waste	0	33
POPULATION CHARACTERISTICS	**99**	**82**
Asthma	**88**	54
Low Birth Weight	**71**	40
Cardiovascular	**93**	**88**
Education	**99**	**99**
Linguistic Isolation	**100**	**97**
Poverty	**100**	**97**
Unemployment	**99**	55
Housing Burden	**83**	62

Source: CalEnviroScreen 3.0, 2018

TOMBSTONE TERRITORY COMMUNITY

The Tombstone Territory Community is an unincorporated community in northwestern Fresno county, approximately two miles southwest of the center of Sanger, and is located in Census Tract 6019006100. The community is located at the intersection of South Greenwood Avenue and East Central Avenue. This census tract experiences high burden from pollution and extremely high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, and solid waste sites, high rates of asthma, high rates of low birth-weight infants, high rates of cardiovascular disease, low levels of education, linguistic isolation, poverty, and unemployment. Table 3-65 provides the scores for each indicator for Census Tract 6019006100.

TABLE 3-65 INDICATOR PERCENTILES FOR TOMBSTONE TERRITORY

CalEnviroScreen 3.0 Indicators	Census Tract 6019006100
CalEnviroScreen 3.0	*80-85*
POLLUTION BURDEN	**69**
Ozone	**98**
PM 2.5	**97**
Diesel	28
Pesticides	**96**
Toxic Releases	60
Traffic	4
Drinking Water	**74**
Cleanups	9
Groundwater Threats	0
Hazardous Waste	0
Impaired Water	0
Solid Waste	**68**
POPULATION CHARACTERISTICS	**83**
Asthma	**79**
Low Birth Weight	**85**
Cardiovascular	**68**
Education	**82**
Linguistic Isolation	**70**
Poverty	**68**
Unemployment	**84**
Housing Burden	30

Source: CalEnviroScreen 3.0, 2018

TRANQUILLITY

Tranquillity is a census-designated place in northwestern Fresno county, 12 miles southwest of Kerman, and is located in Census Tract 6019008200. This census tract experiences extremely high burden from both pollution and population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, groundwater threats, high rates of cardiovascular disease, low levels of education, linguistic isolation, and poverty. Table 3-66 provides the scores for each indicator for Census Tract 6019008200.

TABLE 3-66 INDICATOR PERCENTILES FOR TRANQUILLITY

CalEnviroScreen 3.0 Indicators	Census Tract 6019008200
CalEnviroScreen 3.0	*85-90*
POLLUTION BURDEN	**79**
Ozone	**82**
PM 2.5	**95**
Diesel	8
Pesticides	**93**
Toxic Releases	47
Traffic	2
Drinking Water	**81**
Cleanups	44
Groundwater Threats	**74**
Hazardous Waste	9
Impaired Water	49
Solid Waste	33
POPULATION CHARACTERISTICS	**82**
Asthma	54
Low Birth Weight	40
Cardiovascular	**88**
Education	**99**
Linguistic Isolation	**97**
Poverty	**97**
Unemployment	55
Housing Burden	62

Source: CalEnviroScreen 3.0, 2018

WAHTOKE

Wahtoke is an unincorporated community located in central Fresno County, 5.5 miles north of Reedley, and is located in Census Tract 6019006300. This census tract experiences extremely high burden from pollution and some burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, and unemployment. Table 3-67 provides the scores for each indicator for Census Tract 6019006300.

TABLE 3-67 INDICATOR PERCENTILES FOR WAHTOKE

CalEnviroScreen 3.0 Indicators	Census Tract 6019006300
CalEnviroScreen 3.0	*80-85*
POLLUTION BURDEN	**92**
Ozone	**98**
PM 2.5	**97**
Diesel	13
Pesticides	**97**
Toxic Releases	51
Traffic	5
Drinking Water	**94**
Cleanups	52
Groundwater Threats	51
Hazardous Waste	61
Impaired Water	29
Solid Waste	62
POPULATION CHARACTERISTICS	59
Asthma	66
Low Birth Weight	60
Cardiovascular	55
Education	62
Linguistic Isolation	47
Poverty	41
Unemployment	**68**
Housing Burden	40

Source: CalEnviroScreen 3.0, 2018

WILDFLOWER

Wildflower is an unincorporated community in central Fresno County, seven miles west of Kingsburg, and is located in Census Tract 6019007300. Homes are located along south Fowler Avenue to the south and East Clarkson Avenue to the west. This census tract experiences extremely high burden from pollution and high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, cleanup sites, solid waste sites, high rates of asthma, low levels of education, linguistic isolation, poverty, and unemployment. Table 3-68 provides the scores for each indicator for Census Tract 6019007300.

TABLE 3-68 INDICATOR PERCENTILES FOR WILDFLOWER

CalEnviroScreen 3.0 Indicators	Census Tract 6019007300
CalEnviroScreen 3.0	*85-90*
POLLUTION BURDEN	**91**
Ozone	**98**
PM 2.5	**97**
Diesel	24
Pesticides	**94**
Toxic Releases	51
Traffic	8
Drinking Water	**93**
Cleanups	**75**
Groundwater Threats	39
Hazardous Waste	49
Impaired Water	0
Solid Waste	**68**
POPULATION CHARACTERISTICS	**68**
Asthma	**83**
Low Birth Weight	15
Cardiovascular	66
Education	**83**
Linguistic Isolation	**74**
Poverty	**82**
Unemployment	**72**
Housing Burden	38

Source: CalEnviroScreen 3.0, 2018

WINELAND

Wineland is an unincorporated community in central Fresno County, located along Highway 99 between Selma and Kingsburg, and straddles the border between Census Tracts 6019007300 and 6019007004. The census tract on the west side (Census Tract 6019007300) experiences an extremely high burden from pollution and high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, cleanup sites, solid waste sites, high rates of asthma, low levels of education, linguistic isolation, poverty, and unemployment.

The census tract on the east side (Census Tract 6019007004) experiences an extremely high burden from pollution and high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, cleanup sites, hazardous waste sites, solid waste sites, high rates of asthma, high rates of low birth-weight infants, and high rates of cardiovascular disease. Table 3-69 provides the scores for each indicator for Census Tracts 6019008302 and 6019008200.

TABLE 3-69 INDICATOR PERCENTILES FOR WINELAND

CalEnviroScreen 3.0 Indicators	Census Tract 6019007300	Census Tract 6019007004
CalEnviroScreen 3.0	*85-90*	*90-95*
POLLUTION BURDEN	**91**	**93**
Ozone	**98**	**98**
PM 2.5	**97**	**98**
Diesel	24	42
Pesticides	**94**	**91**
Toxic Releases	51	61
Traffic	8	3
Drinking Water	**93**	61
Cleanups	**75**	**82**
Groundwater Threats	39	32
Hazardous Waste	49	**77**
Impaired Water	0	0
Solid Waste	**68**	**86**
POPULATION CHARACTERISTICS	**68**	**73**
Asthma	**83**	**93**
Low Birth Weight	15	**68**
Cardiovascular	66	**87**
Education	**83**	61
Linguistic Isolation	**74**	63
Poverty	**82**	56
Unemployment	**72**	29
Housing Burden	38	29

Source: CalEnviroScreen 3.0, 2018

YUBA AVENUE COMMUNITY

The Yuba Avenue Community is an unincorporated community in central Fresno county, approximately five miles southwest of Kerman, and is located in Census Tract 6019003900. The community is generally located along South Butte Avenue, between West North Avenue and West Malaga Avenue. This census tract experiences extremely high burden from pollution and high burden from population characteristics. Overall, this census tract experiences burden from ozone, PM 2.5, pesticides, drinking water contaminants, groundwater threats, solid waste sites, high rates of cardiovascular disease, low levels of education, linguistic isolation, and poverty. Table 3-70 provides the scores for each indicator for Census Tract 6019003900.

TABLE 3-70 INDICATOR PERCENTILES FOR YUBA AVENUE

CalEnviroScreen 3.0 Indicators	Census Tract 6019003900
CalEnviroScreen 3.0	*85-90*
POLLUTION BURDEN	**91**
Ozone	**85**
PM 2.5	**95**
Diesel	15
Pesticides	**95**
Toxic Releases	62
Traffic	3
Drinking Water	**99**
Cleanups	0
Groundwater Threats	**84**
Hazardous Waste	9
Impaired Water	55
Solid Waste	**96**
POPULATION CHARACTERISTICS	**72**
Asthma	66
Low Birth Weight	60
Cardiovascular	**82**
Education	**90**
Linguistic Isolation	**77**
Poverty	**83**
Unemployment	29
Housing Burden	22

Source: CalEnviroScreen 3.0, 2018

KEY TERMS

Community. An inhabited area within a city or county that is comprised of no less than 10 dwelling units adjacent or in close proximity to one another.

Disadvantaged Unincorporated Community (DUC). A fringe, island, or legacy community in which the median household income is 80 percent or less than the statewide median household income.

Island Community. Any inhabited and unincorporated territory that is surrounded or substantially surrounded by one or more cities or by one or more cities and a county boundary or the Pacific Ocean.

Fringe Community. Any inhabited and unincorporated territory that is within the city's sphere of influence.

Legacy Community. A geographically isolated community that is inhabited and has existed for at least 50 years.

Local Agency Formation Commission (LAFCo). A commission within each county that reviews and evaluates all proposals for formation of special districts, incorporation of cities, annexation to special districts or cities, consolidation of districts, and merger of districts with cities. Each county's LAFCo is empowered to approve, disapprove, or conditionally approve such proposals. This commission is made up of two members of the County Board of Supervisors, two City Council members, and a public member.

Municipal Service Review (MSR). A study conducted for a city, county, or special district that examines all public service needs for the area and recommends action to promote the efficient provision of public services.

Sphere of Influence (SOI). The probable physical boundaries and service area of a local agency, as determined by the Local Agency Formation Commission (LAFCo).

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CHAPTER 4: HOUSING

INTRODUCTION

California State Housing Element law (Government Code Section 65580 (et seq.)) mandates that local governments must update the General Plan Housing Element to adequately plan to meet existing and projected housing needs of all economic segments of the community. Housing Elements are one of the required elements of a General Plan. Jurisdictions must gain approval from the California Department of Housing and Community Development (HCD) through a certification process. The Housing Element, unlike other elements of the General Plan, must be updated per a mandated schedule, or "cycle," to ensure that the County is making incremental progress towards its goals and policies.

Fresno County and 12 of the 15 cities in Fresno County, with the help of the Fresno Council of Governments (Fresno COG), collectively prepared a Multi-Jurisdictional Housing Element (MJHE) for the fifth-cycle of housing element updates. The primary objective of the project was to prepare a regional plan addressing housing needs through a single certified housing element for all 13 participating local governments. The MJHE covers the planning period of December 31, 2015 through December 31, 2023, for all jurisdictions, and includes the following content:

- Identification and analysis of existing and projected local housing needs;
- Identification of resources and constraints; and
- Goals, policies, and implementation programs for the rehabilitation, maintenance, improvement, and development of housing for all economic segments of the population.

On March 15, 2016, the Fresno County Board of Supervisors adopted the MJHE and, on July 22, 2016, HCD certified that the MJHE was in full compliance with State housing element law.

The adopted MJHE is available for review at the Fresno COG website at http://www.fresnocog.org/multi-jurisdictional-housing-element.

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CHAPTER 5: TRANSPORTATION AND MOBILITY

INTRODUCTION

This chapter summarizes the transportation and mobility context for the County of Fresno and is organized into the following sections:

- Roadways and Functional Classifications (Section 5.1)
- Level of Service and Vehicle Miles Traveled (Section 5.2)
- Active Transportation: Bikeways, Trails, and Pedestrian Facilities (Section 5.3)
- Transit Services (Section 5.4)
- Goods Movement (Section 5.5)
- Aviation Facilities (Section 5.6)
- Transportation Demand / System Management (Section 5.7)
- Programmed Transportation Improvements (Section 5.8)

SECTION 5.1 ROADWAY AND FUNCTIONAL CLASSIFICATIONS

INTRODUCTION

This section describes the roadway infrastructure in Fresno County, including ownership and intended function. The level of connectivity in a roadway network affects the number of options travelers have in choosing a route between destinations. Lane miles when spread over multiple facilities will generally offer more capacity than a single facility with many lanes. A well-connected system of arterials supported by a secondary network of collectors and local streets can also reduce the traffic disruption impact of construction or collision related events. Fresno County uses the following seven-category functional classification system:

- **Freeways** are high-speed, high-capacity roadways with very limited access control whose main purpose is to serve intercounty, intercity, and regional through traffic over long distances. Freeways are typically four to ten lanes, and interchanges are at least 1.0 mile apart.
- **Expressways** are also high-speed, high-capacity roadways with very limited access control whose main purpose is to serve intercity, intra-city travel and connect major origins and destinations. Similar to freeways, there is no local access or service road intersections, but interchanges can be as close as 0.5 miles apart.
- **Super Arterials** are special arterial roadways with greater access control designed to carry high volumes of traffic with limited travel delay. Such roadways are used as primary circulation routes to serve intercity, intra-city travel and connect major origins and destinations. Super arterials are typically four to six lanes.

- **Arterials** are fed by local and collector roadways and provide linkages to the State highway system as well as linkages to and between communities and major activity centers. The public uses these roadways as primary circulation routes for through traffic, and they carry higher volumes of traffic than local and collector roadways. In urban/suburban areas, major arterials will generally carry higher traffic volumes than minor arterials requiring more right-of-way and have more access restrictions. Rural arterial roadways may or may not carry high traffic volumes, but do provide primary access routes for through travel in rural areas of the county. Arterials typically range from two to six lanes.
- **Collector Roadways** are intended to "collect" traffic from the local streets and carry it to the roadways higher in the street classification hierarchy (e.g., arterials). The public uses these roadways as secondary circulation routes, and they generally carry light traffic volumes. Access to abutting land is normally permitted but may be restricted to certain uses depending upon future traffic volumes. In urban/suburban areas, major collector roadways will generally carry higher traffic volumes than minor collectors requiring more right-of-way and have more access restrictions. Collector roadways are typically 2-lanes.
- **Local Streets** provide direct access to abutting land, and access to the collector street system. The public uses these streets for local circulation. They carry little, if any, through traffic, and generally carry very low traffic volumes. Local Streets are generally 2-lanes.
- **Highway Transit Corridor**. This is an overlay classification that provides for an additional 12-foot lane in both directions to accommodate transit vehicles.

A map of roadways by functional classification is provided in Figure 5-1.

FINDINGS

- Fresno County lacks roadway connectivity to the east due to the barrier created by the Sierra Nevada Mountains and to the west due to the Diablo Range in San Benito County.
- Internally, east-west connectivity within Fresno County provides fewer options and lower levels of service than is provided for north-south trips. Adjacent communities are directly linked by the roadway system in Fresno County.
- Fresno County is well-connected north and south to neighboring communities with I-5 and SR-99 as the system's primary backbones.
- Based on state and federal roadway designations, there are a number of corridors in Fresno County that are eligible (i.e., candidates) for leveraging numerous state/federal transportation funding programs.
- SR-198 in western Fresno County is eligible for scenic designation.

EXISTING SETTING

Fresno County is served by an extensive network of freeways, arterials, and local roads. The network provides a high level of north-south connectivity with adjacent counties (i.e., Madera, Kings, Merced, and Tulare). There are currently no roadway connections to Inyo County to the east and only limited roadway connectivity with San Benito County and Monterey County to the west. Internally, a radial pattern of major roadways serves the city of Fresno, while roadways in the western part of the county provide access to the local communities and I-5.

ROADWAY DESIGNATIONS

In addition to functional classifications, there are also State and Federal roadway designations that define specific distinctions for certain roadways. Designations define the broader functionality of a given highway facility and also define whether a given facility is eligible for Federal and State highway funding programs. The Fresno County roadway network includes:

- **California Freeway Expressway System.** A comprehensive statewide system of access-controlled freeways and expressways identified for their importance to the future development of the State of California (State Highway Code 250-252, 257).
- **California Scenic Highway System.** Portions of the state highway system designated to establish the State's responsibility for the protection and enhancement of California's natural scenic beauty. These roadways, together with the adjacent scenic corridors, require special scenic conservation treatment (State Highway Code 260).
- **Interregional Road System (IRRS).** A system of roadways that provide interregional access to all economic centers in the state. Some roadways are identified as "High Emphasis Routes" due to their critical importance to both interregional and state travel. Eligible for State discretionary funding for routes located outside the boundaries of urbanized areas of over 50,000 population (Census) except as necessary to provide connections for continuation of the routes within those urban areas.
- **High Emphasis Route (State Designation).** High Emphasis Routes are a subset of the IRRS Routes; non-urbanized portions of these routes connecting urban areas. IRRS Routes are established by Streets and Highways Code, Sections 164.10-164.20.
- **Focus Route (State Designation).** Focus Routes are a subset of High Emphasis Routes that are the highest priority for completion/maintenance. These routes are in non-urbanized areas and will complete a statewide system. These Focus Routes include the original 13 High Emphasis Routes detailed in the 1989 Transportation Blueprint Legislation.
- **National Highway System (Federal Designation).** A network of highways important to the nation's economy, defense, and mobility.
- **Surface Transportation Assistance Act Routes (STAA – Federal Designation).** Act passed in 1982 that allows large trucks to operate on the interstate and certain primary routes collectively called the National Network. These routes, referred to as STAA routes, are designed to accommodate STAA-sized vehicles (48 to 53 feet from kingpin to rear-axle) specifically providing larger turn radii than typically provided on local roads.
- **Strategic Highway Network (STRAHNET – Federal Designation).** A network of highways that are important to the nation's strategic defense policy and that provide defense access, continuity and emergency capabilities for defense purposes. It is a subsystem of the National Highway Network.

ROADWAY NETWORK INVENTORY

Table 5-1 provides a complete inventory of centerline roadway miles by jurisdiction within Fresno County. There are approximately 4,000 miles of local county roadways within the unincorporated areas of the county. Of the nearly 530 total state highway centerline miles within the county, 420 miles of state highway centerline miles serve unincorporated areas and approximately 110 of centerline miles within the cities.

TABLE 5-1 ROADWAY INVENTORY Fresno County, California January 2018	
Jurisdiction	**Centerline Miles**
City Roadways	2,640.33
City of Clovis	386.86
City of Coalinga	58.29
City of Firebaugh	21.67
City of Fowler	34.83
City of Fresno	1,635.32
City of Huron	12.95
City of Kerman	48.77
City of Kingsburg	71.29
City of Mendota	23.34
City of Orange Cove	34.49
City of Parlier	29.67
City of Reedley	88.64
City of San Joaquin	13.58
City of Sanger	97.52
City of Selma	83.10
Unincorporated County Roadways	3,997.16
State Highways	529.68
Federal Agencies	1.73
TOTAL	**7,168.89**

Source: Caltrans, California Public Road Data – 2018. Released November 2019.

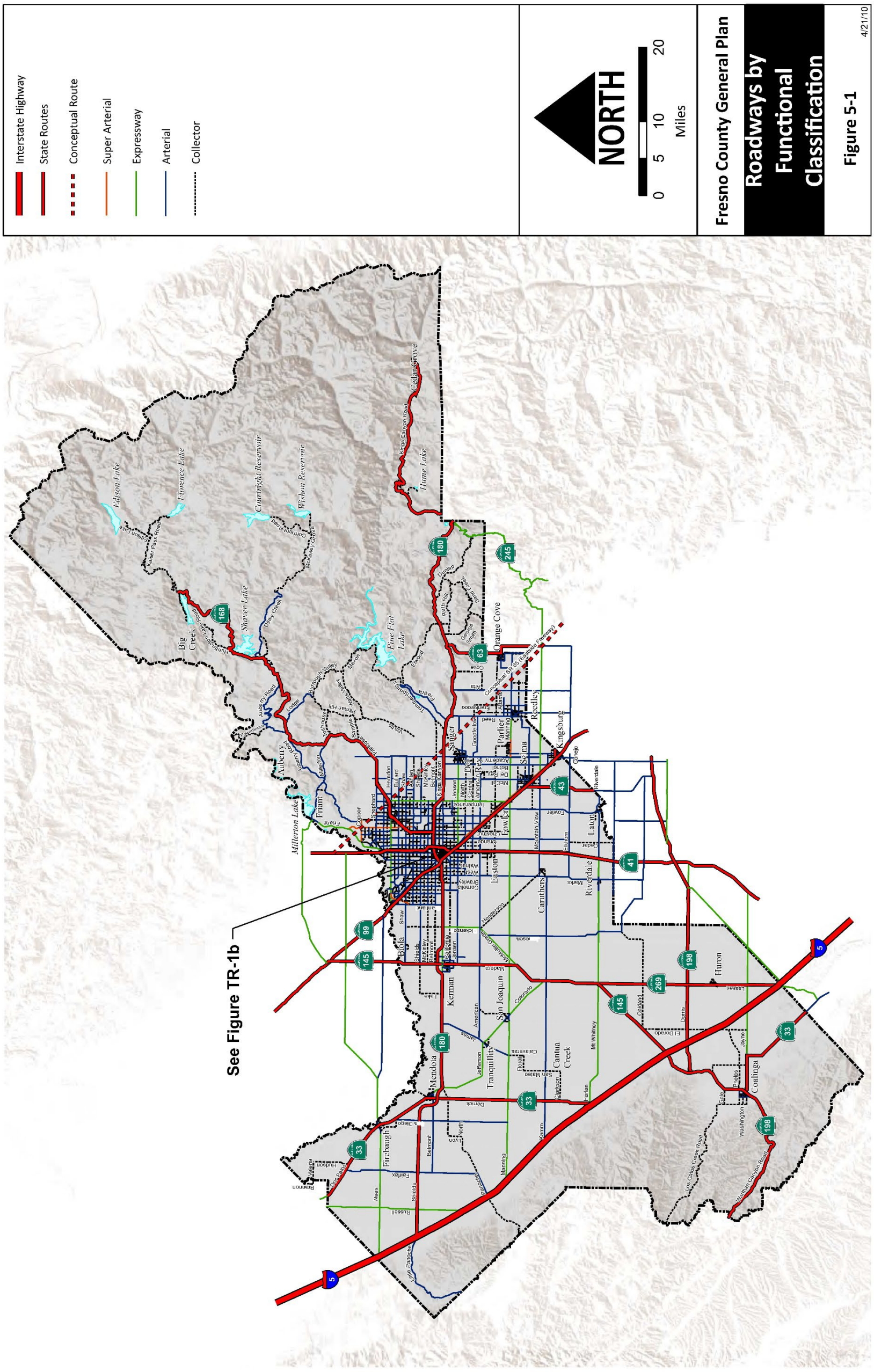
STATE HIGHWAY NETWORK

State and federal highways carry a high proportion of traffic throughout Fresno County. Given that the state highway network forms the primary backbone of the Fresno County network, the state highway system within Fresno County is described in detail.

The western portion of Fresno County is served by the I-5 and is entirely within unincorporated areas. Additionally, 12 state routes traverse the county (SR-33, SR-41, SR-43, SR-63, SR-99, SR-145, SR-168, SR-180, SR-198, SR-201, SR-245, and SR-269). State highways are shown in Figure 5-1.

The primary north-south highways within Fresno County are I-5 and SR-99. SR-99 serves the major population centers within the county, while I-5 serves as a major route for through traffic. SR-180 and SR-198 provide the most direct east-west access across Fresno County and connections with adjacent counties.

FIGURE 5-1
ROADWAYS BY FUNCTIONAL CLASSIFICATION
Fresno County



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FREEWAY AND HIGHWAY DESCRIPTION

Table 5-2 shows the various designations for each state route within Fresno County. The rest of this section discusses the existing context and plans by Caltrans, as expressed in their Route Concept Reports (RCR) for each route.

TABLE 5-2
STATE HIGHWAY DESIGNATIONS
Fresno County

Route	County Functional Classification	Freeway and Expressway System	Scenic Highway	IRRS	High Emphasis Route	Focus Route	National Highway System	STAA	STRAHNET
I-5	Freeway	✓		✓	✓	✓	✓	✓	✓
SR-33	Super Arterial							✓	
SR-41	Expressway	✓		✓	✓	P	✓	✓	
SR-43	Arterial	✓						✓	
SR-63	Arterial	✓							
SR-99	Freeway	✓		✓	✓	✓	✓	✓	✓
SR-145	Super Arterial	✓						✓	
SR-168	Expressway / Collector	✓		P				P	
SR-180	Expressway / Super Arterial / Arterial	P	P	P			P	P	
SR-198	Super Arterial / Arterial	P		P	P	P	P	P	P
SR-201	Super Arterial							✓	
SR-245	Arterial								
SR-269	Super Arterial							✓	

P indicates that a portion of the corridor is included in the designation.

INTERSTATE 5

Interstate 5 (I-5) is federally classified as a Principal Arterial and is the major north-south freeway facility serving western Fresno County and does not pass directly through any of the urbanized communities within the county. The freeway enters Fresno County from Kings County in the south and Merced County in the north. I-5 is designated as part of the STAA National Network for goods movement. Bicycles are permitted on the shoulders of I-5 throughout Caltrans District 6. The 2035 Route Concept Report (RCR) calls for facility expansion to six lanes through the entire County and the ultimate concept would have it expanded to eight lanes in Fresno County.

STATE ROUTE 33

State Route 33 (SR-33) is a two-lane conventional highway that provides a parallel route to I-5 through Fresno County that serves the communities in the western portion of the county. The federal functional classification of SR-33 is Minor Arterial in Fresno County except between Merced Avenue and Phelps Avenue in Coalinga where it is a Principal Arterial. There is a four-lane section of the route in Coalinga between Glenn Avenue and Phelps Avenue. The portion of the route between Polk Street in Coalinga and SR-198 to the north of Coalinga is co-signed SR-33 and SR-198. SR-33 also has a discontinuity between its with I-5 where the through roadway is designated SR-145 and a second junction with I-5 at Derrick Avenue about 12 miles to the north.

The portion of SR-33 that is shared with SR-198 is an eligible state scenic highway but has not been officially designated. SR-33 is designated as a STAA Terminal Access Route for goods movement.

The SR-33 2030 RCR facility would have improvements such as turn lanes, new signals, and passing lanes on all of the two-lane segments. The ultimate concept would have the four-lane section expanded to SR-33's departure from Jayne Avenue to the south and Gale Avenue to the north.

STATE ROUTE 41

State Route 41 (SR-41) is a federally classified Principal Arterial with an Urban section between Mountain View to the Madera County limit. The roadway ranges from a 2 -lane expressway to a 6-lane freeway (plus auxiliary lanes and interchange improvements) within Fresno County and connects the city of Fresno to Yosemite National Park [Madera County] to the north and the city of Lemoore to the south. The expressway portion of the route runs from the Kings County boundary to North Avenue in the city of Fresno.

SR-41 is a high emphasis regional route and is also a focus route south of SR-99. SR-41 is designated as a STAA Terminal Access Route for goods movement. The 2035 RCR facility would have the freeway section extended south to Mountain View Avenue and would have the 2-lane section in the southern portion of the county widened to 4-lanes. It would also have auxiliary lanes added through the city of Fresno and the six-lane section of the freeway extended into Madera County. The ultimate concept is a 6-lane freeway from Lemoore to Madera County with an 8-lane section from SR-99 to the Madera County limit (post-25 year concept).

STATE ROUTE 43

State Route 43 (SR-43) is a federally classified Minor Arterial with the section north of Nebraska Avenue in the city of Selma designated as a Principal Arterial and has its northern terminus in Selma at SR-99. The route connects to the city of Hanford to the south.

The roadway is currently a 2-lane conventional highway south of Nebraska Avenue and has 4-lanes to the north. The 2035 RCR roadway would be widened to four lanes all the way to the Kings County limit. The ultimate concept would have the section south of Nebraska Avenue upgraded to expressway standards. SR-43 is designated as a STAA Terminal Access Route for goods movement.

STATE ROUTE 63

State Route 63 (SR-63) is a two-lane conventional highway connecting the city of Orange Cove and Tulare County with SR-180 in eastern Fresno County. SR-68 is federally designated as a Principal Arterial. SR-63 is designated as a STAA Terminal Access Route for goods movement and is a California Legal Route (at post-mile 30.1) for a short portion south of its juncture with SR-180.

The 2035 RCR for SR-68 in Fresno County remains a two-lane highway with some safety and operational improvements. The ultimate concept would be a four-lane conventional highway.

STATE ROUTE 99

Paralleling I-5 to the east, State Route 99 (SR-99) is the primary access route for the major population centers in Fresno County and the Central Valley. It connects from Bakersfield through Tulare County in the south and through Madera County to Sacramento in the north. SR-99 is designated as part of the STAA National Network for goods movement.

Throughout Fresno County, SR-99 is currently a 6-lane freeway with auxiliary lanes serving key interchanges within the city of Fresno. The SR-99 RCR indicates that the ultimate configuration in Fresno County would consist of a 6-lane freeway with auxiliary lanes between city of Kingsburg and the State Route 43/99 interchange in Selma. North of this interchange, State Route 99 is ultimately planned as an 8-lane freeway until the Madera County line.

STATE ROUTE 145

State Route 145 (SR-145) is a two-lane conventional highway that provides a north-south link between the I-5 and the city of Madera. Its route serves rural western Fresno County, and also serves as a main street for the city of Kerman. The section within Kerman between Church Avenue and SR-180 is 4-lanes. SR-145 is designated as a STAA Terminal Access Route for goods movement.

The 2035 RCR would be widened to 4-lanes north of Kerman to the Madera County line and would have operational improvements applied north of Manning Avenue to Kerman. The ultimate concept would have the roadway widened to 4-lanes countywide.

STATE ROUTE 168

State Route 168 (SR-168) connects the city of Fresno with Shaver Lake and recreational locations in the Sierra National Forest. The western portion of the route exists entirely within Fresno County where it terminates before continuing east on the other side of the Sierra Nevada range in Inyo County. Both the route's cross-section and terrain vary significantly.

SR-168 is a 6-lane limited access facility from SR-180 to Herndon Avenue, at which point it continues with 4-lanes to Owens Mountain Parkway, where it becomes a conventional highway. At Shepherd Avenue, SR-168 becomes a 2-lane conventional highway for the rest of its length excepting a 4-lane expressway section between Lodge Road and the Auberry Road / Tollhouse Road intersection. SR-168 is designated as a STAA Terminal Access Route for goods movement and is a California Legal Route (at post-mile 21.6) three miles east of Clovis including a short section that is Advisory.

The 2035 RCR would extend the freeway section to Shepherd Avenue and add lanes from Shepherd Avenue to Academy Avenue. Operational improvements would be installed on the remaining 2-lane sections. The ultimate roadway concept would be an 8-lane freeway from SR-180 to Temperance Avenue and a 4-lane freeway to Academy Avenue.

STATE ROUTE 180

State Route 180 (SR-180) is the primary east-west route through Fresno County. It currently connects SR-33 to Kings Canyon National Park via the city of Fresno. There is an unconstructed portion of the route that would connect to I-5 in the west and San Benito County.

SR-180 is a 2-lane conventional highway between SR-33 and Brawley Avenue, with 4-lane sections between SR-33 and Belmont Avenue and Madre Avenue and Goldenrod Avenue in the city of Kerman. There is a 3-lane section (2 eastbound, 1 westbound) from Goldenrod Avenue to Howard Avenue. The route is a freeway through the city of Fresno from Brawley Avenue to Temperance Avenue, an expressway from Temperance Avenue to Frankwood Avenue, and a conventional highway from Frankwood Avenue to its terminus in Kings Canyon National Park. SR-180 is designated as a STAA Terminal Access Route for goods movement from its juncture with SR-33 east to Reed Avenue at Kings Canyon (post-mile 77.5). East of Reed Avenue, SR-180 is a California Legal Route is route terminus.

The 2035 RCR would have operational improvements installed between Belmo Avenue and James Road, a travel lane converted to a braided ramp between SR-41 and SR-168, an extension of the expressway section to Del Road, and operational improvements to the remaining eastern conventional highway section. The ultimate concept would convert the western conventional highway section to a 4-lane expressway and would add a travel lane in both directions on the freeway section.

STATE ROUTE 198

State Route 198 (SR-198) connects southwestern Fresno County with US 101 in Monterey County and with Hanford and Visalia to the east. A portion of the route is cosigned with SR-33 through and to the north of the city of Coalinga. SR-198 is a 2-lane conventional highway through Fresno County with a short 4-lane section near Harris Ranch.

The 2035 RCR is the ultimate concept for SR-198 in Fresno County and would see operational improvements from Monterey County to I-5, and the section east of I-5 would be built up to a 4-lane expressway. From I-5 to SR-99 SR-198 is designated as part of the STAA National Network for goods movement. East of its juncture with SR-99, SR-198 is designated as a STAA Terminal Access Route until just west of its terminus near Kings Canyon Sequoia National Park where it is designated as a California Legal Advisory Route. A short segment of SR-198 between its junctures with SR-145 and I-5 is designated as a California Legal Route.

STATE ROUTE 201

State Route 201 (SR-201) is a short connection between Kingsburg and Elderwood in Tulare County. Less than two miles of the route traverse Fresno County between SR-99 in Kingsburg and the Tulare County line. SR-201 is a 4-lane conventional highway between SR-99 and Marlon Street and a 2-lane conventional highway from Marlon Street to Tulare County.

The 2030 RCR for the corridor includes operational improvements to the 2-lane section, while the ultimate concept would expand that section to 4-lanes. SR-201 is designated as a STAA Terminal Access Route for goods movement from SR-99 to SR-63 and a California Legal Route from SR-63 to SR-245.

STATE ROUTE 245

State Route 245 (SR-245) is a north-south connection between SR-198 and SR-180 through eastern Tulare County and a small portion of Fresno County. It is a parallel facility for SR 198 for Visalia to access Kings Canyon National Park.

SR-245 is a 2-lane conventional highway through Fresno County and serves the unincorporated communities of Pinehurst and Etheda Springs. The 2035 RCR and ultimate corridor concept includes some operational improvements, but no widening. SR-245 is designated as a California Legal Route for goods movement from SR-201 to SR-198 and a California Legal Advisory Route from SR-201 to SR-180.

STATE ROUTE 269

State Route 269 (SR-269) is a north-south connection between Avenal in Kings County and the city of Huron. The route terminates at its junction with SR-145 to the north.

SR-269 is a 2-lane conventional highway through Fresno County with a 4-lane section between Tornado Street and Palmer Avenue in Huron. The 2035 RCR ultimate corridor concept includes some operational improvements, but no widening. SR-269 is designated as a STAA Terminal Access Route for goods movement.

REGULATORY SETTING

Fixing America's Surface Transportation (FAST) Act (FY2016-FY2021) provides federal funding for surface transportation programs and transforms the policy and programmatic framework for investments to guide the growth and development of the country's vital transportation infrastructure. FAST continues the previous transportation bill's 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.

Surface Transportation Assistance Act. In 1982 the U.S. Congress, as part of the Surface Transportation Assistance Act of 1982 (STAA), for the first time allowed motor carrier semi-trailers to be up to 53 feet long (and over, as grandfathered in this legislation). In the same Act, Congress created rules for operation of trailers 48 to 53 feet in length and lifted prior restrictions on the overall combination length of highway tractors and semi-trailers. Instead, it imposed a restriction on the dimension between the kingpin on the trailer and the center of the rear axle on the trailer. This dimension is called the kingpin to rear axle length (KPRA). KPRA dimension is limited to 40 feet on a multi-axle trailer and 38 feet on a single axle trailer when the trailer is 53 feet long and operated in combination with a highway tractor or truck. There is no KPRA limitation when the trailer is 48 feet long.

Regional Transportation Plan. As the regional transportation planning agency for Fresno County, the Fresno Council of Governments (FCOG) developed and adopted the Regional Transportation Plan (RTP)). The RTP complies with State and Federal transportation planning requirements required of

urbanized counties for a comprehensive and long-range transportation plan. The RTP is financially constrained multi-modal plan that identifies regional transportation improvements needed to improve system maintenance and operations and to improve mobility and accessibility countywide.

Sustainable Community Strategy (SB 375). As a companion document to the RTP, a Sustainable Community Strategy (SCS) is now required in California per SB 375 Sustainable Communities and Climate Protection Act of 2008. This law added a requirement that California's 18 Metropolitan Planning Organizations (MPOs), including FCOG, align three major components within the regional transportation planning process– land use planning, transportation planning and funding, and State housing mandates – in order to reduce greenhouse gas (GHG) emissions from cars and light trucks. An SCS must be based on realistic planning assumptions; consider adopted general plans and spheres of influence; and consider natural resources and farmland. It must be internally consistent with the transportation and financing elements of the RTP and consistent with the adopted Regional Housing Needs Allocation. Finally, an SCS must be able to achieve the GHG reduction target established by the California Air Resources Board. SB 375 requires a greater level of land use planning coordination between local agencies (i.e., Fresno County) and MPOs (i.e., FCOG) to meet the GHG targets established for Fresno County.

Congestion Management Program. The Congestion Management Program (CMP) is the State mandated program (Government Code 65089) aimed at reducing congestion on highways and roads in California. The CMP establishes a designated roadway network of regional significance, roadway service standards, multi-modal performance standards and a land use analysis element to identify and mitigate multi-jurisdictional transportation impacts resulting from local land use decisions. Federal, state and local transportation funding is contingent upon local agency compliance with the CMP. FCOG is the designated Congestion Management Agency for Fresno County.

Measure C. Measure C is a half-cent sales tax aimed at improving the transportation system in Fresno County. The original measure passed in 1986; voters approved a further 20-year extension to this measure in 2006. The measure is administered by the Fresno County Transportation Authority.

The California Complete Streets Act of 2008. This law requires cities and counties to include complete streets policies as part of their general plans so that roadways are designed to safely accommodate all users, including bicyclists, pedestrians, transit riders, children, older people, and disabled people, as well as motorists. It complements existing State policy, which directs Caltrans to "fully consider the needs of non-motorized travelers (including pedestrians, bicyclists and persons with disabilities) in all programming, planning, maintenance, construction, operations and project development activities and products." Beginning January 2011, any substantive revision of the circulation element in the general plan of a California local government will include complete streets provisions.

The California Scenic Highway Program. This is a state designation indicating that a highway is located in an area of outstanding natural beauty. California's Scenic Highway Program was created by the Legislature in 1963. Its purpose is to protect and enhance the natural scenic beauty of California highways and adjacent corridors through special conservation treatment. The state laws governing the Scenic Highway Program are found in the Streets and Highways Code, Sections 260 through 263.

KEY TERMS

Conventional Highway refers to a roadway with no control of access, which may be divided or have grade separations at intersections. Abutting property owners have access rights.

Expressway refers to an arterial highway for through traffic that may have partial control of access, but which may or may not be divided or have grade separations at intersections.

Freeway refers to a divided arterial highway with full control of access and with grade separations at intersections.

Centerline Miles refers to miles of roadway irrespective of the number of travel lanes.

Functional Classification is the system by which roadways are grouped. Each functional classification represents an intended usage of the roadway, which helps to determine the type of access, capacity need, and speed at which the roadway is expected to operate.

California Department of Transportation (Caltrans). Caltrans provides management, support, and planning oversight for state highway facilities throughout the state.

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SECTION 5.2 LEVEL OF SERVICE AND VEHICLE MILES OF TRAVEL

INTRODUCTION

This section describes the roadway infrastructure and circulation conditions in Fresno County. The fundamental objective of a roadway system is to provide access and mobility. If roads are not planned near areas of development, the road/circulation system may not provide adequate access nor would they have sufficient capacity to serve development. At this point, the road system will fail to provide adequate mobility since motorists would experience long delays and restricted access. This section helps transportation planners and engineers to identify critical or key focus areas within the County.

FINDINGS

- Majority of the road mileage in Fresno County is maintained by the county.
- Although accounting for only about 12 percent of the road mileage in the county, state highways account for over 60 percent the vehicle-miles of travel in the county.
- An overall picture of selected state highway segments, which traverse the unincorporated areas of the county, shows that the roadway segments analyzed currently operate at LOS C or better during the AM/PM peak hours.
- Peak level of service (LOS) on most state and local roads is at level of service C or better; a majority of the facilities operate in the LOS A – C range. Currently, 13 county roadways operate at LOS D or worse during the peak hour periods.

EXISTING SETTING

COUNTY ROADWAY INVENTORY AND DAILY VEHICLE MILES OF TRAVEL

Countywide maintained road miles (i.e., referred to as centerline miles) and daily vehicle miles of travel (DVMT) data are annually reported for Fresno County by the Federal Highway Performance Monitoring System (HPMS). DVMT is a general but robust measure of vehicle activity. It measures the extent of utilization a transportation network experiences by motorists. Although it is not a good indicator of congestion, it is a great indicator of overall vehicle activity. DVMT is commonly applied on a per-household or per-capita basis and is a primary input for regional air quality analyses and for developing DVMT rates for safety analysis. Per SB 743, VMT is now the basis for transportation impact identification and mitigation under the California Environmental Quality Act.

VMT is computed by multiplying a given roadway's traffic volume by its centerline segment length. To estimate countywide DVMT, the HPMS program uses a sample-based method that combines daily traffic counts stratified by functional classification of roadway by volume groups to produce sample based geographic estimates of DVMT. HPMS DVMT estimates are considered "ground truth" by the 1990 Federal Clean Act Amendments (November 15, 1990). HPMS DVMT estimates are used to validate baseline travel demand models and to track modeled VMT forecasts over time. HPMS DVMT estimates are reported for each county by local jurisdiction, state highway use, and other state/federal land roadways e.g., State Parks, US Bureau of Land Management, US Forest Service, US Fish and Wildlife Service.

As shown in Table 5-3, the majority of road mileage in rural Fresno County consists of County-owned roads. State highways account for slightly over 10 percent of the maintained lane miles, but over half of the DVMT – emphasizing the important role the state highway system has in providing access and mobility within the unincorporated areas of Fresno County.

TABLE 5-3
MAINTAINED MILES AND DAILY VEHICLE MILES OF TRAVEL BY JURISDICTION – 2018

Fresno County – Unincorporated Area
2018

Jurisdiction	Maintained miles			Daily vehicle miles of travel (000) [1]		
	Rural	Urban	Total	Rural	Urban	Total
Fresno County	3,318.25	678.81	3,997.16	4,141.48	2,050.30	6,191.77
State Highways	420.67	109.01	529.68	4,396.68	6,284.54	10,681.22
U.S. Forest Service	1.73	--	1.73	0.88	--	0.88
Total	3,740.65	787.82	4,528.57	8539.04	8,334.84	16,873.87

[1]Average daily vehicle mile of travel in thousands of vehicle miles.
Source: Caltrans, California Public Road Data – 2018. Released November 2019.

ROADWAY TRAFFIC VOLUMES AND LEVEL OF SERVICE

Level of Service (LOS) is used to rate a roadway segment's traffic flow characteristics, and acts as an indicator of roadway performance. LOS assists in determining when roadway capacity needs to be improved, using a scale of A through F. LOS values A through C are generally considered to be acceptable, although some situations allow for LOS D and E in areas of short peak traffic impacts. LOS for rural highways is largely determined by roadway geometry factors, such as grades, vertical and horizontal curves, and the presence for passing opportunities.

Fresno County has not adopted a comprehensive level of service standard. However, it is a well-established County practice to maintain level of service "C" as a goal for development mitigation, and as a threshold for County capacity-enhancing roadway projects. The cities of Fresno and Clovis have a level of service "D" standard for their roadway systems. For purposes of this analysis, LOS values A through C are considered to be acceptable.

Table 5-4 provides the 2010 Highway Capacity Manual (HCM) planning level volume thresholds for each LOS grade relative to functional class (arterial or collector) number of lanes, and speed limit.

For freeways, the HCM prescribes that level of service be determined by density: i.e., the number of passenger cars (or equivalent) per lane per mile. Densities can be estimated using Caltrans Performance Monitoring System (PeMS) speed and flow data using the following formula: $density = \frac{flow/speed}{number\ of\ lanes}$

Table 5-5 shows the freeway density criteria for each service level.

TABLE 5-4
2010 HCM PLANNING METHOD LOS THRESHOLDS

K-Factor	D-Factor	Two-Lane Roads				Four-Lane Roads				Six-Lane Roads			
		LOS B	LOS C	LOS D	LOS E	LOS B	LOS C	LOS D	LOS E	LOS B	LOS C	LOS D	LOS E
Posted Speed - 30 mi/h (Local/Collector)													
0.09	0.55	NA	5,900	15,400	19,900	NA	11,300	31,400	37,900	NA	16,300	46,400	54,300
	0.60	NA	5,400	14,100	18,300	NA	10,300	28,800	34,800	NA	15,000	42,500	49,800
0.10	0.55	NA	5,300	13,800	17,900	NA	10,100	28,200	34,100	NA	14,700	41,800	48,900
	0.60	NA	4,800	12,700	16,400	NA	9,300	25,900	31,300	NA	13,500	38,300	44,800
0.11	0.55	NA	4,800	12,600	16,300	NA	9,200	25,700	31,000	NA	13,400	38,000	44,500
	0.60	NA	4,400	11,500	14,900	NA	8,400	23,500	28,400	NA	12,200	34,800	40,800
Posted Speed - 45 mi/h (Arterial/Expressway)													
0.09	0.55	NA	10,300	18,600	19,900	NA	21,400	37,200	37,900	NA	31,900	54,000	54,300
	0.60	NA	9,400	17,100	18,300	NA	19,600	34,100	34,800	NA	29,200	49,500	49,800
0.10	0.55	NA	9,300	16,800	17,900	NA	19,300	33,500	34,100	NA	28,700	48,600	48,900
	0.60	NA	8,500	15,400	16,400	NA	17,700	30,700	31,300	NA	26,300	44,500	44,800
0.11	0.55	NA	8,400	15,300	16,300	NA	17,500	30,500	31,000	NA	26,100	44,200	44,500
	0.60	NA	7,700	14,000	14,900	NA	16,100	27,900	28,400	NA	23,900	40,500	40,800

Assumes for 30-mi/h facilities (Local/Collector): signal spacing = 1,050 ft and 20 access points/mi.
Assumes for 45-mi/h facilities (Arterial/Expressway): signal spacing = 1,500 ft and 10 access points/mi.

TABLE 5-5
LEVEL OF SERVICE CRITERIA FOR FREEWAYS

LOS	Density[1]
A	≤11
B	>11 – 18
C	>18 – 26
D	>26 – 35
E	>35 – 45
F	>45 or any component with demand/capacity ratio > 1.00

[1]Density in passenger car equivalents per lane per mile
Source: Highway Capacity Manual, 2010.

UPDATE OF 2015 TRAFFIC COUNT DATA TO 2018-20 TRAFFIC COUNT DATA

Typically, new traffic count data is collected to provide a baseline as a means to compare to future conditions. However, given current COVID-19 shelter-in-place conditions, data collection for vehicles is not possible until travel conditions return to "normal". Therefore, historical Caltrans Performance Measurement System (PeMS) traffic count data on state routes in Fresno County were used to develop trends to update the traffic counts on the State Routes. In addition, these trends were applied to establish a baseline for growth rate values for increase/decrease of 2015 traffic on the County roadway system, for which little or no current count data was available.

Table 5-6 shows the 2015-baseline traffic count data as compared to 2018-20 traffic count data as a means to identify growth rates, or factors, that could be applied to dated traffic counts on unincorporated roadways in Fresno County by recognizing traffic count trends along four major highway corridors: I-5, SR-41, SR-99, and SR-180. Traffic count data from these four facilities is used because Caltrans maintains a centralized repository that leverages real-time and historical traffic data. Caltrans PeMS collects data from the Intelligent Transportation System (ITS) Vehicle Detector Stations (VDS), traffic counter and other sets, such as the California Highway Patrol Incident Data.

As a way to establish a base line for achieving a growth rate value, previous data provided from PeMS in 2015 is compared to current PeMS data (2018-2020) for the same location facilities that were listed as 2015 PeMS data as presented in Table 5-6. Based upon evaluation of existing 2015 AADT and 2018-2020 AADT on the freeway and multi-lane state facilities within the unincorporated areas of Fresno County, the analysis in Table 5-6 presents areas of increases and decreases in annualized growth rate. Although some segments show a decline in traffic, it is understood that short-term traffic counts (such as these) can yield such results. On average, the annualized growth rate between existing 2015 and existing 2020 resulted in an **overall increase in traffic of 1.08 percent**. Therefore, a growth rate of 1.08 percent will be applied thus representing 2020 baseline conditions. Tables 5-7 and 5-8 show results of a LOS analysis using 2020 baseline conditions.

TABLE 5-6
STATE HIGHWAY FACILITIES AADT COMPARISON FOR EXISTING 2015 AND 2020 IN UNINCORPORATED AREAS OF FRESNO COUNTY

Fac[1]	Dir[2]	Pos[3]	Location	Dir Lanes	Existing 2015 AADT[4]	Existing 2018-2020 AADT[5]	# of Years	Annualized Growth Rate
Multi-Lane Freeways/Highways								
I-5	N	23.62	I5 NB South of Coalinga-Mendota	2	17,356	18,980	5	1.80%
I-5	N	25.63	I5 NB North of Coalinga-Mendota	2	14,202	27,320	5	13.98%
41	N	20.28	North Ave DT 41 NB	2	14,645	15,010	5	0.49%
41	S	23.445	Huntington Ave 41 SB	4	46,503	55,580	5	3.63%
99	N	11.5	N of Merced Ave 99 NB	3	49,581	47,660	5	-0.79%
99	N	13.02	N of Clovis Ave 99 NB	3	46,088	46,440	5	0.15%
99	N	13.5	N of Lincoln Ave 99 NB	3	35,180	46,810	5	5.88%
99	N	14	N of Jefferson Ave 99 NB	3	33,282	43,010	5	5.26%
99	N	14.5	American Ave 99 NB	3	39,793	35,940	5	-2.02%
99	N	15	N of American Ave 99 NB	3	53,068	48,210	5	-1.90%
99	N	15.47	Chestnut Ave 99 NB	3	40,315	44,240	5	1.87%

TABLE 5-6
STATE HIGHWAY FACILITIES AADT COMPARISON FOR EXISTING 2015 AND 2020 IN UNINCORPORATED AREAS OF FRESNO COUNTY

Fac[1]	Dir[2]	Pos[3]	Location	Dir Lanes	Existing 2015 AADT[4]	Existing 2018-2020 AADT[5]	# of Years	Annualized Growth Rate
99	N	16.2	Central Ave 99 NB	3	38,507	48,530	5	4.73%
99	N	17.52	Orange Ave	3	49,991	39,330	5	-4.68%
99	N	18.3002	Jensen Ave	3	49,110	45,160	5	-1.67%
99	N	29.9605	N of Ashlan Ave 99 NB	3	53,950	39,360	5	-6.11%
99	N	27.6005	Gettysburg Ave	3	46,500	38,270	5	-3.82%
99	N	28.78	Barstow Ave 99 NB	3	41,790	39,590	5	-1.08%
99	N	29.31	Bullard Ave	3	35,910	38,200	5	1.25%
99	N	30.294	Herndon Ave 99 SB	3	30,570	31,590	5	0.66%
99	S	11.21	Merced Ave 99 SB	3	30,810	47,050	5	8.84%
99	S	30.291	Herndon Ave 99 SB	3	30,220	33,180	5	1.89%
99	S	29.311	Bullard Ave	3	51,780	51,990	5	0.08%
99	S	28.781	Barstow Ave 99 SB	3	46,700	40,120	5	-2.99%
99	S	27.601	Gettysburg Ave	3	46,500	50,010	5	1.46%
99	S	26.961	N of Ashlan Ave 99 SB	3	56,850	43,070	5	-5.40%
99	S	18.3005	Jensen Ave	3	40,400	43,760	5	1.61%
99	S	17.51	Orange Ave	3	47,540	37,160	5	-4.81%
99	S	17	Cedar Ave	3	48,480	46,620	5	-0.78%
99	S	16.201	Central Ave 99 SB	3	44,610	55,390	5	4.42%
99	S	14.501	American Ave 99 NB	3	27,020	32,640	5	3.85%
99	S	14.001	N of Jefferson Ave 99 NB	3	32,730	50,760	5	9.17%
99	S	13.501	N of Lincoln Ave 99 NB	3	31,700	46,350	5	7.89%
99	S	13.021	N of Clovis Ave 99 SB	3	45,440	45,600	5	0.07%
99	S	10.85	S/O of Merced Ave 99 NB	3	30,650	45,310	5	8.13%
180	E	54.17	180 EB W/O Marks Ave	2	13,510	14,140	5	0.91%
180	W	58.252	180 WB W of Fresno St At Thesta	4	63,000	55,440	5	-2.21%
180	W	57.106	180 @ WB Broadway Ave WB	4	62,000	52,510	5	-3.27%
180	W	56.481	180 EB E/O 99	3	46,500	42,830	5	-1.63%
180	W	56.121	180 EB W/O 99	3	29,720	21,580	5	-6.20%
180	W	54.171	180 EB W/O Marks Ave	2	12,640	12,340	5	-0.48%
180	W	65.342	Temperance Ave LP WB 180	2	17,030	15,350	5	-2.05%
180	W	65.041	Temperance Ave DT WB 180	2	18,730	18,740	5	0.01%
180	W	63.947	Fowler Ave LP WB 180	2	19,500	20,210	5	0.72%
180	W	63.7	Fowler Ave DT WB 180	3	15,160	25,080	5	10.59%
180	W	55.1	Hughes Ave 180 WB	3	15,120	14,530	5	-0.80%
Two-Lane Highways								
33	N	0	Kings/Fresno County Line	2	2,000	2,000	3	0.00%
33	N	8.02	Alpine/Lost Hills Rd	2	1,750	1,750	3	0.00%
33	N	18.588	Gale Ave	2	4,100	4,350	3	1.99%
33	N	24.316	Jct. Rte. 198 East	2	2,150	2,450	3	4.45%
33	N	27.019	Derrick Ave	2	2,100	2,200	3	1.56%
33	N	29	Jct. Rte. 145 Northeast, South Jct. Rte. 5	2	1,850	2,200	3	5.95%
33	N	39.853	North Jct. Rte. 5	2	1,850	1,950	3	1.77%
33	N	53.4	Adams Ave	2	1,750	1,750	3	0.00%
33	N	59.43	California Ave	2	2,250	2,000	3	-3.85%

TABLE 5-6
STATE HIGHWAY FACILITIES AADT COMPARISON FOR EXISTING 2015 AND 2020 IN UNINCORPORATED AREAS OF FRESNO COUNTY

Fac[1]	Dir[2]	Pos[3]	Location	Dir Lanes	Existing 2015 AADT[4]	Existing 2018-2020 AADT[5]	# of Years	Annualized Growth Rate
41	N	0	Excelsior Ave; Kings/Fresno County Line	2	14,100	16,000	3	4.30%
41	N	2.03	Mount Whitney Ave	2	14,500	16,600	3	4.61%
43	N	0	Kings/Fresno County	2	10,500	12,200	3	5.13%
63	N	0	Tulare/Fresno County Line	2	2,450	2,500	3	0.68%
63	N	2.5	American Ave	2	890	910	3	0.74%
63	N	8.362	Jct. Rte. 180	2	750	770	3	0.88%
145	N	0	Jct. Rtes. 5 and 33	2	2,500	2,300	3	-2.74%
145	N	10.324	Excelsior Ave	2	2,800	3,350	3	6.16%
145	N	13.212	Jct. Rte. 269	2	4,400	4,550	3	1.12%
145	N	15.22	Cerini Rd	2	4,750	4,550	3	-1.42%
145	N	17.27	Elkhorn Ave	2	4,900	5,800	3	5.78%
145	N	20.28	Kamm Ave	2	5,500	6,400	3	5.18%
145	N	20.65	Colorado Rd	2	4,700	5,600	3	6.01%
145	N	25.085	Madera Ave	2	1,900	2,200	3	5.01%
145	N	26.09	Manning Ave	2	2,700	3,250	3	6.38%
145	N	30.11	American Ave	2	5,000	6,100	3	6.85%
145	N	35.149	Kerman, Jct. Rte. 180	2	8,500	9,200	3	2.67%
145	N	36.154	Belmont Ave	2	9,400	9,700	3	1.05%
145	N	40.166	Shaw Ave	2	6,300	6,900	3	3.08%
145	N	41.283	Fresno/Madera County Line	2	6,300	6,900	3	3.08%
168	N	11.839	Shepherd Ave	2	5,500	7,000	3	8.37%
168	N	15.47	Academy Ave	2	5,900	6,700	3	4.33%
168	N	18.55	Sample/Pittman Hill Roads	2	5,100	5,800	3	4.38%
168	N	22.7	Tollhouse Rd at Millerton	2	4,700	5,400	3	4.74%
168	N	23.716	Nicholas Rd	2	3,950	4,050	3	0.84%
168	N	30.201	Morgan Canyon Rd at Auberry Rd	2	8,700	9,300	3	2.25%
168	N	36.179	Auberry Rd	2	9,100	8,800	3	-1.11%
168	N	45	Dinkey Creek Rd	2	4,800	4,800	3	0.00%
168	N	47.85	Shaver Heights; Dalton Ave	2	950	1,050	3	3.39%
168	N	49.66	Huntington Lake Rd	2	880	1,000	3	4.35%
168	N	65.84	Florence Lake Rd	2	860	1,000	3	5.16%
180	N	24.595	Mendota, Belmont Ave	2	6,500	7,300	3	3.94%
180	N	26.124	Panoche Rd	2	6,800	7,400	3	2.86%
180	N	34.59	James Rd	2	6,500	7,800	3	6.27%
180	N	40.11	Shasta Ave	2	6,900	8,300	3	6.35%
180	N	41.63	Siskiyou Ave	2	10,400	11,300	3	2.81%
180	N	43.63	Goldenrod Ave	2	10,700	12,100	3	4.18%
180	N	47.65	Dickenson Ave	2	12,900	14,100	3	3.01%
180	N	50.6	Grantland Ave	2	13,000	14,600	3	3.94%
180	N	74.61	Centerville, Smith Ave	2	11,000	13,200	3	6.27%
180	N	74.95	Centerville, Trimmer Springs Rd	2	11,700	14,100	3	6.42%
180	N	77.49	Reed Ave	2	5,800	6,900	3	5.96%
180	N	87.706	Jct. Rte. 63 South	2	5,400	4,600	3	-5.20%
180	N	108.13	Jct. Rte. 245 South	2	1,100	1,450	3	9.65%

TABLE 5-6
STATE HIGHWAY FACILITIES AADT COMPARISON FOR EXISTING 2015 AND 2020 IN UNINCORPORATED AREAS OF FRESNO COUNTY

Fac[1]	Dir[2]	Pos[3]	Location	Dir Lanes	Existing 2015 AADT[4]	Existing 2018-2020 AADT[5]	# of Years	Annualized Growth Rate
180	N	109.53	Fresno/Tulare County Line	2	1,100	1,500	3	10.89%
180	N	112.09	N Boundary General Grant Grove, Kings Canyon National Park	2	1,500	1,100	3	-9.82%
180	N	116.85	Hume Lake Rd	2	880	710	3	-6.91%
180	N	137.94	Kings Canyon National Park	2	800	710	3	-3.90%
198	N	0	Monterey/Fresno County Line	2	710	830	3	5.34%
198	N	12.33	Parkfield Junction	2	820	840	3	0.81%
198	N	19.145	Coalinga Creek	2	890	1,050	3	5.67%
198	N	22.65	Jct. Rte. 33	2	1,850	1,900	3	0.89%
198	N	26.814	Jct. Rte. 5	2	3,650	4,200	3	4.79%
198	N	34.66	Jct. Rte. 269	2	3,500	5,300	3	14.83%
198	N	42.731	Fresno/Kings County Line	2	4,850	5,100	3	1.69%
245	N	0	Tulare/Fresno County Line	2	220	240	3	2.94%
245	N	8.972	Jct. Rte. 180	2	130	210	3	17.33%
269	N	0	Kings/Fresno County Line	2	5,100	5,400	3	1.92%
269	N	0.15	Plymouth Ave/Avenal Cutoff Rd East	2	4,500	4,850	3	2.53%
269	N	0.427	Jct. Rte. 5	2	1,900	2,100	3	3.39%
269	N	12.746	Jct. Rte. 198	2	3,250	3,300	3	0.51%
269	N	24.764	Jct. Rte. 145	2	2,450	2,600	3	2.00%
					Average Annualized Growth Rate:			**1.08%**

[1] Facility type, [2] Facility direction, [3] CA post-mile marker, [4-5] Average Annual Daily Traffic
Source: Caltrans, Performance Measurement System (PeMS), Version 19.0.0

EXISTING LEVEL OF SERVICE – COUNTY ROADWAYS

Based on the LOS density criteria thresholds provided in Table 5-5 relative to 2020 baseline traffic counts, Table 5-7 and **Error! Reference source not found.** provides LOS results for local County roadway segments under Existing 2020 conditions. The roadway segments analyzed represent a good cross-section of vehicular travel throughout Fresno County. Based upon this analysis, 13 roadway segments are shown to operate at LOS D or worse under existing conditions in Table 5-8.

TABLE 5-7
LOS FOR UNINCORPORATED FRESNO COUNTY ROADWAYS

Road	Location	Dir	Road Class	Dir Lanes	Count (2020)			LOS	
					AM pk	PM pk	Daily	AM pk	PM pk
Academy	N/O Adams	NB	Arterial	2	299	353	4,007	A-C	A-C
Academy	N/O Adams	SB	Arterial	2	282	370	4,124	A-C	A-C
Academy	N/O Herndon	NB	Arterial	1	64	97	801	A-C	A-C
Academy	N/O Herndon	SB	Arterial	1	112	56	776	A-C	A-C
Academy	S/O Adams	NB	Arterial	2	210	315	3,301	A-C	A-C

TABLE 5-7
LOS FOR UNINCORPORATED FRESNO COUNTY ROADWAYS

Road	Location	Dir	Road Class	Dir Lanes	Count (2020)			LOS	
					AM pk	PM pk	Daily	AM pk	PM pk
Academy	S/O Adams	SB	Arterial	2	223	323	3,398	A-C	A-C
Academy	S/O Herndon	NB	Arterial	1	179	199	1,965	A-C	A-C
Academy	S/O Herndon	SB	Arterial	1	207	160	1,968	A-C	A-C
Adams	E/O Academy	EB	Collector	1	172	202	1,961	A-C	A-C
Adams	E/O Academy	WB	Collector	1	158	157	1,781	A-C	A-C
Adams	W/O Academy	EB	Collector	1	103	176	1,380	A-C	A-C
Adams	W/O Academy	WB	Collector	1	123	94	1,178	A-C	A-C
Alta	N/O South	NB	Arterial	1	147	128	1,561	A-C	A-C
Alta	N/O South	SB	Arterial	1	118	135	1,485	A-C	A-C
Alta	S/O South	NB	Arterial	1	152	140	1,764	A-C	A-C
Alta	S/O South	SB	Arterial	1	143	150	1,686	A-C	A-C
American	E/O Chestnut	EB	Arterial	1	56	62	709	A-C	A-C
American	E/O Chestnut	WB	Arterial	1	60	91	850	A-C	A-C
American	E/O Clovis	WB	Arterial	1	108	85	1,017	A-C	A-C
American	E/O Fowler	EB	Arterial	1	56	85	931	A-C	A-C
American	E/O Fowler	WB	Arterial	1	94	75	945	A-C	A-C
American	E/O Temperance	EB	Arterial	1	56	84	930	A-C	A-C
American	E/O Temperance	WB	Arterial	1	91	74	919	A-C	A-C
American	W/O Chestnut	EB	Arterial	1	39	51	512	A-C	A-C
American	W/O Chestnut	WB	Arterial	1	42	44	476	A-C	A-C
American	W/O Clovis	EB	Arterial	1	67	113	1,087	A-C	A-C
American	W/O Clovis	WB	Arterial	1	142	72	1,049	A-C	A-C
American	W/O Golden State	EB	Arterial	1	179	161	1,826	A-C	A-C
Auberry	N/O Copper	NB	Arterial	1	164	263	2,920	A-C	A-C
Auberry	N/O Copper	SB	Arterial	1	259	203	2,861	A-C	A-C
Barstow	W/O Garfield	EB	Local	1	60	46	499	A-C	A-C
Barstow	W/O Garfield	WB	Local	1	45	43	501	A-C	A-C
Bethel	N/O Manning	NB	Arterial	1	43	74	659	A-C	A-C
Bethel	N/O Manning	SB	Arterial	1	44	61	636	A-C	A-C
Bethel	N/O Mountain View	NB	Arterial	1	52	71	847	A-C	A-C
Bethel	N/O Mountain View	SB	Arterial	1	57	68	775	A-C	A-C
Bethel	S/O Mountain View	NB	Collector	1	81	159	1,492	A-C	A-C
Bethel	S/O Mountain View	SB	Collector	1	193	173	1,657	A-C	A-C
Browning	E/O Pleasant	EB	Local	1	32	30	256	A-C	A-C
Browning	E/O Pleasant	WB	Local	1	15	37	279	A-C	A-C
Browning	W/O Pleasant	EB	Local	1	23	29	219	A-C	A-C
Browning	W/O Pleasant	WB	Local	1	13	29	193	A-C	A-C
Cedar	N/O Laguna	NB	Collector	1	40	34	410	A-C	A-C
Cedar	N/O Laguna	SB	Collector	1	51	44	437	A-C	A-C
Cedar	S/O Laguna	NB	Collector	1	31	38	386	A-C	A-C
Central	E/O Marks	EB	Collector	1	15	23	210	A-C	A-C
Central	E/O Marks	WB	Collector	1	19	19	231	A-C	A-C
Central	W/O Marks	EB	Collector	1	17	22	184	A-C	A-C
Central	W/O Marks	WB	Collector	1	19	18	192	A-C	A-C
Chestnut	N/O American	NB	Collector	1	134	215	2,140	A-C	A-C
Chestnut	N/O American	SB	Collector	1	174	148	2,010	A-C	A-C
Chestnut	S/O American	NB	Collector	1	128	177	1,875	A-C	A-C
Chestnut	S/O American	SB	Collector	1	157	146	1,887	A-C	A-C

TABLE 5-7
LOS FOR UNINCORPORATED FRESNO COUNTY ROADWAYS

Road	Location	Dir	Road Class	Dir Lanes	Count (2020)			LOS	
					AM pk	PM pk	Daily	AM pk	PM pk
Crawford	N/O Manning	NB	Local	1	52	64	720	A-C	A-C
Crawford	N/O Manning	SB	Local	1	53	64	668	A-C	A-C
El Dorado	S/O Dorris	NB	Collector	1	44	58	585	A-C	A-C
El Dorado	S/O Dorris	SB	Collector	1	63	45	583	A-C	A-C
Fairfax	N/O Panoche	NB	Arterial	1	25	44	274	A-C	A-C
Fairfax	N/O Panoche	SB	Arterial	1	66	20	314	A-C	A-C
Fairfax	N/O Shields	NB	Arterial	1	21	41	280	A-C	A-C
Fairfax	N/O Shields	SB	Arterial	1	73	16	287	A-C	A-C
Fairfax	S/O Shields	NB	Arterial	1	52	35	375	A-C	A-C
Fairfax	S/O Shields	SB	Arterial	1	67	30	437	A-C	A-C
Fig	N/O North	NB	Collector	1	57	113	1,037	A-C	A-C
Fig	N/O North	SB	Collector	1	81	71	925	A-C	A-C
Fig	S/O North	NB	Collector	1	67	177	996	A-C	A-C
Fig	S/O North	SB	Collector	1	191	72	981	A-C	A-C
Fowler	S/O Behymer	NB	Local	1	385	292	3,040	A-C	A-C
Fowler	S/O Behymer	SB	Local	1	246	241	2,849	A-C	A-C
Fresno-Coalinga	N/O El Dorado	NB	Super arterial	1	87	126	1,430	A-C	A-C
Fresno-Coalinga	N/O El Dorado	SB	Super arterial	1	103	96	1,417	A-C	A-C
Garfield	N/O Barstow	NB	Local	1	119	60	739	A-C	A-C
Garfield	N/O Barstow	SB	Local	1	57	74	729	A-C	A-C
Garfield	S/O Barstow	NB	Local	1	75	42	497	A-C	A-C
Garfield	S/O Barstow	SB	Local	1	40	47	499	A-C	A-C
Golden State	N/O American	NB	Super Arterial	2	146	181	1,984	A-C	A-C
Golden State	N/O American	SB	Super Arterial	2	160	248	2,370	A-C	A-C
Golden State	S/O American	NB	Super Arterial	2	206	210	2,308	A-C	A-C
Golden State	S/O American	SB	Super Arterial	2	213	282	2,842	A-C	A-C
Grantland	N/O Shields	NB	Arterial	1	58	90	855	A-C	A-C
Grantland	N/O Shields	SB	Arterial	1	76	89	1,042	A-C	A-C
Grantland	S/O McKinley	NB	Arterial	1	33	60	517	A-C	A-C
Herndon	E/O Academy	EB	Local	1	20	45	333	A-C	A-C
Herndon	E/O Academy	WB	Local	1	42	25	300	A-C	A-C
Herndon	W/O Academy	EB	Arterial	1	85	121	1,283	A-C	A-C
Herndon	W/O Academy	WB	Arterial	1	147	109	1,239	A-C	A-C
Huntsman	E/O Temperance	EB	Local	1	9	19	148	A-C	A-C
Huntsman	E/O Temperance	WB	Local	1	7	20	156	A-C	A-C
James Rd	N/O Levee Rd	NB	Arterial	1	55	90	808	A-C	A-C
James Rd	N/O Levee Rd	SB	Arterial	1	102	57	826	A-C	A-C
James Rd	S/O Levee Rd	NB	Arterial	1	60	94	848	A-C	A-C
James Rd	S/O Levee Rd	SB	Arterial	1	97	63	854	A-C	A-C
Jayne	E/O Alpine	EB	Expressway	1	351	234	3,234	A-C	A-C
Jayne	E/O Alpine	WB	Expressway	1	177	379	3,280	A-C	A-C
Jefferson	E/O Peach	EB	Local	1	28	46	323	A-C	A-C
Jefferson	E/O Peach	WB	Local	1	31	27	318	A-C	A-C
Laguna	E/O Cedar	EB	Local	1	14	16	127	A-C	A-C
Laguna	E/O Cedar	WB	Local	1	15	17	142	A-C	A-C
Laguna	W/O Cedar	EB	Local	1	11	6	67	A-C	A-C
Laguna	W/O Cedar	WB	Local	1	11	10	76	A-C	A-C
Levee	W/O James Rd	EB	Local	1	21	20	121	A-C	A-C

TABLE 5-7
LOS FOR UNINCORPORATED FRESNO COUNTY ROADWAYS

Road	Location	Dir	Road Class	Dir Lanes	Count (2020)			LOS	
					AM pk	PM pk	Daily	AM pk	PM pk
Levee	W/O James Rd	WB	Local	1	20	19	166	A-C	A-C
Lincoln	E/O Hayes	EB	Local	1	52	89	771	A-C	A-C
Lincoln	E/O Hayes	WB	Local	1	94	44	730	A-C	A-C
Manning	E/O Marks	EB	Expressway	1	105	157	1,483	A-C	A-C
Manning	E/O Marks	WB	Expressway	1	129	119	1,460	A-C	A-C
Manning	E/O Orange	EB	Expressway	1	122	153	1,706	A-C	A-C
Manning	E/O Orange	WB	Expressway	1	141	121	1,619	A-C	A-C
Manning	W/O Academy	EB	Expressway	2	525	805	8,292	A-C	A-C
Manning	W/O Academy	WB	Expressway	2	837	643	9,042	A-C	A-C
Manning	W/O Derrick	EB	Expressway	1	42	53	722	A-C	A-C
Manning	W/O Derrick	WB	Expressway	1	72	39	721	A-C	A-C
Manning	W/O Orange	EB	Expressway	1	119	162	1,701	A-C	A-C
Manning	W/O Orange	WB	Expressway	1	138	120	1,639	A-C	A-C
Marks	N/O Central	NB	Arterial	1	30	40	433	A-C	A-C
Marks	N/O Central	SB	Arterial	1	29	33	378	A-C	A-C
Marks	S/O Central	NB	Arterial	1	29	34	375	A-C	A-C
Marks	S/O Central	SB	Arterial	1	25	35	352	A-C	A-C
McKinley	E/O Grantland	EB	Collector	1	93	117	1,068	A-C	A-C
McKinley	E/O Grantland	WB	Collector	1	92	102	997	A-C	A-C
McKinley	W/O Grantland	EB	Collector	1	90	99	974	A-C	A-C
McKinley	W/O Grantland	WB	Collector	1	95	97	990	A-C	A-C
Mountain View	E/O Bethel	EB	Expressway	2	306	484	5,226	A-C	A-C
Mountain View	E/O Bethel	WB	Expressway	2	431	386	5,427	A-C	A-C
Mountain View	E/O Mendocino	EB	Expressway	2	362	522	5,634	A-C	A-C
Mountain View	E/O Mendocino	WB	Expressway	2	420	478	5,949	A-C	A-C
Mountain View	E/O Smith	EB	Expressway	2	381	552	5,796	A-C	A-C
Mountain View	E/O Smith	WB	Expressway	2	466	483	6,161	A-C	A-C
Mountain View	E/O Zediker	EB	Expressway	2	369	537	5,667	A-C	A-C
Mountain View	E/O Zediker	WB	Expressway	2	437	467	5,963	A-C	A-C
Mountain View	W/O Bethel	EB	Expressway	2	448	315	5,079	A-C	A-C
Mountain View	W/O Bethel	WB	Expressway	2	390	467	5,392	A-C	A-C
Mountain View	W/O Zediker	EB	Expressway	2	380	517	5,691	A-C	A-C
Mountain View	W/O Zediker	WB	Expressway	2	408	478	5,954	A-C	A-C
Nees	W/O Washoe	EB	Expressway	1	69	217	1,291	A-C	A-C
Nees	W/O Washoe	WB	Expressway	1	173	84	1,281	A-C	A-C
North	E/O Fig	EB	Arterial	1	167	335	2,748	A-C	A-C
North	E/O Fig	WB	Arterial	1	231	188	2,814	A-C	A-C
North	W/O Fig	EB	Arterial	1	105	278	1,841	A-C	A-C
Orange	N/O Manning	NB	Local	1	13	9	86	A-C	A-C
Orange	N/O Manning	SB	Local	1	11	15	96	A-C	A-C
Orange	S/O Manning	NB	Local	1	15	9	105	A-C	A-C
Orange	S/O Manning	SB	Local	1	5	15	95	A-C	A-C
Palm Frontage	N/O San Ramon	NB	Arterial	1	7	19	84	A-C	A-C
Palm Frontage	N/O San Ramon	SB	Arterial	1	13	8	67	A-C	A-C
Palm Frontage	S/O San Ramon	SB	Arterial	1	24	31	309	A-C	A-C
Panoche	E/O Fairfax	EB	Collector	1	30	87	480	A-C	A-C
Panoche	E/O I-5	EB	Arterial	1	64	38	399	A-C	A-C
Panoche	E/O I-5	WB	Arterial	1	29	49	400	A-C	A-C

TABLE 5-7
LOS FOR UNINCORPORATED FRESNO COUNTY ROADWAYS

Road	Location	Dir	Road Class	Dir Lanes	Count (2020)			LOS	
					AM pk	PM pk	Daily	AM pk	PM pk
Panoche	W/O Fairfax	EB	Arterial	1	29	118	566	A-C	A-C
Panoche	W/O Fairfax	WB	Arterial	1	118	33	566	A-C	A-C
Panoche	W/O I-5	EB	Arterial	1	114	173	2,057	A-C	A-C
Panoche	W/O I-5	WB	Arterial	1	137	164	1,953	A-C	A-C
Peach	N/O American	NB	Collector	1	33	81	478	A-C	A-C
Peach	N/O American	SB	Collector	1	63	40	492	A-C	A-C
Rialto	E/O Garfield	EB	Arterial	1	8	11	48	A-C	A-C
Rialto	E/O Garfield	WB	Arterial	1	6	7	47	A-C	A-C
Rialto	W/O Grantland	EB	Arterial	1	14	10	98	A-C	A-C
Rialto	W/O Grantland	WB	Arterial	1	10	14	95	A-C	A-C
Sample	W/O Pittman Hill	EB	Arterial	1	39	124	776	A-C	A-C
Sample	W/O Pittman Hill	WB	Arterial	1	126	41	750	A-C	A-C
San Jose	E/O Fruit	EB	Arterial	1	20	15	160	A-C	A-C
San Jose	E/O Fruit	WB	Arterial	1	10	18	159	A-C	A-C
San Ramon	E/O Fruit	EB	Arterial	1	28	18	193	A-C	A-C
San Ramon	E/O Fruit	WB	Arterial	1	27	28	278	A-C	A-C
San Ramon	W/O Palm Frontage	EB	Arterial	1	64	33	360	A-C	A-C
San Ramon	W/O Palm Frontage	WB	Arterial	1	23	41	278	A-C	A-C
Shields	W/O Fairfax	EB	Arterial	1	23	43	322	A-C	A-C
Shields	W/O Fairfax	WB	Arterial	1	71	20	283	A-C	A-C
South	E/O Alta	EB	Arterial	1	60	85	851	A-C	A-C
South	E/O Alta	WB	Arterial	1	124	89	1,097	A-C	A-C
South	W/O Alta	EB	Arterial	1	55	98	731	A-C	A-C
South	W/O Alta	WB	Arterial	1	98	71	944	A-C	A-C
Temperance	N/O Jensen	NB	Arterial	1	126	186	1,613	A-C	A-C
Temperance	N/O Jensen	SB	Arterial	1	235	116	1,567	A-C	A-C
Thorne	S/O Barstow	NB	Arterial	1	49	47	358	A-C	A-C
Thorne	S/O Barstow	SB	Arterial	1	44	57	317	A-C	A-C

TABLE 5-8 LOS FOR FRESNO COUNTY ROADWAYS (PEAK HOUR ONLY)					
Road	**From**	**To**	**Dir Lanes**	**Peak Hour Count**	**LOS**
Trinity St	B St	SR 99	1	212	A-C
Tulare Ave	SR 41	Cedar Ave	2	1,188	D
Tulare Ave	Cedar Ave	Cl .06M E/Willow Av	2	897	A-C
Tulare Ave	Cl .06 E/ Willow Ave	Cl .06M W/Caesar Ave	2	744	A-C
Tulare St	H St	Fresno Amtrak Station	2	997	A-C
Tulare St	Fresno Amtrak Station	SR 41	2	1,350	D
Tulare St	B St	H St	1	329	A-C
Tuolumne St Frontage	Fulton St	Van Ness Ave	2	538	A-C
Tuolumne St.	SR 99	P St.	2/1	345	A-C
U St	Tulare St	Divisadero St	1	449	A-C
Valentine Ave	Weber Ave	Ashlan Ave	1	381	A-C
Valentine Ave	Ashlan Ave	Marty Ave	1	1,029	D
Valentine Ave	Cl .025 S/Weldon Ave	Cl .05 N/ Clinton Ave	1	127	A-C
Valentine Ave	Princeton Ave	Parkway Dr	1	129	A-C
Valentine Ave	Cl .15M S/Nielson Av	Cl @ SPRR	1	58	A-C
Valentine Ave	Alamos Ave	San Jose Ave	1	374	A-C
Van Ness Ave	Railroad Ave	Los Angeles St	1	298	A-C
Van Ness Ave	SR 180	Mc Kinley Ave	1	543	A-C
Van Ness Ave	Los Angeles St	SR 41	2	519	A-C
Van Ness Ave	Inyo St	Tuolumne St	2	898	A-C
Van Ness Ave	Tuolumne St	Divisadero St	1	502	A-C
Van Ness Ave	Railroad Ave	Los Angeles St	1	308	A-C
Van Ness Ave	SR 41	Inyo St	2/1	813	A-C
Van Ness Ave	Divisadero St	SR 180	1	824	D
Van Ness Ave/Maroa	Mc Kinley Ave	Shields Ave	1	510	A-C
Van Ness Blvd	Cl .03M N/Bullard Av	Cl .07M S/Sierra Ave	1	445	A-C
Van Ness Blvd	Cl .127 S/Herndon Av	Herndon Ave	1	382	A-C
Van Ness Blvd	Herndon Ave	Alluvial Ave	1	363	A-C
Van Ness Blvd	Shaw Ave	Cl 0.15M N/Shaw Ave	1	40	A-C
Vassar Ave	Clinton Ave	Motel Dr	1	973	A-C
Ventura St	SR 99	SR 41	2	1,398	D
Ventura St	California Ave	SR 99	2	957	A-C
W Figarden Dr	Brawley Ave	Bullard Ave	2	1,004	A-C
Walnut Ave	North Ave	Cl @ Annadale Ave.	1	53	A-C
Walnut Ave	Jensen Ave	Grove Ave	1	156	A-C
Walnut Ave	Grove Ave	Church Ave	1	196	A-C
Walnut Ave	Church Ave	California Ave	1	410	A-C
Weber Ave	Olive Ave	West Ave	1	631	D
Weber Ave	Mc Kinley Ave	Clinton Ave	1	355	A-C
Weber Ave	Clinton Ave	Marks Ave	1	1,030	D
Weber Ave	Marks Ave	Brawley Ave	1	808	D
Weber Ave	Belmont Ave	Olive Ave	1	608	D
Wesley Ave	Franklin Ave	Belmont Ave	1	121	A-C
West Ave	California Ave	Kearney Blvd	1	119	A-C
West Ave	Sierra Ave	Herndon Ave	2	922	A-C
West Ave	Herndon Ave	Alluvial Ave	2	164	A-C
West Ave	Shaw Ave	Cl .03M S/Vartikian	2	1,285	D

TABLE 5-8 LOS FOR FRESNO COUNTY ROADWAYS (PEAK HOUR ONLY)					
Road	**From**	**To**	**Dir Lanes**	**Peak Hour Count**	**LOS**
West Ave	North Ave	Church Ave	1	44	A-C
West Ave	Church Ave	California Ave	1	85	A-C
West Ave	Kearney Blvd	Whitesbridge Road (SR 180)	1	10	A-C
Willow Ave	Bullard Ave	Palo Alto Ave	3	279	D
Willow Ave	Shepherd Ave	Cl 0.19M S/Copper Ave	1	2,489	**E**
Willow Ave	Nees Ave	Teague Ave	2	1,215	D
Willow Ave	Jensen Ave	.25 N/Church Ave	1	1,632	A-C
Willow Ave	Cl @SPRR	Butler Ave	1	292	A-C
Willow Ave	Lane Ave	Cl @ Mc Kenzie Ave	2	423	A-C
Willow Ave	Cl @ Clay Ave	Olive Ave	1	931	A-C
Wishon Ave	Olive Ave	McKinley Ave	1	339	A-C
Wishon Ave	McKinley Ave	Maroa Ave	2/1	451	A-C

Note: LOS thresholds from Table 5-4 applied; assumes peak hour count constitutes 10% of daily traffic.

EXISTING LEVEL OF SERVICE – STATE TWO-LANE FACILITIES

For the two-lane state highway facilities that traverse unincorporated areas of Fresno County, the HCM Planning Method thresholds from Table 5-4 were used to determine LOS. This analysis was based on the most recent published annual average daily traffic (AADT) volumes from Caltrans (2018 Caltrans Volume Report). Two-lane state highway segments that traverse the incorporated (i.e., city) areas of the county were excluded. Caltrans Transportation Concept Reports (RCR) were used to help identify those incorporated versus unincorporated segments. Based on Table 5-, seven (7) two-lane segments on SR-41, SR-43 and SR-180 are shown to currently operate at LOS D. All other two-lane state highway segments within the unincorporated areas of Fresno County operate at LOS C or better.

TABLE 5-9 LEVEL OF SERVICE ON STATE TWO-LANE FACILITIES UNINCORPORATED AREAS OF FRESNO COUNTY - 2018				
Route	**Postmile**	**Location**	**ADT***	**LOS**
33	0	Kings/Fresno County line	2,000	A-C
33	8.02	Alpine/Lost Hills Road	1,750	A-C
33	18.588	Gale Avenue	4,350	A-C
33	24.316	SR 198 east	2,450	A-C
33	27.019	Derrick Avenue	2,200	A-C
33	29	SR 145 Northeast, South I-5	2,200	A-C
33	39.853	North I-5	1,950	A-C
33	53.4	Adams Avenue	1,750	A-C
33	59.43	California Avenue	2,000	A-C
41	0	Excelsior Avenue; Kings/Fresno County line	16,000	D
41	2.03	Mount Whitney Avenue	16,600	D
43	0	Fresno/Kings County line	12,200	D
63	0	Fresno/Tulare County line	2,500	A-C
63	2.5	American Avenue	910	A-C
63	8.362	SR 180	770*	A-C

TABLE 5-9 LEVEL OF SERVICE ON STATE TWO-LANE FACILITIES UNINCORPORATED AREAS OF FRESNO COUNTY - 2018				
Route	**Postmile**	**Location**	**ADT***	**LOS**
145	0	I-5 and SR 33	2,300	A-C
145	10.324	Excelsior Avenue	3,350	A-C
145	13.212	SR 269	4,550	A-C
145	15.22	Cerini Road	4,550	A-C
145	17.27	Elkhorn Avenue	5,800	A-C
145	20.28	Kamm Avenue	6,400	A-C
145	20.65	Colorado Road	5,600	A-C
145	25.085	Madera Avenue	2,200	A-C
145	26.09	Manning Avenue	3,250	A-C
145	30.11	American Avenue	6,100	A-C
145	35.149	Kerman, SR 180	9,200	A-C
145	36.154	Belmont Avenue	9,700	A-C
145	40.166	Shaw Avenue	6,900	A-C
145	41.283	Fresno/Madera County line	6,900	A-C
168	11.839	Shepherd Avenue	7,000	A-C
168	15.47	Academy Avenue	6,700	A-C
168	18.55	Sample/Pittman Hill Roads	5,800	A-C
168	22.7	Tollhouse Road at Millerton	5,400	A-C
168	23.716	Nicholas Road	4,050	A-C
168	30.201	Morgan Canyon Road at Auberry Road	9,300	A-C
168	36.179	Auberry Road	8,800	A-C
168	45	Dinkey Creek Road	4,800	A-C
168	47.85	Shaver Heights; Dalton Avenue	1,050	A-C
168	49.66	Huntington Lake Road	1,000	A-C
168	65.84	Florence Lake Road	1,000	A-C
180	24.595	Mendota, Belmont Avenue	7,300	A-C
180	26.124	Panoche Road	7,400	A-C
180	34.59	James Road	7,800	A-C
180	40.11	Shasta Avenue	8,300	A-C
180	41.63	Siskiyou Avenue	11,300	D
180	43.63	Goldenrod Avenue	12,100	D
180	47.65	Dickenson Avenue	14,100	D
180	50.6	Grantland Avenue	14,600	D
180	77.49	Reed Avenue	6,900	A-C
180	87.706	SR 63 South	4,600	A-C
180	108.128	SR 245 South	1,450	A-C
180	109.528	Fresno/Tulare County line	1,500	A-C
180	112.09	Northern Boundary General Grant Grove, Kings Canyon National Park	1,100	A-C
180	116.85	Hume Lake Road	710	A-C
180	137.94	Kings Canyon National Park	710*	A-C
198	0	Fresno/Monterey County line	830	A-C
198	12.33	Parkfield Junction	840	A-C
198	19.145	Coalinga Creek	1,050	A-C
198	22.65	SR 33	1,900	A-C
198	26.814	I-5	4,200	A-C
198	34.66	SR 269	5,300	A-C
198	42.731	Fresno/Kings County line	5,100*	A-C
245	0	Fresno/Tulare County line	240	A-C

TABLE 5-9 LEVEL OF SERVICE ON STATE TWO-LANE FACILITIES UNINCORPORATED AREAS OF FRESNO COUNTY - 2018				
Route	**Postmile**	**Location**	**ADT***	**LOS**
245	8.972	SR 180	210*	A-C
269	0	Fresno/Kings County line	5,400	A-C
269	0.15	Plymouth Avenue/Avenal Cutoff Road East	4,850	A-C
269	0.427	I-5	2,100	A-C
269	12.746	SR 198	3,300	A-C
269	24.764	SR 145	2,600*	A-C

*Source: Caltrans Traffic Census Program – 2018 (Excel) Traffic Volumes. * Denotes Back AADT volumes. All other volumes are Ahead AADT volumes.*

COMMUTING

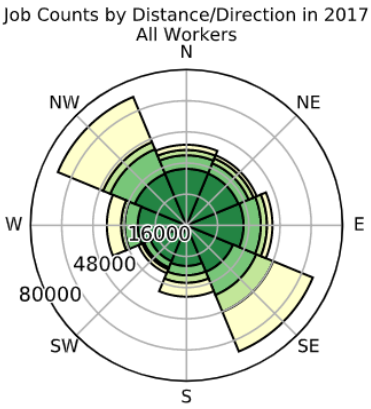
Morning home-to-work and evening work-to-home return trips are forms of non-discretionary travel that typically must occur in discreet windows of time during the day. As such, commute traffic is a major contributor to AM/PM peak hour congestion on county roadways. Single occupant vehicles are the dominant commute mode in Fresno County, followed by carpools. Table 5-6 shows commute mode shares in Fresno County.

TABLE 5-6 JOURNEY TO WORK MODE SPLIT – VEHICULAR (2018)									
Area	**Drove Alone**		**Carpool**		**Telecommute**		**Other (Taxi, Motorcycle, etc.)**		**Total**
County of Fresno	304,109	78.5%	46,488	12.0%	16,658	4.3%	6,586	1.7%	387,400
County of Fresno (Unincorporated)	56,284	79.7%	7,118	10.1%	4,356	6.2%	838	1.2%	70,664
City of Clovis	35,875	82.7%	4,121	9.5%	1,909	4.4%	434	1.0%	36,803
City of Coalinga	4,440	80.5%	651	11.8%	210	3.8%	28	0.5%	45,713
City of Firebaugh	2,087	77.0%	572	21.1%	16	0.6%	14	0.5%	81,741
City of Fowler	2,115	81.4%	231	8.9%	125	4.8%	83	3.2%	34,479
City of Fresno	161,430	78.0%	24,835	12.0%	8,692	4.2%	3,104	1.5%	46,488
City of Huron	1,281	59.4%	632	29.3%	69	3.2%	22	1.0%	113,508
City of Kerman	4,417	76.6%	905	15.7%	306	5.3%	58	1.0%	60,822
City of Kingsburg	4,389	86.9%	328	6.5%	131	2.6%	106	2.1%	25,181
City of Mendota	1,850	54.6%	1,393	41.1%	64	1.9%	37	1.1%	159,221
City of Orange Cove	2,156	70.4%	554	18.1%	52	1.7%	144	4.7%	70,119
City of Parlier	4,286	73.3%	959	16.4%	88	1.5%	409	7.0%	63,534
City of Reedley	6,924	72.5%	1,671	17.5%	258	2.7%	353	3.7%	67,795
City of San Joaquin	998	84.2%	152	12.8%	12	1.0%	0	0.0%	49,587
City of Sanger	7,608	77.0%	1,571	15.9%	138	1.4%	375	3.8%	61,597
City of Selma	7,971	82.3%	794	8.2%	232	2.4%	581	6.0%	31,767
California	13,195,405	73.7%	1,844,134	10.3%	1,020,540	5.7%	286,467	1.6%	17,904,213

Source: American Community Survey – 2018 5 Year Aggregate.

DISTANCE TO WORK

Distance and direction to work was estimated for Fresno County workers in 2017 based upon the US Census' Longitudinal Employer-Housing Dynamics web-based tool. As shown in the exhibits below, more than one half (56%) of Fresno County employees travel less than 10 miles to work, as opposed to approximately 19% of Fresno County workers that travel more than 50 miles for their commute.



Jobs by Distance - Work Census Block to Home Census Block

	2017 Count	2017 Share
Total All Jobs	370,040	100.0%
Less than 10 miles	207,635	56.1%
10 to 24 miles	62,975	17.0%
25 to 50 miles	28,704	7.8%
Greater than 50 miles	70,726	19.1%

Additionally, the radar graph above denotes directional travel. Based upon review of the data, a majority of the workers travel to/from the northwest and southeast to commute. This pattern is similar to directionality of State Route 99 in Fresno County, thus stressing local and regional importance of this freeway.

SAFETY

Based on the three most recent available years of accident data from the California Highway Patrol, Statewide Integrated Traffic Records System (SWITRS), the majority of collisions in the unincorporated areas of Fresno County are property damage only. Fewer than 10 percent of collisions result in fatalities.

TABLE 5-7
MOTOR VEHICLE COLLISION STATISTICS: 2015 – 2019,
FRESNO COUNTY – UNINCORPORATED AREA

Motor vehicle involved with	Collisions				Victims		Injuries		
	Total	Fatal	Injury	PDO [1]	Killed	Injured	Severe	Other visible	Complaint of pain
Non- collision	2,155	85	1,499	571	101	2,038	270	778	451
Pedestrian	551	138	407	6	140	453	101	165	141
Other motor vehicle	17,890	345	11,474	6,071	433	20,190	955	2,888	7,631
Motor vehicle on other roadway	118	8	84	26	10	159	5	18	61
Parked motor vehicle	605	5	242	358	5	318	10	106	126
Bicycle	434	29	395	10	29	418	62	174	159
Animal	393	0	74	319	0	91	13	25	36
Fixed object	7,093	189	3,391	3,513	210	4,382	497	1,448	1,446
Other object	942	12	320	610	12	412	28	152	140
Not stated	33	0	32	1	0	43	2	10	20
Total	**30,214**	**811**	**17,918**	**11,485**	**940**	**28,504**	**1,943**	**5,764**	**10,211**

[1]PDO = property damage only.

Source: California Highway Patrol, Statewide Integrated Traffic Records System (SWITRS), Years 2015-2019.

Note: Collisions may include multiple victims and injuries.

REGULATORY SETTING

See Section 5.1

KEY TERMS AND REFERENCES

- **Annual Average Daily Traffic (AADT)**. The total volume of traffic passing a point or segment of a highway facility in both directions for one year divided by the number of days in a year. AADT is typically measured by taking one two-week sample during each of the four seasons (fall, winter, spring, summer) and averaging.
- **Daily Vehicles Miles of Travel (DVMT)**. The total vehicle miles of travel recorded over a 24-hour period. Alternatively, total VMT over one year divided by the number of days in a year.
- **Vehicle Miles of Travel (VMT).** The number of roadway miles traveled by motor vehicles.
- **Highway Capacity Manual (HCM)**. A publication of the Transportation Research Board (TRB) that contains concepts, guidelines, and procedures for computing the capacity and quality of service of various roadway facilities for all modes of travel (driving, walking, biking, and taking transit).
- **Level of Service (LOS)**. A qualitative measure for the travel experience along a roadway. A scale of A to F is used to indicate the level of service, with "A" as the best quality and "F" as the worst quality.
- **Statewide Integrated Traffic Records System (SWITRS)**. A data base of vehicular collisions collected and maintained by the California Highway Patrol.

REFERENCES

California Department of Transportation. California 2018 Public Road Data, Statistical Information Derived from the Highway Performance Monitoring System, Released November 2019. http://www.dot.ca.gov/hq/tsip/hpms/index.php

California Department of Transportation. Traffic Census Program, http://traffic-counts.dot.ca.gov/

2018 Regional Transportation Plan and Sustainable Communities Strategy, Fresno Council of Government.

SECTION 5.3 ACTIVE TRANSPORTATION

INTRODUCTION

This section describes the existing facilities and provides information regarding facilities and programs for bicyclists and pedestrians in Fresno County. Several of the jurisdictions within Fresno County, including the County, have adopted bicycle, pedestrian or active transportation plans in addition to their general plans. The following plans either have been adopted or are being prepared by agencies within Fresno County.

- **County of Fresno**, Fresno County Regional Active Transportation Plan (Fresno COG – February 2018); Regional Bicycle and Recreational Trails Master Plan (2013)
- **City of Clovis**, City of Clovis Active Transportation Plan (October 2016); Bicycle Transportation Plan (2011)
- **City of Coalinga**, Active Transportation Plan (March 2017)
- **City of Firebaugh**, Fresno County Regional Active Transportation Plan (Fresno COG – February 2018)
- **City of Fowler**, Fresno County Regional Active Transportation Plan (Fresno COG – February 2018)
- **City of Fresno**, City of Fresno Active Transportation Plan (December 2016) Bicycle, Pedestrian, and Trails Master Plan (2010)
- **City of Huron**, Fresno County Regional Active Transportation Plan (Fresno COG – February 2018)
- **City of Kerman**, Fresno County Regional Active Transportation Plan (Fresno COG – February 2018); Bicycle, Pedestrian Master Plan (2015 – Partial, Citywide plan pending)
- **City of Kingsburg**, Fresno County Regional Active Transportation Plan (Fresno COG – February 2018)
- **City of Mendota**, Fresno County Regional Active Transportation Plan (Fresno COG – February 2018)
- **City of Orange Cove**, Fresno County Regional Active Transportation Plan (Fresno COG – February 2018)
- **City of Parlier**, Fresno County Regional Active Transportation Plan (Fresno COG – February 2018)
- **City of Reedley**, Fresno County Regional Active Transportation Plan (Fresno COG – February 2018); Bicycle Transportation Plan (2010)
- **City of San Joaquin**, Fresno County Regional Active Transportation Plan (Fresno COG – February 2018)
- **City of Sanger**, Fresno County Regional Active Transportation Plan (Fresno COG – February 2018); Bicycle Plan (2005)
- **City of Selma**, City of Selma Active Transportation Plan (April 2018)

- **Fresno COG**, Fresno County Regional Active Transportation Plan (Fresno COG – February 2018); Regional Active Transportation Program (2014)

FINDINGS

- The bicycle network throughout Fresno County lacks continuity and connectivity.
- Existing bikeway facilities in unincorporated Fresno County are limited due to insufficient funding for the construction of major bikeway projects.
- Within the unincorporated areas of the county, a spine of Class I facilities supported by a feeder network of Class II and III facilities would best achieve the goals of the Regional Bicycle and Recreational Trails Master Plan.
- Bicycle is the mode of travel for about 0.8 percent of journey to work trips in Fresno County and only 0.3 percent of trips originating in the unincorporated areas. The city of Kingsburg generates the highest proportional number of bicycle trips in the county and the city of Fresno generates nearly two-thirds of all bicycle trips in the county.
- Walking is the mode of travel for over 3 percent of journey to work trips in unincorporated Fresno County, which is more than the California average of 2.7 percent.
- Walkway and pedestrian facilities in the unincorporated areas are discontinuous and/or non-existent. There is no countywide ADA transition plan for county-maintained roads.

EXISTING SETTING

This section summarizes existing active transportation commute mode shares, the existing and planned bicycle and pedestrian facilities and infrastructure, and how the bicycle and pedestrian network in Fresno County interfaces with other modes to contribute to the larger mobility context.

JOURNEY TO WORK

Bicycle and pedestrian mode shares for commuters in Fresno County were collected from the American Community Survey using data from 2018. Table 5-8 shows the relative proportion of commuters using active transportation as their primary commute mode for each jurisdiction and provides a comparison to the California statewide average. Commuters living in the unincorporated parts of Fresno County walk to work in greater proportions than the county as a whole. This group of commuters also exceeds the statewide average. Bicycle commuters in Fresno County make up a lower proportion than either the countywide or statewide averages. Journey to work data excludes the non-working segments of the population, such as school-aged children and retired persons, who may make more trips using non-motorized modes.

TABLE 5-8 JOURNEY TO WORK MODE SPLIT – BICYCLE AND PEDESTRIAN (2018)					
Area	**Walked**		**Bicycle**		**Total**
County of Fresno (total)	6,586	1.7%	2,324	0.6%	387,400
County of Fresno (Uninc.)	1,491	1.7%	45	0.05%	6,398
City of Clovis	434	1.0%	390	0.9%	43,380
City of Coalinga	176	3.2%	--	<0.1%	5,515
City of Firebaugh	22	0.8%	--	<0.1%	2,710
City of Fowler	8	0.3%	39	1.5%	2,598
City of Fresno	3,311	1.6%	1,449	0.7%	206,961
City of Huron	104	4.8%	--	<0.1%	2,157
City of Kerman	46	0.8%	--	<0.1%	5,766
City of Kingsburg	51	1.0%	45	0.9%	5,051
City of Mendota	20	0.6%	--	<0.1%	3,389
City of Orange Cove	122	4.0%	34	1.1%	3,062
City of Parlier	88	1.5%	--	<0.1%	5,847
City of Reedley	96	1.0%	115	1.2%	9,550
City of San Joaquin	23	1.9%	--	<0.1%	1,185
City of Sanger	158	1.6%	20	0.2%	9,880
City of Selma	87	0.9%	19	0.2%	9,685
California	483,414	2.7%	179,042	1.0%	17,904,213

Source: American Community Survey – 2018 5 Year Aggregate.

Although Table 5-12 identifies limited bicycle journey to work trips recorded for seven (7) incorporated cities, it does not necessarily mean that commuter in these cities uses their bike to travel to/from work. Because this data was provided by the US Census American Community Survey, the small survey sample size may skew the results. However, the underlying theme is that many workers are not using bicycles to commute to work to commute in Fresno County (0.5%) is half of the state's estimate of 1.0%.

EXISTING AND PLANNED PEDESTRIAN FACILITIES

The County of Fresno does not currently have a targeted plan for pedestrian facilities at the regional level. Several cities in Fresno County have Active Transportation Plans (ATP) that will look specifically at the pedestrian mobility network. Fresno COG adopted the Fresno County Regional Active Transportation Plan, which was adopted by the Fresno COG Policy Board in February 2018. An entire chapter of this report is dedicated to unincorporated Fresno County. This ATP reports that most roads within the county were developed without bicycle facilities, and many unincorporated communities within the County were developed without sidewalks. The current network of pedestrian facilities is non-contiguous with sidewalks and marked crossings concentrated in more densely populated areas and near schools.

All of the incorporated cities within Fresno County have a network of sidewalks and marked pedestrian crossings in their core areas to allow safer and more comfortable pedestrian mobility. The city of Fresno has converted its Downtown pedestrian mall into a complete street that allows automobile traffic. This conversion has resulted in an increase in economic activity, while preserving an enhanced pedestrian friendly environment.

EXISTING AND PLANNED BIKEWAYS

Fresno County voters approved Measure C, a half-cent sales tax, that benefits transportation infrastructure in 1986, and approved a 20-year extension of the Measure in 2006. The Measure C extension is expected to contribute nearly $55 million for bicycle facilities throughout the county by 2027 and funding is distributed to agencies with an adopted bicycle and pedestrian master plan. In 2013, Fresno County adopted the Regional Bicycle and Regional Trails Master Plan, which included separate maps showing the existing and proposed Class I multiple purpose bikeways (Figure 5-2) and Class II rural bikeways (Figure 5-3). Following is a list of the major planned and existing facilities:

- Fancher Creek Trail Plan
- California Aqueduct Trail
- Friant Kern Canal Trail
- San Joaquin River Trail
- Main Canal Trail
- Gatos Creek Trail
- Temperance Avenue Bikeway
- Golden State Boulevard Bikeway
- Harvey Avenue Bikeway
- Shields Avenue Bikeway
- Kings Canyon Road Bikeway
- Dry Creek Canal Trail
- Herndon Canal Trail
- Gould Canal Trail
- Burlington Northern Rail Trail
- San Joaquin Valley Rail Trail
- Jensen Avenue Bikeway
- Buttonwillow Trail
- Leonard Avenue Bikeway

BICYCLE TRANSIT CONNECTIONS

Transit systems that accommodate bicycles enable riders to access destinations that may be difficult or time-consuming to reach solely by bicycle and increase overall system accessibility by expanding the potential service area range of bus stops. The Fresno County Rural Transit Agency (FCRTA) and its partner city-owned transit services, including Fresno Area Express, all have exterior bike racks equipped on their buses to accommodate two bicycles. Amtrak trains also allow a limited number of bicycles in designated cars. Bicycle parking is not provided at most FCRTA stops or at the Santa Fe Passenger Depot.

BICYCLE SUPPORT FACILITIES

The Regional Bicycle and Recreational Trails Master Plan includes the goal "Promote bicycling as an alternate form of transportation and integrate bicycling with other forms of transportation, including public transit to major destination areas." The eight associated policies are oriented towards the provision of bicycle parking at transit stops, on transit vehicles, and at public and commercial buildings; installation of rest areas, showers, changing facilities, water stations, and landscaping on existing and new bikeways; and enhancement of information services for cyclists countywide. Likewise, the 2018 Fresno County Regional ATP contains goals and policies that promote and encourage bicycling in Fresno County.

FIGURE 5-2
EXISTING AND PLANNED CLASS I BIKEWAY FACILITIES

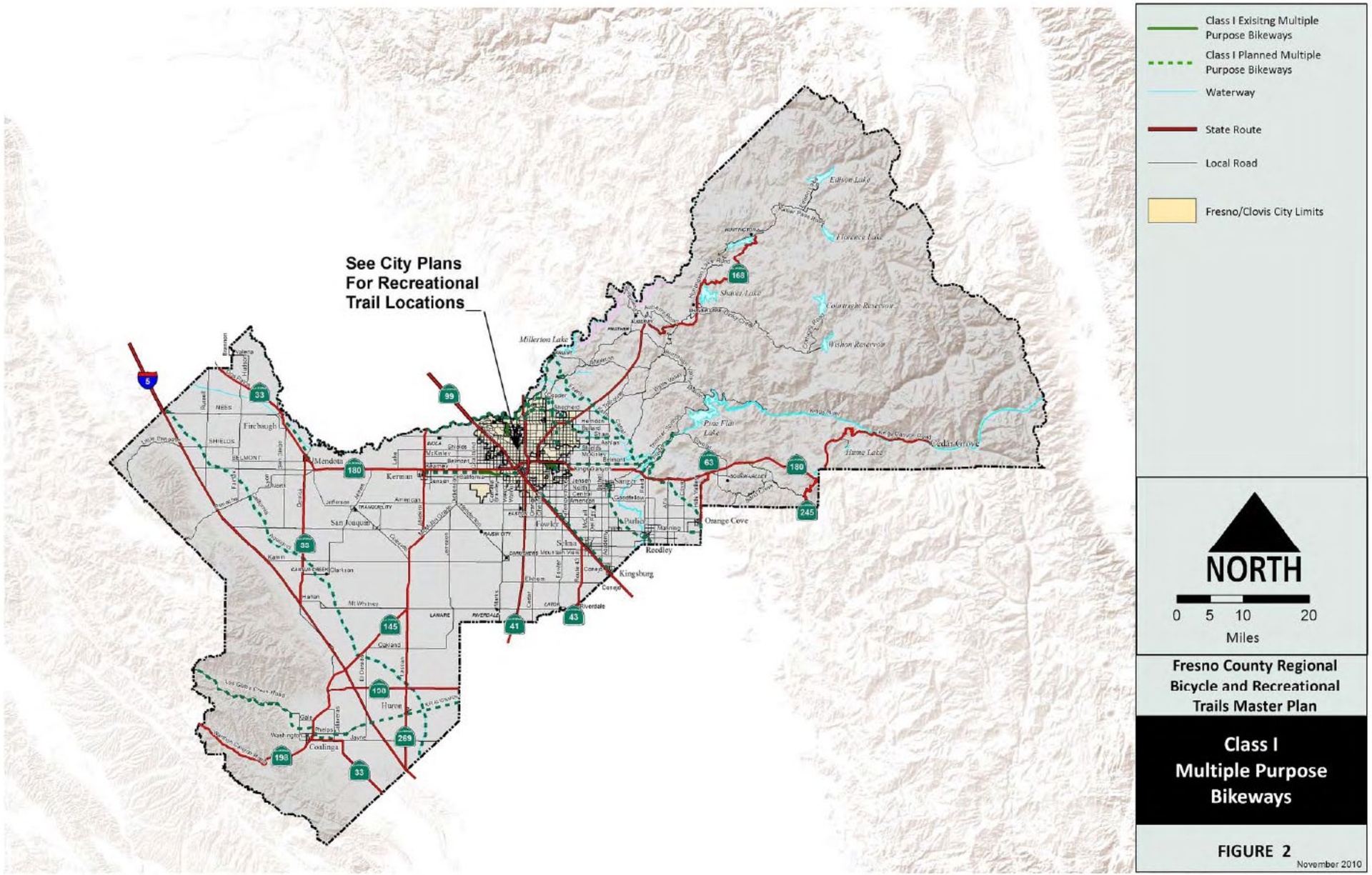
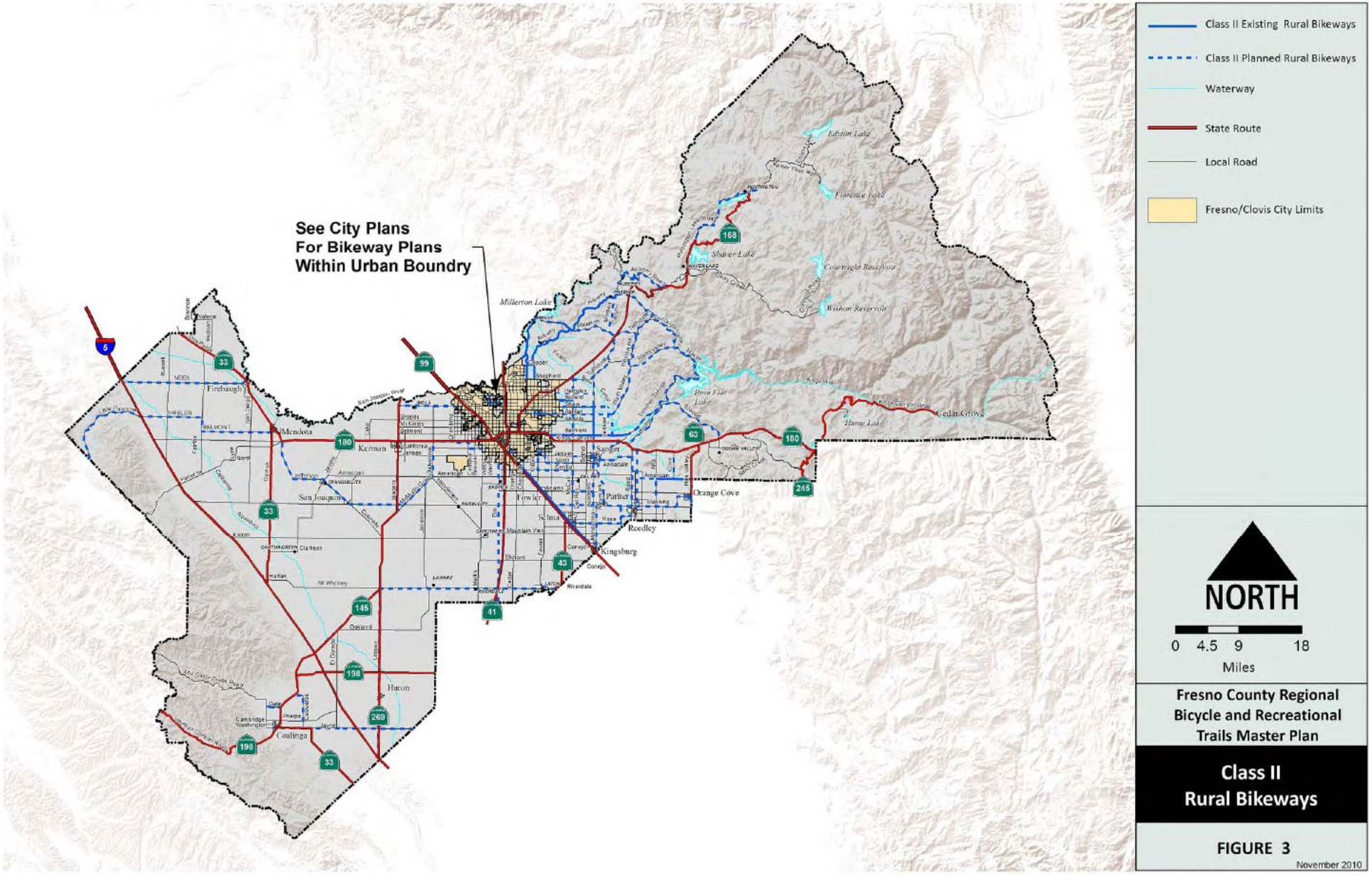


FIGURE 5-3
EXISTING AND PLANNED CLASS II BIKEWAY FACILITIES



PEDESTRIAN AND BICYCLE SAFETY

The California Office of Traffic Safety ranks California counties on a variety of traffic safety metrics, including bicycle and pedestrian injuries and fatalities. In 2017, the most recent year available, Fresno County reported respectable news compared to other counties in the state. Of the 58 counties in California, Fresno County ranked 2nd safest for pedestrians, safest for pedestrians under 15 years old (1st), safest for pedestrians over 65 years old (1st), 1st safest for bicyclists, and 2nd safest for bicyclists under 15 years old. As Fresno County invests more in bicycle and pedestrian infrastructure, it is likely that more people will choose those modes for day-to-day activity, which will in turn increase the potential for collisions. Increased education and enforcement are important tools for bicycle and pedestrian safety. The Fresno County Sheriff's office provides information and training on bicycle safety throughout the county.

PEDESTRIAN AND BICYCLE PERFORMANCE STANDARDS

The Fresno County Regional Transportation Plan / Sustainable Communities Strategy (RTP/SCS) reviewed total transit, bicycle, and pedestrian trips as part of the scenario evaluation criteria, but there are currently no formally mandated measurement cycles for active transportation in Fresno County. The 2018 RTP/SCS, the Fresno County Congestion Management Process, the Regional Bicycle and Recreational Trails Master Plan and Fresno County Regional ATP have provisions to encourage investment in the bicycle and pedestrian framework throughout the county.

REGULATORY SETTING

National Highway Performance Program (NHPP). The Fresno County RTP/SCS is partially funded through the NHPP, for which bicycle and pedestrian facility improvements are eligible where they might impact designated roadways. These projects must be consistent with the County's General Plan to be eligible for funding.

Fixing America's Surface Transportation (FAST) Act. This law builds on the theme of its predecessors, providing federal funding assistance for transportation projects, while encouraging a broader scope of performance-based planning, including enhanced bicycle and pedestrian connectivity. These specifically include recreational trails, improvements needed to comply with the Americans with Disabilities Act, and Safe Routes to School. It also broadens the definition of bicycle facilities to include intermodal facilities that enhance connections between transportation modes.

The California Complete Streets Act of 2008. This law requires cities and counties to include complete streets policies as part of their general plans so that roadways are designed to safely accommodate all users, including bicyclists, pedestrians, transit riders, children, older people, and disabled people, as well as motorists. It will complement an existing policy, which directs Caltrans to "fully consider the needs of non-motorized travelers (including pedestrians, bicyclists and persons with disabilities) in all programming, planning, maintenance, construction, operations and project development activities and products." Beginning January 2011, any substantive revision of the circulation element in the general plan of a California local government will include complete streets provisions.

Fresno Council of Governments (Fresno COG). A Joint Powers Authority composed of the County of Fresno and the Cities of Clovis, Coalinga, Firebaugh, Fowler, Fresno, Huron, Kerman, Kingsburg, Mendota, Orange Cove, Parlier, Reedley, San Joaquin, Sanger, and Selma. Fresno COG administers the

Regional Transportation Plan / Sustainable Communities Strategy and the Regional Congestion Management Process that provide funding opportunities for bicycle and pedestrian improvements.

Regional Bicycle and Recreational Trails Master Plan. The County of Fresno adopted this plan in 2013. It includes a set of goals and policies that bind the County's approach to planning and installing bicycle infrastructure.

Toward an Active California State Bicycle and Pedestrian Plan. This statewide plan was developed in 2017 by Caltrans and is the first pedestrian and bicycle plan to continue to progress toward a sustainable multimodal transportation system. *Toward an Active California* complements local and regional active transportation plans being developed across the state, supporting agencies as they undertake their own efforts to improve the walking and bicycling environment in California.

KEY TERMS

Complete Street. A roadway facility that safely provides adequate access and capacity for all modes and users within the shared right-of-way.

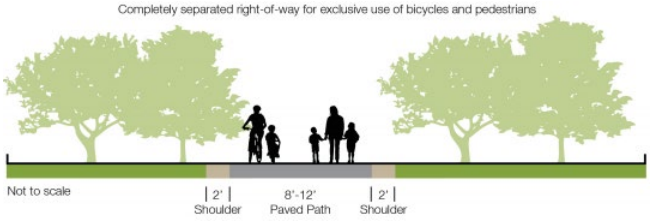
Class I Bikeway – Bike Path. Facilities that are fully separated from automobile traffic. These are generally off street trails and are often shared with pedestrians and sometimes equestrian users.

Class II Bikeway – Bike Path. Dedicated bicycle space on a facility shared with vehicles. Most commonly these are marked bicycle lanes or paved shoulders and are wide enough that vehicles can pass cyclists without leaving their lanes.

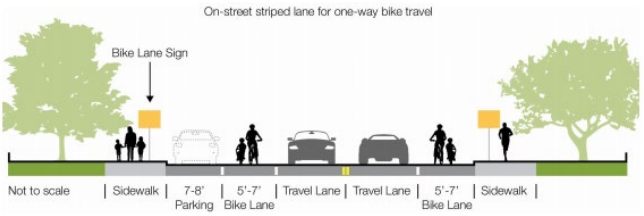
Class III Bikeway – Bike Route. Roadways where bicycles and vehicles share the same lane. These are generally indicated with signage to "share the road" or by painted "sharrows". Bicycles are granted full right of access to the street and are considered part of general traffic.

Class IV Separated Bikeway. Physically separated bicycle facilities that are distinct from the sidewalk and designed for exclusive use by bicyclists. They are located within the street right-of-way but provide comfort similar to Class I Bikeway – Bike Path.

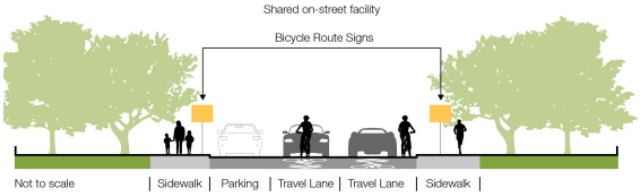
- Class I Bikeway - Bike Path (from *Fresno County Regional Active Transportation Plan*)



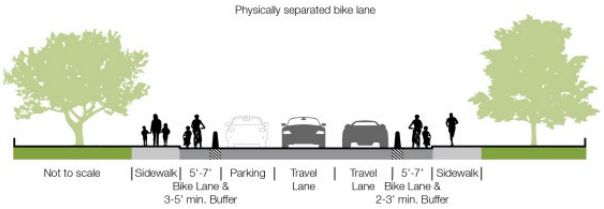
- Class II Bikeway - Bike Path (from *Fresno County Regional Active Transportation Plan*)



- Class III Bikeway - Bike Route (from *Fresno County Regional Active Transportation Plan*)



- Class IV Separated Bikeways (from *Fresno County Regional Active Transportation Plan*)



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Fresno COG, Fresno County Regional Active Transportation Plan, February 22, 2018.

Federal Highway Administration. National Highway Performance Program. http://www.fhwa.dot.gov/map21/factsheets/nhpp.cfm, January 26, 2016

US Congress. Fixing America's Surface Transportation Act. https://www.congress.gov/114/bills/hr22/BILLS-114hr22enr.pdf, January 26, 2016.

SECTION 5.4 TRANSIT SERVICES

INTRODUCTION

This section describes the existing transit services in Fresno County. The Fresno County Rural Transit Agency (FCRTA) is the main provider of transit services in the rural parts of the county. The Rural Consolidated Transportation Service Agency (CTSA) provides special services for social service agencies.

FINDINGS

The following are the main findings on transit service in the unincorporated areas of Fresno County:

- The Fresno County Rural Transit Agency is the main provider of transit service for rural Fresno County. This service is aimed at serving the public. Service is provided through 30 different subsystems throughout the rural part of the county.
- FCRTA ridership is heavily transit-dependent. Most riders (58.9%) use the system five days per week. Most riders (nearly 85 percent) have no alternative to transit for their travel.
- Although the FCRTA system operating cost per hour is rather low ($61.67/hour) compared to large urban systems (typically $100 - $200 /hour), the cost per passenger trip is rather high ($11.87), reflecting the low demand density. Average farebox recovery is 11.95 percent across the entire system.
- The FCRTA Short Range Transit Plan contains specific recommendations for each individual system. In general, these recommendations are for 1) continuing to monitor service productivity, 2) adjusting fares as warranted, 3) implementing service improvements as needed, 4) where possible, expanding service to areas close to existing service.
- The Rural Consolidated Transportation Service Agency (CTSA) provides specialized transit service to social service agencies in rural parts of the county. The agency is funded by local funds and TDA funds.

EXISTING CONDITIONS

JOURNEY TO WORK

The transit mode share for commuters in Fresno County was collected from the American Community Survey using data from 2018. Table 5-9 shows the relative proportion of commuters using transit as their primary commute mode for each jurisdiction and provides a comparison to the California statewide average. Commuters living in the unincorporated parts of Fresno County use transit less than the county as a whole and far less than commuters statewide. Journey to work data excludes the non-working segments of the population, such as school-aged children and retired persons, who may make more trips using transit.

TABLE 5-9 JOURNEY TO WORK MODE SPLIT – TRANSIT (2018)			
Area	**Transit**		**Total**
County of Fresno (total)	4,649	*1.2%*	*387,400*
County of Fresno (Unincorporated)	*239*	*0.3%*	***70,664***
Cities			
City of Clovis	217	0.5%	43,380
City of Coalinga	11	0.2%	5,515
City of Firebaugh	0	0.0%	2,710
City of Fowler	0	0.0%	2,598
City of Fresno	3,932	1.9%	206,961
City of Huron	50	2.3%	2,157
City of Kerman	29	0.5%	5,766
City of Kingsburg	0	0.0%	5,051
City of Mendota	20	0.6%	3,389
City of Orange Cove	0	0.0%	3,062
City of Parlier	18	0.3%	5,847
City of Reedley	134	1.4%	9,550
City of San Joaquin	0	0.0%	1,185
City of Sanger	0	0.0%	9,880
City of Selma	0	0.0%	*9,685*
California	**913,115**	***5.1%***	**17,904,213**
Source: American Community Survey – 2018 5 Year Aggregate.			

TRANSIT SERVICE AVAILABILITY

Fresno County Rural Transit Agency (FCRTA) is the primary provider of public transit services in the rural areas of Fresno County. Rural public transit services are available within the Spheres of Influence (SOI) for each of the 13 incorporated cities in the county. The cities are linked to the Fresno-Clovis Metropolitan Area (FCMA) by either privately operated common carriers or publicly operated wheelchair accessible service providers. Reduced fixed route fares are available to the elderly (60+), and disabled patrons using the various inter-city services.[1] The agency serves a number of unincorporated rural communities in the county, including those shown in the Table 5-10.

TABLE 5-10 RURAL COMMUNITIES SERVED BY FCRTA		
Alder Springs	Halfway	Raisin City
Auberry	Jose Basin	Riverdale
Burrough Valley	Lanare	Sycamore
Cantua Creek	Laton	Three Rocks
Caruthers	Marshall Station	Tollhouse
Del Rey	Meadow Lakes	Tranquility
Easton	Mile High	*Native American Indian Rancherias:*
El Porvenir	New Auberry	Big Sandy
Five Points	O'Neill's	Cold Springs
Friant	Prather	Table Mountain.

Source: Fresno County Rural Transit Agency, Short Range Transit Plan for the Rural Fresno County Area 2018 – 2022. Adopted April 27, 2017.

[1] Fresno County Rural Transit Agency, Short Range Transit Plan for the Rural Fresno County Area, 2018 – 2022. Adopted April 27, 2017.

TRANSIT SERVICES

FCRTA service consists of 30 subsystems as shown in Table 5-11.

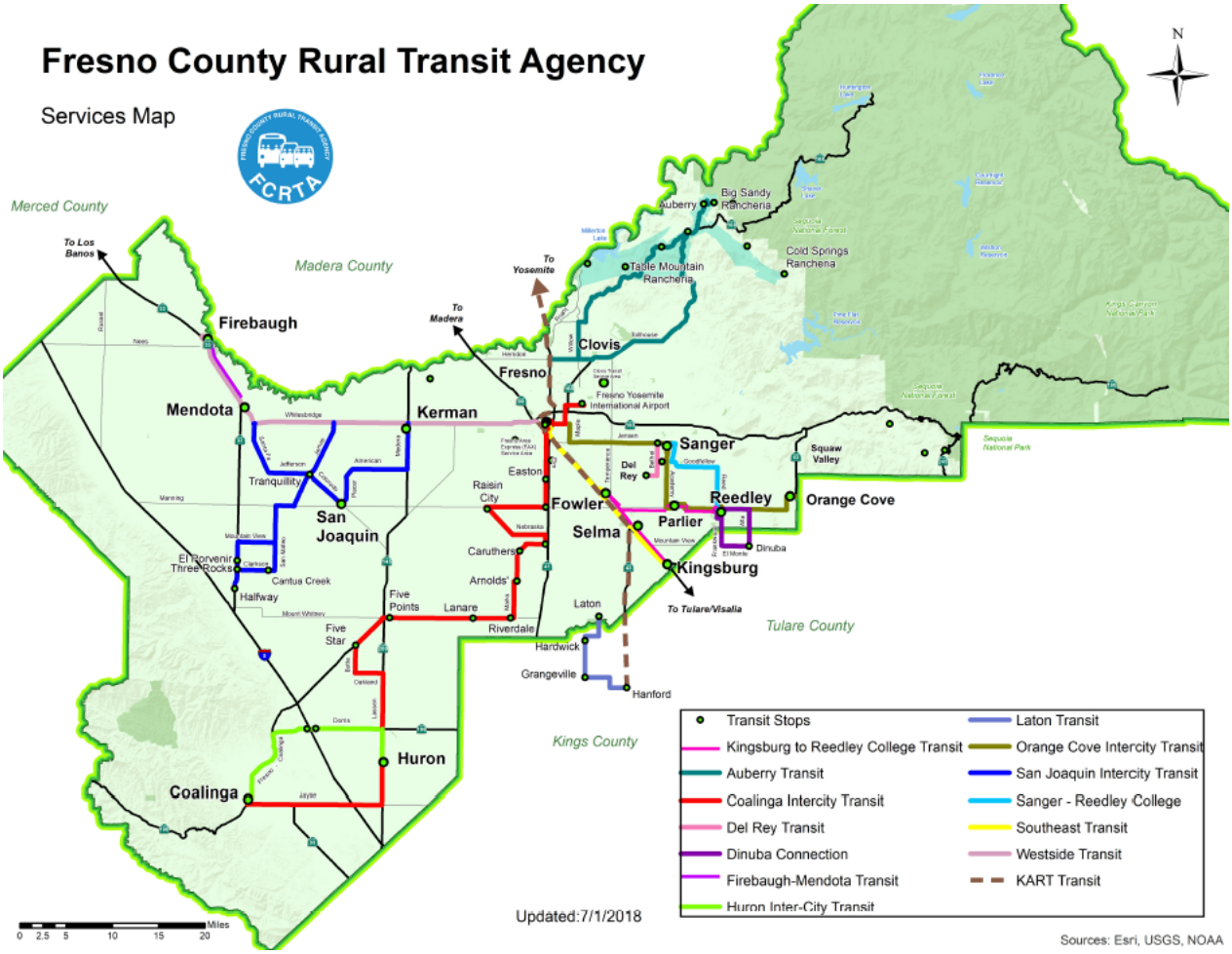
TABLE 5-11
TRANSIT SUBSYSTEMS IN RURAL FRESNO COUNTY

Intra-City operations	Inter-City operations	Inter-community operations
Coalinga Transit	Auberry Transit	Auberry Transit
Del Rey Transit	Coalinga Transit	Dinuba Transit
Firebaugh Transit	Huron Transit	Rural Transit
Fowler Transit	Laton Transit	
Huron Transit	Orange Cove Transit	
Kerman Transit	Sanger Transit	
Kingsburg Transit	Big Trees Transit	
Laton Transit	Southeast Transit	
Mendota Transit	Westside Transit	
Orange Cove Transit	Firebaugh-Mendota Transit	
Parlier Transit	Kingsburg-Reedley Transit	
Reedley Transit	Kerman-Firebaugh N.D.C. Transit	
Sanger Transit		
San Joaquin Transit		
Selma Transit		

Source: Fresno County Rural Transit Agency, Short Range Transit Plan for the Rural Fresno County Area 2018 – 2022. Adopted April 27, 2017.

Figure 5-4 show the relationship of these services to each other.

FIGURE 5-4
MAP OF TRANSIT SERVICES



Source: Fresno County Rural Transit Agency home page: http://www.ruraltransit.org/ .

A summary of the services provided by each subsystem is presented in Table 5-12. Most services operate Monday through Friday during daytime hours; limited Saturday service is provided by Reedley Transit, Sanger Transit, Selma Transit, Shuttle Transit, and Sequoia-Kings Canyon-Yosemite Transit. The last two also provide limited Sunday service.

TABLE 5-12
SUMMARY OF FCRTA SERVICES

FCRTA subsystem	Days and times of operation	Type of service	Frequency of inter-city trips	Also serves
Auberry Transit				
Inter-Community Service	M-F: 7:30 am - 2:30 pm	Demand Responsive		Adler Springs, Auberry, New Auberry, Big Sandy Indian Rancheria, Burrough Valley, Cold Springs Indian Rancheria, Friant, Jose Basin, Marshall Station, Meadow Lakes, Mile High, Prather, Sycamore
Inter-City Service	Tue: 8:00 am - 5:00 pm	24 Hour prior reservations by end of Mon, for Tues	One Round Trip	Above Communities & Table Mountain Indian Rancheria, Tollhouse, Fresno
Big Trees Transit				
Demonstration Service	M-Sun: 7:00 am-7:35 pm Memorial-Labor Day	Fixed Route Prior Reservation	Four Round Trips	Fresno, Sanger, State Highway 180, Sequoia-Kings Canyon
Del Rey Transit				
Intra-City Service & Inter-Community Service	M-F: 8:00 am – 5:00 pm	Demand Responsive	Four Round Trips	Del Rey, Sanger
Firebaugh Transit				
Intra-City Service	M-F: 6:45 am – 5:30 pm	Demand Responsive		Sphere of Influence
Inter-City Service	M-F: 7:00 am – 5:00 pm	Fixed Route with Route Deviation	Ten Round Trips	Firebaugh and Mendota
Inter-Community Service on Southeast Transit	M-F: 6:45 am – 5:45 pm	Fixed Route with Route Deviation	Two Round Trips	Firebaugh, Mendota, Kerman, San Joaquin, Cantua Creek, El Povenir, Half Way, Tranquility, Three Rocks, Fresno
Fowler Transit				
Intra-City Service	M-F: 6:45 am – 5:30 pm	Demand Responsive		Sphere of Influence
Inter-City Service on Southeast Transit	M-F: 6:45 am – 5:45 pm	Fixed Route with Route Deviation	Three Round Trips	Fowler, Fresno, Selma, Kingsburg

TABLE 5-12
SUMMARY OF FCRTA SERVICES

FCRTA subsystem	Days and times of operation	Type of service	Frequency of inter-city trips	Also serves
Huron Transit				
Intra-City Service	M-F: 7:00 am – 5:00 pm	Demand Responsive		Sphere of Influence
Inter-City Service	M-F: 8:45 am – 5:45 pm	Fixed Route with Route Deviation	Seven Round Trips	Huron, Harris Ranch,, 1-5/198 Interchange, West Hills College, Coalinga
Inter-Community Service on Coalinga Transit	M-F: 8:00 am – 5:45 pm	Fixed Route with Route Deviation	One Round Trip	Coalinga, Huron, Riverdale, Lanare, Caruthers, Easton, Fresno
Kingsburg Transit				
Intra-City Service	M-F: 9:00 am – 6:00 pm Sa: 8:00 am – 5:00 pm	Demand Responsive	Three Round Trips	Sphere of Influence
Southeast Transit	M-F: 6:45 am – 5:45 pm	Fixed Route with Route Deviation		Kingsburg, Selma, Fowler, Fresno
Kingsburg-Reedley College Transit Inter-City Service	M-F: 7:450 am-4:15 pm	Fixed Route with Route Deviation	Three Round Trips	Kingsburg, Selma, Fowler, Parlier, Reedley
Mendota Transit				
Intra-City Service	M-F: 6:45 am – 5:45 pm	Demand Responsive		Sphere of Influence
Inter-City Service	M-F: 7:00 am – 5:00 pm	Fixed Route with Route Deviation	Ten Round Trips	Firebaugh and Mendota
Inter-Community Service on Westside Transit	M-F: 6:45 am – 5:45 pm	Fixed Route with Route Deviation	Two Round Trips	Firebaugh, Mendota, Kerman, San Joaquin, Cantua Creek, El Povenir, Half Way, Tranquility, Three Rocks, Fresno
New Freedom Transit *Demonstration Service* Intra and Inter-Community Service	M-F: 8:00 am – 5:00 pm	Demand Responsive, Prior Reservation & Emergency	Multiple Round Trips	Countywide
Orange Cove Transit				
Intra-City service	M-F: 6:45 am – 5:45 pm	Demand Responsive		Sphere of influence
Inter-City service	M-F: 6:45 am – 5:45 pm	Fixed Route with Route Deviation	Two Round Trips	Orange Cove, Reedley, Parlier, Sanger, Fresno

TABLE 5-12
SUMMARY OF FCRTA SERVICES

FCRTA subsystem	Days and times of operation	Type of service	Frequency of inter-city trips	Also serves
Parlier Transit				
Intra-City Service	M-F: 7:00 am – 4:00 pm	Demand Responsive		Sphere of influence
Inter-City Service	M-F: 6:45 am – 5:45 pm	Scheduled Fixed Route with Route Deviation	Two Round Trips	Orange Cove, Reedley, Parlier, Sanger, Fresno
Rural Transit				
Inter-Community Service Inter-City Service	M-F: 8:00 am – 5:00 pm	24-Hour Reservation Demand Responsive	Multiple Round Trips	Beyond Existing City Service Areas – Remote Rural Area
Sanger Transit				
Intra-City Service	M-Sa: 8:00 am – 5:00 pm	Demand Responsive		Sphere of influence
Inter-City Service	M-F: 6:45 am – 4:25 pm	Fixed Route with Route Deviation	Nine Round Trips	Sanger, Parlier, Reedley
Inter-City Service on Orange Cove Transit	M-F: 6:450 am – 5:45 pm	Fixed Route with Route Deviation	Two Round Trips	Orange Cove, Reedley, Parlier, Sanger, Fresno
San Joaquin Transit				
Intra-City Service and Inter-Community Service	M-F: 6:30 am – 5:30 pm	Demand Responsive		Sphere of Influence, Cantua Creek, El Porvenir, Half Way, Tranquility, Three Rocks
Westside Transit	M-F: 6:45 am – 5:45 pm	Fixed Route with Route Deviation	Two round trips	San Joaquin, Kerman, Mendota, Firebaugh, Fresno
Selma Transit				
Intra-City Service	M-Sa: 8:00 am – 5:00 pm	Demand Responsive		Sphere of Influence
Inter-City Service on Southeast Transit	M-F: 6:45 am – 5:45 pm	Fixed Route with Route Deviation	Three Round Trips	Kingsburg, Selma, Fowler, Fresno
Shuttle Transit				
Intra-City service	M-Sa: 7:30 am – 4:45 pm	Demand Responsive, Prior Reservation	Meets Arriving and Departing Inter-City Services	Fresno-Clovis Metropolitan Area
Southeast Transit				
Inter-City service	M-F: 6:45 am – 5:45 pm	Fixed Route with Route Deviation	Three Round Trips	Kingsburg, Selma, Fowler, Fresno
West Hills N.D. College Transit	M-F: 6:35 am – 3:00 pm	Fixed Route with Route Deviation	One Round Trip	Firebaugh, Mendota, Tranquility, San Joaquin, Kerman
Westside Transit	M-F: 6:45 am – 5:45 pm	Fixed Route with Route Deviation	Two Round Trips	San Joaquin, Kerman, Mendota, Firebaugh, Fresno

Source: Fresno County Rural Transit Agency, Short Range Transit Plan for the Rural Fresno County Area 2018 – 2022. Adopted April 27, 2017.

The CTSA provides specialized service to social service agencies in rural Fresno County; these are summarized in Table 5-13.

TABLE 5-13
CTSA SPECIAL SERVICES

Agency	Transportation						Meal delivery		Mainten-ance
	General	Elderly	Disabled	Student	Intercity	Shared public & local svc	Congre-gate	Home bound	Vehicles
Central Valley Regional Center			X						X
Fresno County EOC									
Head Start				X			X		X
FMAAA Senior Meals							X		X
Rural meal delivery contracted							X		X
Fresno County Dept. of Education									
Court Schools				X					X
Sunnyside High Medical School Program				X					X
Special Events, Non-Profit Charter Timeshares	X	X	X	X					X
Services not in rural OPB rural budget									
Fresno County Rural Transit Agency Subcontracted									
Auberry Transit	X	X				X			
Auberry Transit - Inter-City Transit	X			X					
Del Rey Transit	X	X		X		X			
Firebaugh Transit	X	X				X			
Fowler Transit	X	X							
Huron Inter-City Transit	X			X					
Huron Transit	X	X				X			
Kingsburg Transit	X	X				X			
Mendota Transit	X	X				X			
Orange Cove Transit	X	X				X			
Orange Cove Inter-City Transit	X			X					
Parlier Transit	X	X				X			
San Joaquin Transit	X	X				X			
Selma Transit	X	X							
Southeast Corridor Services	X			X					
Westside Corridor Transit	X			X					
County Wide Unmet Needs Service	X			X					

Source: Fresno County Rural Transit Agency, Short Range Transit Plan for the Rural Fresno County Area 2018 – 2022. Adopted April 27, 2017.

OPERATING DATA

As Table 5-14 shows, the FCRTA carried a total of over 405,000 passengers in FY 2016 at a cost of $4.8 million. Table 5-19 shows that average cost per passenger trip was $11.87 and the average farebox recovery ratio was 11.95 percent.

TABLE 5-14
FCRTA OPERATING SUMMARY, FY 2016

Sub-systems	Seniors	Disabled	General Public	Passengers	Fares[1]	Mileage	Hours	Cost[1]
Auberry	1,203	1,013	295	2,511	$13,445.00	42,428	1,804	$134,445.04
BigTrees Transit	67	0	830	897	$11,253.69	43,920	1,694	$245,199.44
Coalinga	1,112	457	7,567	9,136	$43,565.93	75,434	4,918	$435,659.21
Del Rey	2,124	505	3,700	6,329	$21,275.10	32,087	2,000	$97,679.81
Dinuba	453	48	11,168	11,669	$14,479.00	30,442	1,624	$76,272.17
Firebaugh	5,141	873	15,695	21,709	$25,437.56	53,375	4,686	$254,375.54
Fowler	1,561	854	1,662	4,077	$12,788.96	17,790	2,440	$127,889.59
Huron	4,990	1,087	62,228	68,305	$49,388.16	64,133	6,126	$306,738.50
Kerman	2,091	1,868	4,440	8,399	$19,386.06	13,214	1,944	$193,860.58
Kingsburg	9,524	5,964	6,512	22,000	$24,102.84	44,062	4,832	$241,028.33
Laton	34	12	860	906	$4,466.90	17,597	696	$29,611.52
Mendota	1,218	291	4,582	6,091	$1,705.00	19,903	700	$43,490.10
Orange Cove	1,862	361	11,567	13,790	$17,296.27	18,782	2,500	$172,962.61
Parlier	12,659	2,135	28,495	43,289	$60,533.79	65,209	5,015	$271,167.63
Reedley	5,089	508	6,777	12,374	$14,588.99	16,559	2,008	$145,889.85
Rural	10,496	8,836	34,841	54,173	$53,651.20	74,380	7,516	$536,511.97
Sanger	115	104	967	1,186	$10,038.20	39,467	1,623	$100,381.91
San Joaquin	14,752	7,795	27,267	49,814	$49,822.41	111,849	9,423	$498,224.06
Selma	517	96	1,506	2,119	$16,124.92	37,773	2,788	$161,249.12
Shuttle	10,225	13,570	19,484	43,279	$46,908.73	91,741	8,770	$469,087.30
Southeast	4	3	290	297	$2,109.73	4,639	239	$21,097.24
Westside	2,994	2,833	4,351	10,178	$23,511.25	40,976	2,120	$102,463.44
WWC	2,747	462	9,587	12,796	$37,296.05	50,314	2,120	$126,712.54
Total	**90,979**	**49,676**	**264,699**	**405,354**	**$574,987.29**	**1,018,737**	**78,002**	**$4,810,112.99**

[1]Rounded to nearest dollar.

Source: Fresno County Rural Transit Agency, Short Range Transit Plan for the Rural Fresno County Area 2018 – 2022. Adopted April 27, 2017.

SUMMARY PRODUCTIVITY STATISTICS

Table 5-15 shows several measures of productivity for the Fresno County Rural Transit Agency. These productivity measures are comparable to similar rural systems in California. These system-based performance metrics are reported as part of the Federal Transit Administration (FTA) triennial reporting requirements.

TABLE 5-15
FCRTA PRODUCTIVITY STATISTICS, FY 2016 /17

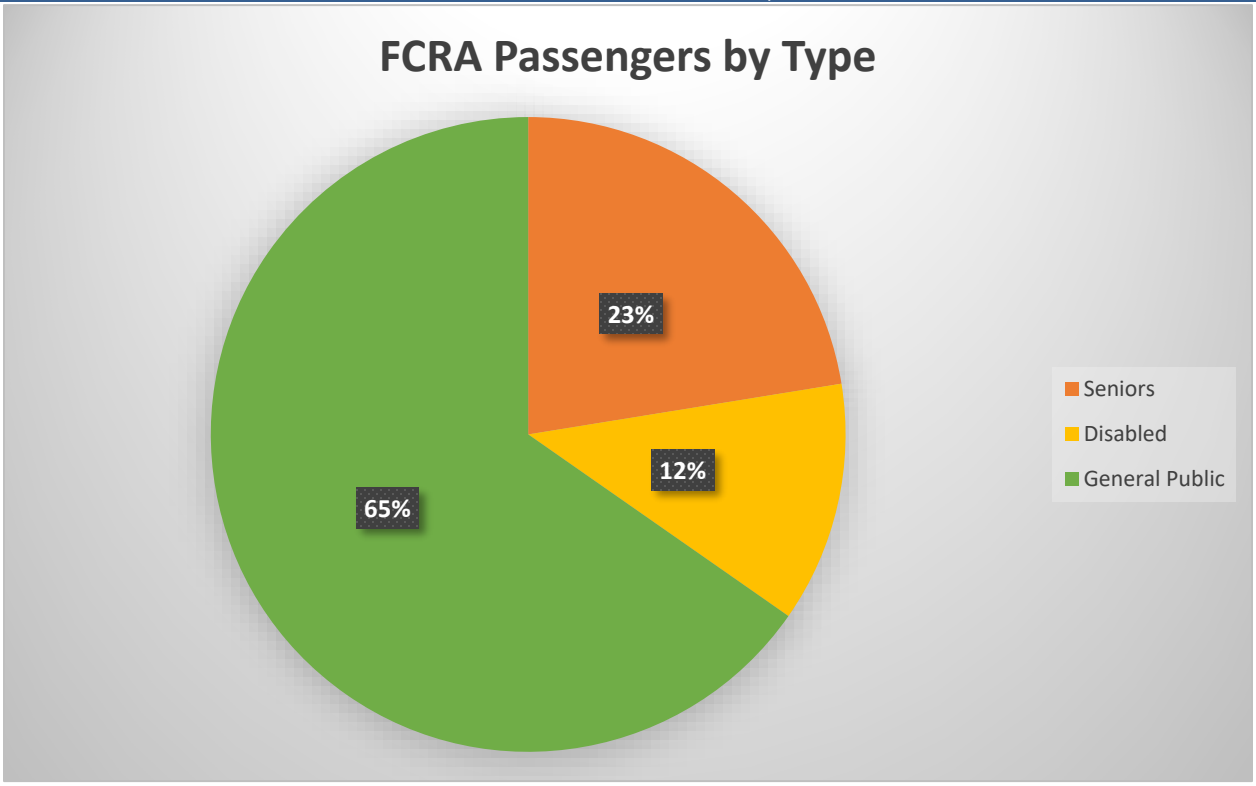
Passengers/hour	5.2
Passengers/mile	0.40
Cost/hour	$61.67
Cost/mile	$4.72
Cost/passenger	$11.87
Farebox recovery	11.95%

Source: Fresno County Rural Transit Agency, Short Range Transit Plan for the Rural Fresno County Area 2018 – 2022. Adopted April 27, 2017.

FCRTA ridership consists of a high percentage of seniors (25 percent) and disabled (8%) as shown in Figure 5-5. The most recent survey of FCRTA's riders revealed the following:

- 84.4 percent of FCRTA's riders have either no other way to make their trip, or would have to walk
- 58.9 percent of FCRTA's riders use the system five (5) days a week
- Female ridership outnumbers male ridership, two-to-one
- The ethnic cross-section of FCRTA ridership was:
    - 24.5 percent White
    - 73.3 percent Hispanic
    - 0.5 percent Black
    - 0.9 percent Asian
    - 0.8 percent American Indian

FIGURE 5-5
FCRTA PASSENGERS BY TYPE, FY 2018/19



Source: Fresno County Rural Transit Agency, Short Range Transit Plan for the Rural Fresno County Area 2018 – 2022. Adopted April 27, 2017.

REGULATORY SETTING

Fresno County Rural Transit Agency (FCRTA). The primary public transit operator for the unincorporated areas in Fresno County. It is a joint powers agency whose board is made up of the following: mayors of cities in Fresno County, Fresno County Supervisor, the FCRTA general manager and operations manager, the finance director for Fresno COG, and, potentially, a consultant member.

Consolidated Transportation Service Agency (CTSA) for the Rural Fresno County Area. The agency established by Fresno County in response to State law (AB 120, 1979) requiring improved coordination and efficiency of transportation provided by social service agencies. The CTSA is a distinct entity from FCRTA; the intent of the CTSA is to provide specialized service to social service agencies located anywhere in rural Fresno County.

Congestion Management Program (CMP). The State mandated program (Government Code 65089) aimed at reducing congestion on highways and roads in California. The CMP establishes a designated roadway network of regional significance, roadway service standards, multi-modal performance standards and a land use analysis element to identify and mitigate multi-jurisdictional transportation impacts resulting from local land use decisions. Federal, State and local transportation funding is contingent upon local agency compliance with the CMP. Fresno COG is the designated Congestion Management Agency for Fresno County.

Measure C. A half-cent sales tax aimed at improving the transportation system in Fresno County. The original measure passed in 1986; voters approved a further 20-year extension to this measure in 2006. This measure is administered by the Fresno County Transportation Authority (FCTA).

California Complete Streets Act of 2008. State law requiring cities and counties to include complete streets policies as part of their general plans so that roadways are designed to safely accommodate all users, including bicyclists, pedestrians, transit riders, children, older people, and disabled people, as well as motorists.

Transportation Development Act (TDA). Funding source for public transportation through the Local Transportation Fund (LTF) and the State Transit Assistance Fund (STA).

Americans with Disabilities Act (ADA). Federal law prohibiting discrimination on the basis of disability.

KEY TERMS

Demand-Responsive Service. Door-to-door transportation service provided to those who are unable to access the regular fixed-route bus service and is available by reservation.

Fixed-Route Bus Service. Transit service that operates on timetables and follows pre-determined routes, serving specified bus stops and stations.

Fixed-Route Bus Service with Route Deviation. Transit service that operates as fixed-route bus service, but allows for route deviation to better serve passenger. This type of service is typically provided to seniors and disabled persons who are unable to access the standard fixed-route service at designated bus service.

Intercity Bus Service. Transit service that provides transit connections to two or more cities in a county.

Inter-Community Service. Transit service that provides connections between two communities and is usually shorter-range than intercity bus service.

Transit-Dependent. Persons who, due to disability, age, and/or economic status, do not have access to a vehicle and rely on public or private transportation services.

SECTION 5.5 GOODS MOVEMENT

INTRODUCTION

Goods movement in Fresno County is a key component of the economic vitality and growth of the region. Fresno County's multimodal system consisting of a highway system, railroads, airport, facilitates the movement of goods throughout the region and state.

FINDINGS

- Fresno County has a number of designated Surface Transportation Assistance Act Routes (STAA) truck routes, most of which are on state highways.
- Most goods movement in the Fresno-Madera area consists of shipments within the area.
- Most goods movement to and from the Fresno-Area is to and from areas outside the four major metropolitan areas (Los Angeles, San Francisco, San Diego, Sacramento).
- The vast majority of goods movement within the county is by truck – primarily on SR-99 and I-5.
- Freight tonnage for parcel shipments doubled between 2012 and 2017 in Fresno County.
- Heavy-duty trucks account for over 90 percent of freight shipments throughout the region.
- Nearly one-half of all truck trips are internal within the Fresno-Madera area.
- An average truck shipment is estimated to be 163 miles per shipment, as opposed to rail that averages 2,300 miles per shipment (2017 CFS Data).

EXISTING CONDITIONS

The designated truck networks in Fresno County consist mainly of State highways. The designated truck network for Fresno County and the surrounding area and corresponding truck designations are shown in Figure 5-6 and Figure 5-7, respectively. National Network STAA routes include I-5, SR-99 and SR-198. All or significant portions of the other state highways in Fresno County are designated as STAA Terminal Access Routes. These routes are traversable by STAA-sized vehicles (48-53 feet from kingpin to rear axle). Portions of SR-63, SR-168, SR-180, SR-198 and SR-245 are not part of the STAA network. These routes are accessible to California Legal-sized vehicles (65 feet from kingpin to rear axle).

Fresno County has jurisdiction over its county roadways. Most truck designation applications involve county roads and require coordination with Caltrans personnel to connect the county route to the STAA National Network at a viable intersection. Also, in turn, County staff work with municipal public works departments to connect the possible routes to municipal routes.

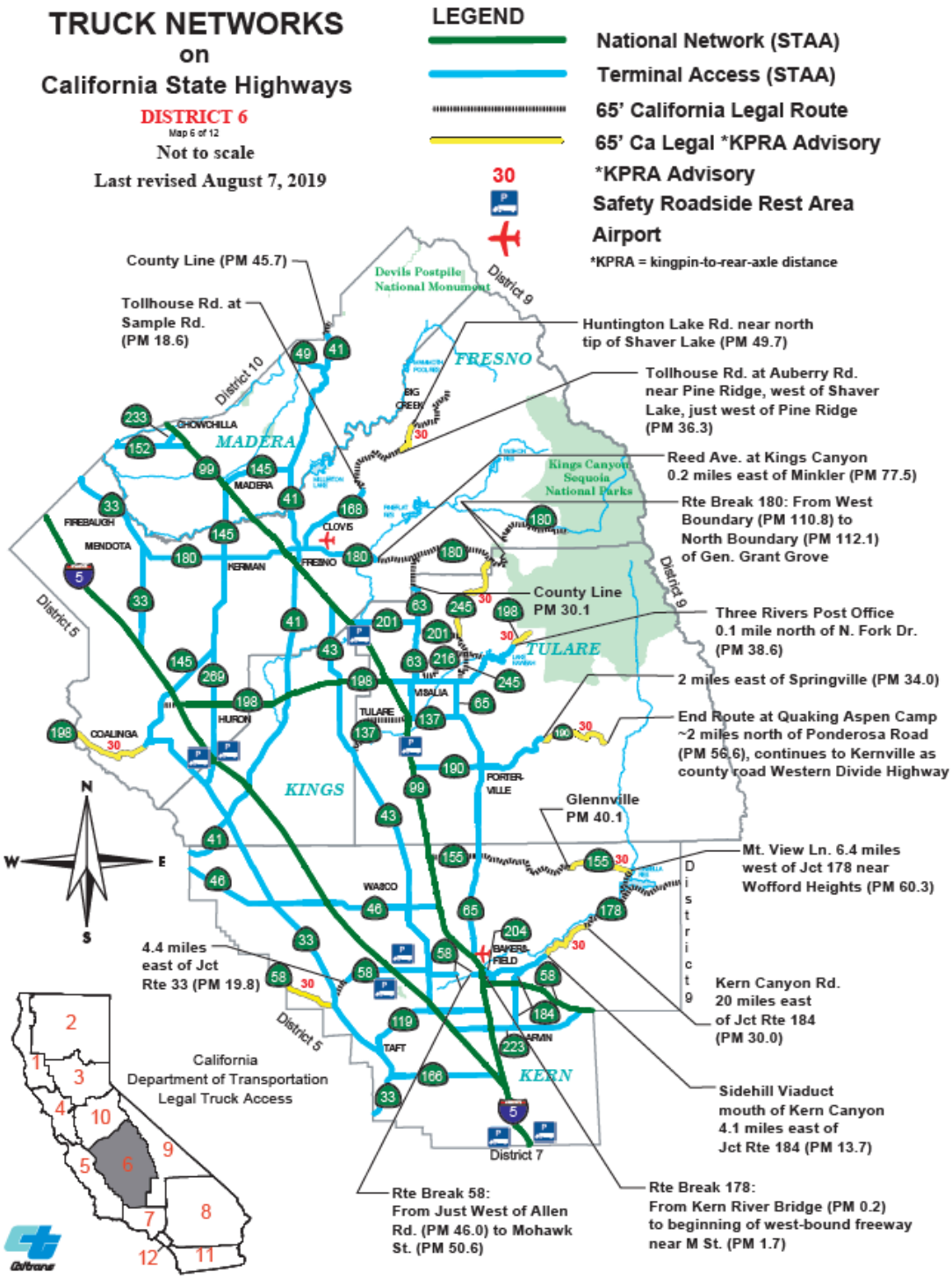
The Fresno Council of Governments (FCOG) is the responsible agency for regional multimodal transportation planning and programming within Fresno County including goods movement. FCOG actively assists its member agencies to plan and ultimately program federal/state/local transportation

funds for transportation improvements. Given the prevalence of goods movement in the county, FCOG was a key participate in the San Joaquin Valley Goods Movement Study. This study identified and prioritized the top goods movement infrastructure improvement projects in the Valley to address goods movement issues and coordinate planning/programming objectives as they relate to goods movement.

Heavy-duty truck parking is also an issue in Fresno County, as it is throughout the state. Many short-haulers do not have adequate parking during non-delivery hours (i.e., overnight and off-peak times). As a result, truck parking occurs in many local neighborhoods and along roadways that fall within the jurisdiction of cities, the county and the state. These parking areas cause disruptions to circulation flow, result in on-street or off-street parking reductions, poor air quality (on refrigerated trucks that run 24-hours), and blighted conditions. As such, Fresno County should work with Caltrans to address the scarcity of truck parking on the National Highway System (NHS) within Fresno County.

Truck volumes on state highways in Fresno County are shown in Table 5-16. The state highways that carry the vast majority of truck traffic both in absolute and percentage share include SR-99, I-5 and SR-198. These routes also carry the greatest number of 5+ axle trucks that are typically STAA-sized vehicles.

FIGURE 5-6
Truck Routes in Fresno County and Surrounding Areas



Source: Caltrans.

FIGURE 5-7
FEDERAL AND CALIFORNIA TRUCK TYPE DESIGNATIONS

LENGTHS	"GREEN" STAA TRUCKS		"BLACK" CALIFORNIA LEGAL TRUCKS
ROUTE COLORS:			
OVERALL LENGTH:	unlimited	unlimited	65 feet MAX
SEMITRAILER:	53 feet MAX	48 feet MAX	unlimited
KPRA (kingpin-to-rearmost-axle distance):	40 feet MAX (for two-axle semitrailer); 38 feet MAX (for single-axle semtrailer)	unlimited	40 feet MAX (for two-axle semitrailer); 38 feet MAX (for single-axle semtrailer)

Doubles:

LENGTHS	"GREEN" STAA TRUCKS	"BLACK" CALIFORNIA LEGAL TRUCKS	
ROUTE COLORS:			
		OPTION A	OPTION B
OVERALL LENGTH:	unlimited	75 feet MAX	65 feet MAX
TRAILERS:	28 ft - 6 inch MAX (each trailer)	28 ft - 6 inch MAX (each trailer)	28 ft - 6 inch MAX (one trailer) unlimited (other trailer)

Source: Caltrans.

TABLE 5-16
TRUCK TRAVEL ON STATE HIGHWAYS IN FRESNO COUNTY (2018)

Route	Leg	Post Mile	Description	AADT		Truck %	Truck AADT by Axle			
				All Vehicles	Truck		2	3	4	5+
5	A	14.873	JCT. RTE. 198	41,000	10,012	24.42	1,502	300	200	8,010
5	B	14.873	JCT. RTE. 198	39,500	11,990	30.35	2,442	369	287	8,891
5	A	17.964	JCT. RTE. 33 SOUTH, JCT. RTE. 145 NORTH	40,000	9,768	24.42	1,465	293	195	7,814
5	B	17.964	JCT. RTE. 33 SOUTH, JCT. RTE. 145 NORTH	41,000	10,012	24.42	1,502	300	200	8,010
33	A	8.02	ALPINE/LOST HILLS RDS	1,750	198	11.31	100	18	6	74
33	B	8.02	ALPINE/LOST HILLS RDS	2,000	198	9.90	100	18	6	74
33	B	14.75	MERCED AVE	8,300	539	6.49	331	51	14	143
33	A	15.707	COALINGA, JCT. RTE. 198 WEST	9,000	1,365	15.17	688	361	247	69
33	B	15.707	COALINGA, JCT. RTE. 198 WEST	4,100	277	6.76	177	47	34	19
33	A	16.78	COALINGA, PHELPS AVE	5,400	712	13.19	359	82	56	215
33	B	R18.588	GALE AVE	4,950	769	15.53	396	43	17	313
33	A	24.316	JCT. RTE. 198 EAST	2,450	495	20.20	252	31	16	196
33	B	24.316	JCT. RTE. 198 EAST	4,250	765	18.00	237	105	31	391
33	B	R29	JCT. RTE. 145 NORTHEAST, SOUTH JCT. RTE. 5	2,200	495	22.50	252	30	20	193
33	A	R39.853	NORTH JCT. RTE. 5	1,950	777	39.85	176	28	13	560
33	A	62.247	MENDOTA, JCT. RTE. 180 EAST	12,900	1,219	9.45	545	80	58	536
33	B	62.247	MENDOTA, JCT. RTE. 180 EAST	5,700	905	15.88	291	83	75	456
33	A	70.557	FIREBAUGH, 8TH ST	8,300	1,191	14.35	616	174	137	264
33	B	70.557	FIREBAUGH, 8TH ST	9,500	1,805	19.00	1,083	72	36	614
33	A	R79.905	BRANNON AVE	2,150	323	15.00	136	29	23	136
33	B	R79.905	BRANNON AVE	2,400	506	21.10	313	25	18	150
41	A	R0	EXCELSIOR AVE; KINGS/FRESNO COUNTY LINE	16,000	2,450	15.31	945	207	147	1,151
41	B	R23.736	FRESNO, DIVISADERO RD	112,000	8,477	7.57	6,683	687	239	868
41	A	R24.527	FRESNO, JCT. RTE. 180S	152,000	6,080	4.00	4,256	730	182	912
41	A	R25.266	FRESNO, MC KINLEY AVE	152,000	6,080	4.00	3,891	547	182	1,459
41	A	R30.447	FRESNO, HERNDON AVE	83,000	4,150	5.00	2,656	374	125	996
41	B	R30.447	FRESNO, HERNDON AVE	114,000	5,700	5.00	2,850	1,140	570	1,140
41	A	R31.683	FRESNO, FRIANT RD	51,000	2,417	4.74	1,935	172	91	219
43	A	8.34	NEBRASKA AVE	15,000	1,200	8.00	588	96	48	468
43	B	8.34	NEBRASKA AVE	12,800	1,024	8.00	502	82	41	399
43	B	9.308	JCT. RTE. 99; SELMA, WEST	17,900	1,375	7.68	633	116	51	575

TABLE 5-16
TRUCK TRAVEL ON STATE HIGHWAYS IN FRESNO COUNTY (2018)

Route	Leg	Post Mile	Description	AADT		Truck %	Truck AADT by Axle			
				All Vehicles	Truck		2	3	4	5+
63	A	0	TULARE/FRESNO COUNTY LINE	2,500	246	9.84	151	25	11	59
63	B	8.362	JCT. RTE. 180	770	74	9.60	59	7	3	5
99	A	R0.951	KINGSBURG, JCT. RTE. 201 EAST	68,000	14,647	21.54	3,861	653	445	9,688
99	A	6.431	JCT. RTE. 43 SOUTH	93,000	14,545	15.64	3,820	1,213	815	8,698
99	B	6.431	JCT. RTE. 43 SOUTH	80,000	12,480	15.60	3,869	787	439	7,383
99	B	11.098	FOWLER, MERCED RD	104,000	15,600	15.00	4,992	1,092	468	9,048
99	A	15.491	CHESTNUT AVE	93,000	13,950	15.00	4,185	977	419	8,370
99	A	19.29	FRESNO, NORTH JCT. RTE. 41	74,000	17,020	23.00	3,574	1,532	681	11,233
99	B	19.29	FRESNO, NORTH JCT. RTE. 41	120,000	19,284	16.07	4,119	860	586	13,719
99	A	20.19	FRESNO, VENTURA ST	88,000	17,600	20.00	3,520	1,584	880	11,616
99	B	20.19	FRESNO, VENTURA ST	74,000	17,020	23.00	3,404	1,532	851	11,233
99	A	21.012	FRESNO, STANISLAUS RD	105,000	16,517	15.73	5,392	1,229	571	9,323
99	B	21.012	FRESNO, STANISLAUS RD	92,000	19,320	21.00	3,864	1,739	966	12,751
99	A	24.416	FRESNO, CLINTON AVE	112,000	12,309	10.99	3,214	704	266	8,125
99	B	24.416	FRESNO, CLINTON AVE	126,000	13,847	10.99	3,424	860	316	9,247
99	B	30.988	HERNDON AVE	79,000	14,702	18.61	3,855	930	542	9,376
99	O	31.609	FRESNO/MADERA COUNTY LINE	82,000	15,243	18.59	4,262	510	381	10,091
145	A	0	JCT. RTES. 5 AND 33	2,300	509	22.13	154	22	9	324
145	B	13.212	JCT. RTE. 269	4,300	750	17.44	345	67	27	311
145	A	35.149	KERMAN, JCT. RTE. 180	9,200	788	8.56	372	82	36	297
168	A	15.47	ACADEMY AVE	6,700	444	6.62	374	35	12	23
168	B	15.47	ACADEMY AVE	7,000	463	6.62	389	32	14	28
168	A	R36.179	AUBERRY RD	8,800	880	10.00	774	62	35	9
168	B	R36.179	AUBERRY RD	3,350	335	10.00	308	13	7	7
168	A	49.66	HUNTINGTON LAKE RD	1,000	121	12.05	83	18	16	3
168	B	49.66	HUNTINGTON LAKE RD	1,050	141	13.43	108	16	7	10
168	B	65.84	FLORENCE LAKE RD	1,000	121	12.09	70	27	22	2
180	A	34.59	JAMES RD	7,800	1,092	14.00	296	74	42	679
180	B	34.59	JAMES RD	6,700	628	9.37	263	45	21	299
180	A	40.11	SHASTA AVE	8,300	1,090	13.13	626	62	26	375
180	A	42.639	KERMAN, JCT. RTE. 145	14,700	1,247	8.48	561	188	160	339
180	B	42.639	KERMAN, JCT. RTE. 145	15,500	1,090	7.03	597	102	56	335
180	A	71.61	ACADEMY AVE	15,300	1,394	9.11	860	182	82	270
180	B	71.61	ACADEMY AVE	15,300	918	6.00	535	97	54	232
180	A	74.95	CENTERVILLE, TRIMMER SPRINGS RD	14,100	1,182	8.38	709	172	50	250
180	B	74.95	CENTERVILLE, TRIMMER SPRINGS RD	11,700	684	5.85	291	156	38	199
180	A	87.706	JCT. RTE. 63 SOUTH	4,600	455	9.89	406	24	11	13
180	B	87.706	JCT. RTE. 63 SOUTH	3,600	310	8.62	270	18	8	13
180	B	108.128	JCT. RTE. 245 SOUTH	1,450	88	6.07	74	7	5	2

TABLE 5-16
TRUCK TRAVEL ON STATE HIGHWAYS IN FRESNO COUNTY (2018)

Route	Leg	Post Mile	Description	AADT		Truck %	Truck AADT by Axle			
				All Vehicles	Truck		2	3	4	5+
180	A	112.09	NORTH BOUNDARY GENERAL GRANT GROVE, KINGS CANYON NATIONAL PARK	1,100	80	7.27	59	9	6	5
180	A	116.85	HUME LAKE RD	710	61	8.57	54	4	2	1
198	A	12.33	PARKFIELD JCT	840	154	18.33	75	6	4	69
198	B	12.33	PARKFIELD JCT	830	151	18.19	63	6	4	78
198	B	21.19	FIRESTONE AVE	1,050	205	19.52	117	10	7	71
198	A	22.65	JCT. RTE. 33	1,900	286	15.05	155	30	12	89
198	B	22.66	JCT. RTE. 33	6,900	1,518	22.00	577	213	121	607
198	A	26.814	JCT. RTE. 5	4,200	914	21.76	346	36	21	510
198	B	26.814	JCT. RTE. 5	1,900	286	15.05	155	30	12	89
198	A	34.66	JCT. RTE. 269	5,300	910	17.17	268	45	34	564
201	A	0	KINGSBURG, JCT. RTE. 99	13,600	1,578	11.60	718	311	268	281
245	B	8.972	JCT. RTE. 180	210	37	17.50	33	3	1	0
269	A	0	KINGS/FRESNO COUNTY LINE	5,400	805	14.90	244	53	26	482
269	A	0.427	JCT. RTE. 5	2,100	400	19.05	141	21	11	227
269	A	12.746	JCT. RTE. 198	3,300	806	24.42	479	55	28	244
269	B	12.746	JCT. RTE. 198	4,550	607	13.34	308	36	16	247
269	B	24.764	JCT. RTE. 145	2,600	622	23.92	309	48	19	246

Source: Caltrans Traffic Census Program – 2018 (Excel) Truck Traffic AADT Volumes.
A = ahead leg, B = back leg and O = traffic on or at location (Caltrans terminology).

For purposes of statistical analysis, the Commodity Flow Survey (CFS) designates Fresno and Madera counties as a single area. The majority of freight shipments to and from the Fresno-Madera area are within the area; of the remainder, most of the shipments are to and from areas outside the four major metropolitan areas in California (Los Angeles-Long Beach, San Jose-San Francisco-Oakland, San Diego-Carlsbad and Sacramento-Roseville). Table 5-17 show freight shipments from these major California geographies. As shown in Table 5-21, just over 2 percent (2.24 %) of freight shipments originated in the Fresno-Madera area. Trucks are responsible for almost 94 percent of freight deliveries.

TABLE 5-17
FREIGHT SHIPMENTS ORIGINS FROM MAJOR CALIFORNIA GEOS (2017)

Origin	Total shipments (1,000 tons)							
	Mode						Total*	% by origin
	Truck	Parcel	Rail	Truck-rail	Air	Other multi-mode		
Fresno-Madera	16,386	106	173	96	25	8	17,435	2.24%
Los Angeles-Long Beach	272,836	4,189	4,920	9,376	1,030	--	389,011	49.88%
Sacramento-Roseville	42,690	367	124	581	18	--	44,466	5.70%
SJ-SF-Oakland	113,203	1,044	--	1,937	227	--	176,940	22.69%
San Diego-Carlsbad	35,612	315	--	163	48	--	36,483	4.68%
Other California	100,311	311	6,749	5,270	128	--	115,600	14.82%
Total	**581,038**	**6,332**	**11,966**	**17,423**	**1,476**	**8**	**779,935**	
Mode %	93.98%	0.81%	1.53%	2.23%	0.19%	0.0%		

*Source: Commodity Flow Survey, 2017, Bureau of Transportation Statistics and US Census Bureau. Note: *Not all modes shown.*

REGULATORY SETTING

The existing plans and programs pertaining to goods movement are summarized below:

Surface Transportation Assistance Act Routes (STAA – Federal Designation). Act passed in 1982 that allows large trucks to operate on the interstate and certain primary routes collectively called the National Network. These routes, referred to as STAA routes, provide larger turning radius than most local roads can accommodate.

Regional Transportation Plan (RTP). The Regional Transportation Plan (RTP) was adopted by Fresno Council of Governments (FCOG) to comply with State and Federal requirements for a comprehensive and long-range transportation plan. The RTP includes a goal to improve goods movement in the county.

Assembly Bill 617 (AB 617). This bill requires the California Air Resources Board (CARB) and air districts to develop and implement additional emissions reporting, monitoring, reduction plans and measures in an effort to reduce air pollution exposure in disadvantaged communities. Fresno County should continue to work with California Air Resources Board (CARB) and the San Joaquin Valley Air Pollution Control District (SJVAPCD) to address the requirements under AB617.

See Regulatory Setting, Section 5.1, for other applicable regulations.

KEY TERMS

Terminal Access Route. State and local roadways on to which STAA trucks may exit interstate freeways. T-Signs are posted on the State and local Terminal Access routes at decision points. These roadways are suitable for operation by vehicles of the size specified by the STAA and used to access terminals.

Service Access Route. State and local roadways, denoted by S-Signs, on to which STAA trucks may exit interstate freeways for one mile only, for food, fuel, lodging, or repair.

California Legal Route. A non-STAA route designated for trucks

KPRA. King-pin to rear axle expressed in distance (feet).

REFERENCES

California Department of Transportation, http://www.dot.ca.gov/hq/traffops/trucks.htm/, March 2, 2016

California Department of Transportation. https://dot.ca.gov/programs/traffic-operations/census.

SECTION 5.6 AVIATION FACILITIES AND SERVICE

INTRODUCTION

Fresno County is home to the 12th busiest airport in California and is the largest air hub in the Central Valley. As a passenger terminal, the Fresno Yosemite International Airport serves over 850,000 passengers per year, including visitors to the Sierra National Forest and heavily visited tourist sites in the Sierra Nevada Mountains. Fresno County is also served by several other public and private basic utility airports. Fresno County passenger air traffic is compared to the statewide California context in Table 5-18.

TABLE 5-18
CALIFORNIA AIRPORTS WITH > 100,000 ANNUAL ENPLANEMENTS (ACTIVITY IN 2018)

City	Airport	Annual Enplanements*	Driving Distance to Fresno County (miles)
Los Angeles	Los Angeles International	42,624,050	220
San Francisco	San Francisco International	27,790,717	190
San Diego	San Diego International	12,174,224	340
San Jose	Norman Y. Mineta San Jose International	7,032,851	150
Oakland	Metropolitan Oakland International	6,686,603	170
Sacramento	Sacramento International	5,907,629	180
Santa Ana	John Wayne Airport-Orange County	5,201,642	260
Burbank	Bob Hope	2,680,240	200
Ontario	Ontario International	2,498,993	250
Long Beach	Long Beach /Daugherty Field/	1,908,635	240
Palm Springs	Palm Springs International	1,163,883	320
Fresno	**Fresno Yosemite International**	**853,538**	--
Santa Barbara	Santa Barbara Municipal	403,745	230
San Luis Obispo	San Luis County Regional	235,570	140
Santa Rosa	Charles M Schulz - Sonoma County	217,480	240
Bakersfield	Meadows Field	105,104	100

FINDINGS

- Fresno County's aviation system consists of 6 publicly-owned airports, 3 public use/privately owned airports, 1 public use privately owned facility, 13 privately-owned and used airports, and 9 heliports.
- Fresno County does not have direct ownership over any airport. The publicly-owned airports in Fresno County are all in incorporated areas and owned by their respective Cities. County land use policies can have impacts on several privately-owned airports and heliports in unincorporated portions of Fresno County.

- Fresno Yosemite International Airport is the only airport served by commercial passenger flights in Fresno County. The cities of Reedley, Fresno, Mendota, Firebaugh, and Coalinga own general aviation airports.
- Fresno County has certain authority over airports located within the unincorporated county. The authority to regulate development and use of these airports is shared with the airport owners and with the Federal Aviation Administration and State of California. The FAA regulates the manner in which aircraft operate.
- Fresno County is able to ensure that noise and safety impacts of airports are accounted for in the land uses around them, even when the airport is not located in the unincorporated portion of the county. The County can work with the airport owner, the State of California, and the Federal Aviation Administration to ensure land use compatibility in the environs of airports in its jurisdiction.
- Fresno Yosemite International Airport serves over 850,000 annual passengers.

EXISTING SETTING

FRESNO COG REGIONAL TRANSPORTATION PLAN (2018)

The Regional Transportation Plan (RTP) has established the goal of developing "A fully functional and integrated air service and airport system that is complementary to the regional transportation system." This goal is supported by a number of policies guiding new airport site selection, land use policies, interagency coordination, and impact management.

FRESNO COUNTY AIRPORT LAND USE COMPATABILITY PLAN (ALUCP)

Coffman Associates, Inc., prepared the *Fresno County Airport Land Use Compatibility Plan* for the Fresno County Airport Land Use Commission in December 2018. This ALUCP was funded by Fresno COG and is intended to protect and promote the safety and welfare of residents, businesses, and airport users near the public use airports and NAS Lemoore in Fresno County, while supporting the continued operation of these facilities. Specifically, the ALUCP seeks to: ensure that people and facilities are not concentrated in areas susceptible to aircraft accidents; protect the public from the adverse effects of airport noise; and ensure that no structures or activities encroach upon, or adversely affect, the use of navigable airspace

Airports play a vital role in the transportation system and economy of cities and counties throughout the nation. The public use airports in Fresno County provide services, such as business travel, tourism, emergency response, fire suppression, law enforcement, and agriculture support. NAS Lemoore plays a vital role in our country's military preparedness and security by providing a home to the Pacific Strike Fighter Wing and supporting facilities.

In recognition of the important role airports play and proper land use compatibility planning within the State of California, the California State Legislature enacted laws that mandate the creation of Airport Land Use Commissions (ALUCs). Adopted in 1967 to assist local agency land use compatibility efforts, the laws are intended 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."

To achieve this goal, the ALUC has two primary functions:

- To prepare and adopt an airport land use compatibility plan (ALUCP) with a 20-year planning horizon for each airport within its jurisdiction
- Review local agency land use actions and airport plans for consistency with the land use compatibility policies and criteria in the ALUCP

As such, local agency review checks airport plans with consistency of the General Plans of the affected jurisdiction, i.e., city or County General Plan. This process is in place to assist decision makers in determining compatibility of the ALUCP in context of the General Plan.

PUBLIC-USE AIRPORTS

Fresno County's aviation system includes nine airports that are open for use by the public. These airports are:

- Fresno Yosemite International Airport;
- Reedley Municipal Airport;
- Fresno Chandler Executive Airport;
- Firebaugh Airport;
- William Robert Johnston Municipal Airport (Mendota);
- Coalinga Airport;
- Sierra Sky Park;
- Selma Airport; and
- Harris Ranch Airport.

With the exception of Harris Ranch Airport, Selma Airport, and Sierra Sky Park, these airports are all publicly owned. The characteristics of these public use airports vary significantly in size, types of facilities and services, and anticipated improvements. Figure 5-8 shows the locations of these airports and Table 5-19 lists their characteristics.

FIGURE 5-8
FRESNO COUNTY AIRPORTS

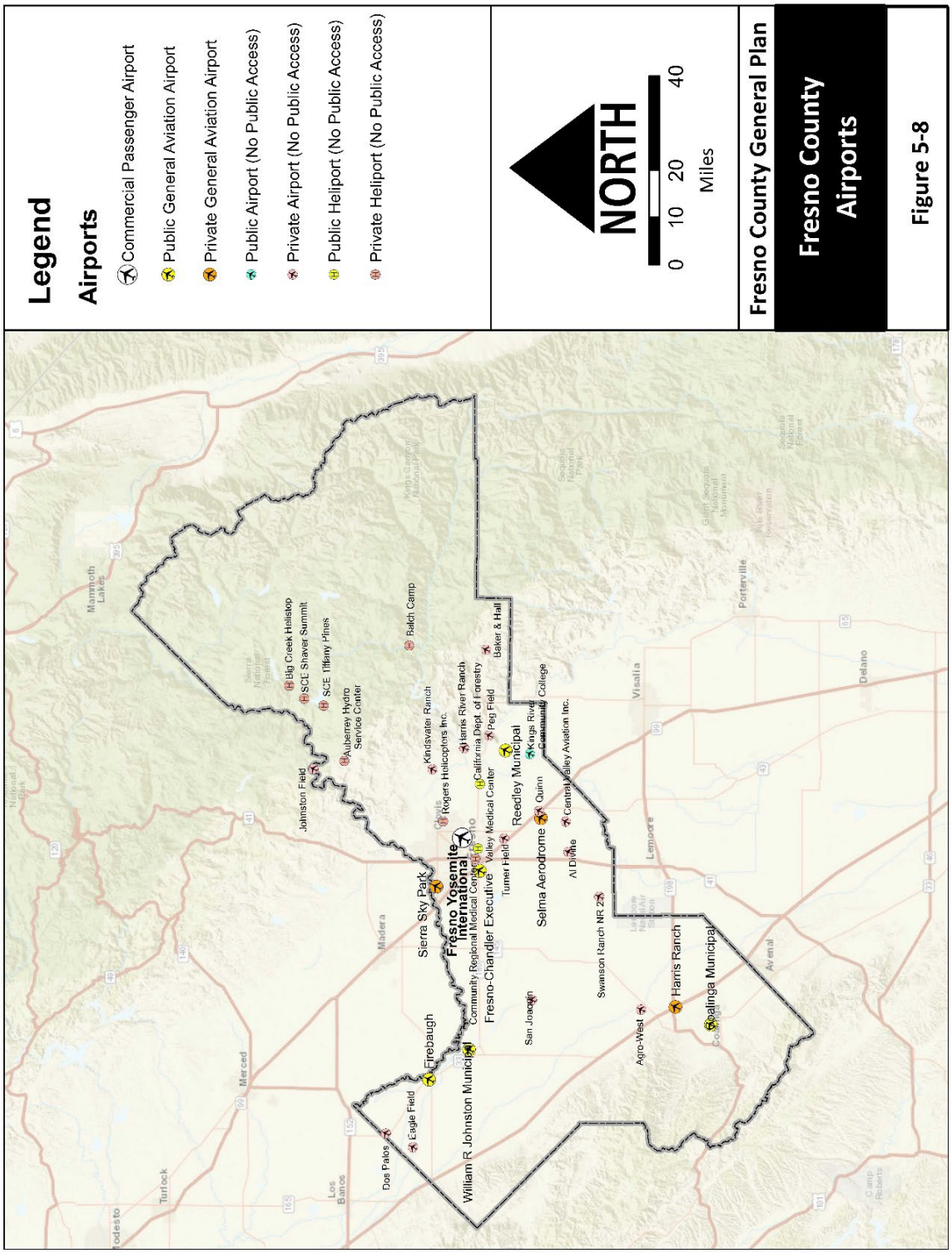


TABLE 5-19
FRESNO COUNTY AIRPORTS (2020)

Airport Name (Airport ID)	Owner	Location	Facilities							Services					
		Community	Based Aircraft[1]	Number of Runways	Longest Runway (ft)	Surface	Lighted	Approach Visibility[3]	Control Tower	Airline Service[4]	AvGas	Jet Fuel	Maintenance	Automobile Rentals	Food
Public Use–Publicly Owned															
Fresno Yosemite International (FAT)	City	Fresno	187	2	9,539	ASPH	Yes	—	✓	✓	✓	✓	✓	✓	✓
Reedley Municipal (O32)	City	Reedley	21	1	3,300	ASPH	Yes	—	—	—	✓	—	—	—	—
Fresno Chandler Executive (FCH)	City	Fresno	100	1	3,627	ASPH	Yes	—	—	—	✓	✓	✓	—	—
Firebaugh (F34)	City	Firebaugh	9	1	3,102	ASPH	No	—	—	—	✓	—	—	—	—
William Robert Johnston Municipal (M90)	City	Mendota	0	1	3,499	ASPH	No	—	—	—	—	—	—	—	—
Coalinga Municipal (C80)	City	Coalinga	5	2	5,000	ASPH	No	—	—	—	✓	—	—	—	—
Public Use–Privately Owned															
Sierra Sky Park (E79)	Private	Fresno	76	1	2,473	ASPH	No	—	—	—	✓	—	✓	—	—
Selma (0Q4)	Private	Selma	44	1	2,206	ASPH	No	—	—	—	✓	—	—	—	—
Harris Ranch (3O8)	Private	Coalinga	0	1	2,820	ASPH	No	—	—	—	✓	—	—	—	✓
Private Use–Publicly Owned															
Reedley College (CA13)	Public	Reedley	1	1	2,000	TURF	No	—	—	—	—	—	—	—	—
Private Use–Privately Owned															
Dos Palos (28CA)	Private	Dos Palos	0	1	2,210	DIRT	No	—	—	—	—	—	—	—	—
Eagle Field (CL01)	Private	Dos Palos	3	1	2,300	ASPH	No	—	—	—	—	—	—	—	—
Table Mountain (5CL9)	Private	Auberry	1	1	2,000	DIRT	No	—	—	—	—	—	—	—	—
Al Divine (65CL)	Private	Caruthers	0	1	2,400	ASHP	No	—	—	—	—	—	—	—	—
Kindsvater Ranch (CL24)	Private	Clovis	4	1	2,000	DIRT	No	—	—	—	—	—	—	—	—
Baker & Hall (77CL)	Private	Dunlap	2	1	3,400	DIRT	No	—	—	—	—	—	—	—	—
Agro-West (5CA7)	Private	Five Points	2	1	3,000	ASPH	No	—	—	—	—	—	—	—	—
Turner Field (11CA)	Private	Fowler	1	1	1,800	DIRT	No	—	—	—	—	—	—	—	—
Peg Field (42CN)	Private	Reedley	3	1	3,110	GRVL	No	—	—	—	—	—	—	—	—
San Joaquin (CA32)	Private	San Joaquin	8	1	2,500	TREAT	No	—	—	—	—	—	—	—	—
Harris River Ranch (9CA7)	Private	Sanger	1	1	3,018	ASPH	No	—	—	—	—	—	—	—	—
Central Valley Aviation Inc. (CA40)	Private	Selma	6	1	2,600	TREAT	No	—	—	—	—	—	—	—	—

TABLE 5-19
FRESNO COUNTY AIRPORTS (2020)

Airport Name (Airport ID)	Owner	Location	Facilities							Services					
		Community	Based Aircraft[1]	Number of Runways	Longest Runway (ft)	Surface	Lighted	Approach Visibility[3]	Control Tower	Airline Service[4]	AvGas	Jet Fuel	Maintenance	Automobile Rentals	Food
Quinn (CA41)	Private	Selma	0	1	2,400	ASPH	No	—	—	—	—	—	—	—	—
Heliport – Public – No Public Use															
Community Regional Medical Center (CN51)	Public	Fresno	0	0	54	CONC	No	—	—	—	—	—	—	—	—
Sanger Heliport (CA31)	Public	Sanger	0	0	25	CONC	No	—	—	—	—	—	—	—	—
Heliport – Private – No Public Use															
Auberry Hydro Service Center (CL91)	Private	Auberry	1	0	60	ASPH	No	—	—	—	—	—	—	—	—
Balch Camp (7C5A)	Private	Balch Camp	0	0	96	ASPH	No	—	—	—	—	—	—	—	—
Big Creek Helistop (CN28)	Private	Big Creek	0	0	65	ASPH	No	—	—	—	—	—	—	—	—
Rogers Helicopters Inc. (7CL2)	Private	Clovis	10	0	400	TURF	No	—	—	—	—	—	—	—	—
Saint Agnes Medical Center (CA96)	Private	Fresno	1	0	50	CONC	No	—	—	—	—	—	—	—	—
SCE Shaver Summit (CL93)	Private	Shaver Lake	0	0	75	GRVL	No	—	—	—	—	—	—	—	—
SCE Tiffany Pines (CL79)	Private	Shaver Lake	0	0	20	CONC	No	—	—	—	—	—	—	—	—

[1] FAA 5010 Forms
[2] ASPH = asphalt; CONC = concrete; GRVL = Gravel ; TREAT = Treated Dirt; DIRT= Dirt; TURF = Turf;
[3] Lowest visibility minimums for instrument approach procedures; distance in statute miles
[4] Including Air Taxi
Data Source: www.airnav.com

PUBLICLY OWNED AIRPORTS

FRESNO YOSEMITE INTERNATIONAL AIRPORT

Fresno Yosemite International Airport (FAT) is the largest and busiest public-use airport in the county and is the only airport served by commercial passenger services. The airport is located approximately 4 miles northeast of downtown Fresno near the junction of SR 168 and SR 180.

FAT is one of three airports (2 public) that are capable of accommodating jet aircraft. Situated on 1,728 acres, FAT is equipped with 14 boarding gates and accommodates passenger service, air cargo operations, corporate jet facilities, military training, and commercial/industrial development. Airport passengers are served by Aero México, Alaska Airlines, Allegiant Airlines, American Airlines, American Eagle, Delta Airlines, Frontier Airlines, United Airlines, United Express and Volaris. Cargo services are provided by Ameriflight, FedEx Express and UPS Airlines.

REEDLEY MUNICIPAL AIRPORT

Owned by the city of Reedley, Reedley Municipal Airport is located about 4.5 miles north of the city center. It is the second largest public-use facility in the county and serves a variety of business and general aviation-related activities. Existing airport facilities include one runway, aircraft hangars and tie downs, and a fueling facility with general aviation fuel. The city has adopted an Airport Master Plan that was completed in 2003 and the Reedley Airport Land Use Plan.

FRESNO CHANDLER EXECUTIVE AIRPORT

Fresno Chandler Executive Airport is owned by the city of Fresno and serves as a reliever for the Fresno Yosemite Airport's general aviation and freight activity. It is located 1.5 miles west of downtown Fresno and used to serve as the primary airport for Fresno. The airport has one operational runway and one out of service runway. The airport provides hangars and tie downs. Operations and development of the Fresno Chandler Executive Airport are guided by the Fresno-Chandler Executive Airport Land Use Plan, last updated in 2000.

FIREBAUGH AIRPORT

Firebaugh Airport is located just west of the city center. It covers approximately 37 acres and has one runway. The airport is used for general aviation and agricultural purposes. This airport is addressed in the current city of Firebaugh General Plan's Circulation Element.

WILLIAM ROBERT JOHNSTON MUNICIPAL AIRPORT

Owned by the city of Mendota, the William Robert Johnston Municipal Airport covers approximately 130 acres and has one runway. Due to limited resources, the city of Mendota does not provide fuel or fixed-base operator services. The airport is overseen by the Fresno County Airport Land Use Policy Plan, which has been adopted by the city of Mendota. The city does not have an Airport Master Plan.

COALINGA AIRPORT

Owned by the city of Coalinga, the Coalinga Airport offers fuel services, tie downs, and leasable hangar space. The airport has two runways. An airport master plan was completed in 2007. The Coalinga Airport Land Use Policy Plan developed in 1994.

PRIVATELY-OWNED AIRPORTS

SIERRA SKY PARK AIRPORT

Sierra Sky Park Airport is a privately-owned general aviation airport and serves the residential aviation community of Sky Park, an unincorporated part of Fresno County. The airport covers approximately 34 acres and is served by one runway. The airport offers tie downs and hangar space. Private entities maintain the Sierra Sky Park Land Use Policy Plan, which was last updated in 1995.

SELMA AERODROME

Selma Aerodrome is a general aviation airport with one runway. The airport offers tie downs. The city of Selma addresses the airport in the Circulation Element of its most current General Plan.

HARRIS RANCH AIRPORT

Harris Ranch Airport is a general aviation airport with one runway. Airplane parking and fuel services are provided. Meals are provided at Harris Ranch.

PRIVATE-USE FACILITIES

In addition to the public-use airports in the county, there over a dozen other aviation facilities that are not open to the public, but submit statistics to the FAA. Many of these are agricultural airstrips located on private farms. These airports, many of which have only treated dirt or turf runways and little if any other facilities, are used primarily to support agricultural crop-dusting activities.

Another category of private aviation facilities in the county are heliports. Two of the county's hospitals, Community Regional Medical Center and Saint Agnes Medical Center, have heliports dedicated to the emergency transport of patients either to or from the hospital. Additionally, several businesses in the county have private heliports located on their property.

MILITARY AIRPORTS

LEMOORE NAVAL AIR STATION

Lemoore Naval Air Station (NAS) straddles the Fresno/Kings County line. This is a military installation and does not provide general aviation services. NAS Lemoore was established in 1961 to support the U.S. Navy's Pacific Fleet. Today, as the West Coast Master Jet Base for the U.S. Navy, NAS Lemoore provides the infrastructure, support and services that enable Commander, Strike Fighter Wing Pacific squadrons to conduct operations in support of national tasking.

REGULATORY SETTING

Federal Aviation Regulations (FARs). FARs are rules established by the Federal Aviation Administration (FAA) governing all civilian and to a lesser extent military aviation activities in the United States. FARs are designed to promote aviation safety. They are approved through a formal federal rulemaking process and address a wide variety of aviation activities, including aircraft design, flight procedures, pilot training requirements, and airport design. FARs concerning aircraft flight generally preempts any state or local regulations.

California Code of Regulations, Section 3533 (Title 21, Article 2). This law grants an exemption to personal-use airports in unincorporated areas and agricultural airports from obtaining an airport permit from the State of California. Aircraft operations at these airports must still comply with applicable federal aeronautical requirements and local jurisdiction land use permit requirements.

California Code of Regulations, Section 3542. This section establishes required airport design standards.

Fresno Council of Governments (Fresno COG). A Joint Powers Authority comprised of the County of Fresno and the Cities of Clovis, Coalinga, Firebaugh, Fowler, Fresno, Huron, Kerman, Kingsburg, Mendota, Orange Cove, Parlier, Reedley, San Joaquin, Sanger, and Selma. Fresno COG serves as the regional transportation planning agency and a technical and information resource for these jurisdictions. Fresno COG also serves the region as the Airport Land Use Commission (ALUC) to assure that surrounding land uses are compatible with the nine public use airports located within the county.

KEY TERMS

General aviation refers to any civil aviation that is not a scheduled air service or service for hire. Most airports provide general aviation services exclusively.

REFERENCES

Airport Land Use Commission of Fresno County. http://www.fresnocog.org/airport-land-use-commission-fresno-county, December 15, 2015.

Airport Master Records and Reports. http://www.gcr1.com/5010WEB/, December 15, 2015.

California Code of Regulations. http://www.dot.ca.gov/hq/planning/aeronaut/documents/regulations/Regs_pub.pdf, December 15, 2015.

2014 Regional Transportation Plan and Sustainable Communities Strategy, Fresno Council of Government.

SECTION 5.7 TRANSPORTATION DEMAND / SYSTEM MANAGEMENT

INTRODUCTION

Transportation Demand Management (TDM) programs are strategies designed to reduce the demand for the automobile as a mode of travel. By encouraging the use of alternative transportation modes, vehicle demand on the existing roadway system is reduced and system efficiency is improved. TDM strategies can help reduce or delay the need for capacity increasing projects on county roadways.

Similar to TDM, Transportation System Management (TSM) strategies seek to optimize use of the existing transportation system. TSM aims at increasing system capacity without constructing new roads or requiring major widening of existing roads or intersections. TSM includes a suite of operational strategies for optimizing system performance through active management. TSM strategies counter the default reactive strategy of waiting until system deficiencies are evident and/or adding capacity.

FINDINGS

- Fresno County is subject to Rule 9410, which mandates employer-based trip reduction programs for large employers. However, most employers in the unincorporated areas of Fresno County are exempt from Rule 9410 either because they are not large enough (employ less than 100 employees) or are agricultural/farm-based businesses.

- The primary TDM strategy in Fresno County is the rideshare program administered by the Fresno Council of Governments. With agencies in neighboring counties, Fresno County has established a multi-county vanpool program for commuters and agricultural workers.

- The following four TSM strategies most applicable to unincorporated Fresno County are: 1) Traffic Signal Timing Management; 2) Pavement Management Systems; 3) Intelligent Transportation Systems; and, 4) Parking Management (including remote park-and-ride lots).

- Field deployment of the following Intelligent Transportation System (ITS) market packages are most applicable to the unincorporated areas of the county for maximizing the efficiency of the existing transportation system: Safety; Traveler Information Systems; Incident Management; Advanced Public Transit Systems; and, Traffic Management.

- With an estimated 3,997 miles of unincorporated county roads, the county is responsible for the majority of the local maintained roadways (approximately 59 percent of the local roadways in Fresno County).

- Based on a countywide survey, roadway maintenance was considered the highest priority and the rehabilitation needs of rural roads the number nine priority for Measure C expenditures.

- Park-and-ride lot locations are limited in Fresno County with three formal sites identified as Fowler Park & Ride, Rolling Hills Park & Ride and Friant Park & Ride. These park-and-ride lots have potential to serve as connections commuter-oriented transit developments in Fresno County.

EXISTING SETTING

TRANSPORTATION DEMAND MANAGEMENT

Given that the daily commute to and from work is a major cause of traffic congestion and is the most well understood trip type in terms of origin and destinations, the commute trip is typically targeted for demand management strategies. Typical "supply-side" strategies include: providing safe and efficient alternatives to driving alone such as commuter oriented transit services; providing Class I and Class II bike lane facilities connecting residential areas to major employment sites; and providing park-and-ride lots to facilitate carpooling/ridesharing. Typical "demand-side" strategies include employer-based incentives for carpooling or using alternative forms of transportation to work and establishing rideshare programs (such as rideshare match lists) to help promote/facilitate ridesharing by interested individuals. TDM strategies in Fresno County include, but are not limited to the following:

- Measure C Carpool Incentive program, which provides incentives to commuters who share a ride to work or school with at least one other person.
- Measure C Commuter and Farmworker Vanpool Subsidy programs, which provide subsidies and reimbursements to new and existing commuter vanpools.
- CalVans is a Joint Powers Public Transportation Agency comprised of a number of Local Transportation Planning Agencies. They run a multi-county vanpool program for commuters and agricultural workers.
- Fresno COG Valleyrides.com website and Carpool App offer commuters free ride matching, and houses the information needed to participate in the Measure C Carpool and Vanpool Programs.
- REV-UP (rural electric vehicle utilization project) is a new electric rideshare program available to resident in rural communities in Fresno County. Partnering with FCRTA, REV-UP was developed to help fill transportation gaps in sparsely populated, low-density communities where public transit is not viable and where FCRTA is stretched to provide services for residents in need. The pilot project aims to be a necessary community resource, providing access to jobs, education, and health care as well as a reduction in vehicle emissions to improve air quality.
- Transportation Network Companies (TNC) and ridesharing may be beneficial for rural communities that do not have existing transit service. As TNC's become more commonly used, government agencies and private companies will need to work together to share data to accommodate this emerging transportation mode.
- Flex-time work schedules with employers to reduce congestion at peak times

Fresno County's Measure C Extension, a half-cent sales tax measure, allocates almost $20 million over its 20-year lifespan to fund carpool, vanpool and farmworker vanpool programs. Rule 9410: Employer Based Trip Reduction, implemented by the San Joaquin Valley Air Pollution Control District (SJVAPCD), is a good example of programs designed to encourage employees to reduce single-occupancy vehicle trips, thus reducing GHG and other pollutant emissions.

TRANSPORTATION SYSTEM MANAGEMENT

The following four strategies most applicable to unincorporated Fresno County include: 1) Traffic Signal Timing Management; 2) Pavement Management Systems; 3) Intelligent Transportation Systems; and, 4) Parking Management (including remote park-and-ride lots). These are described below.

TRAFFIC SIGNAL TIMING MANAGEMENT

The effectiveness of any roadway corridor to accommodate and serve travel demand is typically most constrained at intersections. Hence, the type and effectiveness of the intersection controls is a critical factor to the overall performance of the corridor. Proper management of traffic signals requires continually examining the traffic signal coordination between state and local agency signals; regularly updating signal timing plans to respond to changing conditions; and as needed, installing and maintaining advanced signalization improvements such as loop detectors to semi-actuate or fully-actuate traffic signals. Corridor or area-wide traffic signal retiming for better coordination or levels of service, the installation of adaptive traffic controls, the development and operation of traffic management centers, proactive management and prioritization of roadway resurfacing, or the installation of real-time traveler information. Where applicable, synchronization of a series of closely spaced signals along a major roadway can enhance "progression" or the smooth movement of a platoon of vehicles without the need to come to a complete stop. Individual intersection operations are not specifically addressed as part of the General Plan, however, this discussion is included here to emphasize the importance and applicability of Traffic Signal Timing Management in Fresno County (see also Intelligent Transportation Systems).

PAVEMENT MANAGEMENT SYSTEM

There are roughly 7,169 miles of roadways in Fresno County of which 530 are owned by the State (including 29 miles of State Park roads), and almost 2 miles are owned by the Federal government (U.S. Forest Service roads). Caltrans has set aside funds for maintenance of its system. The responsibility for maintenance of the remaining 6,637 miles rests with the 16 local jurisdictions. The county is responsible for the majority of the local agency roadways with 3,997 miles of unincorporated county roads that are over 50 percent of the total maintained roadways in all of Fresno County.

As part of the development of the Fresno Council of Government's (FCOG) 2018 Regional Transportation Plan and Sustainable Community Strategy (RTP/SCS), community feedback recorded during public outreach efforts indicated that the top priority for transportation funding should be to repair potholes on city and/or rural roads. As part of Fresno County's development of the Measure C Extension Expenditure Plan, another countywide survey was performed which identified top ten types of project types that the electorate wanted to see funded. Of the top ten spending priorities, roadway maintenance was considered the highest priority for Measure C expenditures. Rehabilitation needs of rural roads specifically (i.e., roadways that traverse unincorporated areas of the county) was listed number nine on the list.

A typical local two-lane roadway costs approximately $7 million per mile to construct (2-lane roadway with five-foot paved shoulders). To resurface a typical four-lane roadway costs approximately $2 million per mile (milling and resurfacing). The expected pavement life for a roadway is roughly 20 years if preventative maintenance has been applied during the useful life of that road. Roadways are severely impacted by the weight and frequency of traffic and inclement weather conditions. The movement of goods by freight trucks and construction equipment transportation will significantly lower pavement life and accelerate the need for maintenance, rehabilitation and replacement. Given the prominence of goods

movement by truck and the extent of STAA truck designated routes in Fresno County, degradation of road pavement is a critical maintenance issue for the county.

For the Fresno County roadway system to adequately serve people and the movement of goods, a substantial investment in transportation infrastructure to keep the system in good repair is required. A pavement management system (PMS) is a decision-making process that helps public works personnel make cost-effective decisions concerning the maintenance and rehabilitation of their jurisdiction's pavement. It provides a tool for rating a roadway's pavement condition, establishing a consistent maintenance and repair schedule, and evaluating the effectiveness of ongoing maintenance strategies.

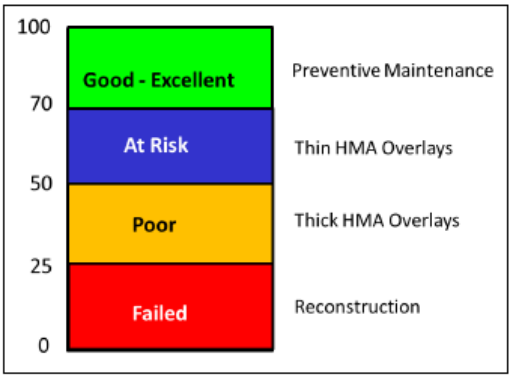
Without a PMS, jurisdictions will typically choose to repair based on a "fix the worst first" approach. Unfortunately, in the long run, this will be the least cost-effective strategy. A critical concept in road maintenance is that while pavements deteriorate only 40 percent in quality in the first 75 percent of life (15 years), subsequent deterioration accelerates rapidly, resulting in another 40 percent drop in pavement quality in the next 5 years of life. As such, as pavement quality degrades over time, the cost to restore pavement to its original condition increases dramatically (from $3 to $15 per square yard to $55 per square yard). A PMS can identify pavements that are headed for rapid decline so that preventative maintenance can be applied in a timely fashion.

To monitor pavement quality, a rating system called Pavement Condition Index (PCI) is used. PCI is a numerical index between 0 and 100, which is used to indicate the general condition of a pavement. It is widely used in transportation civil engineering. It is a statistical measure based on a visual survey of the number and types of distresses in a pavement. The result of the analysis is a numerical value between 0 and 100, with 100 representing the best possible condition and 0 representing the worst possible condition.

Figure 5-9 shows the PCI and shows examples of pavement conditions on various points on the index. Good to excellent pavements (PCI>70) are best suited for pavement preservation techniques, (e.g., preventive maintenance treatments). As pavements deteriorate, treatments that address structural adequacy are required. Between a PCI of 25 to 69, hot mix asphalt (HMA) overlays are usually applied at varying thicknesses. This may be accompanied by milling or recycling techniques. Finally, when the pavement has failed (PCI<25), reconstruction is typically required. If a pavement section has a PCI between 90 and 100, no treatment is applied. Photos are provided to visually relate ranges of PCI values. Based on the Pavement Condition Index (PCI), a PCI of 70-100 reflects "good" pavement condition; a PCI score of 25-69 reflects "at risk" pavement condition; and a PCI between 0-24 reflects "poor" pavement condition. Fresno County aspires to maintain an average PCI of 75 for major roadways (i.e., state highway facilities) and a PCI of 69 for local roadways.

Based on FCOG's 2018 RTP, Fresno County has an annual maintenance-funding shortfall of up to $31 million annually, or $740 million over the 20-year life of the RTP. Given that over 50 percent of total centerline miles in Fresno County are under the county's jurisdiction (see Section 5.1), over half of this funding shortfall will fall under the responsibility of the county.

FIGURE 5-9
PAVEMENT CONDITION INDEX AND EXAMPLES



PCI = 90

PCI = 79

PCI = 61

PCI = 40

PCI < 20

As part of the current Measure C Expenditure Plan, Fresno County as a whole is projected to receive approximately $1.5 billion in new revenues for transportation improvements. Specifically, for the unincorporated areas of Fresno County, funding is projected to be approximately $170 million for the total 20-Year Total Allocation or approximately an Annual Allocation of $8.5 million. Each city and the county have the flexibility to prioritize their own needs and decide how they will spend the local portion of their Measure C Extension dollars. Based on the Measure C Renewal Expenditure Plan, approximately 35 percent of total Measure C revenue ($593.6 million) will go to the Local Transportation Program which provides local agencies flexible funding for street maintenance, rehabilitation, ADA compliance, pedestrian facilities and trails, and bicycle facilities.

Based on the public's priority for roadway maintenance and the need to eliminate deferred maintenance or "unfunded backlog" (defined as maintenance work that is needed, but not funded), the top priority for the county's portion of the Measure C Local Transportation Program will continue to be roadway maintenance.

INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

Intelligent Transportation System (ITS) strategies can be used as a component of a TSM program to improve roadway efficiencies. They consist of automated and electronic technologies that are used to improve operations and traveler information on a transportation network. ITS technologies encompass data collection, surveillance, real-time traveler information, demand-responsive roadway operations, individual vehicular operations, and fulfilling emergency response needs. They can help address recurring and incident-related congestion, facilitate inter-agency communication, prioritize transit and emergency responder access, and provide valuable data for planning.

ITS applications in unincorporated areas typically focus on the following five ITS market packages: 1) Safety; 2) Traveler Information Systems; 3) Incident Management Systems; 4) Advanced Public Transit Systems; and, 5) Traffic Management Systems. The Fresno County ITS Strategic Deployment Plan addresses the transportation needs of the county through Intelligent Transportation Systems (ITS). Below is a list of ITS improvements/strategies that fall within the five ITS market packages that are applicable to the unincorporated areas of the county.

Safety

- Light emitting diode (LED) pedestrian crossings
- Advance advisory systems
- On-board bus surveillance cameras.

Traveler Information Systems

- Multimodal Regional Traveler Information System & Trip Planning Software
- En-route Traveler Information Systems - mobile message signs (where visual impact preclude variable message signs) at major junctures – located at junctures of state highways within the County;
- Transit Dynamic Routing and Scheduling System
- Electronic traveler information (websites, kiosks, HAR, Social Media/511 systems);

- Real time transit system communication systems (bus GPS units and time of arrival information boards at bus shelters and primary transit stops); and
- Trucks and recreational vehicle advisory signs/signals.

Incident Management Systems

- Installation of CCTV monitors in known accident hot spots;
- Installation of Smart Call-Boxes along hazardous corridors and in areas known to have poor cellular coverage; and
- Coordinated emergency response systems such as emergency vehicle tracking using automated vehicle location (AVL) technology, computer aided dispatch (CAD), and other complementary systems
- Emergency Vehicle Preemption on key corridors

Advanced Public Transit Systems

- Expand Computer Aided Dispatch/Automated Vehicle Location (CAD/AVL) System(s) (see traveler information)
- ITS Technologies to Support Bus Rapid Transit (BRT) such as transit signal priority (TSP), transit traveler information system elements, traffic signal coordination, and off-board payment ticket vending machines
- Demand Responsive Dispatching.
- Regional Automated Farebox System
- Wi-Fi on BRT Buses

Traffic Management

- Traffic Signal Upgrades
- Install New Traffic Signals
- Traffic Signal Re-timing/Re-synchronization
- Adaptive signal control
- Arterial Traffic Management Systems Expansion – System elements referenced by this project include, but are not limited to: enhancements to the central system(s), closed circuit television (CCTV) cameras and systems, highway advisory radio (HAR) systems and transmitters, arterial changeable message signs (CMS), traffic monitoring stations (TMS), communications infrastructure, etc.
- Arterial Widening – implement ITS technologies to support arterial widening projects.

PARKING MANAGEMENT – PROVISION OF REMOTE PARK-AND-RIDE LOTS

Park-and-ride measures involve establishing convenient (and typically free) parking lots at remote sites located along a highway or near highway junctures. Park-and-ride facilities can increase opportunities for transit use among commuters who do not live within walking distance of a convenient transit stop or station and expand carpooling and vanpooling opportunities. Remote park-and-ride lots intercept

commuters close to their trip origins and at relatively distant locations from their destinations. Remote park-and-ride lots are intended to reduce vehicle miles traveled and ease congestion.

There are only three formal/designated remote park-and-ride lots in Fresno County (see Table 5-20). All are owned and maintained by Caltrans and serve the SR-168 corridor. Collectively, these three lots provide a total of 152 spaces for park-and-ride activities. They include amenities such as paving, striped spaces and lighting. Other amenities such as provision of bike lockers and/or bus service connections are not provided at these lots.

TABLE 5-20
FRESNO COUNTY PARK AND RIDE LOTS (2020)

Lot ID #	Owner	Post Mile	Name	Description	Parking Spaces
1	Caltrans	T32.8	Lodge Road	At the T intersection of Route 168 and Lodge Road, NE of Clovis	27
11	Caltrans	31.2	Auberry Road	Northeast corner of T intersection of Route 168 and Auberry Road	15
14	Caltrans	R9.1	Temperance	Northwest quadrant of Route 168 and Temperance Ave	110

REGULATORY SETTING

Rule 9410 (the eTRIP rule, Employer Based Trip Reduction) is a rule mandated by the San Joaquin Valley Air Pollution Control District to help bring the District in conformance with federal and state air quality standards. The eTRIP Rule \was adopted by the District Governing Board on December 17, 2009. The eTRIP Rule requires larger employers to establish an Employer Trip Reduction Implementation Plan (eTRIP) to encourage employees to reduce single-occupancy vehicle trips, thus reducing pollutant emissions associated with work commutes.

The eTRIP Rule can apply to worksites in incorporated cities with a population of at least 10,000 people or worksites where at least 50% of all employees work at least 2,040 hours per year. Out of the worksites that meet these criteria, the eTRIP Rule applies to employers with at least 100 eligible employees at a worksite. For the eTRIP Rule, a worksite includes any satellite buildings within one mile of a central location. In determining the number of eligible employees an employer has at a worksite, there are several types of employees who are excluded employees:

- Employees who do not report to work between 6 AM and 10 AM
- Part-time employees who work fewer than 32 hours per week
- Emergency health and safety employees – employees with an authorized emergency response vehicle, or any sworn peace officer or firefighter
- Seasonal employees who are employed less than 16 consecutive weeks
- Employment agency personnel
- Farm workers
- Field personnel
- Field construction workers who report directly to work at temporary construction sites

- Home garage employees who are assigned employer-owned vehicles for commutes to and from the worksite
- On-call employees who are required to be on-call for at least 50% of their work time per year, subject to other Rule 9410 conditions
- Volunteers

KEY TERMS

- **Transportation Demand Management (TDM).** Strategies that emphasize a more efficient use of the existing transportation network by focusing on the movement of people and freight as opposed to motor vehicles. TDM strategies are developed to encourage walking, biking, using public transit, carpooling, flexible work schedules, and telecommuting.
- **Transportation Systems Management (TSM).** Operational strategies that are designed to increase the capacity and efficiency of existing transportation facilities without roadway capacity increasing projects. TSM strategies may include traffic signal timing management, pavement management, and the use of intelligent transportation systems (ITS).
- **Intelligent Transportation Systems (ITS)**. Automated and electronic technologies used to improve operations and traveler information on a transportation network. ITS technologies encompass data collection, surveillance, real-time traveler information, demand-responsive roadway operations, individual vehicular operations, and fulfilling emergency response needs.

REFERENCES

Fresno County Intelligent Transportation System (ITS) Strategic Deployment Plan (November 2015)

2001 San Joaquin Valley Intelligent Transportation System (ITS) Strategic Deployment Plan

2018 Regional Transportation Plan and Sustainable Communities Strategy, Fresno Council of Government.

Rural Counties Task Force: Streets and Roads Performance Measurement Data Project (May 2015), Nichols Consulting Engineers (NCE)
http://www.ruralcountiestaskforce.org/Pavement_Needs_Assessment.html

SECTION 5.8 PROGRAMMED TRANSPORTATION IMPROVEMENTS

INTRODUCTION

This section describes the major funding sources and programmed transportation improvements for Fresno County.

FINDINGS

- Fresno County has a number of programmed transportation improvements that cover a variety of improvements. The primary improvement project types listed in order of investment include bridge replacement; roadway maintenance/rehabilitation; intersection improvements (channelization and signalization); complete street treatments (i.e., shoulder improvements and pedestrian/bicycle facilities); and, roadway widenings.
- Nearly $45,000,000 of projects are programmed in the 2019 FTIP for projects within unincorporated Fresno County.
- Measure C funds are used to leverage state and federal projects in Fresno County.
- As part of Measure C Renewal (2007-2027), Fresno County is projected to receive approximately $1.3 billion in new revenues for transportation improvements.
- All funded transportation projects must comply with federal laws and complete an air quality conformity finding for many pollutants, including CO, VOC, ROG, particulate matter, etc.

EXISTING CONDITIONS

Fresno County is eligible for discretionary (i.e., competitive) and non-discretionary (formula-based apportioned funds) Federal, State, and local transportation funds through a variety of sources. These are described below.

Federal transportation funding is provided through the Federal Funding Fixing America's Surface Transportation (FAST) Act (FY2016-FY2021). FAST provides federal funding for surface transportation programs and transforms the policy and programmatic framework for investments to guide the growth and development of the country's vital transportation infrastructure. Federal funding programs primarily applicable to roadway infrastructure improvements include: Congestion Mitigation and Air Quality (CMAQ); Highway Safety Improvement Program (HSIP); Highway Railroad Grade Crossing Program; National Highway Performance Program (NHPP); Surface Transportation Program (RSTP); Transportation Alternatives Program (TAP); and Transportation Investment Generating Economic Recovery (TIGER). Federal funding programs primarily applicable to transit improvements include: Federal Transit Administration Section 5307 (Urbanized Area Formula Grants); Federal Transit Administration Section 5310 (Enhanced Mobility of Seniors and Individuals with Disabilities); and Federal Transit Administration Section 5311 (Rural Area Formula Grants).

Fresno County is also eligible for the following State transportation funding programs: Transportation Development Act (TDA); State Highway Operation and Protection Program (SHOPP); Active Transportation Plan (ATP); Prop 1B: The Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006; and the State Transportation Improvement Program (STIP). The STIP is split into two programs: the Regional Transportation Improvement Program (RTIP), which is administered by FCOG for Fresno County's share of STIP funding (75 percent of overall STIP funding) and the Interregional Transportation Improvement Program (ITIP) that is administered by Caltrans (25 percent of overall STIP funding).

In addition to General Fund and apportionments of gas tax subvention funds (Section 2014 and 2105), the primary sources of local transportation funding are Measure C, the Regional Transportation Mitigation Fee (RTMF) program and the County's local traffic impact fee program. Local transportation funds help the county bridge the gap when State and Federal funding levels are inadequate, leverage federal and state funding sources that require local matching funds, and allow the county to be more competitive for discretionary funding programs by demonstrating a local financial commitment.

Measure C is a half-cent sales tax referendum originally passed by Fresno County voters in 1986 to help fund transportation improvements. As part of Measure C Renewal (2007-2027), Fresno County is projected to receive approximately $1.3 billion in new revenues for transportation improvements. For the unincorporated areas of Fresno County, funding is projected to be approximately $170 million for the total 20-Year Total Allocation or approximately an Annual Allocation of $8.5 million.

The Regional Transportation Mitigation Fee (RTMF) is a regional fee program that will also cover the 20-year period of Measure C. The intent of the fee is to provide additional funding to implement Tier 1 (financially constrained) and Tier 2 (financially unconstrained) Regional Transportation Program projects. Such projects will also be needed to address future growth and development impacts; therefore, it is appropriate to require that at least 20 percent of the funding needed to implement the projects should be paid for by new development within the county. While the RTMF provides funds for improvements for roadways of regional significance (i.e., state highway facilities and local arterials designated as part of the Congestion Management Program/Process), Fresno County also collects developer fees for improvements to local streets and roads as part of its local fee program.

As the designated metropolitan planning organization for the region, Fresno COG prepares and maintains the Federal Transportation Improvement Program (FTIP). The program includes a listing of all transportation-related projects requiring federal funding or other approval by the federal transportation agencies. The FTIP also lists non-federal (i.e., local and state funded projects) regionally significant projects for information and air quality modeling purposes. Projects included in the FTIP are consistent with Fresno COG's RTP and are part of the area's overall strategy for providing mobility, congestion relief, and reduction of transportation-related air pollution in support of efforts to attain federal air quality standards for the region.

As a result of the Memorandum of Understanding between the eight Valley transportation planning agencies, a committee was formed to coordinate the FTIP format. Reviewing agencies are able to see a consistent presentation of the FTIP with common sections among the eight agencies as well as map exhibits.

In accordance with Federal transportation legislation, the Fresno COG establishes the following project priorities:

1. All project phases shown in the first year of the four-year element (2018-19) must be obligated by June or considered for reprogramming. This group shall have first priority.

2. All projects phases shown in the second year of the four-year element (2019-20) shall have second priority.

3. All project phases shown in the third year of the four-year element (2020-21) shall have third priority.

4. All project phases shown in the fourth year of the four-year element (2021-22) shall have fourth priority.

5. All projects shown outside the four-year element may be advanced, via an approved FTIP Amendment, into the four-year element as long as financial constraint is still maintained.

Table 5-21 presents a complete list of FTIP projects for 2018/19 through 2021/22 for unincorporated Fresno County.

TABLE 5-21
FTIP PROJECTS FOR 2018/19-21/22

Project Id	FTIP	Project Title	Project Description	Est. Total Cost
FRE150024	18-00	Adams from Cherry to Clovis; Shoulder Improvements	Adams Avenue from Cherry Avenue to Clovis Avenue; Shoulder Improvements. Construct 4-foot-wide paved shoulders on each side of existing 24-foot travel-way	$7,750,279
FRE090130	18-00	Grouped Projects for Shoulder Improvements in Fresno County	Projects are consistent with 40 CFR Part 93.126 Exempt Tables 2 and Table 3 Categories-Shoulder Improvements	$4,853,401
FRE070201	18-00	Rehabilitation, repair, reconstruction	Rehabilitation, repair, and/or reconstruction of deficient two-lane roads that connect to Interstate 5, SR 180, SR 41 and SR 99 countywide	$3,646,349
FRE070202	18-00	Rehabilitation, repair, and/or reconstruction	Rehabilitation, repair, and/or reconstruction of deficient two-lane roads that connect to Interstate 5, SR 180, SR 41 and SR 99 countywide	$2,009,606
FRE111376	18-00	Replace Bridge #42C0261-Italian Bar Road over Redinger Lake, 5.7 miles North of Jose Basin Rd	Replace single lane bridge with two-lane bridge	$7,644,000
FRE130076	18-00	Bridge No. 42C0268-Millerton Road Over Little Dry Creek, 1.8 Mile E of Auberry Road	Replace single lane structurally deficient bridge with standard two-lane bridge	$2,265,000
FRE130078	18-00	Bridge No. 42C0268-Millerton Road Over Little Dry Creek, 1.8 Mile E of Auberry Road	Replace single lane structurally deficient bridge with standard two-lane bridge	$2,261,000

TABLE 5-21 FTIP PROJECTS FOR 2018/19-21/22				
Project Id	**FTIP**	**Project Title**	**Project Description**	**Est. Total Cost**
FRE090621	18-00	Grouped Projects for Pavement Resurfacing and/or Rehabilitation-AC Overlays-Fresno County-RSTP	Projects are consistent with 40 CFR Part 93.126 Exempt Tables 2 and Table 3 Categories-Pavement Resurfacing	$3,000,000
FRE130082	18-00	Replace Bridge No. 42C0264-Jose Basin Road Over Bald Mill Creek	Replace existing one-lane bridge with two-lane bridge	$2,778,000
FRE130083	18-00	Replace Bridge No. 42C0496-N Del Rey over Fresno Canal	Replace existing timber one-lane bridge with two-lane bridge	$2,415,000
FRE130007	18-00	American Ave Reconstruction from SR 99 to Temperance Avenue	Reconstruction of approximately 1.4 miles of American Avenue, from the eastern right-of-way of SR99 to Clovis Avenue, and place approximately 2 miles of HMA overlay, from Clovis Avenue to 100 feet east of Temperance Avenue. The work also includes realignment and signalization of the currently-substandard intersection of American Avenue and Golden State Boulevard	$6,250,146

REGULATORY SETTING

Federal Transportation Improvement Program

The Federal Transportation Improvement Program (FTIP) is a federal requirement for Metropolitan Planning Organizations (MPOs) that was created in 1991. The 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) and one extension; the Transportation Equity Act for the 21st Century (TEA 21); the Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU) and its 3 extensions; Moving Ahead for Progress in the 21st Century (MAP-21); and, the current Federal Funding Fixing America's Surface Transportation (FAST) Act (FY2016-FY2021) continue to require that each MPO prepare a FTIP. The TIP is a financially constrained multimodal transportation planning program developed by the Metropolitan Planning Organization through its member agencies and in cooperation with state and federal agencies. The basic premise behind a TIP is that it is the incremental implementation (four years) of the long-range Regional Transportation Plan (24 years). The TIP serves to present to federal funding agencies manageable components of funding the long-range plan.

The Federal TIP is a compilation of project lists from the State Transportation Improvement Program (STIP), urbanized and non-urbanized areas, and other programs using federal funding. The FTIP is to be composed of two parts. The first is a priority list of projects and project segments to be carried out in a four-year period. The second is a financial plan that demonstrates how the FTIP can be implemented. The financial plan is also required to indicate all public and private resources and financing techniques that are expected to be used to carry out the program. Federal legislation has further defined the FTIP process focusing on enhanced public and public agency participation.

Projects are typically added to the FTIP after the County has applied for and received federal funding, often through a competitive process with other cities in the region or statewide. In Fresno County, projects are proposed by the Road Maintenance and Operations Division based upon condition, safety, and community need. Proposed projects are then scoped by the Design Division to determine their deliverability within funding guidelines for a particular federal program. Projects are then prioritized based on competitiveness and deliverability and are then submitted for federal funding. Projects that are not submitted or are not awarded funding may be completed using local or state funding, or they may be delayed until federal funding becomes available. The only exceptions are for projects using lifeline money and bridge projects where there is not a competitive pot for funding; rather, it is based on meeting the funding requirements.

State Transportation Improvement Program (SB 45)

The STIP comprises two programs: the Regional Transportation Improvement Program (RTIP) and the Interregional Transportation Improvement Program (ITIP). Pursuant to SB 45, 75% of the overall STIP funding goes to regional authorities to pay for accepted RTIP projects, and the remaining 25% of the overall STIP funding is used to pay for ITIP projects, as determined by Caltrans. Once the Fresno County region has selected the projects for the RTIPs, the California Transportation Commission (CTC) must allocate funds for the projects based on estimated construction costs. The funds are programmed in the Federal Transportation Improvement Programs (FTIP) for inclusion in the State Transportation Improvement Program (STIP). Pursuant to SB 45, allocations of Regional Choice funds are known as "County Shares".

Regional Transportation Plan

As the regional transportation planning agency (RTPA) for Fresno County, the Fresno Council of Governments (FCOG) developed and adopted the Regional Transportation Plan (RTP). The RTP complies with State and Federal transportation planning requirements required of urbanized counties for a comprehensive and long-range transportation plan. The RTP is financially constrained multi-modal plan that identifies regional transportation improvements needed to improve system maintenance and operations and to improve mobility and accessibility countywide.

KEY TERMS

Federal Funding Fixing America's Surface Transportation (FAST) Act. The current Federal transportation funding bill

Federal Transportation Improvement Program (FTIP). The Federal transportation programming document and process.

State Transportation Improvement Program (STIP). The State transportation programming document and process.

Measure C. The half-cent sales tax referendum passed by Fresno County voters in 1986 and again in 2006 for funding transportation improvements in Fresno County.

REFERENCES

2018 Regional Transportation Plan and Sustainable Communities Strategy, Fresno Council of Governments.

2015 Federal Transportation Improvement Program (FTIP), Fresno Council of Governments.

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CHAPTER 6: PUBLIC FACILITIES AND SERVICES

INTRODUCTION

This chapter describes current conditions and capacities of public facilities, utilities, and services in Fresno County. It is organized into the following sections:

- Water Supply, Treatment, and Delivery (Section 6.1)
- Wastewater Collection and Treatment (Section 6.2)
- Storm Drainage and Flood Protection (Section 6.3)
- Solid and Hazardous Waste Disposal and Recycling (Section 6.4)
- Utilities and Major Utility Corridors (Section 6.5)
- Telecommunications (Section 6.6)
- Law Enforcement (Section 6.7)
- Fire Protection (Section 6.8)
- Emergency Services (Section 6.9)
- Medical Services (Section 6.10)
- Schools and Childcare (Section 6.11)
- Other County Services (Section 6.12)

SECTION 6.1 WATER SUPPLY, TREATMENT, AND DELIVERY

INTRODUCTION

The purpose of this section is to summarize existing information regarding water supply and delivery infrastructure in Fresno County. This section focuses primarily on unincorporated areas within the County that are serviced by existing water districts, community service districts, county service areas, and a water conservation district. Information is provided on water treatment, current demand, storage and distribution systems, and the condition of these facilities.

EXISTING CONDITIONS

Water delivery in unincorporated Fresno County is provided by special districts and private water systems. Domestic water systems within the County are operated and maintained by water districts, community service districts, county service areas, and a water conservation district. Often small, these districts provide water to residents, public facilities, and commercial buildings outside the sphere of influence of municipal water systems. Data for each service provider was primarily obtained from Municipal Service Review (MSR) documents filed with the Fresno County Local Area Formation Commission (LAFCo).

BIG CREEK COMMUNITY SERVICES DISTRICT

The Big Creek Community Service District provides water services for Track No. 2373. It includes about 29.17 acres in the community of Big Creek. There are currently 67 water connections on 63 parcels within the District's boundaries. The District has rights to 60,000 gallons/day. This water comes from a tributary to the San Joaquin River. The water permit does not have an expiration date. (Big Creek Community Services District MSR, September 2011)

BIOLA COMMUNITY SERVICES DISTRICT

The Biola Community Service District provides water services for the unincorporated area of Biola. Its boundaries contain about 242 acres. The District has a population of 1,100 people except during harvest season for local agriculture, from August through September, when the population rises to 1,600 people. District infrastructure includes two working groundwater wells with a hydro-pneumatic tank, electrical panel boxes, chlorine stations, and generators and pumps. The District contracts with California Water Services to maintain the water system. (Biola Community Services District MSR, 2013)

CARUTHERS COMMUNITY SERVICES DISTRICT

The Caruthers Community Service District covers approximately 361 acres in central Fresno County, approximately 16 miles south of the City of Fresno. The District provides water service via four wells, well pumps, and a water distribution system. The District currently serves approximately 2,570 persons with approximately 644 connections. The estimated future population in the District is 4,829.

The District's current water supply is capable of supporting 2,736 people or 747 connections. New development within the District would necessitate new water supplies. The District's water distribution system includes several dead-end runs and a few locations of four-inch and smaller water lines. The smaller water lines were constructed of steel in the early 1960s. According to the District Municipal Service Review, the smaller water lines have exceeded their anticipated useful life. The water system lacks looping and extensions to adequately serve existing development. Long dead-end runs diminish available water pressure and water delivery capacity. The District has completed several projects to increase water line size and looping to improve the current water system.

Several of the water supply wells for the District have arsenic concentrations that exceed the present regulations. The District has obtained financial assistance through Proposition 84 to construct a test hole and complete the design of a new production well, distribution facilities, and blending tank. The District may receive funding to construct the improvements through Proposition 84 or the Safe Drinking Water State Revolving fund. (Caruthers Community Services District MSR, 2011)

COUNTY SERVICE AREA NO. 1

County Service Area No. 1 encompasses approximately 24 acres generally located east of Tollhouse Road (SR 168) at Flintridge Drive, approximately 9 miles south of Huntington Lake. The District provides water, sewer, and snow removal services for the Tamarack Heights tract. County Service Area No. 1 (Tamarack Heights) was formed in 1962. It is located east of Tollhouse Road (SR 168) at Flintridge Drive, approximately nine miles south of Huntington Lake. There are 45 parcels within the District including 37 residences and a motel. Its boundaries contain about 24 acres and its Sphere of Influence about 39 acres. The District distributes water from two district wells to parcels in the District. (CSA No. 1 MSR, 2011)

COUNTY SERVICE AREA NO. 5

County Service Area No. 5 (Wildwood Island) was formed in 1963 and Wildwood Meadows was annexed in 1966. The District includes 114 acres on the east side of the Kings River, just north of SR 180 at Piedra Road. The District provides water service for the Wildwood Island and Wildwood Meadows tracts. The District contains 156 parcels, 142 of which accommodate single family residences served by the district with 2 out of district water users. The remaining 14 parcels are either vacant or unbuildable outlots. Water infrastructure owned by the District includes two wells, hydro tanks, and distribution system. (CSA No. 5 MSR, 2011)

COUNTY SERVICE AREA NO. 10

County Service Area No. 10 encompasses approximately 211 acres in two non-contiguous areas. The Cumorah Knolls area is about 134 acres and located north of and adjacent to Shaw Avenue, just west of Academy Avenue. The Mansionette Estates No. 3 area was annexed to the district in 2001 and covers about 77 acres south of and adjacent to Herndon Avenue at Leonard Avenue. The District is just to the east of the City of Clovis and provides water via District wells. The District is fully built out and does not anticipate any new growth, so the existing infrastructure is adequate to meet the District's needs. (CSA No. 10 MSR, 2011)

COUNTY SERVICE AREA NO. 14

County Service Area No. 14 encompasses approximately 19 acres and provides water service in the Belmont Manor subdivision. The District is located at Belmont and Leonard Avenues. Water is provided via wells. The Fresno County Department of Public Works maintains the District's community water system facilities, which are adequate to meet the District's needs, since the area is fully developed. The hydro tank for Well 2 was installed in 1965 and needs to be replaced to enhance operations and increase reliability in the system. (CSA No. 14 MSR, 2011)

COUNTY SERVICE AREA NO. 23

County Service Area No. 23 encompasses approximately 17 acres and provides water service to the Exchequer Heights tract, which is located approximately 3 miles southwest of the Dinkey Creek area. The District serves16 single family residential lots with water from wells. It is fully built out and does not anticipate any new growth. The Districts infrastructure consists of a Community Water System that is operated and maintained by special district staff. (CSA No. 23 MSR, 2011)

COUNTY SERVICE AREA NO. 30

County Service Area No. 30 encompasses approximately 29 acres and provides water services in the El Porvenier subdivision. The District is located west of Derrick Avenue near Clarkson Avenue. The area within the district is subdivided and largely built out.

The District treats and distributes surface water provided by Westlands Water District to parcels within the district and three out-of-agency customers. District facilities include two water treatment plants, distribution lines, a storage facility, and a backup well. The Fresno County Department of Public Works assumed direct operational responsibilities of the community water system in April 2010. California

Water Services out of Coalinga had previously been under contract with the County to operate and maintain the water system.

The two existing surface water treatment plants are old and do not provide optimal Total Organic Carbon (TOC) reduction to help control Total Trihalomethanes (TTHM), which are a byproduct of the Contact Time (CT) of disinfectant chemicals with the raw surface water. The system was issued a Compliance Order from the California Department of Public Health (CDPH) due to TTHM violations on November 3, 2008. The County has instituted rate restructuring to generate funds to address deficiencies and received a planning and design grant from the State of California for a ground water supply system. As of 2017, the County was awaiting a construction grant award from the State to construct a well water supply system.

COUNTY SERVICE AREA NO. 31

County Service Area No. 31 provides water to approximately 8,518 acres containing 2,451 parcels. The area within the District is designated for residential and/or commercial development and is largely subdivided and significantly built out.

The District is divided into seven zones. Zones "C", "D", "F" and "G" operate and maintain water infrastructure that serve a number of residential communities. Zone "E" is within Waterworks District 41 and is provided water by the Waterworks District. The District's existing infrastructure is sufficient for the current services. (CSA No. 31 MSR, 2011)

COUNTY SERVICE AREA NO. 32

County Service Area No. 32 provides water services to the Cantua Creek farm labor housing development. The District is located at Clarkson Avenue west of San Mateo Avenue. There are 79 parcels within the District including 43 single-family residences and 30 mobile home sites. The area within the district is subdivided and largely built out. The District also provides "out of District" water service.

The District treats and distributes surface water received from Westlands Water District (WWD) to parcels within the District and to out-of-agency customers. District facilities include a surface water treatment plant, distribution lines, a storage facility, and a backup well. The Fresno County Department of Public Works assumed operational responsibilities of the community water system in April 2010. California Water Services out of Coalinga had previously been under contract with the County to operate and maintain the water and sewer systems.

The existing surface water treatment plant does not provide optimal Total Organic Carbon (TOC) reduction to help control Total Trihalomethanes (TTHM), which are a byproduct of the Contact Time (CT) of disinfectant chemicals with the raw surface water. The system was issued a Compliance Order from the California Department of Public Health (CDPH) due to TTHM and Haloacetic violations on November 3, 2008. The County has instituted rate restructuring to generate funds to address deficiencies and received a planning and design grant from the State of California for a ground water supply system. As of 2017, the County was awaiting a construction grant award from the State to construct a well water supply system.

COUNTY SERVICE AREA NO. 34

County Service Area (CSA) No. 34 (Millerton New Town) encompasses approximately 2,414 acres in two non-contiguous sections located south and east of Millerton Lake, adjacent to Millerton Road and Auberry Road. The community of Friant is located one and one-half miles to the west of the District. The area within the District is divided into three zones (A, B, and C). Of the 152 single family lots in Zone A only 86 have existing homes, so it is projected that the area within Zone A will continue to build out. Zone B has 3 existing homes and an additional 88 undeveloped lots. Zone C has a total of 161 undeveloped lots with construction anticipated to begin during FY 2011-12. Existing facilities are adequate for the current level of services provided.

Water used by the District is obtained from Millerton Lake, with the exception of Zone B, which uses groundwater. District infrastructure includes pumps that draw water from Millerton Lake, a raw water line, a water treatment plant and distribution system, and a storage tank.

- The District currently provides water services to the Brighton Crest subdivision, designated as Zone A by the District. This zone includes a golf course with a club house and 152 single-family parcels, 86 of which are developed with single-family residences. The remaining 66 residential lots will be provided service at the time they are developed.
- The District provides water service to Zone B, Ventana Hills Estates. Service is provided to three residential lots. An additional 88 undeveloped lots will be provided service as they are developed. Zone B provides water service to parcels within its boundaries from two wells. Its water system is separate from the remainder of CSA 34, Zone A and Zone C. There is no plan to unite the systems.
- Zone C, Granite Crest Estates, is being developed and includes a total of 161 residential lots. The District will begin providing water to Zone C at the time the first homes are granted occupancy.
- The District does not provide any direct services to the remainder of CSA 34, but does administer contracted water reservations to provide water for parcels within its boundaries when they are developed in the future.

Existing infrastructure and service levels are adequate to serve the District's current needs. The District is governed by the County Board of Supervisors and is administered by the Special Districts Administrator Office of the Fresno County Public Works and Planning Department. The Special Districts Office monitors, maintains, and repairs District infrastructure. The Office also provides administrative services to a total of 23 CSAs and 6 Waterworks Districts within Fresno County.

In September 2009, the County and the Table Mountain Rancheria Band of Indians (Table Mountain) entered into an agreement according to which Table Mountain would provide up to $2,000,000 in materials and cash toward improvements for the water system. Phase one included four new submersible water pumps and an emergency tee connection and was completed in the fall of 2010. Phase two includes a water main from the pumps to approximately Millerton Road and other associated work and materials and is an ongoing project. It is anticipated that the lake pumps' master control center will also be replaced in the near future. (CSA No. 34 MSR, 2011)

COUNTY SERVICE AREA NO. 39

County Service Area No. 39 (Beran Way and Prospect Avenue) encompasses about 80 acres in two segments south and west of the City of Fresno. The District funds retail water service to 140 dwellings and West Park School within the two zones. Zone A is north and south of Beran Way between Marks and Valentine Avenues; and Zone B is on both sides of Prospect Avenue between Church and Jensen Avenues. The area is fully subdivided and largely built out.

Water purchased from the City of Fresno is distributed and metered to individual parcels within the District. Excluding the school, there are 166 parcels within the District. Two of these parcels are exempt and two are unbuildable. The remaining 162 parcels have 164 meters on them but only 140 of them are receiving water. The District encompasses two disadvantaged areas. Beran Way in Zone A and West Park in Zone B. The District purchases water from the City of Fresno and distributes it to these two communities. The Board of Supervisors governs the District, and the Special District Administrator within the County Public Works and Planning Department manages the District. (CSA No. 39 MSR, 2012)

COUNTY SERVICE AREA NO. 43

County Service Area No. 43 provides water services in the unincorporated community of Raisin City. The District is located north and south of Manning Avenue at Henderson Road. The District contains 75 parcels with 67 water connections, including a school, a park, and the Caruthers Easton Little League. The area is subdivided and largely built out.

LAFCo authorized community water services in 2001 and a domestic water system was designed and completed. Beginning in 2006, the District started providing water from a community well that complies with State drinking water quality standards. This replaced water previously provided by 33 private wells, some of which contained contaminants exceeding drinking water quality standards. The Fresno County Department of Public Works maintains the community water system. (CSA No. 43 MSR, 2011)

COUNTY SERVICE AREA NO. 44

County Service Area No. 44 encompasses approximately 381 acres in the Friant area. The population of CSA 44 is estimated at 575 with a potential to grow to 619 if all the parcels are developed. The District consists of three distinct zones that provide services.

- Zone A, CSA 44A, was established in 1992 to provide sewer services to the Millerton Lake Mobile Home Village. CSA 44A does not provide water service.
- Zone C, CSA 44C, was established in 1999 to provide water services to the River View Subdivision, located approximately one mile south of Friant, to the east of Friant Road and Lost Lake Park. The subdivision is a gated community also known as the Tanqueray Subdivision. It consists of 12 residential lots and a common area covering approximately 30 acres. Potable water is provided to 11 connections in CSA 44C
- Zone D, CSA 44D, was formed in 1999 to provide water and wastewater services to the Monte Verdi Estates Subdivision. The Monte Verdi Estates subdivision is a gated community consisting of 121 homes and 125 residential lots on 24 acres. Potable water is provided to 122 connections in CSA 44D.

Water for CSA 44C and CSA 44D comes from groundwater pumped at two well sites in each zone. According to the District's 2001 MSR, per capita production in the two zones averaged 828 gallons per day in CSA 44C and 842 gallons per day in CSA 44D, which is sufficient to serve anticipated demand. (CSA No. 44 MSR, 2011)

COUNTY SERVICE AREA NO. 47

County Service Area No. 47 provides community water and sewer services to the Quail Lake Estates subdivision. The District consists of 375 acres generally located between Ashlan and Shaw Avenues, east of McCall Avenue. The area is subdivided into 707 residential lots, a clubhouse lot, 1 school, and 1 commercial lot. Approximately 129 residential lots are undeveloped. The District provides retail water supply produced from wells and distributed to parcels within the District. 577 residential lots receive water, which is activated at the time building permits are issued.

The District is engaged in groundwater recharge by helping administer a recharge facility in conjunction with the Fresno Irrigation District and Quail Lake Estates Homeowners Association. The District purchases approximately 400 acre feet of surface water annually from Fresno Irrigation District (FID) for recharge in the groundwater recharge facility located within the CSA's boundaries. Construction of this facility was a requirement for County approval of the Quail Lake Estates Subdivision. Existing and planned District infrastructure is sufficient to meet anticipated demand. (CSA No. 47 MSR, 2011)

COUNTY SERVICE AREA NO. 49

County Service Area No. 49 (Community of O'Neill) provides water services for the community of J. E. O'Neill. It includes about 81 acres in five non-contiguous areas adjacent to the Fresno-Coalinga Road (SR 145), approximately three miles southwest of the community of Five Points. There are nine parcels in the District. They are developed with 42 residences, a market, another commercial property, a Headstart facility, and the Westside Elementary School. The area within the District is a farming community and built out. No new growth is anticipated.

The District distributes water obtained from the Westlands Water District to customers within the District. Funds for the installation of the surface water treatment facility and distribution system were obtained by an 80 percent grant/20 percent loan from the State Revolving Fund and Community Development Block Grant (CDBG) funds. District water infrastructure includes a surface water treatment facility and distribution system. (CSA No. 49 MSR, 2011)

COUNTY SERVICE AREA NO. 51

County Service Area No. 51 provides water service for the Dry Creek Rural Community. The 1,782-acre District is north of Clovis and outside of the City's sphere of influence. The Local Agency Formation Commission (LAFCo) formed the District in March of 2006 to provide domestic water service to approximately 600 rural residential homes. In June 2007, the Fresno County Board of Supervisors approved formation of the District to provide service to a smaller area and reduced the number of homes to be served to 432.

The District's primary source of water will be purchased surface water from Fresno Irrigation District which will be treated by the City of Fresno before distribution to the District. As necessary, the District will supplement the surface water supply with groundwater supplied by the City of Clovis. The District has completed the design of the water system infrastructure, however, on June 10, 2010, within three

years of CSA No. 51's formation, several landowners filed litigation against the County alleging, among other things, that the County failed to comply with the California Environmental Quality Act (CEQA). Staff believes that the litigation has made it extremely difficult for the District to move forward with the construction of the water system. On June 27, 2011, LAFCo received a petition from landowners opposed to the district requesting the district be dissolved. (CSA No. 51 MSR, 2011)

DEL REY COMMUNITY SERVICES DISTRICT

The Del Rey Community Service District serves the unincorporated community of Del Rey located south of Sanger. It provides water services to a population of approximately 1,200 residents as well as commercial and industrial development. District infrastructure includes three pump houses that also store equipment, as well as water lines. (Del Rey MSR, 2007)

KINGS RIVER CONSERVATION DISTRICT

The Kings River Conservation District encompasses approximately 1,311,163 acres (2,049 square miles) in Fresno, Kings, and Tulare Counties. Fresno County's portion accounts for approximately 640,931 acres (1,001 square miles), or 48.9% of the total. Fresno County is the principal county for the District. In Fresno County, the District extends from Tulare and Kings County on the south to Madera County on the north, and occupies the central part of Fresno County, surrounding the cities of Clovis, Fresno, Fowler, Kerman, Kingsburg, Parlier, Reedley, San Joaquin, Sanger, and Selma.

The District is responsible for management of water within its service area, including essential flood control and groundwater management services. It owns and maintains levees and the Kings River channel, operates a hydroelectric generating plant on the Kings River at the base of Pine Flat Dam, and operates a natural gas fired electrical peaking plant in Malaga. Groundwater management includes monitoring and publishing an annual Groundwater Report which details water table conditions and improvements. (Kings River Conservation District MSR, 2007)

LANARE COMMUNITY SERVICES DISTRICT

Lanare Community Service District (CSD) serves the unincorporated community of Lanare, located a few miles west of Riverdale and approximately 25 miles southwest of the city of Fresno. The District encompasses approximately 346 acres.

The District provides water service in the community of Lanare. The District has approximately 149 water service connections including residential and commercial. Water service is provided to a few connections outside of the District's boundary. The District's current water supply facilities include two wells, a water filtration system, and a distribution system. The District estimates its average daily water production is 156,000 gallons, which equates to up to 56,940,000 gallons annually. Maximum daily demand is estimated to be 312,000 gallons per day. The District estimates the water system is capable of producing approximately 300 gallons per minute. The existing system's production capacity is satisfactory for the District's current water supply needs.

The District's newest well is connected to a water filtration system that was installed at the beginning of 2007. The primary purpose of the filtration system is to ensure the District can meet federal arsenic standards of less than 10 parts per billion (ppb). When operating, this filtration system allows the District to comply with this standard, among others. The filtration system is not being used at this time because the limited number of water users, at the current service rates, cannot support the filtration system's

significant operational costs. Without filtration, arsenic levels are above 10 ppb, but are below the previous federal standard of 50 ppb. The District's water supply does not exceed standards for any other contaminant.

The District is currently supplying water through use of its oldest well, which the District states is not adequate to supply the community 24 hours a day, seven days a week, for an indefinite period of time. According to the District's 2007 Municipal Services Review, the District was in the process of installing a bypass system so that its newest well can supply water for the community without first being filtered.

As of 2017, Lanare CSD's public water treatment system was in court-ordered receivership because of concerns for the technical, managerial, and financial (TMF) capacity of the CSD. In addition, the 2013 Kings Basin Water Authority Disadvantaged Community (KBDAC) Study noted that the arsenic levels in Lanare's drinking water exceeded acceptable standards.

LATON COMMUNITY SERVICES DISTRICT

The Laton Community Service District is located in the south central portion of Fresno County adjacent to the Kings River. The District's boundaries contain about 500 acres with an approximate population of 1,230. During harvest season (August through September), the District's population increases to 1,600. The District provides water supply and distribution to lands within the District's boundaries.

The District owns and operates groundwater wells and the water distribution system. The water system is considered sufficient to handle anticipated growth within the community. The District currently has 461 connections for water and wastewater service, with 410 of the connections being for single family residential uses. Additional groundwater wells needed for future development will be constructed on sites located within the new developments. The well sites will be determined as development occurs. (Laton MSR, 2011)

MALAGA COUNTY WATER DISTRICT

The Malaga County Water District provides water services to the residents of the unincorporated community of Malaga. The District serves an area adjacent to and overlapping with the southern edge of the City of Fresno's boundaries. The District's northern boundary is roughly along East North Avenue; the western boundary is roughly along the railroad running from north to south between the Maple and Cedar Avenue alignments; the eastern boundary runs along South Minnewawa Avenue; and the southern boundary runs along East American Avenue.

The Malaga County Water District owns its water distribution system and provides water services to both residential and business customers. The District has two active wells, two inactive wells, and two wells designated as "standby". The District is presently constructing water system upgrades that would enable standby power at Well 7. The District recently completed construction of a water main in North Avenue between Chestnut and Willow Avenues. The District is also planning for a new well west of State Route 99 (SR 99). District staff has stated that its infrastructure is currently acceptable to provide said services, however, future demands are unknown and may require infrastructure improvements or upgrades beyond those already planned. (Malaga County Water District MSR, 2007)

PINEDALE COUNTY WATER DISTRICT

The Pinedale County Water District is an independent special district that provides water services to areas predominantly within the City of Fresno, but also within some unincorporated island areas. The District encompasses approximately 850 acres. The water service area of the District has an irregular shape that lies between Fresno Avenue and Fruit Avenue, covering areas south of Nees Avenue and north of Bullard Avenue. The District provides services to approximately 3,026 customers, which equates to roughly 8,000 residents.

The District maintains its infrastructure, which mainly consists of five wells, water mains, and sewer lines. The District's water mains are in need of replacement. All other infrastructure is adequate to provide service. (Pinedale County Water District MSR, 2007)

SIERRA CEDARS COMMUNITY SERVICE DISTRICT

The Sierra Cedar Community Service District provides water services to 250 customers near the Shaver Lake areanty. The District contains approximately 115 acres and is bounded by Bretz Mill Road, Black Oak Road, Hanging Branch, Saddleback Road, and Rockledge.

The District obtains water from four groundwater wells. The District upgraded its water facility in 2011 by adding two wells and two water tank reservoirs with a total storage capacity of 500,000 gallons. The District is under the jurisdiction of the State Board of Health and the County of Fresno. The District has limited land available for development and currently water rights have been secured for all land within the District. (Sierra Cedars CSD MSR, 2011)

RIVERDALE PUBLIC UTILITIES DISTRICT

The Riverdale Public Utility District is located in Central Fresno County near the Fresno/Kings County boundary. The District provides services to the unincorporated community of Riverdale. The District encompasses approximately 424 acres (0.66 square miles). Land uses within the consist of a mixture of residential, commercial, and agriculture. Riverdale has an estimated population of 2,416 people (US Census 2000 data).

The District provides water services to the Community of Riverdale and has approximately 950 water connections. The District owns and operates three water wells that supply water to the entire District through a water supply distribution system, which is composed of 6 and 8-inch pipes. Demand for water is approximately 50% of the District's two primary wells' capacity. Each well has a capacity of approximately 1,250 gallons per minute and is estimated to be able to serve 630 units. Annual average water usage for the District is approximately 0.6 million gallons per day (mgd), corresponding to 735 gallons per day (gpd) per water customer. (Riverdale Public Utilities District MSR, 2007)

WATERWORKS DISTRICT NO. 18

Waterworks District No. 18 is located in north central Fresno County at the base of Friant Dam and Millerton Lake. The District provides surface water treatment and water distribution. District No. 18 services approximately 134 residential (approximately 425 acres), as well as commercial and industrial customers in the rural community of Friant.

Water is obtained from Millerton Lake via a contract with the United States Bureau of Reclamation. The water allotment is 150 acre-feet. A polymer (Sweetwater 8809) is added to the water, pressure filtered, post-chlorinated, and distributed to the community via a closed pipe system. The treated water is pumped into the clearwell tank and then pumped into the 325,000-gallon storage tank. The system has several pumps of different velocities, which feed the Bureau of Reclamation, Millerton State Park, and the California Department of Forestry Fire Station. (Waterworks District No. 18 website, waterworksdist18.com/about-us, accessed March 19, 2016; Waterworks District No. 18 MSR, 2011)

WATERWORKS DISTRICT NO. 37

Waterworks District No. 37 provides community water for the 77-acre subdivision known as Mile High, near Meadow Lakes, and includes a portion of Bald Mountain Road near Auberry Road. The subdivision contains 46 residential lots, of which 45 are developed. There is one out-of-district water user. The District's service demands are supported historically by well production. The District owns two production wells, a storage tank, and fire suppression hydrants. The District is fully built out and does not anticipate any additional growth. (Fresno County Public Works and Planning, Report to the Board of Supervisors: County Waterworks District No. 37, 2011; Waterworks District No. 37 MSR, 2011)

WATERWORKS DISTRICT NO. 38

Waterworks District No. 38 encompasses approximately 154 acres located approximately 6 miles north of the where Sky Harbour Road intersects with Millerton Road. The District provides water service to the residents of the District, totaling 59 service connections. Services provided are within designated service boundaries with the exception of one out-of-district user (a State recreation area). The District owns one production well and a storage tank system. (Waterworks District No. 38 MSR, 2011)

WATERWORKS DISTRICT NO. 40

Waterworks District No. 40 encompasses approximately 278 acres, but only provides service to 23 acres generally located near the intersection of Tollhouse Road and Shaver Springs Road (Improvement Zone 1). The District owns one production well and a storage tank system. The District contains 92 parcels, of which 65 are developed. The land uses in the District are primarily residential.

The District's service demands are supported historically by well production. The District averages approximately one new service connection per year. The District's water source does not have enough production capacity to fully meet its needs (around 15 gallons per minute) and the water exceeds the State's maximum contaminant level for uranium. The County has applied for a State Drinking Water State Revolving Fund with the purpose of identifying a new water source that is sufficient in quantity and quality to meet the District's needs and to design infrastructure to bring the water from the new well to the District. Waterworks District No. 40 MSR, 2011)

WATERWORKS DISTRICT NO. 41

Waterworks District No. 41 is located south of Shaver Lake, along Highway 168, with the bulk of the District's area occurring to the east of the highway. The District's boundaries are irregular and include areas of development along Bretz Mill Road, Outcrop Road, Woody Lane, Littlefield Road, Ridge Road, and Woodland Road. Services provided are within designated service boundaries with no out-of-district users.

The District is divided into two parts, a water service area and a sewer service area. The water service area encompasses approximately 1,975 acres, and the sewer service area encompasses approximately 1,585 acres generally located south of Shaver Lake, along Highway 168. The District's service demands are historically supported by well production. The District averages approximately 28 new sewer service connections per year. The District owns 15 water wells, storage tanks, and a distribution system for water. (Waterworks District No. 41 MSR, 2011)

WATERWORKS DISTRICT NO. 42

Waterworks District No. 42 encompasses approximately 367 acres generally located northeast of the intersection of Alluvial and DeWolf Avenues, southeast of State Route 168, east of Clovis. The area contains 145 parcels, 102 of which are currently served by the district. The land uses in the District are primarily residential.

The District provides water services to area residents and there are no out-of-district users. The District owns one production well and a storage tank system. The District's service demands have been supported, historically, on well production. Groundwater usage is frequently monitored and the District maintains records of the amount of groundwater utilized by the District's customers.

The District is fully built out and does not anticipate any additional growth. Existing infrastructure is of sufficient type and quality to meet the existing and foreseeable demands of District customers. The District is investigating construction of a fifth production well and is evaluating installation of meters for all customers. (Waterworks District No. 42 MSR, 2011)

REGULATORY SETTING

Water in California is managed by a complex network of Federal and State regulations. California administers rights to surface water at the State level, but not rights to groundwater, which is managed under a variety of authorities including local governments. Major regulatory policies pertaining to domestic water management are summarized below.

FEDERAL REGULATIONS

Safe Drinking Water Act. The Safe Drinking Water Act (SDWA), administered by the United States Environmental Protection Agency (EPA) in coordination with the California Department of Public Health California Department of Public Health (CDPH), is the main Federal law that ensures the quality of Americans' drinking water. Under SDWA, EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards. In 1996 Congress amended the Safe Drinking Water Act to emphasize sound science and risk-based standard setting, small water supply system flexibility and technical assistance, community-empowered source water assessment and protection, public right-to-know, and water system infrastructure assistance through a multi-billion-dollar state revolving loan fund.

U.S. Environmental Protection Agency (EPA). The EPA is responsible for developing and enforcing regulations that implement environmental laws enacted by Congress. EPA is responsible for researching and setting national standards for a variety of environmental programs, and delegates to states and tribes the responsibility for issuing permits and for monitoring and enforcing compliance.

Arsenic is an example of a groundwater contaminant that is regulated by the EPA. Arsenic is a naturally occurring element and its presence can be traced back to geologic deposits. These natural deposits of arsenic can be found throughout the United States and are prevalent in New England and the Southwest. Groundwater that flows over these deposits may be contaminated with arsenic, which then makes its way into public and private drinking water wells. In 2001 the U.S. EPA lowered the existing 50 ppb standard to 10 ppb; all water systems must comply with this standard by January 2006. The California CDPH must adopt a new arsenic standard that is equal to or more stringent than the U.S. EPA standard and set as close as economically feasible to the Public Health Goal (PHG). A PHG is the level of arsenic in drinking water that would not pose a significant health threat if consumed over a lifetime. The CDPH adopted the 10 ppb standard for arsenic on November 28, 2008.

STATE REGULATIONS

California Water Code. The California Water Code, a section of the California Code of Regulations, establishes the governing laws pertaining to all aspects of water management in California. Domestic water service in the unincorporated areas of San Joaquin County is generally provided by special districts. These agencies operate in accordance with the California Water Code.

Urban Water Management Planning Act. In 1983 the California Legislature enacted the Urban Water Management Planning Act (Water Code Section 10610 to 10656). The Act states that every urban water supplier that provides water to 3,000 or more customers, or that provides over 3,000 acre-feet annually, should make every effort to ensure the appropriate level of reliability in its water service is sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry years. The Act requires that urban water suppliers adopt and submit an urban water management plan at least once every five years to the Department of Water Resources. Non-compliant urban water suppliers are ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26 (commencing with Section 79000), or receive drought assistance from the State until the Urban Water Management Plan (UWMP) is submitted pursuant to the Urban Water Management Planning Act.

Cortese-Knox-Hertzberg Governmental Reorganization Act of 2000. The Cortese-Knox-Hertzberg Governmental Reorganization Act of 2000 requires California Local Agency Formation Commission's (LAFCO) to conduct municipal service reviews for specified public agencies under their jurisdiction. One aspect of municipal service review is to evaluate an agency's ability to provide public services within its ultimate service area. A municipal service review is required before an agency can update its sphere of influence.

Senate Bills (SB) 610 and SB 221. SB 610 and SB 221 amended State law, effective January 1, 2002, to improve the link between the information on water supply availability and certain land use decisions made by cities and counties. Both statutes require detailed information regarding water availability to be provided to the City and County decision-makers prior to approval of specified large (greater than 500 dwelling units) development projects. Both statutes also require this detailed information to be included in the administrative record that serves as the evidentiary basis for an approval action by the City or County on such projects. Under SB 610, water assessments must be furnished to local governments for inclusion in any environmental documentation for certain projects as defined in Water Code 10912 subject to the California Environmental Quality Act (CEQA). Under SB 221, approval by a City or County of certain residential subdivisions requires an affirmative written verification of sufficient water supply.

Sustainable Groundwater Management Act. Signed into law on September 16, 2014, the Sustainable Groundwater Management Act (SGMA) is a comprehensive legislation for the management of groundwater throughout the State. The SGMA was created through a combination of Senate Bills 1168 and 1319 and Assembly Bill 1739. It established a new structure for managing California's groundwater resources at a local level by local agencies. SGMA requires, by June 30, 2017, the formation of locally-controlled groundwater sustainability agencies (GSAs) in California's high- and medium-priority groundwater basins and subbasins (basins). A GSA is responsible for developing and implementing a groundwater sustainability plan (GSP) to meet the sustainability goal of the basin to ensure that it is operated in its sustainable yield, without causing undesirable results. DWR is required to develop and adopt emergency regulations for evaluating GSPs, the implementation of GSPs, and coordination of agreements by June 1, 2016. A GSP may be any of the following (Water Code § 10727(b)):

- A single plan covering the entire basin developed and implemented by one GSA
- A single plan covering the entire basin developed and implemented by multiple GSAs
- Multiple plans implemented by multiple GSAs and coordinated pursuant to a single coordination agreement that covers the entire basin and which is subject to Water Code Section 10727.6

The legislative intent of SGMA was to recognize and preserve the authority of cities and counties to manage groundwater pursuant to their existing powers. As such, local governments play an important land use and water management role in California and should be involved in GSA formation and GSP implementation. GSPs are required to take into account the most recent planning assumptions stated in local general plans of jurisdictions overlying the basin. (Water Code §10726.9)

- In the event that there is an area in a high- or medium-priority basin that is not in the management area of a GSA, the county in which that unmanaged area lies will be presumed to be the GSA for that area. (Water Code § 10724(a))
- A county shall provide notification to DWR of its intent to manage the unmanaged area pursuant to Water Code §10723.8 unless the county notifies DWR in writing that it will not be the GSA for the area. (Water Code § 10724(b))
- An "unmanaged area" as used in Water Code §10724(a) is an area of a basin that has not yet had (or will not have) a local agency file a GSA formation notice with DWR.
- Water Code §10724 does not give the county exclusive authority to be the GSA in a basin if other local agencies have also declared their intent to manage groundwater, but have not yet resolved their service area overlap.

California Department of Public Health. A major component of the California Department of Public Health, Division of Drinking Water and Environmental Management is the Drinking Water Program (DWP) which regulates public water systems. Regulatory responsibilities include the enforcement of Federal and State Safe Drinking Water Acts, the regulatory oversight of approximately 8,700 public water systems, the oversight of water recycling projects, issuance of water treatment permits, and certification of drinking water treatment and distribution operators. Other functions include supporting and promoting water systems security, providing support for small water systems, and improving technical, managerial, and financial (TMF) capacity, and for providing subsidized funding for water system improvements under the State Revolving Fund (SRF) and Proposition 50.

California Department of Water Resources. The California Department of Water Resources is responsible for preparing and updating the California Water Plan, which is a policy document that guides the development and management of the State's water resources. The plan is updated every five years to reflect changes in resources and urban, agricultural, and environmental water demands. The California Water Plan suggests ways of managing demand and augmenting supply to balance water supply with demand.

KEY TERMS

The following key terms used in this chapter are defined as follows:

Acre-Foot (acre-ft). The volume of water required to cover one acre of land (43,560 square feet) to a depth of one foot. One acre-foot is equal to 325,851 gallons or 1,233 cubic meters. Historically, an acre-foot represents the amount of water typically used by one family during a year.

Aquifer. A geologic formation that is water bearing. A geological formation or structure that stores and/or transmits water, such as to wells and springs. Use of the term is usually restricted to those water-bearing formations capable of yielding water in sufficient quantity to constitute a usable supply for people's uses.

Commercial Water Use. Water used for motels, hotels, restaurants, office buildings, other commercial facilities, and institutions. Water for commercial uses come both from public-supplied sources, such as a county water department, and self-supplied sources, such as local wells.

Cubic Feet per Second (cfs). A rate of flow, in streams and rivers, for example. It is equal to a volume of water one foot high and one foot wide flowing a distance of one foot in one second. One "cfs" is equal to 7.48 gallons of water flowing each second.

Domestic Water Use. Water used for household purposes such as drinking, food preparation, bathing, washing clothes, dishes, and animals, flushing toilets, and watering lawns and gardens.

Groundwater. (1) Water that flows or seeps downward and saturates the soil or rock, supplying springs and wells. The upper surface of the saturated zone is called the water table. (2) Water stored underground in rock crevices and in the pores of geologic materials that make up the crust of the earth.

Industrial Water Use. Water used for industrial purposes in such industries as steel, chemical, paper, food processing, and petroleum refining. Nationally, water for industrial uses comes mainly (80 percent) from self-supplied sources, such as local wells or withdrawal points in a river, but some water comes from local water service providers.

Maximum Contaminant Level (MCL). The designation given by the U.S. Environmental Protection Agency (EPA) to water-quality standards promulgated under the Safe Drinking Water Act. The MCL is the greatest amount of a contaminant that can be present in drinking water without creating either a risk to human health (primary standard) or aesthetic concerns (secondary standards).

Microgram (µg). One-millionth of a gram.

Milligram (mg). One-thousandth of a gram.

Million Gallons per Day (mgd). A rate of flow of water equal to 133,680.56 cubic feet per day, or 1.5472 cubic feet per second, or 3.0689 acre-feet per day. A flow of one million gallons per day for one year equals 1,120 acre-feet (365 million gallons).

Municipal Water System. A water system that has at least five service connections or which regularly serves at least 25 individuals for 60 days; also called a public water system.

Per Capita Use. The average amount of water used per person using a standard time period, generally per day.

Surface Water. Water that is on the earth's surface, such as in a stream, river, lake, or reservoir.

Water Quality. A term used to describe the chemical, physical, and biological characteristics of water, usually in respect to its suitability for a particular purpose.

Well (water). An artificial excavation put down by any method for the purposes of withdrawing water from the underground aquifers. A bored, drilled, or driven shaft or a dug hole whose depth is greater than the largest surface dimension and whose purpose is to reach underground water supplies or oil, or to store or bury fluids below ground.

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PERSONS CONSULTED

None

SECTION 6.2 WASTEWATER COLLECTION AND TREATMENT

INTRODUCTION

This section summarizes existing information regarding wastewater collection systems, treatment, and disposal facilities in Fresno County. It provides an overview of current treatment capacities, current number of connections to the system, and the general condition of the infrastructure. Wastewater collection information is generally reported in terms of each individual district providing the service. Data for each service provider was primarily obtained from Municipal Service Review (MSR) documents filed with the Fresno County Local Area Formation Commission (LAFCo).

EXISTING CONDITIONS

Most of the wastewater collection systems within unincorporated Fresno County serve small communities. Wastewater service within the county is generally provided by special districts, including waterworks districts, community services districts, county service areas, a county sanitation district, and County water districts.

Incorporated areas within Fresno County are served by municipal wastewater collection and treatment systems, with the exception of Fowler, Kingsburg, and Selma, which are served by a joint Selma-Kingsburg-Fowler County Sanitation District. Unincorporated areas within the county are served by small special districts, although many rural areas of the county rely on individual or community septic systems.

COUNTY SANITATION DISTRICT

SELMA-KINGSBURG-FOWLER COUNTY SANITATION DISTRICT

The Selma-Kingsburg-Fowler County Sanitation District is located in south-central Fresno County. The boundary of the District includes the Cities of Selma, Kingsburg, and Fowler and their respective Spheres of Influence, the connection corridors between the Cities, as well as the District's wastewater treatment facility located west of Kingsburg.

The District provides wastewater collection, treatment, and disposal services primarily to the Cities of Selma, Kingsburg, and Fowler, serving approximately 38,400 people through nearly 10,300 connections. Additionally, the District serves about 200 connections located outside the municipal boundaries of the three Cities. District infrastructure includes a secondary level wastewater treatment plant, major sewer connecting routes to the plant, two office buildings, and various vehicles and other equipment necessary to operate the plant. Average dry weather flow is about 4.0 million gallons per day (mgd); average wet weather flow is about 3.8 mgd. The flows are higher in dry weather due to fruit processing industries in the District. The sewer system consists of approximately 150 miles of sewer lines ranging in size from eight inches to 42 inches in diameter and 21 wastewater pump stations. The District owns the treatment plant and major connecting routes to the plant. (Selma-Kingsburg-Fowler County Sanitation District MSR, 2007)

COUNTY WATER DISTRICTS

MALAGA COUNTY WATER DISTRICT

The Malaga County Water District provides sewer services to the community of Malaga, an area adjacent to, and overlapping with, the southern edge of the City of Fresno's boundaries. The District owns a wastewater treatment plant and related facilities, including three lift stations, sewer lines, disposal ponds, and two buildings. The reported design treatment and disposal capacity of the wastewater treatment facility (WWTF) is 1.2 million gallons per day. The District is authorized to discharge up to 0.45 million gallons per day of disinfected tertiary-treated wastewater to Central Canal, which is connected to Fresno Slough and flows into the San Joaquin River. Secondary-treated wastewater is discharged to onside disposal ponds. Due largely to deferred maintenance, the actual treatment and disposal capacity of the WWTF is considerably less than authorized by permit. (PMC, Malaga County Waste District MSR, October 2007; Central Valley Water Board, "Malaga County Water District, Wastewater Treatment Facility, Fresno County" December 2014; Fresno County, Staff Report: Malaga Wastewater Treatment Facility, 2008)

PINEDALE COUNTY WATER DISTRICT

The Pinedale County Water District is an independent 850-acre special district that provides wastewater services to areas predominantly within the City of Fresno, but also within some unincorporated island areas. The service area of the District has an irregular shape which lies between Fresno Ave and Fruit Ave, covering areas south of Nees Ave and north of Bullard Ave. Wastewater service area does not extend west of Palm Ave.

The District provides wastewater services to approximately 3,026 customers, consisting of approximately 8,000 residents. District wastewater infrastructure mainly consists of District maintained sewer lines. Wastewater is discharged into the City of Fresno's collection system for transport to the Fresno/Clovis Regional Wastewater Treatment Plant through an existing service agreement. The Herndon Trunk Sewer, constructed in 1974, connects the existing urban development in the District to the City's Regional Wastewater Treatment Plant. Existing sewer pipeline infrastructure is able to adequately provide wastewater collection for existing and future service demands anticipated by the District. (Pinedale County Water District MSR, 2007)

COMMUNITY SERVICES DISTRICTS

BIOLA COMMUNITY SERVICES DISTRICT

The Biola Community Service District provides sewer services for a 242-acre unincorporated community of Biola. The District has a population of 1,100 people except during harvest season for local agriculture, from August through September, when the population rises to 1,600 people. District infrastructure includes a seven-acre wastewater treatment plant, a generator, and five aeration ponds each with an aeration pump. The treatment plant is permitted by the State of California for a flow of 200,000 gallons per day. Average wet weather flows are between 160,000 – 170,000 gallons per day, and dry weather flows average 80,000 to 90,000 gallons per day. There are 358 wastewater connections in the District providing service to residential and industrial customers. The District contracts with California Water Services to maintain wastewater systems. (Biola Community Services District MSR, 2013)

CARUTHERS COMMUNITY SERVICES DISTRICT

The Caruthers Community Service District is located in the central portion of Fresno County, approximately 16 miles south of the City of Fresno. The District provides wastewater services to approximately 361 acres, consisting of 644 connections which serve about 2,576 persons.

District infrastructure includes the wastewater collection system, two sewage lift stations, and a wastewater treatment facility. The wastewater treatment process consists of an aerated lagoon treatment system. The District wastewaster system has a capacity of 0.24 mgd. Existing demands and commitments are 0.214 mgd. The District has submitted to the Regional Water Quality Control Board (RWQCB) a Report of Waste Discharge for an expansion of the treatment and disposal facilities to 0.28 MGD. Additional expansion of the facilities is needed to serve any proposed developments. The RWQCB has expressed the intent to require nitrogen reduction at the wastewater treatment facility. This requirement will result in substantial capital improvement needs. The District has obtained financial assistance from the USDA to construct the improvements. (Caruthers Community Services District MSR, 2011)

DEL REY COMMUNITY SERVICES DISTRICT

The Del Rey Community Services District serves the unincorporated community of Del Rey located south of the City of Sanger. The District provides sewer services to a population of approximately 1,200 residents as well as commercial and industrial development. District infrastructure includes a wastewater treatment plant, an equipment building, and related wastewater infrastructure.

In 2007 an industrial wastewater treatment plant was constructed adjacent to the domestic wastewater treatment plant to treat wastewater from a raisin plant. The domestic plant will need to be upgraded if Union Community is developed. Future development will be required to finance any additional infrastructure necessary to provide it with required services. (Del Rey Community Services District MSR, 2007; County of Fresno, Department of Public Works and Planning, Planning Commission Staff Report Agenda Item No. 2, Initial Study Application No. 5122, May 27, 2004)

The District is in the process of acquiring land for the purpose of establishing a wastewater discharge area. The proposed wastewater discharge area is adjacent to an existing District wastewater treatment plant. The District plans to grow alfalfa or other row crops on the subject parcel, which would be irrigated with treated wastewater effluent, well water, and/or water from the Consolidated Irrigation District Canal. It proposes to exchange properties with POM Wonderful LLC. POM Wonderful wishes to expand east of their existing facility and is willing to trade their property located east of the wastewater treatment facilities for the two parcels owned by Del Rey Community Services District located south of the wastewater treatment facilities. (County of Fresno, Department of Public Works and Planning, Planning Commission Staff Report, Agenda Item No. 2, General Plan Conformity Findings – Del Rey Community Services District Wastewater Discharge Area, February 7, 2013)

LATON COMMUNITY SERVICES DISTRICT

The Laton Community Services District is located in the south central portion of Fresno County adjacent to the Kings River. The District provides wastewater collection and treatment to about 500 acres, including an approximate population of 1,600 during harvest season (August through September) and 1,230 throughout the remainder of the year. There are 461 connections for wastewater service, of which 410 are for single family residential uses.

The District currently owns and operates the wastewater collection and treatment system, which consists of sewer mains, pumps, and a treatment plant. The treatment plant is operating at approximately two-thirds of its design capacity, and is expected to be able to serve anticipated growth. The current permitted treatment capacity is 200,000 gallons per day (gpd). (Laton Community Services District MSR, 2011)

COUNTY SERVICE AREAS

COUNTY SERVICE AREA NO. 1

County Service Area No. 1 encompasses approximately 24 acres east of Tollhouse Road (SR 168) at Flintridge Drive, approximately nine miles south of Huntington Lake. The District provides sewer services for the Tamarack Heights tract. There are 45 parcels within the District including 37 residences and a motel. The District collects, treats and disposes of wastewater using an on-site package treatment plant. (CSA No. 1 MSR, 2011)

COUNTY SERVICE AREA NO. 30

County Service Area No. 30 encompasses approximately 29 acres and provides sewer services in the El Porvenier subdivision. The District is located west of Derrick Avenue near Clarkson Avenue. The area within the district is subdivided and largely built out. The District collects, treats and disposes of wastewater using an on-site package treatment plant. Its facilities include a wastewater collection system, treatment plant, and disposal ponds. The Fresno County Department of Public Works assumed direct operational responsibilities of the community water and sewer systems in April 2010. California Water Services out of Coalinga had previously been under contract with the County to operate and maintain the water and sewer systems. (CSA No. 30 MSR, 2011)

COUNTY SERVICE AREA NO. 31

County Service Area No. 31 provides sewer services to approximately 8,518 acres (2,451 parcels) on both sides of Tollhouse Road (SR 168) in the vicinity of Shaver Lake. The area within the District is designated for residential and/or commercial development and is largely subdivided and significantly built out.

The District is divided into seven zones. Zone "B" serves approximately 600 acres including the Shaver Lake Village area and Camp Edison; Zone "C" provides services to 1,160 acres off Highway 168 in South Shaver Lake; Zone "D" serves 348 acres of the Bretz Mountain Village subdivision; Zone "E" provides services to the 40 acres of the Timber Ridge subdivision; Zone "F" serves 99 acres generally located near Bretz Road and Blue Canyon Road; and Zone "G" provides services to 72 acres known as the Shaver Lake Bretz Mountain Village area.

- Zone "B" operates and maintains the sewer infrastructure that serves Shaver Lake Village area and Edison Campground and shares in the maintenance and operations of a wastewater treatment facility with Fresno County Waterworks District 41S that also treats wastewater from the greater Shaver area.

- Zones "C", "D", "F" and "G" operate and maintain the sewer infrastructure that serve a number of residential communities.

- Zone "E" is within Waterworks District No. 41 and is provided sewer services by the Waterworks District.

The District's existing infrastructure is sufficient for current services. The districts community sewer system is maintained by the Fresno County Department of Public Works. The wastewater treatment facility can be expanded to meet the needs of future development. (CSA No. 31 MSR, 2011)

COUNTY SERVICE AREA NO. 32

County Service Area No. 32 provides wastewater services to the Cantua Creek farm labor housing development. The District is located at Clarkson Avenue west of San Mateo Avenue and its area is subdivided and largely built out. The district contains 79 parcels, of which 43 are single-family residences and 30 are mobile home sites.

The District collects, treats and disposes of wastewater using an on-site package treatment plant. District facilities include a wastewater collection system, treatment plant, and disposal ponds. The Fresno County Department of Public Works assumed operational responsibilities of the community sewer systems in April 2010. California Water Services out of Coalinga had previously been under contract with the County to operate and maintain the sewer systems. (CSA No. 32 MSR, 2011)

COUNTY SERVICE AREA NO. 34

County Service Area No. 34 provides a full range of extended governmental services for the Millerton New Town community. The District is located north of the City of Clovis' wastewater treatment plant near the intersection of Auberry and Millerton Roads, one and one-half miles east of the community of Friant.

The District provides wastewater services to the Brighton Crest subdivision, designated as Zone "A" by the District, and to the Bella Vista subdivision, designated as Zone "C." Zone "A" includes a golf course with a club house and 152 single-family parcels, 86 of which are developed with single-family residences. The remaining 66 residential lots will be provided service at the time they are developed. Zone "C" includes a total of 161 residential lots. Approximately 3,500 homes and some limited commercial development are anticipated to be constructed within the District in the future.

The District's older secondary wastewater treatment facility provided sewerage service for about 80 homes in Zone "A." This facility had a constructed capacity of 0.056 mgd and consisted of a septic tank effluent pumping (STEP) system, recirculating sand filter, and lined evaporation ponds. (California State Water Resources Control Board, Fresno County Service Area No. 34 Millerton New Town WWTF, 2008) The District replaced its secondary wastewater treatment facility with a tertiary wastewater treatment facility that serves both Zone "A" and "C." The new treatment facility provides disinfected tertiary-treated wastewater for unrestricted irrigation of the Brighton Crest Golf Course, adjacent open space and landscaped areas, recreational and school properties, residential lots, and for fire protection within the Marina Estates subdivision. The new tertiary treatement facility will be expanded in phases to a final capacity of 1.07 mgd to provide sufficient capacity as the community grows. It consists of headworks, a new secondary treatment process, coagulation/flocculation, filtration, disinfection, sludge handling facility, an emergency storage basin, lined effluent storage ponds (permeability less than 10-7 cm/sec), and a recycled water irrigation system.

Existing infrastructure and service levels are adequate to serve the District's needs. The District is administered by the Special Districts Administrator Office of the Fresno County Public Works and Planning Department. The Special Districts Office monitors, maintains and repairs District infrastructure. (CSA No. 34 MSR, 2011)

COUNTY SERVICE AREA NO. 44

County Service Area 44 is located in the northern portion of Fresno County just to the north and east of the City of Fresno. In total, the District covers 381 acres. The District consists of three distinct zones that provide water and wastewater services. Zone "A" provides sewer to 24 acres, Zone "C" provides retail water to 30 acres, and Zone "D" provides both water and sewer service to 24 acres. The District provides wastewater collection and treatment to 99 connections in Zone "A" and 121 connections in Zone "D."

Zone "A" and Zone "D" each have their own wastewater treatment facility. The WWTF in CSA 44A is designed for 22,000 gallons per day with a maximum capacity of 8 million gallons per year. Wastewater flows do not exceed processing capacity. The WWTF in Zone "D" was designed in the 1990s to provide tertiary treatment of wastewater that could be used instead of well water to irrigate communal landscaping and open space areas. The WWTF, however, has never been able to produce a treated wastewater effluent that satisfied the Waste Discharge Requirements set by the State Water Resources Control Board. The County has designed a new facility for tertiary treatment and has approved an assessment for the purposes of repaying the loan to build the new plant. (CSA No. 44 MSR, 2011)

Since 2005, the Citizens Advisory Committee for CSA 44D has been working with Fresno County Department of Public Works and Planning to plan and design improvements to upgrade the existing wastewater treatment facility that serves the 125 residential lots in the Monte Verdi Estates Subdivision. The efforts of the Advisory Committee and County staff have resulted in a facilities plan for the WWTF Capital Improvements, as well as preapproval, at terms described below, for a loan from the State Water Resources Control Board under the California Clean Water State Revolving Fund Program to finance the construction of the WWTF Capital Improvements. (Wilson, Edward, Engineer's Report: Assessment District 284, prepared for the Fresno County Board of Supervisors, May 2013.)

COUNTY SERVICE AREA NO. 47

County Service Area No. 47 provides sewer services to the Quail Lake Estates subdivision. The District consists of 375 acres generally located between Ashlan and Shaw Avenues, east of McCall Avenue. The area is subdivided into 707 residential lots, a clubhouse lot, 1 school, and 1 commercial lot. Approximately 129 residential lots are undeveloped.

The District collects, treats, and disposes of wastewater using the District's on-site tertiary treatment plant. Construction of this facility was a requirement for County approval of the Quail Lake Estates Subdivision. Existing and planned District infrastructure is sufficient to meet anticipated uses.

As a long-term cost saving measure, the Quail Lake Homeowners Association has requested that the District be dissolved and that water and sewer services be provided by California Water Services (Cal Water). Cal Water has submitted an operational plan for the Quail Lake Estates area indicating that the level of service to the area would remain the same and no construction or development is proposed. The proposed dissolution was initiated by the Fresno County Board of Supervisors on July 10, 2012, and reorganization was approved by Fresno County LAFCo on March 13, 2013. The District's application has been extended to provide enough time for Cal Water to obtain approval from the Public Utilities

Commission and the County enough time to pay off Bonds prior to the sale of CSA 47. (CSA No. 47 MSR, 2011; Witte, Jeff, Fresno County LAFCo Executive Officer's Report: Fresno County BOS "Dissolution of County Service Area No. 47, March 2013; Fey, David, Fresno County LAFCo Executive Officer's Report: Request for One-Year Extension of Time to Complete Proceedings for the Fresno County BOS "Dissolution of CSA No. 47, February 2015).

PUBLIC UTILITIES DISTRICTS

PINEDALE PUBLIC UTILITIES DISTRICT

The Pinedale Public Utility District is an independent special district surrounded by the City of Fresno and roughly bounded by the San Joaquin River (north), Bullard Avenue (south), Ingram Avenue (east), and Forkner Avenue (west). A significant portion of the 362-acre District is located within the City of Fresno.

The District provides wastewater service to approximately 2,050 customers. It owns and maintains 25 miles of sewer lines within its sewer collection system, which discharge sewage effluent into the City of Fresno's collection system for transport to the Fresno/Clovis Regional Wastewater Treatment Plant. The City of Fresno provides this service through an existing service agreement. The District does not have any plans for upgrading or expanding its system. (Pinedale Public Utilities District MSR, 2007)

RIVERDALE PUBLIC UTILITIES DISTRICT

The Riverdale Public Utility District is located in Central Fresno County near the Fresno/Kings County boundary and provides services to the unincorporated community of Riverdale. The District encompasses approximately 424 acres (0.66 square miles). Land uses within the consist of a mixture of residential, commercial, and agriculture.

The District provides wastewater services with 930 wastewater connections. Its infrastructure consists of gravity fed lines and three lift stations that convey water to the District's wastewater treatment plant. The WWTF's design capacity is 0.25 mgd. According to the District's 2007 Municipal Services Review, the District is in the permitting and engineering phases of the first expansion to increase the treatment and disposal capacity to 0.42 mgd. This wastewater treatment plant expansion will enable service to an additional 560 residential units, for a total wastewater service area of 1,410 residential units. Additional upgrades can bring the total capacity up to 0.72 mgd to serve a total of 2,400 units. (Riverdale Public Utilities District MSR, 2007)

TRANQUILLITY PUBLIC UTILITIES DISTRICT

The 157-acre Tranquillity Public Utility District encompasses the community of Tranquillity in western Fresno County, northwest of the City of San Joaquin. The District provides wastewater collection and treatment services to 263 sewer connections. Its infrastructure includes sewer mains, pumps, and a treatment plant. The treatment plant is near its permitted capacity of 120,000 gpd. Sewer lines are in need of repairs or replacement in various locations. Any additional development connecting to the District sewer system would require expansion of the wastewater treatment facility. (Tranquillity Public Utilities District MSR, 2011)

WATERWORKS DISTRICTS

WATERWORKS DISTRICT NO. 18

Waterworks District No. 18 is located in the north central portion of Fresno County at the base of Friant Dam and Millerton Lake. The District provides surface water treatment and water distribution and services approximately 134 residential, commercial, and industrial customers in the rural community of Friant.

Residents within the District primarily use septic systems for wastewater, but the District is pursuing grants from the State of California to build a wastewater treatment plant to accommodate the proposed Friant Ranch development. Once the wastewater treatment plant is complete, residents will hook-up to the wastewater treatment plant, abandoning existing septic systems. (Waterworks District No. 18 website, waterworksdist18.com/about-us, accessed March 19, 2016; Waterworks District No. 18 MSR, 2011)

WATERWORKS DISTRICT NO. 38

Waterworks District No. 38 encompasses approximately 154 acres approximately six miles north of the intersection of Sky Harbour Road and Millerton Road. The District provides wastewater services to the residents of the District. The District currently has 59 service connections. District infrastructure includes extended aeration and spray fields for wastewater. (Waterworks District No. 38 MSR, 2011)

WATERWORKS DISTRICT NO. 40

Waterworks District No. 40 encompasses approximately 278 acres but only provides service to Improvement Zone 1, a 23-acre area generally located near the intersection of Tollhouse Road and Shaver Springs Road. The subdivision contains 92 parcels of which 65 are developed. The land uses in the District are primarily residential. The District owns extended aeration and spray fields for wastewater treatment. (Waterworks District No. 40 MSR, 2011)

WATERWORKS DISTRICT NO. 41

Waterworks District No. 41 is located south of Shaver Lake, along Highway 168, with the bulk of the District's area occurring to the east of the highway. The District provides sewer service to an area encompassing approximately 1,585 acres, generally located south of Shaver Lake along Highway 168. It owns aeration ponds for wastewater treatment. In 2011 the District purchased 148 acres adjacent to existing facilities to be used as spray fields and/or wastewater ponds in order to accommodate the demands of future development. The regional wastewater treatment facility has a capacity of 280,000 gallons per day and has not experienced any overcapacity issues. (Waterworks District No. 41 MSR, 2011; Weaver, Allen, Board Briefing Report: Shaver Lake Water and Sewer Capacity Evaluation 2011, August 2011)

WATERWORKS DISTRICT NO. 42

Waterworks District No. 42 encompasses approximately 367 acres generally located northeast of the intersection of Alluvial and DeWolf Avenues, southeast of State Route 168, and east of the City of Clovis. The District provides wastewater services to 102 parcels with no out-of-district users. Its infrastructure includes extended aeration and spray fields for wastewater treatment and is of sufficient

type and quality to meet the existing and foreseeable demands of District customers. (Waterworks District No. 42 MSR, 2011)

REGULATORY SETTING

Key organizations that regulate wastewater treatment and disposal in California include the United States EPA and the State Water Resources Control Board (SWRCB). These agencies are responsible for carrying out and enforcing environmental laws enacted by Congress. Local government agencies, including the San Joaquin County Environmental Health Department (EHD), are responsible for establishing and implementing specific design criteria related to onsite septic systems. Major regulatory policies pertaining to sanitary sewer management are summarized below.

FEDERAL REGULATIONS

U.S. Environmental Protection Agency (EPA). The EPA Office of Wastewater Management (OWM) supports the Federal Water Pollution Control Act (Clean Water Act) by promoting effective and responsible water use, treatment, disposal and management, and by encouraging the protection and restoration of watersheds. The OWM is responsible for directing the National Pollutant Discharge Elimination System (NPDES) permit, pretreatment, and municipal bio-solids management (including beneficial use) programs under the Clean Water Act. The OWM is also home to the Clean Water State Revolving Fund, the largest water quality funding source, focused on funding wastewater treatment systems, non-point source projects, and estuary protection.

Clean Water Act (CWA). The CWA is the cornerstone of surface water quality protection in the United States. The stature employs a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff.

Section 303 of the CWA requires states to adopt water quality standards for all surface water of the United States. Where multiple uses exist, water quality standards must protect the most sensitive use. Water quality standards are typically numeric although narrative criteria based on biomonitoring methods may be employed where numerical standards cannot be established or where they are needed to supplement numerical standards. The SWRCB and the RWQCB are responsible for ensuring implementation and compliance with the provisions of the Federal CWA.

STATE REGULATIONS

State Water Resources Control Board (SWRCB). The SWRCB, in coordination with nine Regional Water Quality Control Boards (RWQCB), performs functions related to water quality, including issuance of wastewater discharge permits (NPDES and WDR) and other programs on stormwater runoff, and underground and above ground storage tanks.

Cortese-Knox-Hertzberg Governmental Reorganization Act of 2000. The Cortese-Knox-Hertzberg Governmental Reorganization Act of 2000 requires California Local Agency Formation Commission's (LAFCO) to conduct municipal service reviews for specified public agencies under their jurisdiction. One aspect of municipal service review is to evaluate an agency's ability to provide public services within its ultimate service area. A municipal service review is required before an agency can update its sphere of influence.

Small Community Wastewater Grant Program. The small community wastewater grant program (SCWG), funded by Propositions 40 and 50, provides grant assistance for the construction of publicly owned wastewater treatment and collection facilities. Grants are available for small communities with financial hardships. Communities must comply with population restrictions (maximum population of 20,000 people) and annual median household income provisions (maximum income of $37,994) to qualify for funding under the SCWG Program.

Title 22 of California Code of Regulations. Title 22 regulates the use of reclaimed wastewater. In most cases, only disinfected tertiary water may be used on food crops where the recycled water would come into contact with the edible portion of the crop. Disinfected secondary treatment may be used for food crops where the edible portion is produced above ground and will not come into contact with the secondary effluent. Lesser levels of treatment are required for other types of crops, such as orchards, vineyards, and fiber crops. Standards are also prescribed for the use of treated wastewater for irrigation of parks, playgrounds, landscaping and other non-agricultural irrigation. Regulation of reclaimed water is governed by the nine RWQCBs and CDPH.

KEY TERMS

The following key terms used in this chapter are defined as follows:

Base Flow. The component of wastewater that originates from domestic users such as residential, commercial, and institutional discharges.

Disinfection. A process following secondary or tertiary treatment that typically involves the use of chlorine or ultraviolet (UV) radiation to destroy bacteria and other pathogens.

Dry Weather Infiltration. Groundwater that enters into the sanitary sewer system during the driest period of the year when the groundwater table is lowest in elevation.

Effluent. Treated wastewater that is discharged from a wastewater treatment facility.

Freeboard. The vertical distance between the maximum design water surface of a channel and the top bank provided to account for differences between predicted and actual water surface elevations and/or to provide an allowance for protection.

Inflow. Surface stormwater that enters into the sanitary sewer through direct sources such as vented manhole covers, downspouts, area drains, and uncapped cleanouts.

Interceptor. Sanitary sewer interceptors are those lines that convey sewage from neighborhood to neighborhood in route to the wastewater treatment plant. Pipe diameters are generally larger than lines placed within residential developments.

Lift Station. A pumping facility that conveys wastewater flow from an area that would not naturally drain to the wastewater treatment plant, or into the gravity sewer system for delivery and treatment.

NPDES (National Pollutant Discharge Elimination System) Permit. The regulatory document that defines the discharge requirements, monitoring requirements, and operational requirements for a particular wastewater treatment facility or other discharger to a surface water.

Primary Treatment. Treatment of wastewater prior to secondary treatment involving screening, settling, and removal of suspended solids.

Sanitary Sewer. Pipes, pump stations, manholes, and other facilities that convey untreated (raw) wastewater from various sources to wastewater treatment facilities.

Secondary Treatment. Treatment of wastewater that typically follows primary treatment and involves biological processes and settling tanks to remove organic material.

Service Line. Facilities owned and maintained by property owners that conveys waste from a structure to the public system.

Surcharge. A condition in which the wastewater flow rate in a sewer system exceeds the capacity of the sewer lines to the extent that raw sewage begins to rise within manholes.

Tertiary Treatment. Treatment of wastewater that follows secondary treatment and involves filtration or membrane processes to remove fine suspended and colloidal material, thus providing a more advanced level of treatment than secondary treatment alone.

Title 22. A section of the California Water Code that establishes water quality requirements for wastewater reclamation. As an example, Title 22 requires filtration of any reclaimed effluent used for full-body contact recreation or fresh food crop irrigation. Title 22 requires lesser levels of treatment for other uses of reclaimed effluent.

Wastewater. Sewage (either treated or untreated) from residential, commercial, industrial, and institutional sources.

Wastewater Collection System. The totality of the pipes, pump station, manholes, and other facilities that convey untreated (raw) wastewater from the various sources to a wastewater treatment facility.

WDR. Waste discharge requirements are issued by the Regional Water Quality Control Board (Regional Board) to govern wastewater discharges to land.

WWTF. Abbreviation for wastewater treatment facility.

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PERSONS CONSULTED

None.

SECTION 6.3 STORM DRAINAGE AND FLOOD PROTECTION

INTRODUCTION

During winter and spring months, river systems in Fresno County swell with heavy rainfall and snow melt runoff. To prevent flooding, a wide variety of storm drainage and flood control measures are utilized throughout the county. Storm drainage systems composed of street gutters, inlets, underground storm drains, retention basins, pumping stations, and open channels are used to collect and control stormwater runoff. The following discussion characterizes the storm drainage and flood control systems for unincorporated areas within Fresno County.

EXISTING CONDITIONS

Most of the storm drainage systems within the unincorporated areas of Fresno County are managed by a single flood control district. The Fresno Metropolitan Flood Control District services the Fresno and Clovis areas including unincorporated areas stretching east into the Foothills. A small number of individual communities have storm drainage systems serviced by special districts. Drainage services in these areas center on the creation and maintenance of retention basins to collect stormwater. Data for each service provider was primarily obtained from Municipal Service Review (MSR) documents filed with the Fresno County Local Area Formation Commission (LAFCo).

FLOOD CONTROL DISTRICT

FRESNO METROPOLITAN FLOOD CONTROL DISTRICT

The Fresno Metropolitan Flood Control District is the only flood control district in Fresno County. The District encompasses approximately 255,555 acres, including the Cities of Fresno and Clovis, and extends into the foothills east of the two cities. Its primary services include a local drainage program and regional flood control system. Other services include water conservation, storm water disposal, groundwater recharge, and recreation.

District facilities include numerous drainage facilities, flood control water courses, and retention basins for drainage and flood control. The District anticipates an expanded need for services in conjunction with expansion of the Fresno/Clovis Metropolitan Area, as projected by the City of Fresno, City of Clovis, and Fresno County. (Fresno Metropolitan Flood Control District MSR, 2007)

COMMUNITY SERVICES DISTRICTS

BIOLA COMMUNITY SERVICES DISTRICT

The Biola Community Service District provides sewer services for the 242-acre unincorporated community of Biola. The District has a population of 1,100 people except during harvest season for local agriculture, from August through September, when the population rises to 1,600 people. Storm drainage services are provided through the maintenance and use of two retention basins. The District's older storm water retention basin is south of the Biola's downtown area and is maintained by the District. The newer basin is part of the Self-Help Enterprises development and is maintained by Self-Help Enterprises, although the District is interested in taking over the title and maintenance of it. The District has had

preliminary discussion with the County of Fresno Public Works Department regarding the Self-Help storm basin. (Biola Community Services District MSR, 2013)

CARUTHERS COMMUNITY SERVICES DISTRICT

The Caruthers Community Service District is located in the central portion of Fresno County, approximately 16 miles south of the City of Fresno. The District provides storm drainage services to 361 acres. The District maintains two retention basins owned by the County of Fresno. (Caruthers Community Services District MSR, 2011)

DEL REY COMMUNITY SERVICES DISTRICT

The Del Rey Community Services District serves the unincorporated community of Del Rey located south of the City of Sanger. The District serves a population of approximately 1,200 residents as well as commercial and industrial development. The District provides storm drainage services by maintaining retention basins for storm water drainage. (Del Rey Community Services District MSR, 2007)

EASTON COMMUNITY SERVICE DISTRICT

The Easton Community Service District is located in the community of Easton approximately four miles south of the City of Fresno and serves a population of 1,966. Its boundaries contain about 701 acres. The District maintains a storm drainage basin within the Easton Village subdivision. Maintenance includes clearing the basin of debris and maintaining the landscape to retain the basin's capacity for storm runoff. (Easton Community Services District MSR, 2011)

COUNTY SERVICE AREAS

COUNTY SERVICE AREA NO. 14

County Service Area No. 14 encompasses approximately 19 acres and provides storm drainage services in the Belmont Manor subdivision. The area is fully developed. The Fresno County Department of Public Works maintains District storm drainage facilities. (CSA No. 14 MSR, 2011)

COUNTY SERVICE AREA NO. 35

County Service Area No. 35 encompasses the entire County of Fresno. The District provides services in 80 separate zones of benefit located throughout the County. These zones encompass 13,746 acres. There are presently 3,501 parcels within CSA No. 35's zones of benefit, almost all of which are residential lots. The District primarily maintains roads, but also provides storm drainage and other services to some zones. (CSA No. 35 MSR, 2011)

PUBLIC UTILITIES DISTRICTS

RIVERDALE PUBLIC UTILITIES DISTRICT

The Riverdale Public Utility District is located in Central Fresno County near the Fresno/Kings County boundary. The District provides services to a service area encompassing approximately 424 acres. Land uses within the District consist of a mixture of residential, commercial, and agriculture. The District

provides storm drainage services to the community of Riverdale. (Riverdale Public Utilities District MSR, 2007)

TRANQUILLITY PUBLIC UTILITIES DISTRICT

The Tranquillity Public Utility District encompasses the 157 acres in western Fresno County, northwest of the City of San Joaquin. The District provides storm drainage services to Tranquillity. District storm drainage infrastructure consists of curbs and gutters, above and below ground piping, and two pumps that discharge storm water into a canal that borders Tranquillity. Some curbs/gutters are in need of repair, and repairs and replacements are done when there is adequate funding. Repairs to the storm drainage pumps are performed on a regular basis, and there are no plans for replacement of the pumps. The pumps operate at capacity during periods of heavy rain. (Tranquillity Public Utilities District MSR, 2007)

REGULATORY SETTING

Key organizations that regulate the stormwater industry in California include the EPA and SWRCB. These agencies are responsible for carrying out and enforcing environmental laws enacted by Congress. The need to protect the environment has resulted in a number of laws and subsequent regulations and programs. Local government agencies are responsible for establishing and implementing specific design criteria related to storm drain systems. Various Federal and State programs related to the control of pollutants in stormwater are summarized below.

FEDERAL REGULATIONS

Clean Water Act. In 1972, the CWA was amended to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with an NPDES permit. The 1987 amendments to the CWA added Section 402(p), which establishes a framework for regulating municipal and industrial stormwater discharges, including discharges associated with construction activities, under the NPDES program.

U.S. Environmental Protection Agency (EPA). In 1990 EPA published final regulations that establish stormwater permit application requirements. The regulations, also known as Phase I of the NPDES program, provide that discharges of stormwater to waters of the United States from construction projects that encompass one or more acres of soil disturbance are effectively prohibited unless the discharge complies with an NPDES permit. Phase II of the NPDES program expands the requirements by requiring operators of small MS4s in urbanized areas and small construction sites to be covered under an NPDES permit, and to implement programs and practices to control polluted stormwater runoff.

STATE REGULATIONS

State Water Resources Control Board (SWRCB). In California, the NPDES stormwater permitting program is administered by the SWRCB. The SWRCB has established a construction General Permit that can be applied to most construction activities in the State. Construction permittees may choose to obtain individual NPDES permits instead of obtaining coverage under the General Permit, but this can be an expensive and complicated process, and its use is generally limited to very large construction projects that discharge to critical receiving waters. In California, owners of construction projects may obtain NPDES permit coverage by filing a Notice of Intent (NOI) to be covered under the SWRCB Order No. 99-08-

DWQ, NPDES General Permit No. CAS00002, WDRs for Discharges of Storm Water Runoff Associated with Construction Activity (General Permit) and subsequent adopted modification.

KEY TERMS

The following key terms used in this chapter are defined as follows:

Acre-Foot (acre-ft). The volume of water required to cover one acre of land (43,560 square feet) to a depth of one foot. One acre-foot is equal to 325,851 gallons or 1,233 cubic meters. This term is usually used to describe the volume of stormwater detention or retention basins and reservoirs.

Basin. A hydrologic unit defined as a part of the surface of the earth covered by a drainage system consisting of a surface stream or body of impounded surface water plus all tributaries.

Best Management Practices (BMPs). Activities or structural improvements that help reduce the quantity and improve the quality of stormwater runoff. BMPs include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw materials storage.

Catch Basin. An entryway to the storm drain system, usually located at street corners.

Culvert. A short, closed (covered) conduit or pipe that passes stormwater runoff under an embankment, usually a roadway.

CWA. Clean Water Act.

Detention. A stormwater system that delays the downstream progress of stormwater runoff in a controlled manner. This is typically accomplished using temporary storage areas and a metered outlet device. (As opposed to a less common retention pond).

Drainage. The control and removal of excess rainfall runoff or groundwater by the use of surface or subsurface features or drains.

Drainage Channel. An open channel such as a swale, constructed channel, or natural drainage course that may convey, store and treat runoff.

Federal Emergency Management Agency (FEMA). The federal agency that regulates floodplains and manages the nation's flood insurance program.

Flood. A temporary rise in flow or stage of any watercourse or stormwater conveyance system that results in stormwater runoff exceeding its normal flow boundaries and inundating adjacent, normally dry areas.

Flood Control. The specific regulations and practices that reduce or prevent the damage caused by stormwater runoff.

Floodplain. Any land area susceptible to inundation by stormwater from any source. FEMA defines the floodplain to be the area inundated by the 100-year flood.

Floodplain Management. The implementation of policies and programs to protect floodplains and maintain their flood control function.

Freeboard. The vertical distance between the maximum design water surface of a channel and the top bank provided to account for differences between predicted and actual water surface elevations and/or to provide an allowance for protection.

Frequency. How often an event will occur expressed by the return period or exceedance probability.

General Permit. A permit issued under the NPDES program to cover a certain class or category of stormwater discharges. These permits reduce the administrative burden of permitting stormwater discharges.

Infiltration. The penetration of water through the ground surface into subsurface soil or the penetration of water from the soil into sewer or other pipes through defective joints, connections, or manhole wells.

Levee. A dike or embankment constructed to confine flow to a stream channel and to provide protection to adjacent land. A levee designed to provide 100-year flood protection must meet FEMA standards.

Low Impact Development. Development that incorporates a combination of drainage design features and pollution reduction measures to reduce development impacts on hydrology (peak runoff flow rates) and water quality.

NPDES. "National Pollutant Discharge Elimination System" – the name of the surface water quality program authorized by Congress as part of the 1987 Clean Water Act. This is EPA's program to control the discharge of pollutants to waters of the United States.

One Hundred Year (100-year) Flood. The flood event that has a one percent (1%) chance of occurring in any given year.

One Hundred Year (100-year) Runoff. The storm runoff that has a one percent (1%) chance of occurring in any given year.

Recharge. Re-supplying of water to the aquifer. Recharge generally comes from snowmelt and stormwater runoff.

Retention. A process that halts the downstream progress of stormwater runoff. This is typically accomplished using total containment involving the creation of storage areas that use infiltration devices, such as dry wells, to dispose of stored stormwater via percolation over a specified period of time. (As opposed to a more common Detention Pond).

Runoff. Drainage or flood discharge that leaves an area as surface flow or as pipeline flow.

Stormwater. Precipitation that accumulates in natural and/or constructed storage and stormwater systems during and immediately following a storm event.

Stormwater Facilities. Systems such as watercourses, constructed channels, storm drains, culverts, and detention/retention facilities that are used for conveyance and/or storage of stormwater runoff.

Stormwater Management. Functions associated with planning, designing, constructing, maintaining, financing, and regulating the facilities (both constructed and natural) that collect, store, control, and/or convey stormwater.

Stormwater System. The entire assemblage of stormwater facilities located within a watershed.

Sub-basin or Sub-shed. An area within the watershed that can be analyzed independently and that contributes a component of total watershed runoff.

Surface Water. Water that remains on the surface of the ground, including rivers, lakes, reservoirs, streams, wetlands, impoundments, seas, and estuaries.

Swale. A low laying or depressed, at least seasonally wet stretch of land. Often lined with grass (grassy swale) and used as a conveyance for stormwater.

Urban Runoff. Stormwater from urban areas that tends to contain heavy concentrations of pollutants from vehicles and industry.

Watercourse. A lake, stream, creek, channel, stormwater conveyance system, or other topographic feature, over which stormwater flows at least periodically.

Watershed. That geographical area which drains to a specified point on a water course, usually a confluence of streams or rivers (also known as a drainage area, catchment, or river basin).

Wetlands. Land with wet, spongy soil, where the water table is at or above the land surface for at least part of the year. Wetlands are characterized by a prevalence of vegetation that is adapted for life in saturated soil conditions. Examples include swamps, bogs, fens, marshes, and estuaries.

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WEBSITES

None

PERSONS CONSULTED

None

SECTION 6.4 SOLID AND HAZARDOUS WASTE DISPOSAL AND RECYCLING

INTRODUCTION

This section describes existing solid waste and hazardous waste facilities and disposal practices within unincorporated Fresno County. Solid and hazardous waste handling operations are critical to the health and safety of County residents and are an important consideration for developers, decision makers, and the public, relative to land use decisions.

EXISTING CONDITIONS

SOLID WASTE FACILITIES

Fresno County operates one active solid waste disposal facility, or landfill: the American Avenue Landfill. This landfill serves 6,000 square miles and more than 900,000 residents. The county of Fresno generated 130,120 tons of solid waste between the third quarter of 1995 and the third quarter of 1996. The average solid waste generation rates for residential, commercial, and industrial land uses are as follows:

- Residential (.39)
- Commercial (.23)
- Industrial (.34)

The California Integrated Solid Waste Management Board's (CIWMB) Solid Waste Information System (SWIS) lists 48 solid waste disposal/landfill sites within Fresno County. Of these 48 sites, only two sites are active solid waste landfills, the American Avenue Landfill and the Clovis Landfill (see to Table 6-1). The remaining sites are closed or closing (see Table 6-3). Table 6-2 identifies additional active solid waste facilities, including transfer stations and recycling centers. (Fresno County, *Fresno County General Plan*, October 2000)

AMERICAN AVENUE LANDFILL

The American Avenue Landfill is located at 18950 West American Avenue, in Kerman. It is a Class III landfill, and will only accept standard municipal waste. The landfill has a total capacity of 21.7 million cubic yards and handles on average 2,200 tons per day. As of July 2005, the landfill has a remaining capacity of 29.4 million cubic yards. (Solid Waste Information System [SWIS], available at http://calrecycle.ca.gov)

CLOVIS LANDFILL

Portions of the unincorporated areas of the county use the Clovis Landfill. Only a small portion of the unincorporated county's solid waste is taken to this facility, which serves mainly the city of Clovis.

COALINGA LANDFILL

The Coalinga Landfill is located at 30825 Lost Hills Road in Coalinga. The landfill is closed and has been monitored by the Fresno County Department of Public Health, Environmental Health Division, who are acting as the Local Enforcement Agency. County staff recommended an award of a contract to initiate final closure activities to the Board of Supervisors on July 29, 2014. The final closure activities entail conditioning the final soil cover with water, among other activities, and using water for dust control. (Ramirez, Rene, Staff Report: Consideration of Fresno County Request for Construction Waster for Final Cover Requirements at the Closed Coalinga Disposal Site, prepared for the Coalinga City Council, July 2014)

RECYCLING PROGRAMS

The American Avenue Landfill has oil and household hazardous waste recycling programs, a triple-rinse pesticide container recycling program, and a greenwaste recovery program. The County sponsors a countywide recycling education program through schools and public contact. The County has also established a Recycling Market Development Zone for businesses that use recyclable goods, and has a used oil recycling program with centers throughout the county. (Fresno County, *Fresno County General Plan*, October 2000)

HOUSEHOLD HAZARDOUS WASTE FACILITY

Household hazardous wastes such as paint, waste motor oil, non-commercial pesticides, aerosols, wood preservatives, and solvents are disposed of through a County-sponsored program. The County operates one household hazardous waste facility as the American Avenue Disposal Site/Landfill. Hazardous household items are accepted in quantities up to 15 gallons or 125 pounds.

The Fresno County Regional Household Hazardous Waste Facility operates a Reuse Center as a resource to all Fresno County residents. The Reuse Center recycles household chemical products selected from items collected at the Hazardous Household Waste Facility. Items are screened and those that meet program criteria are made available free-of-charge to County residents for the purposes they were originally intended. In addition to providing a free community service, the Reuse Center helps the Facility avoid costly handling and disposal fees associated with more traditional household hazardous waste management options. (Fresno County Public Works and Planning, Household Hazardous Waste, http://www.co.fresno.ca.us/DepartmentPage.aspx?id=18071, accessed March 24, 2016)

TABLE 6-1
ACTIVE SOLID WASTE LANDFILLS
Fresno County
2016

Name	Location	Owner	Operator	SWIS	Landfill Class	Permitted Capacity (cu yard)	Est. Remaining Capacity (cu yard)	Closure Date
City of Clovis Landfill	15679 Auberry Road, Fresno, CA 93626	City of Clovis	City of Clovis	10-AA-0004	III	7,800,000	7,740,000	4/30/2047
American Avenue Disposal Site	18950 W. American Ave., Tranquillity, CA 93668	County of Fresno	County of Fresno	10-AA-0009	II, III	32,700,000	29,358,535	8/31/2031

Source: Solid Waste Information System (SWIS), http://calrecycle.ca.gov.

TABLE 6-2
ACTIVE SOLID WASTE FACILITIES EXCLUDING LANDFILL SITES
Fresno County
2016

SWIS Number	Name	Unit	Activity	Regulatory Status	Operational Status
10-AA-0010	Shaver Lake Transfer Station	1	Limited Volume Transfer Operation	Notification	Active
10-AA-0145	Rice Road Recyclery Transfer Station	1	Large Volume Transfer/Proc Facility	Permitted	Active
10-AA-0171	Jefferson Avenue Transfer Station	1	Large Volume Transfer/Proc Facility	Permitted	Active
10-AA-0172	Jefferson Inert Debris ENG Fill Op	1	Inert Debris ENG Fill Operation	Notification	Active
10-AA-0174	Kochergen Property Grease Trap Disposal	1	Land Application	Permitted	Active
10-AA-0182	Gallo Vineyards, Inc Compost Facility	1	Composting Facility (Green Waste)	Permitted	Active
10-AA-0187	Cedar Ave. Recycling Transfer Station	1	Large Volume Transfer/Proc Facility	Permitted	Active
10-AA-0188	Mid Valley Recycling Elm Ave	1	Large Volume Transfer/Proc Facility	Permitted	Active
10-AA-0191	Tri County Transfer Recycling, LLC	2	Large Volume Transfer/Proc Facility	Permitted	Active
10-AA-0192	KROEKER Recycling Facility	1	Large Volume Transfer/Proc Facility	Permitted	Active
10-AA-0193	Harris Ranch Feeding Company	1	Composting Operation (Ag)	Notification	Active
10-AA-0197	West Coast Waste	1	Chipping and Grinding Activity Fac./ Op.	Permitted	Active
10-AA-0198	Nick`s Trucking, Inc.	1	Small Vol CD Wood Debris ChipGrind Op	Notification	Active
10-AA-0199	Green Valley Recycling	1	Chipping and Grinding Activity Fac./ Op.	Permitted	Active
10-AA-0201	MidValley Disposal Transfer Recycling St	1	Large Volume Transfer/Proc Facility	Permitted	Active
10-AA-0203	Road Maintenance Area 5, Caruthers	1	Limited Volume Transfer Operation	Notification	Active
10-AA-0204	City of Kingburg Corpation Yard	1	Limited Volume Transfer Operation	Notification	Active
10-AA-0205	Road Maintenance Area 1, Firebaugh	1	Limited Volume Transfer Operation	Notification	Active
10-AA-0206	Road Maintenance Area 4, Biola LVTOp.	1	Limited Volume Transfer Operation	Notification	Active
10-AA-0208	Road maintenance Area 9, Fresno	1	Limited Volume Transfer Operation	Notification	Active
10-AA-0210	Road Maintenance Area 8, Fresno	1	Limited Volume Transfer Operation	Notification	Active
10-AA-0211	Road maintenance Area 11, Fresno	1	Limited Volume Transfer Operation	Notification	Active
10-AA-0213	City of Selma Corporate Yard	1	Limited Volume Transfer Operation	Notification	Active
10-AA-0217	Municipal Service Center, Annex	1	Inert Debris Type A Proc. Operation	Notification	Active
10-AA-0220	City of Orange Cove (Limited Vol. T/P)	1	Limited Volume Transfer Operation	Notification	Active

TABLE 6-2
ACTIVE SOLID WASTE FACILITIES EXCLUDING LANDFILL SITES
Fresno County
2016

SWIS Number	Name	Unit	Activity	Regulatory Status	Operational Status
10-AA-0221	Mid Valley Disposal Recy. TS- Coalinga	1	Limited Volume Transfer Operation	Notification	Active
10-AA-0223	Dunlap Public Works Corporation Yard	1	Limited Volume Transfer Operation	Notification	Active
10-AA-0224	City of Reedley Waste Water Treatment	1	Limited Volume Transfer Operation	Notification	Active
10-AA-0225	City of Sanger Public Works Yard	1	Limited Volume Transfer Operation	Notification	Active
10-AA-0226	ReConserve of California	1	Limited Volume Transfer Operation	Notification	Active
10-AA-0228	Road Maintenance Area 7, Fresno	1	Limited Volume Transfer Operation	Notification	Active

Source: Solid Waste Information System (SWIS), http://calrecycle.ca.gov

TABLE 6-3
CLOSED SOLID WASTE FACILITIES
Fresno County
2016

SWIS Number	Name	Unit	Activity	Regulatory Status	Operational Status
10-AA-0002	Chateau Fresno Landfill	1	Solid Waste Disposal Site	Permitted	Closed
10-AA-0006	Coalinga Disposal Site	1	Solid Waste Landfill	Permitted	Closing
10-AA-0008	Mendota Solid Waste Disposal	1	Solid Waste Disposal Site	Permitted	Clean Closed
10-AA-0011	Southeast Regional Solid Waste Disposal	1	Solid Waste Disposal Site	Permitted	Closed
10-AA-0013	Orange Avenue Disposal Inc	1	Solid Waste Landfill	Permitted	Closed
10-AA-0018	Rice Road Disposal Site	1	Solid Waste Disposal Site	Permitted	Closed
10-AA-0020	Kepco Pinedale Landfill	1	Solid Waste Disposal Site	Permitted	Closed
10-AA-0022	Kamm Disposal	1	Solid Waste Disposal Site	Unpermitted	Closed
10-AA-0025	Chestnut Avenue Sanitary Landfill	1	Solid Waste Disposal Site	Permitted	Closed
10-AA-0078	Bethel Disposal Site III	1	Solid Waste Disposal Site	Permitted	Closed
10-CR-0003	Friant Road Inert Disposal Site	1	Solid Waste Disposal Site	Unpermitted	Closed
10-CR-0004	Kash Inc/Parlier Disposal Site	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0005	Burlington Northern Santa Fe DS	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0008	Del Rey Disposal Site	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0011	Riverdale Disposal Site	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0012	City of Sanger Disposal Site (City Yard)	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0013	Snake Road Disp Site	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0014	Spano River Ranch Disposal	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0018	City of Reedley Landfill	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0019	Auberry Disposal Site	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0021	Camp 19 Disposal Site	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0023	City of Firebaugh Disposal Site	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0024	Fowler City Disposal Site	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0026	Gabriels Disposal Site	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0030	Glenn Meadow Disposal Site	1	Solid Waste Disposal Site	To Be Determined	Closed

TABLE 6-3
CLOSED SOLID WASTE FACILITIES
Fresno County
2016

SWIS Number	Name	Unit	Activity	Regulatory Status	Operational Status
10-CR-0031	Hume Lake Disposal Site	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0032	Laton Disposal Site	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0033	Meadow Lakes Disposal Site	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0040	Shaver Lake Disposal Site	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0043	Tranquillity Disposal Site	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0044	Trimmer Solid Waste	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0046	Highland Disposal	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0048	Orange Cove Disposal Site	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0050	Balch Camp Disposal Site	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0053	Fresno Irrigation District	1	Solid Waste Disposal Site	Unpermitted	Closed
10-CR-0056	M.D. Wesson Disposal Site	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0057	Big Creek Municipal Disposal Site	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0058	Italian Bar Disposal Site	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0059	Hyde Park Disposal Site	1	Solid Waste Disposal Site	To Be Determined	Closed
10-CR-0060	Lassen Avenue Disposal Site	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0061	Nielson Ave Dumpsite	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0065	City of Sanger DS (River Bottom)	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0068	Mono Creek Disposal Site	1	Solid Waste Disposal Site	To Be Determined	Closed
10-CR-0071	City of Kerman Disposal Site	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0076	Basin-II-2 Disposal Site	1	Solid Waste Disposal Site	Pre-regulations	Closed
10-CR-0077	City of Huron Cleanup Grant (2136)	1	Solid Waste Disposal Site	Unpermitted	Closed
10-AA-0002	Chateau Fresno Landfill	1	Solid Waste Disposal Site	Permitted	Closed
10-AA-0006	Coalinga Disposal Site	1	Solid Waste Landfill	Permitted	Closing

Source: Solid Waste Information System (SWIS), http://calrecycle.ca.gov

RESIDENTIAL SOLID WASTE SERVICES

BIOLA COMMUNITY SERVICES DISTRICT

The Biola Community Service District provides solid waste services for the 242-acre unincorporated community of Biola. The District has a population of 1,100 people except during harvest season for local agriculture, from August through September, when the population rises to 1,600 people. The District contracts with Sunset Waste Systems to provide solid waste collection and disposal service to the District. Sunset Waste Systems provides two hundred and fifty 90-gallon trash cans, eight 64-gallon trash cans, four three-yard bins, three two and a half yard bins and two roll off containers to the residents of the District. Sunset Waste System also provides recycling services under its existing contract. (Biola Community Services District MSR, 2013)

DEL REY COMMUNITY SERVICES DISTRICT

The Del Rey Community Service District serves the unincorporated community of Del Rey located south of the City of Sanger. It provides solid waste services to a population of approximately 1,200 residents, as well as commercial and industrial developments. The District contracts with Industrial Waste Salvage for solid waste and recycling services. (Del Rey Community Services District MSR, 2007)

EASTON COMMUNITY SERVICES DISTRICT

The Easton Community Service District is located in the community of Easton approximately four miles south of the City of Fresno and serves a population of 1,966. The District provides solid waste services to residents within the District through a contract with a private waste hauler. (Easton Community Services District MSR, 2011)

LATON COMMUNITY SERVICES DISTRICT

The Laton Community Service District is located in the south central portion of Fresno County adjacent to the Kings River. It provides solid waste pickup to an approximate population of 1,230. Solid waste services are provided through a contract with Waste Management Inc., a private provider. (Laton Community Services District MSR, 2011)

COUNTY SERVICE AREA NO. 30

County Service Area No. 30 encompasses provides solid waste removal services in the El Porvenier subdivision, located west of Derrick Avenue near Clarkson Avenue. The area within the district is subdivided and largely built out. The District contracts with a private hauler to provide solid waste removal. (CSA No. 30 MSR, 2011)

COUNTY SERVICES AREA NO. 32

County Service Area No. 32 provides solid waste removal services to the Cantua Creek farm labor housing development. The District is located at Clarkson Avenue west of San Mateo Avenue, and includes 43 single-family residences and 30 mobile home sites. The area within the district is subdivided and largely built out. The District provides refuse collection through a contract with a private solid waste hauler. (CSA No. 32 MSR, 2011)

MALAGA COUNTY WATER DISTRICT

The Malaga County Water District provides solid waste disposal services to the community of Malaga, an area adjacent to, and overlapping with, the southern edge of the City of Fresno's boundaries. Solid waste services are contracted to a private company, Industrial Waste & Salvage. (Malaga County Water District MSR, 2007)

PINEDALE COUNTY WATER DISTRICT

The Pinedale County Water District is an 850-acre independent special district that provides services to areas predominantly within the City of Fresno, but also within some unincorporated island areas. It provides solid waste collection and disposal service to unincorporated areas of the district through a service contract with Waste Management Inc. The City of Fresno provides solid waste service to the City of Fresno areas within the District. (Pinedale County Water District MSR, 2007)

RIVERDALE PUBLIC UTILITIES DISTRICT

The Riverdale Public Utility District is located in Central Fresno County near the Fresno/Kings County boundary. The District encompasses approximately 424 acres and contains a mixture of residential, commercial, and agriculture land uses. The District provides solid waste pick-up and disposal services to the Community of Riverdale through a contract with a private solid waste hauler, Waste Connections. (Riverdale Public Utilities District MSR, August 2007)

REGULATORY SETTING

STATE AND LOCAL SOLID WASTE REGULATIONS

In accordance with the California Code of Regulations (CCR) Title 27, Sections 21600 through 21900, all solid waste disposal sites are jointly regulated under California Code of Regulations (CCR), Title 27, Division 2, Chapters 1 through 8, Section 20005 through 23014; the California Regional Water Quality Control Board (RWQCB); and the California Integrated Waste Management Board (CIWMB). Solid waste transfer stations and compost sites are regulated under CCR, Title 14, Division 7, Chapters 3 and 4, Sections 17200 through 17870. Transfer stations and compost sites are primarily regulated by the CIWMB. The RWQCB has recently begun to regulate compost sites and has a limited authority regarding transfer stations. The Fresno County Department of Public Health, Environmental Health Division is the Local Enforcement Agency (LEA) for the CIWMB.

KEY TERMS

The following terms are used in the section to describe the solid and hazardous waste:

Solid Waste. Non-hazardous solid discarded items from households and light industry. Solid waste includes primarily waste paper and food organic waste. Other common waste items are plastic, cloth, metal cans and yard waste.

Household Hazardous Waste. Items that are discarded at specially designated facilities and not in solid waste facilities. These items included paints, cleaning chemicals, solvents, fluorescent light bulbs, non-commercial pesticides, insecticides and motor oil

Electronic "E" Waste. Items that include computers, computer monitors, TVs, printers and electronic parts which are excluded from solid waste landfills.

Hazardous Waste. Discarded items from industrial or agricultural processes that would be designated hazardous due to the concentration and chemical content.

Industrial Waste. Solid or liquid material that is discarded from industrial facilities.

Waste Generation Rates. The amount solid waste generated. These rates are used to assess the annual anticipated landfill volume used.

REFERENCES

REPORTS/PUBLICATIONS

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PMC. Del Rey Community Service District Municipal Service Review and Sphere of Influence Update, July 2007.

PMC. Malaga County Water District Municipal Service Review and Sphere of Influence Update, October 2007.

PMC. Pinedale County Water District Municipal Service Review and Sphere of Influence Update, October 2007.

PMC. Riverdale Public Utility District Municipal Service Review and Sphere of Influence Update, August 2007.

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Witte, Jeff; Fleming, Candie; and Hendricks, Samantha. Easton Community Service District Municipal Service Review and Sphere of Influence Update, September 2011.

Witte, Jeff; Fleming, Candie; and Hendricks, Samantha. Laton Community Service District Municipal Service Review and Sphere of Influence Update, September 2011.

Witte, Jeff; Fleming, Candie; and Hendricks, Samantha. County Service Area No. 14 Municipal Service Review and Sphere of Influence Update, September 2011.

Ramirez, Rene. Staff Report: Consideration of Fresno County Request for Construction Waster for Final Cover Requirements at the Closed Coalinga Disposal Site. Prepared for the Coalinga City Council, July 2014.

WEBSITES

Fresno County Public Works and Planning. Household Hazardous Waste, www.co.fresno.ca.us/DepartmentPage.aspx?id=18071, accessed March 24, 2016.

PERSONS CONSULTED

None

SECTION 6.5 UTILITIES AND MAJOR UTILITY CORRIDORS

INTRODUCTION

This section contains existing available information on the utilities provided in Fresno County, focusing on natural gas and electrical service systems. Utilities are important service providers that support the expansion of the region's economic base, serve available developable land, and maintain or increase infrastructure capacity.

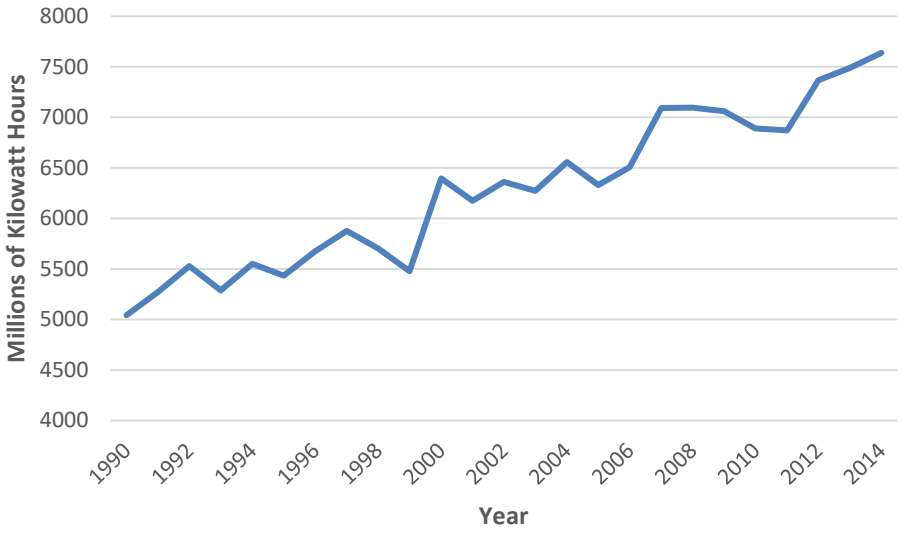
EXISTING CONDITIONS

ELECTRICAL SERVICES

Pacific Gas & Electric (PG&E) provides electrical service to the majority of Fresno County, including all incorporated areas. The Southern California Edison Company serves the northeast area of Fresno County in the communities of Shaver Lake and Big Creek where the company has generating facilities. In 2014 Fresno county consumed 7,638 million kilowatt hours of electricity, an increase of 19.4 percent over electricity demand in 2000, and an increase of 51.5 percent over demand in 1990. Figure 6-1 summarizes power consumption in Fresno county from 1990 to 2014. Neither company has problems serving their customers and does not anticipate future problems serving the communities. Table 6-4 identifies power generating facilities in Fresno County. (California Energy Commission, Energy Consumption Data Management System, available at http://ecdms.energy.ca.gov, accessed March 30, 2016)

FIGURE 6-1
POWER CONSUMPTION

Fresno County
2014



Source: State of California, Energy Consumption Data Management System, available at http://ecdms.energy.ca.gov, accessed March 30, 2016.

TABLE 6-4 POWER GENERATING FACILITIES Fresno County 2016					
Plant_Name	**Online Mw**	**Facility**	**Online Year**	**Plant City**	**Owner**
Mendota Biomass	25.00	Waste-to-Energy	1989	Mendota	Covanta Energy
Rio Bravo Fresno	25.00	Waste-to-Energy	1988	Fresno	North American Power Group, Ltd.
Orange Cove Id	0.51	Hydroelectric	1990	Fresno	Orange Cove Irrigation District
Kings River Hydro Co.	1.00	Hydroelectric	1990	Fresno	Orange Cove Irrigation District
Portal	10.00	Hydroelectric	1956	Big Creek	Southern California Edison Company
Kerckhoff 1	33.70	Hydroelectric	1920	Auberry	Pacific Gas and Electric Company
Balch 1	34.00	Hydroelectric	1927	Balch Camp	Pacific Gas and Electric Company
Kings River	52.00	Hydroelectric	1962	Fresno	Pacific Gas and Electric Company
Big Creek 8	64.50	Hydroelectric	1921	Auberry	Southern California Edison Company
Big Creek 2	67.10	Hydroelectric	1913	Big Creek	Southern California Edison Company
Big Creek 1	82.90	Hydroelectric	1913	Big Creek	Southern California Edison Company
Big Creek 2a	98.50	Hydroelectric	1928	Big Creek	Southern California Edison Company
Balch 2	108.00	Hydroelectric	1958	Balch Camp	Pacific Gas and Electric Company
Haas	144.00	Hydroelectric	1958	Fresno	Pacific Gas and Electric Company
Kerckhoff 2	155.00	Hydroelectric	1983	Auberry	Pacific Gas and Electric Company
Pine Flat	165.00	Hydroelectric	1984	Fresno	Kings River Conservation District
Big Creek 3	177.00	Hydroelectric	1923	Auberry	Southern California Edison Company
Eastwood	199.00	Hydroelectric	1987	Shaver Lake	Southern California Edison Company
Helms Pumped Storage	1212.00	Hydroelectric	1984	Shaver Lake	Pacific Gas and Electric Company
Roy Sharp Jr.	0.10	Oil/Gas	1991	Caruthers	
Coalinga Cogen.	7.00	Oil/Gas	1988	Coalinga	Aera Energy LLC.
Coalinga	20.70	Oil/Gas	1986	Coalinga	Chevron U.S.A.
Fresno Cogen Partners LP PKR	21.30	Oil/Gas	2001	San Joaquin	Fresno Cogeneration Partners
PE - Kes Kingsburg Llc	34.50	Oil/Gas	1990	Kingsburg	PE Management-Kingsburg, LLC

TABLE 6-4
POWER GENERATING FACILITIES
Fresno County
2016

Plant_Name	Online Mw	Facility	Online Year	Plant City	Owner
Coalinga Cogen Co.	38.40	Oil/Gas	1991	Coalinga	Claremont Tennis Club
Sanger Power & Feed	39.80	Oil/Gas	1991	Sanger	Dynamis Inc.
Wellhead Power Gates, LLC	46.50	Oil/Gas	2001	Huron	Wellhead Power Gates, LLC
Calpeak Power Panoche, LLC	49.62	Oil/Gas	2002	Firebaugh	Calpeak
Wellhead Power Panoche, LLC	49.90	Oil/Gas	2001	Firebaugh	Wellhead Power Panoche, LLC
Fresno Cogen	58.25	Oil/Gas	1989	San Joaquin	Fresno Cogeneration Partners
Kings River Conservation Dist. Peaker	98.00	Oil/Gas	2005	Fresno	Kings River Conservation District
Starwood Midway	120.00	Oil/Gas	2009	Los Banos	Starwood Power-Midway LLC
Panoche Energy Center	400.00	Oil/Gas	2009	Panoche Hills	Energy Investors Fund
Sun Harvest	0.25	Solar	2007	Fresno	Enxco
La Joya Del Sol	1.50	Solar	2012	Fresno	Gestamp Asetym Solar North America
Calrenew-1 Solar Farm	5.00	Solar	2010	Mendota	Meridian Energy USA
Giffen Solar Station	10.00	Solar	2012	Cantua Creek	Pacific Gas and Electric Company
West Gates Solar Station	10.00	Solar	2013	Huron	Pacific Gas and Electric Company - Power Generation
Five Points Solar Station	15.00	Solar	2011	Five Points	Pacific Gas and Electric Company
Westside Solar	15.00	Solar	2011	Five Points	Pacific Gas and Electric Company
Stroud Solar	20.00	Solar	2011	Helm	Pacific Gas and Electric Company
Cantua Solar Station	20.00	Solar	2012	Cantua Creek	Pacific Gas and Electric Company
Huron Solar Station	20.00	Solar	2012	Huron	Pacific Gas and Electric Company
Gates Solar Station	20.00	Solar	2013	Huron	Pacific Gas and Electric Company - Power Generation
Guernsey Solar Station	20.00	Solar	2013	Hanford	Pacific Gas and Electric Company - Power Generation

Source: California Energy Commission, Database of California Power Plants, http://energy.ca.gov/sitingcases, accessed March 30, 2016.

NATURAL GAS SERVICES

PG&E provides all natural gas services within Fresno County. The main spines run near SR 99, SR 41, and SR 180 with pipelines reaching each of the incorporated cities and into the foothills north and east of Clovis.

REGULATORY SETTING

FEDERAL REGULATORY SETTING

Federal Energy Regulatory Commission (FERC). FERC is an independent agency that regulates the interstate transmission of electricity, natural gas, and oil. FERC also reviews proposals to build liquefied natural gas (LNG) terminals and interstate natural gas pipelines, as well as licensing hydropower projects. Licensing of hydroelectric facilities under the authority of FERC includes input from State and Federal energy, environmental protection, fish and wildlife, and water quality agencies. The California Energy Commission's Systems Assessment and Facilities Siting Division provides coordination with FERC to ensure that needed energy facilities are authorized in an expeditious, safe, and environmentally acceptable manner.

STATE REGULATORY SETTING

California Energy Commission (CEC). The CEC is California's primary energy policy and planning agency. Created by the California Legislature in 1974, the CEC has five major responsibilities: 1) forecasting future energy needs and keeping historical energy data; 2) licensing thermal power plants 50 MW or larger; 3) promoting energy efficiency through appliance and building standards; 4) developing energy technologies and supporting renewable energy; and 5) planning for and directing State response to energy emergencies. Under the requirements of the California Public Resources Code, the CEC in conjunction with the California Department of Conservation (DOC) Division of Oil, Gas, and Geothermal Resources is required to assess electricity and natural gas resources on an annual basis or as necessary.

California Public Utilities Commission (CPUC). The CPUC is a State agency created by a constitutional amendment to regulate privately-owned utilities providing telecommunications, electric, natural gas, water, railroad, rail transit, and passenger transportation services, and in-State moving companies. The CPUC is responsible for assuring that California utility customers have safe, reliable utility services at reasonable rates, while protecting utility customers from fraud. The CPUC regulates the planning and approval for the physical construction of electric generation, transmission, or distribution facilities; and local distribution pipelines of natural gas (CPUC Decision 95-08-038).

California Code of Regulations (CCR). Title 20, Public Utilities and Energy, contains the regulations related to power plant siting certification. CCR Title 24, California Building Standards, contains the energy efficiency standards related to residential and nonresidential buildings. Title 24 standards are based, in part, on a State-mandate to reduce California's energy demand. The CPUC regulates rates and charges for basic telecommunication services, such as how much a customer pays for the ability to make and receive calls.

Independent System Operator (ISO). The Independent System Operator (ISO), whose governing board is appointed by the Governor, manages most of California's transmission system. The ISO's primary function is to balance electricity supply with demand and maintain adequate reserves to meet the needs of California homes and businesses. FERC regulates the ISO. The California Electricity Oversight Board monitors and reports on the activities of the ISO.

KEY TERMS

Electricity. A natural phenomenon, either through lightening or the attraction and repulsion of protons and electrons to create friction, that forms an electric current or power.

Watt. An electrical unit of power equal to the rate of energy transfer produced in a circuit by one volt acting through a resistance of 1 ohm, a unit of measurement of resistance.

Kilowatt Hours (kWh). A unit of measurement for electricity equal to one thousand watt hours.

Power Plants. Sources for generating electricity.

Generators. Entities that own, operate, and maintain generation assets to supply energy and ancillary services to the competitive market.

Transmission and Distribution Lines. Distribution networks for electricity and natural gas.

REFERENCES

REPORTS/PUBLICATIONS

California Energy Commission, Database of California Power Plants, available at http://energy.ca.gov/sitingcases, accessed March 30, 2016.

California Energy Commission, Energy Consumption Data Management System, available at http://ecdms.energy.ca.gov, accessed March 30, 2016.

PG&E.com, Gas Transmission Pipeline System Map, available at http://www.pge.com/en/safety/systemworks/gas/transmissionpipelines/index.page, accessed March 24, 2016.

WEBSITES

None

PERSONS CONSULTED

None

SECTION 6.6 TELECOMMUNICATIONS

INTRODUCTION

The telecommunications and digital industries have experienced phenomenal growth in the past decade, both in the number of services provided and dependency upon those services. Services include basic phone services, long distance services, internet services, and wireless communication services (e.g. cellular phone service, enhanced specialized mobile radio [ESMR], personal communication services (PCS) and paging systems).

EXISTING CONDITIONS

TELEPHONE SERVICES

AT&T is the largest telecommunications provider in the United States and provides wired telephone service to the majority of Fresno County residents. AT&T services include all telecommunications services, including local phone service, long distance telephone service, and high-speed Internet.

The Ponderosa Telephone Company serves the northern areas of Fresno County including the towns of Auberry, Shaver, Big Creek, Huntington, and the southern half of Friant.

The Sebastian Corporation provides wired telephone services to the City of Kerman.

Wireless telephone service is available from many national and local providers, including Verizon Wireless, AT&T, Sprint, and T-Mobile.

ANTENNAS

Telecommunication services require antenna structures that are typically accompanied by equipment buildings or boxes. Cellular and ESMR equipment buildings are generally less than 12 feet by 24 feet. PCS equipment facilities are self-contained weatherproof cabinets about the size of a vending machine. Some providers propose an integration of antennas with light poles, while others attach their antennas to buildings or other structures. Building mounted antennas are unnoticeable if they are hidden from view on the roof or painted to match the color and texture of the building. Lattice towers are the least common type of antenna, range from 60 to 200 feet in height, and generally accommodate a variety of uses. They are found where great height is needed and where multiple microwave antennas are required. Although they can accommodate many users, they pose serious visual impacts.

INTERNET AND TELEVISION SERVICES

County residents in most urbanized areas are eligible for Digital Subscriber Line (DSL) high-speed internet access through internet providers including AT&T, Comcast, and Earthlink. Internet access in rural areas is generally limited to dial-up service or satellite connections.

Cable television services are offered by numerous providers, including Comcast, DirectTV, and various satellite companies.

REGULATORY SETTING

STATE REGULATORY SETTING

California Public Utilities Commission (CPUC). The CPUC is a State agency created by a constitutional amendment to regulate privately-owned utilities providing telecommunications, electric, natural gas, water, railroad, rail transit, and passenger transportation services, and in-State moving companies. The CPUC is responsible for assuring that California utility customers have safe, reliable utility services at reasonable rates, while protecting utility customers from fraud. The CPUC regulates the planning and approval for the physical construction of electric generation, transmission, or distribution facilities; and local distribution pipelines of natural gas (CPUC Decision 95-08-038).

KEY TERMS

Cellular Telephone. A mobile telephone operated through a cellular radio network.

Digital Subscriber Line (DSL). Internet technology that uses existing 2-wire copper telephone wiring to deliver high-speed data services at speeds greater than basic internet dial-up.

Internet. A network that links computer networks all over the world by satellite and telephone, connecting users with service networks such as e-mail and the World Wide Web.

REFERENCES

REPORTS/PUBLICATIONS

Fresno County. *Fresno County General Plan*, October 2000.

WEBSITES

Sebastian Corp. http://www.sebastiancorp.com, accessed March 17, 2016.

The Ponderosa Telephone Company. http://www.goponderosa.com, accessed March 17, 2016.

PERSONS CONSULTED

None

SECTION 6.7 LAW ENFORCEMENT

INTRODUCTION

This section describes the general characteristics of law enforcement facilities and services provided within Fresno County by the Sheriff's Office.

EXISTING CONDITIONS

The Fresno County Sheriff's Department currently has 329 sworn officers serving the unincorporated population of Fresno County (174,200), for a ratio of 1.89 officers per 1,000 residents. The ratio is below the standard of 2.0 officers per 1,000 residents set by the Federal Bureau of Investigation. The Sheriff's Department has 544 non-sworn clerical and support people.

Law enforcement protection for the unincorporated county and contract cities is divided into four areas. Each area can be divided into as many as eight beats. There is one officer per beat at any one time. On occasion, a Reserve Deputy Sheriff will ride with an officer on his or her beat. Most Fresno County Sheriffs assigned to Patrol Division work the 4-10 Plan. This means they work ten hour shifts, four days per week. Detectives work eight-hour shifts, five days per week. (2000 General Plan, Fresno County Sheriff, Enforcement Unit, http://www.fresnosheriff.org/units/enforcement/patrol-areas.html, accessed March 19, 2016)

The Fresno County Sheriff's Department considers the most pressing concerns to be a critical lack of bed space in the County Jail, increasing number of calls for service with no commensurate increase in patrol staff, and a critical lack of patrol vehicles.

CRIME RATES

The most recent County-wide crime data showed that a total of 825 violent crimes and 5,248 property crimes were reported in 2012. Violent crime rate trends for the period 2000 to 2012 show that Fresno County experienced a steep decrease in violent crime totals between 2001 (1,434 reported) and 2002 (611 crimes reported). Between 2002 and 2012 the County has averaged 734 violent crimes per year.

Reported property crimes increased steadily from 5,110 in 2000 to 6,659 in 2006. Since 2006, however, reported property crimes have generally decreased, with only slight increases in 2011 and 2012. Table 6-5 provides data on reported crimes from 2000 to 2012.

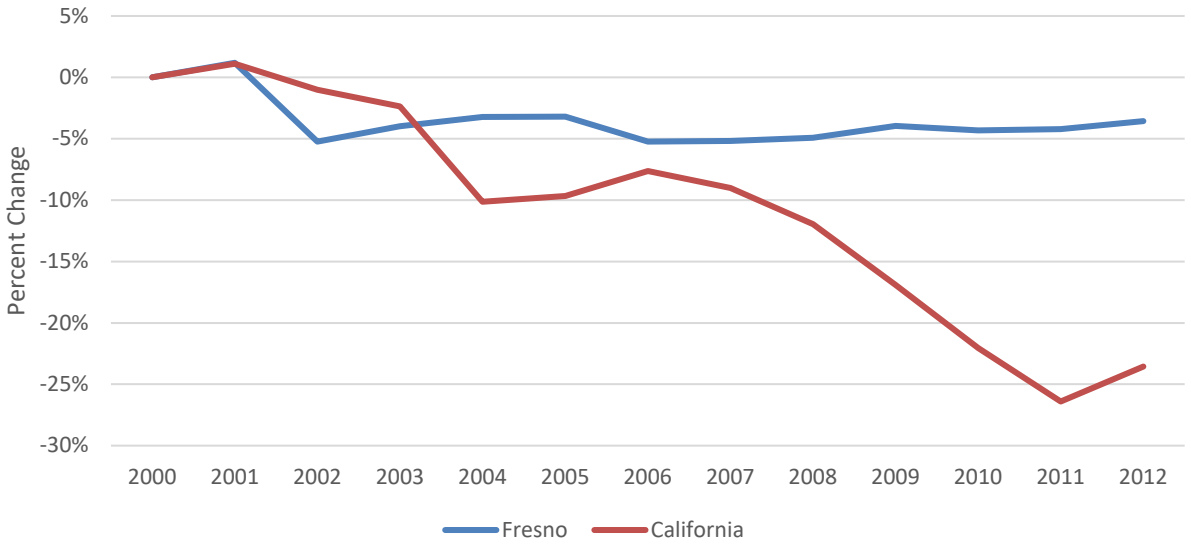
When comparing crime rate trends, Fresno County is experiencing similar trends to California as a whole. Figure 6-2 and Figure 6-3 compare Fresno County and California crime rate trends, using the year 2000 as the baseline.

TABLE 6-5
REPORTED CRIMES
Fresno County
2000-2012

Year	Violent Crimes	Percent Change from the Year 2000	Property Crimes	Percent Change from the Year 2000
2000	1282		5110	
2001	1434	11.86	5460	6.85
2002	611	-52.34	5343	4.56
2003	771	-39.86	6185	21.04
2004	870	-32.14	6208	21.49
2005	872	-31.98	6441	26.05
2006	612	-52.26	6659	30.31
2007	618	-51.79	6497	27.14
2008	652	-49.14	6121	19.78
2009	774	-39.63	5087	-0.45
2010	727	-43.29	4442	-13.07
2011	740	-42.28	4781	-6.44
2012	825	-35.65	5248	2.70

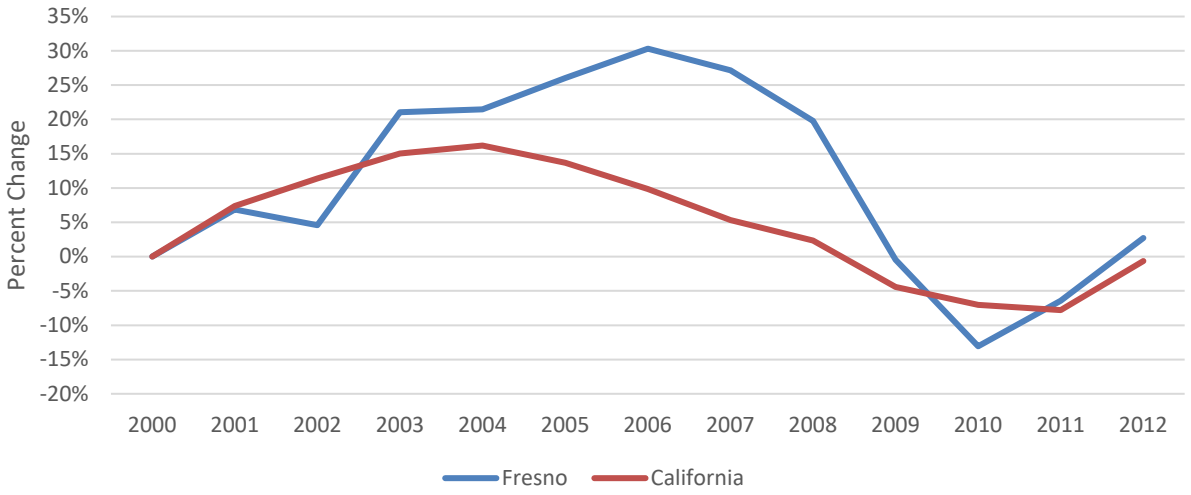
Source: Department of Justice, Uniform Crime Reporting Statistics database, http://www.ucrdatatool.gov.

FIGURE 6-2
VIOLENT CRIME RATE TRENDS (BASELINE YEAR: 2000)
Fresno County and California
2000-2012



Source: Department of Justice, Uniform Crime Reporting Statistics database, http://www.ucrdatatool.gov; Mintier Harnish, 2016.

FIGURE 6-3
PROPERTY CRIME RATE TRENDS (BASELINE YEAR: 2000)
Fresno County and California
2000-2012



Source: Department of Justice, Uniform Crime Reporting Statistics database, http://www.ucrdatatool.gov; Mintier Harnish, 2016.

DIVISIONS

COMMUNICATIONS

The Fresno County Sheriff's Office Communications Center is the critical link between the community and patrol units in the field. The Center provides law enforcement dispatching services as well as emergency 911 services and non-emergency services for Fresno County as well as four municipal police departments within Fresno County – Fowler Police Department, Kerman Police Department, Parlier Police Department, and Sanger Police Department. The Communications Center handles in excess of 900 emergency and non-emergency calls each day. Service calls range from in-progress emergencies and violent crimes to non-emergency calls. (Fresno County Sheriff, Communications Unit, http://www.fresnosheriff.org/units/enforcement/communications.html)

DETECTIVE BUREAU

The Fresno County Sheriff's Office Detective Bureau consists of a number of specialized units responsible for investigating all serious misdemeanor and felony crimes. Detective Bureau units include: Child Predator Program, Crime Scene Unit, Domestic Violence, Elder Abuse, Forensics Laboratory, Homicide Unit, Internet Crimes Against Children (ICAC), Missing Persons/Runaways, Sex Crimes, Sex Offenders, Special Investigations (Vice, Marijuana Safety Team, Marijuana Incidents, and Meth Task Force). (Fresno County Sheriff, http://www.fresnosheriff.org, accessed March 19, 2016)

JAIL DIVISION

The Fresno County Sheriff's Office is responsible for the operation of three jails within the county. The South Annex Jail built in 1947, the Main Jail built in 1989, and the North Annex Jail built in 1993. The total combined capacity of all open floors is 2,427 inmates. The inmate population is supervised by over 350 Correctional Officers, Correctional Sergeants, and Correctional lieutenants. Since 1993 the Fresno County Sheriff has been under a Federal Consent Decree which controls the number of inmates that can be held in jail at any given time. The jail population is limited to a percentage of the number of available beds within the three jails, with the overriding mandate that each inmate shall have a bed. (Fresno County Sheriff, Jail Division, http://www.fresnosheriff.org/jail.html, accessed March 19, 2016)

PATROL

The Fresno County Sheriff's Office provides Patrol services to more than 6,000 square miles. Patrol services are decentralized and divided into four patrol areas. Each area is commanded by a lieutenant who supervises field services from a substation located in each of the areas. (Fresno County Sheriff, Enforcement Unit, http://www.fresnosheriff.org/units/enforcement/patrol-areas.html, accessed March 19, 2016)

PROPERTY AND EVIDENCE

The Property and Evidence Unit is responsible for the custody, documentation, and preservation of all physical evidence seized or obtained by the Sheriff's Office. The Unit processes items of evidence and property and stores them in over thirty locations throughout the metropolitan area. Each item is documented, secured, and stored by the Property and Evidence Unit, to be safely preserved until it is needed for court or returned to its rightful owner. (Fresno County Sheriff, Property and Evidence Unit, http://www.fresnosheriff.org/units/property-and-evidence-unit.html, accessed March 19, 2016)

RECORDS

The Records Unit consists of two shifts operating seven days a week. The Records Unit is currently staffed by 15 Office Assistants and two Supervising Office Assistants. The Records Unit also relies on extra help employees to assist in accomplishing the many tasks the unit is responsible for.

The Records Unit is responsible for processing, distributing and maintaining all police reports written by the Fresno County Sheriff's Office. Over 23,000 reports are generated by the Records Unit each year. These include records of criminal cases, incident reports, traffic citations, impounded and stolen vehicle reports, and other reports for which records are maintained. The Records Unit also processes vehicle releases, background checks, record checks for public and authorized private agencies, subpoenas, and over 42,000 warrants and 6,400 restraining orders each year.

The Records Unit provides over the counter services to citizens. Public services provided by the Records Unit include:

- providing information and copies of police reports to victims or authorized representatives and insurance companies;
- providing an incident call summary upon request;
- providing vehicle release and storage information for impound, towed/stored, recovered stolen and repossessed vehicle;
- providing a Fresno County Sheriff's Office letter of clearance for immigration or visa purpose;
- providing a copy of arrest tag with date of release for in custody verification purposes;
- placing child custody and restraining orders on file; and
- providing warrant information.

(Fresno County Sheriff, Records Unit, http://www.fresnosheriff.org/units/records, accessed March 19, 2016)

SPECIALTY UNITS

The Fresno County Sheriff's Office operates various Specialty Units to effectively provide service to the general public. Fresno County Sheriff's Office Specialty Units include: Agricultural Task Force, Air Support Unit, Boating Enforcement Unit, Dive Team, Explosive Ordinance Disposal, Help Eliminate Auto Theft (HEAT), Honor Guard, K-9 Unit, Multi-Agency Gang Enforcement Consortium (MAGEC), Mounted Patrol Unit, Off-Road Safety Team, Search and Rescue, SWAT/Crisis Negotiations. (Fresno County Sheriff, http://www.fresnosheriff.org, accessed March 19, 2016)

REGULATORY SETTING

Section 24000 of the California Government Code mandates that the Office of Sheriff be established in each county in California. The Government Code describes the duties of the Office of Sheriff-Coroner, which include acting as bailiff in the Superior Court, maintaining a jail, and preserving the peace.

KEY TERMS

There are no key terms in this section.

REFERENCES

REPORTS/PUBLICATIONS

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WEBSITES

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Fresno County Sheriff, Records Unit. http://www.fresnosheriff.org/units/records, accessed March 19, 2016.

Fresno County Sheriff, Jail Division. http://www.fresnosheriff.org/jail.html, accessed March 19, 2016.

PERSONS CONSULTED

None

SECTION 6.8 FIRE PROTECTION

INTRODUCTION

This section summarizes existing information regarding fire protection services in unincorporated areas of Fresno County. The following evaluation describes the special districts that provide various levels of fire protection services, the concepts of mutual and automatic aid as they relate to facility planning, and a summary of the Department's existing and future needs.

EXISTING CONDITIONS

Unincorporated Fresno County is served by the Fresno County Fire Protection District, Fig Garden Fire Protection District, North Central Fire Protection District, Orange Cove Fire Protection District, Bald Mountain Fire Protection District, Laton Community Service District, Riverdale Public Utilities District, County Service Area 31B (Shaver Lake), and the California Department of Forestry and Fire Protection (CDF).

ISO RATINGS

The Insurance Services Office (ISO) rates fire departments and assigns public protection classifications for the establishment of fire insurance rates. Many districts have multiple ISO ratings depending on distance to fire stations or water hydrants, and are often broken up by city and rural service areas. The higher the Insurance Rating number the lower the level of service and the higher the cost for a homeowner's fire insurance. An area with no organized fire protection services is assigned a Class 10 rating. The ISO ratings for fire protection service providers are included the following profiles.

FIRE PROTECTIONS DISTRICTS (FPD)

BALD MOUNTAIN FIRE PROTECTION DISTRICT

The Bald Mountain Fire Protection District encompasses approximately 9,977 acres located north of Highway 168 and southwest of Shaver Lake. It is staffed by 14 volunteer firefighters and provides fire prevention and suppression and emergency medical response services. District inventory includes a 1997 Ford F-350 Medical/Fast Attack Vehicle, a 1996 Chevrolet ¾ ton Command Truck, a 2012 Freightliner type 2 engine, and a 2007 Kenworth Water Tender. The District's average response time to emergency calls is three minutes or less, and its ISO rating is 7. (Bald Mountain Fire Protection District MSR, 2015)

FIG GARDEN FIRE PROTECTION DISTRICT

The Fig Garden Fire Protection District encompasses 442 acres within an unincorporated island surrounded by the City of Fresno. The District is generally bounded by Shaw Avenue to the north, Dakota Avenue to the south, Maroa Avenue to the east, and Palm Avenue to the west. District services include fire prevention and suppression, search and rescue, and hazardous materials response. The District has no employees and contracts for all of its services with the City of Fresno, which also staffs a fire station owned by the District. Fig Garden Fire Protection District has an ISO rating of X. (Fig Garden Fire Protection District MSR, 2007)

FRESNO COUNTY FIRE PROTECTION DISTRICT

The Fresno County Fire Protection District provides fire prevention and suppression, emergency medical response, search and rescue, building permits and inspections, and emergency dispatch services. The District encompasses approximately 2,547 square miles and serves a population of more than 220,000 residents. It extends from Kings and Tulare Counties on the south to Madera County on the north, and from the coastal range on the west to the foothills of the Sierras on the east. District territory includes unincorporated "islands" surrounded by the Cities of Clovis and Fresno. The District contracts with Cal Fire for staff and is administered by the District Fire Chief.

Fresno County FPD operates 13 permanent fire stations located throughout is boundaries. An additional five stations are staffed with paid call Firefighters. The District operates its fire engine companies with a minimum of 2-3 career Firefighters on duty every day, totaling 48 Firefighters on duty daily. It employs 101 full-time paid firefighters, 112 paid call firefighters, for a ratio of one firefighter for every 1,221 residents of the District. District fire apparatus include 18 engines, 1 ladder truck, 1 rescue apparatus, 6 water tenders, and 2 support vehicles.

The District's response standard is five minutes in commercial and residential areas near Fresno and Clovis and 20 minutes in rural areas. It normally meets these standards unless multiple incidents are occurring or the incidents are located in a few areas that cannot be reached within the referenced time standard. The District's ISO ratings are as follows:

- West of SR 99: Generally an ISO rating of 6 applies, except in areas with a municipal water system (Mendota, Huron) where the rating of 5 has been assigned.
- East of SR 99: Generally within the residential and industrial areas around Fresno and Clovis an ISO rating of 5 has been assigned, based on water system availability. In other areas greater than 5 miles from a fire station ratings range from 6 to 8.
- Eastern Foothill Area: An ISO rating of 9 has been assigned to these locations. (2000 General Plan)

The Fresno County FPD and the North Central FPD have faced substantial reductions in the size of their districts due to the growth of the Cities of Fresno and Clovis. Such growth has resulted in the reduction of District tax bases, as a significant portion of District revenues are generated from property taxes on properties located within the Spheres of Influence of the Cities of Fresno and Clovis. Although a transition agreement is in effect between the FPDs and the Cities of Fresno and Clovis, continued detachments of District land will result in substantial revenue loss, closure of a number of fire stations, and reduced service levels. (North Central Fire Protection District MSR, 2007)

NORTH CENTRAL FIRE PROTECTION DISTRICT

North Central Fire Protection District encompasses approximately 138,700 acres within the northern portion of Fresno County. Its services include fire prevention and suppression, emergency medical response, search and rescue, building permits and inspections, emergency dispatch services, and hazardous material response. District territory includes the City of Kerman.

The Fresno County FPD and the North Central FPD have faced substantial reductions in the size of their districts over the last several years due to the growth of the Cities of Fresno and Clovis. Such growth has resulted in the reduction of district tax bases required to fund their on-going operations. North Central

FPD entered into a long-term contract with the City of Fresno and in July 1, 2007, the City began providing fire protection and suppression and other services to the North Central Fire Protection District. North Central FPD employees were transferred to the City and equipment and facilities. On July 1, 2019 the North Central Fire Protection Department (FPD) contract with the City of Fresno was terminated and all North Central FPD employees were reassigned to the City of Fresno Fire District. (North Central Fire Protection District MSR, 2007)

ORANGE COVE FIRE PROTECTION DISTRICT

Orange Cove Fire Protection District encompasses approximately 14,434 acres including the city of Orange Cove and the surrounding area. It is adjacent to the Fresno County Fire Protection District to the west and south and the County of Tulare to the east. The District has one fire station in Orange Cove, one full-time employee, and 24 volunteer employees. District services include fire prevention and suppression and emergency medical response. The Orange Cove Fire Protection District has an ISO rating of X. (Orange Cove Fire Protection District MSR, 2007)

SPECIAL DISTRICTS

COUNTY SERVICE AREA NO. 31

County Service Area 31 has one fire station located on Highway 168 near Dorabella. The station serves a permanent population of 1,500 residents, which increases by 2,000 people during the summer months. The station is staffed by one chief and 25 volunteers. Response time is approximately five to seven minutes, and the station's ISO rating is 7. (Fresno County, *Fresno County General Plan*, October 2000)

COUNTY SERVICE AREA NO. 50

County Service Area No. 50 encompasses 31,114 acres in the vicinity of the communities of Prather and Auberry, and supports fire suppression and emergency medical response services. The District was formed in 2003 to provide a stable revenue stream to support Auberry Volunteer Fire Department activities. It owns one engine and the structure in which it is housed. The Auberry Volunteer Fire Department has an ISO rating of X. (CSA No. 50 MSR, 2011)

LATON COMMUNITY SERVICE DISTRICT

The Laton Community Service District is located in the south central portion of Fresno County adjacent to the Kings River. It provides fire protection services to about 500 acres and an approximate population of 1,600 during harvest season (August-September) and 1,230 throughout the remainder of the year. The District owns one station located at Dewitty and Fowler Avenues. The station has a staff of one fire chief and ten volunteers. There are no Emergency Medical Technicians. Approximately three to four calls are received each month. The Laton CSD has an ISO rating of 8. (Laton Community Services District MSR, 2011; Fresno County, *Fresno County General Plan*, October 2000).

RIVERDALE PUBLIC UTILITIES DISTRICT

The Riverdale Public Utilities District contracts with Fresno County FPD for fire protection services. Its infrastructure includes one station within the District at 10068 Malsbury in Riverdale, two fire trucks, and an administrative building. The Station is staffed by 18 volunteer firefighters. Response time within a

three-mile radius is approximately five minutes. The Riverdale station has an ISO rating of 6 (MSR). (Riverdale Public Utilities District MSR, 2007)

MUTUAL AND AUTOMATIC AID

Mutual Aid is defined as the provision of resources (personnel, apparatus, and equipment) to a requesting jurisdiction already engaged in emergency operations, which have exhausted or will shortly exhaust local resources.

Mutual aid was designed as a cost effective solution to help mitigate this shortage of resources as well as providing for those rare major emergencies that border upon or are actual disasters. Mutual Aid is simply a plan designed to allow fire agencies to assist each other during situations when an agency cannot muster sufficient resources to bring a successful completion to the incident.

Mutual Aid is provided using a progressive system, commencing with the closest neighboring agencies and working out from the incident until all resource needs are fulfilled. This strategy has been designed to minimize delays for agencies needing additional help when calling for Mutual Aid.

Automatic aid is a relatively new concept in the fire service. It is the process whereby the closest piece of emergency apparatus responds to a call for assistance regardless of jurisdiction. As city boundaries continue to expand, County fire stations find themselves surrounded by annexed neighborhoods and in a position to assist the cities with response in the area surrounding them. Conversely, the city fire stations constructed to mitigate the development allow the County Fire Department to relocate its equipment and stations to locations better serving the county residents by automatically responding to county areas to which they are closer. In this way, automatic aid also helps agencies become more cost effective by doing away with duplication of services.

The Fresno County Fire Protection District participates in mutual aid and response agreements with other agencies to obtain enhanced levels of service and coverage. These include cities and special districts in Fresno County, adjacent counties, the California Department of Forestry and Fire Protection (CDF), and the U.S. Army Corp of Engineers. There is also an automatic aid agreement between the City of Fresno and the Fresno County Fire Protection District for emergency response to unincorporated areas within the City of Fresno metropolitan area. There is no automatic aid agreement with the North Central Fire Protection District for unincorporated areas and the District has reopened and staffed two fire stations to serve those unincorporated areas that are in the service areas of existing City of Fresno Fire Stations.

EXISTING AND FUTURE NEEDS

REGULATORY SETTING

KEY TERMS

Automatic Aid. The process whereby the closest piece of emergency apparatus is dispatched to a call for assistance, regardless of jurisdiction.

Insurance Services Office Ratings. Public protection classifications are designated by the Insurance Services Office (ISO). The ISO bases its classifications on a number of factors, including fire department

location, equipment, staffing, water supply, and communications abilities. Ratings range from 1 to 10, with 1 being the best possible fire protection, and 10 being the worst.

Mutual Aid. The provision of resources (personnel, apparatus, and equipment) to a requesting jurisdiction already engaged in emergency operations which have exhausted or will shortly exhaust local resources.

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PMC. Riverdale Public Utilities District Municipal Service Review and Sphere of Influence Update, August 2007.

Witte, Jeff; Fleming, Candie; and Hendricks, Samantha. County Service Area No. 50 Municipal Service Review and Sphere of Influence Update, March 2011.

Witte, Jeff; Fleming, Candie; and Hendricks, Samantha. Laton Community Services District Municipal Service Review and Sphere of Influence Update, September 2011.

WEBSITES

Fresno County Fire Protection District. http://www.fresnocountyfire.org, accessed March 20, 2016.

PERSONS CONSULTED

None

SECTION 6.9 EMERGENCY SERVICES

INTRODUCTION

This section summarizes existing information on emergency services in unincorporated areas of Fresno County. The following evaluation describes County programs and ambulance agencies that provide various levels of emergency services to residents of the County.

EXISTING CONDITIONS

FRESNO COUNTY DEPARTMENT OF PUBLIC HEALTH

OFFICE OF EMERGENCY SERVICES

The Fresno County Office of Emergency Services (OES) is located within the Department of Public Health, Environmental Health Division. It coordinates planning, response, and recovery efforts for disasters occurring within the unincorporated area of the County, and develops the Fresno County Operational Area Master Emergency Services Plan. This Plan serves as a guide for the County's response to emergencies/disasters, and works to ensure the most effective and economical use of all resources, materials, and manpower, for the maximum benefit and protection of effected populations.

Since 1983, communities within Fresno County have suffered many disaster-magnitude emergencies including the Coalinga earthquake, several wild land fires, many flooding events, an airplane crash into a residential area, multi-casualty weather related vehicle accidents, and weather related agricultural economic disasters. It is essential that public agencies, community organizations, businesses, the media, and the public work together to prepare for, respond to, and recover from disasters. In 1995 the Fresno County Board of Supervisors established Fresno County OES as the county's Operational Area Lead Agency responsible for maintaining communication to maintain and enhance the community's ability to respond to disastrous events. During disasters, these communications concern situation reports, damage assessments, declarations of emergency for local, state and federal agencies, mutual aid requests, and disaster cost reimbursement application procedures and coordination. Additionally, Fresno County OES collects and circulates information on training opportunities, emergency alerting, communications systems, emergency plans, resources directories, and disaster response equipment. (Fresno County Department of Public Health, About Fresno County Office of Emergency Services, http://www.co.fresno.ca.us/DivisionPage.aspx?id=31561, accessed March 18, 2016)

EMERGENCY MEDICAL SERVICES DIVISION

The Emergency Medical Services Division manages the Central California Emergency Medical Services (CCEMS) Agency and its Emergency Medical Services Communications Center. Through the Communicaions Center, CCEMS provides ambulance dispatch services for all ambulance requests in Fresno, Kings, and Madera Counties and fire dispatch services to the City of Fresno and the City of Clovis Fire Departments. Division staff includes 38 dispatchers, and 9 dispatch supervisors. All dispatchers are certified in Emergency Medical Dispatch and Emergency Fire Dispatch. In 2007 the Division dispatched 124,968 ambulance responses in Fresno County. The Fresno County Emergency Medical Communication Center is the only designated ambulance dispatch center for Fresno, Kings, and Madera Counties. (Fresno County Department of Public Health, Emergency Medical Services Overview,

http://www.co.fresno.ca.us/DivisionPage.aspx?id=7496, accessed March 18, 2016; Central California EMS Agency, Emergency Medical Services Communications Center Brochure, September 2008)

AMBULANCE SERVICE

Fresno County is served by six ambulance services: American, which serves the Fresno/Clovis areas; Coalinga, which serves the Coalinga area; Selma, which serves the Selma area; Sanger, which serves the Sanger area; Sequoia Safety Council, which serves the Reedley area; and Kingsburg, which serves the Kingsburg region. Table 6-6 lists ambulance service providers with response time and service area population data. There are 19 First Responder Agencies in the County. Table 6-7 lists the First Responder Agencies and their service areas. Fire Protection Districts throughout the county provide paramedic or emergency medical response. This service is critical, especially for children and the elderly.

The service population for the various agencies ranges from 20,000 in the Kingsburg region to 450,000 in the Fresno/Clovis area. The average response time for emergency calls ranges from five minutes in the Sanger area to eight minutes in the Fresno/Clovis area. The average number of runs per day varies from three in the Kingsburg area to 185 in the Fresno/Clovis area.

TABLE 6-6
AMBULANCE SERVICE PROVIDERS
Fresno County
2016

Agency	Address	Area Served	Average Response Time	Average Runs Per Day
American Ambulance	2911 E. Tulare St., Fresno, CA. 93721	Fresno/Clovis		
Coalinga City Fire	300 W. Elm Ave., Coalinga, CA. 93210	Coalinga		
Kingsburg City Fire	1880 Bethel, Kingsburg, Ca. 93631	Kingsburg		
Sanger City Fire Dept.	1700 Seventh St, Sanger, CA 93657	Sanger		
Selma City Fire Dept.	2857 A Street, Selma, CA. 93662	Selma		
Sequoia Safety Council	500 E. 11th Street, Reedley, CA 93654	Reedley		

Source: Fresno County Department of Public Health, Emergency Medical Services, Fresno County Operations, http://www.co.fresno.ca.us/DivisionPage.aspx?id=7590; calls to provider agencies.

TABLE 6-7 FIRST RESPONDER AGENCIES Fresno County 2016	
Agency	**Area Served**
Auberry Volunteer Fire	Auberry
Bald Mountain Volunteer Fire	Auberry Road and Bald Mt. Road, 2 miles Southwest of Shaver Lake
Cal-Fire/Fresno Co. Fire Protection District	Fresno County
Clovis City Fire Department	Clovis
Coalinga City Fire Department	Coalinga
Firebaugh Volunteer Fire Department	Firebaugh
Fowler Fire Department	Fowler
Fresno City Fire Department	Fresno
Hume Lake Volunteer Fire and Rescue Co.	Hume Lake/SR 180
Huntington Lake Volunteer Fire	Huntington Lake Northeast of Big Creek
Kingsburg City Fire	Kingsburg
Laton Volunteer Fire	Laton
Mountain Valley Volunteer Fire	Areas of SR 180, SR 245, and SR 63 near Dunlap
Orange Cove Fire District	Orange Cove
Reedley City Fire Department	Reedley
Riverdale Volunteer Fire Department	Riverdale
Sanger City Fire Department	Sanger
Selma City Fire Department	Selma
Shaver Lake Volunteer Fire	Shaver Lake

Source: Fresno County Department of Public Health, Emergency Medical Services, Fresno County Operations, http://www.co.fresno.ca.us/DivisionPage.aspx?id=7590, accessed March 18, 2016.

Medical care delivered by paramedics in the field is accomplished primarily through standing orders, however, some medications or procedures require the paramedic to contact the base hospital physician for consultation. Unstable patients are taken to the closest most appropriate hospital, which may include a receiving hospital, trauma center, burn center, or pediatric facility. Stable patients may be taken to the facility of their choice. (Fresno County Department of Public Health, Emergency Medical Services Overview, http://www.co.fresno.ca.us/DivisionPage.aspx?id=7496, accessed March 18, 2016; Central California EMS Agency, Emergency Medical Services Communications Center Brochure, September 2008)

Fresno County Department of Health does not have concerns or problems providing service to Fresno County. As the County's population grows, the Department of Health Services does not anticipate problems providing adequate service to the County residents.

REGULATORY SETTING

FEDERAL REGULATORY SETTING

Homeland Security Presidential Directive (HSPD)-5 National Incident Management System (NIMS). Directs the Secretary of Homeland Security to develop and administer a National Incident Management System (NIMS). This system provides a consistent nationwide template to enable Federal, State, local, and tribal governments and private-sector and nongovernmental organizations to work together effectively and efficiently to prepare for, prevent, respond to, and recover from domestic incidents, regardless of cause, size, or complexity, including acts of catastrophic terrorism. San Joaquin County has acted to reduce potential damages from disaster events by adopting and complying with the National Incident Management System (NIMS) standards. The San Joaquin County Board of Supervisors formally adopted NIMS in 2006 as the basic disaster management system for County agencies. Shortly after this action, the San Joaquin County Office of Emergency Services sent out guidance encouraging and assisting other public agencies in the County to adopt NIMS and comply with existing training standards. This regulatory area applies to OES only.

STATE REGULATORY SETTING

Emergency Services Act. The Emergency Services Act is the State of California's basic law establishing the foundation for emergency response. This Act is contained in the California Government Code beginning with Section 8550. The Act gives the Governor and chief executives of all political subdivisions emergency powers; establishes the Governor's Office of Emergency Services; assigns emergency functions to State agencies; provides for mutual aid; and authorizes such organizations as are necessary to carry out the provisions of the law. This regulatory area applies to OES only. Division 2.5 of the Health and Safety Code provides the statutory authority and describes the duties of the State Emergency Medical Services Authority and local (County) EMS agencies for the administration and planning of EMS systems. This statute requires the local county EMS agencies to "plan, implement, and evaluate an emergency medical services system consisting of an organized pattern of readiness and response services based on public and private agreements and operational procedures." As pertains to EMS planning activities, the State EMS Authority has developed planning and implementation guidelines which are used by county EMS Agencies as a planning tool by which to measure and improve all aspects of their EMS system. As set forth in the EMS Act, these EMS System Standards and Guidelines are comprised of the following topic areas: (1) Manpower and training; (2) Communications; (3) Transportation; (4) Assessment of hospitals and critical care centers; (5) System organization and management; (6) Data collection and evaluation; (7) Public information and education; and (8) Disaster response.

KEY TERMS

There are no key terms in this section.

REFERENCES

REPORTS/PUBLICATIONS

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Fresno County Department of Public Health. Emergency Medical Services – Fresno County Operations, http://www.co.fresno.ca.us/DivisionPage.aspx?id=7590, accessed March 18, 2016.

PERSONS CONSULTED

None

SECTION 6.10 MEDICAL SERVICES

INTRODUCTION

This section summarizes existing information regarding medical services in unincorporated areas of Fresno County. The following evaluation describes the hospitals and County programs that provide various levels of medical services to residents of the County.

EXISTING CONDITIONS

Hospitals

Fresno County does not operate any hospitals. Table 6-8 lists the 15 hospitals in the County and includes information on their location, type, number of beds, and type of Emergency Services. St. Agnes Medical Center serves as the Central California EMS base hospital that provides medical control for all patients destined for their facility, as well as those destined for receiving hospitals that are not base hospitals. A base hospital is designated by the Central County EMS Agency and is responsible for directing the advanced life support and pre-hospital care system assigned to it.

In Fresno County, there was an average of 3.6 beds per thousand residents in 2014. This rate is slightly higher than the 2014 California average of 2.6 beds per thousand residents (OSHPD 2014) and the 2013 national average of 2.9 beds per thousand residents. (OECD 2015). (Population Data: Census.gov/QuickFacts)

TABLE 6-8
HOSPITAL FACILITIES
Fresno County
2016

Hospital	Location	Type	Number of Beds	Emergency
Coalinga Regional Medical Center	1191 Phelps Ave., Coalinga, CA 93210	General Acute Care Hospital	123	Standby Emergency
Community Medical Center - Clovis	2755 Herndon Ave., Clovis, CA 93611	General Acute Care Hospital	152	Basic Emergency
Community Regional Medical Center	2823 Fresno St., Fresno, CA 93721	General Acute Care Hospital	641	Basic Emergency
Kaiser Foundation Hospital	7300 N. Fresno St., Fresno, CA 93720	General Acute Care Hospital	169	Basic Emergency
St. Agnes Medical Center (BASE)	1303 E. Herndon Ave., Fresno, CA 93720	General Acute Care Hospital	436	Basic Emergency
Adventist Medical Center - Selma	1141 Rose Ave., Selma, CA 93662	General Acute Care Hospital	57	Standby Emergency
Adventist Medical Center - Reedley	372 W. Cypress Ave., Reedley, CA 93654	General Acute Care Hospital	49	Standby Emergency
Veteran's Administration Medical Center	2615 E. Clinton Ave., Fresno CA 93705	Military General Acute Care Hospital	114	Basic Emergency
Community Behavioral Health Center - Fresno	7171 N. Cedar Ave., Fresno CA 93720	General Acute Care Hospital	61	No Services
Community Subacute and Transitional Care Center - Fresno	3003 N. Mariposa St., Fresno, CA 93703	General Acute Care Hospital	106	No Services
Crestwood Psychiatric Health Facility – Fresno	4411 E. Kings Canyon Rd., Fresno, CA 93702	Psychiatric Health Facility	16	No Services
Department of State Hospital – Coalinga	24511 West Jayne Avenue, Coalinga, CA 93210	Acute Psychiatric Hospital	1500	No Services
Fresno Heart and Surgical Hospital - Fresno	15 E. Audubon Dr., Fresno, CA 93720	General Acute Care Hospital	57	Basic Emergency
Fresno Surgical Hospital – Fresno	6125 N. Fresno St., Fresno, CA 93710	General Acute Care Hospital	27	No Services
San Joaquin Valley Rehabilitation Hospital – Fresno	7173 N. Sharon Ave., Fresno, CA 93720	General Acute Care Hospital	62	No Services
Total			**3,570**	

Source: California Office of Statewide Health Planning and Development, Healthcare Atlas, available at http://gis.oshpd.ca.gov/atlas/places/list-of-hospitals/county/fresno, accessed March 17, 2016; U.S. Department of Veterans Affairs, Central California VA Health Care System, http://www1.va.gov/directory/guide/facility.asp?ID=53, accessed 03/26/2016.

FRESNO COUNTY DEPARTMENT OF PUBLIC HEALTH

The Fresno County Department of Public Health serves to promote, preserve, and protect community health through a variety of programs. The following is a discussion of Department of Public Health programs that provide direct or indirect medical services.

DIVISION OF CHILDREN'S MEDICAL SERVICES

The Division of Children's Medical Services administers the California Children's Services (CCS) program in Fresno County. CCS is a statewide program that pays for treatment, equipment, and rehabilitation services to children with certain diseases, physical limitations, or chronic health problems. CCS manages client care and pays for doctor visits, hospital stays, surgery, physical therapy, lab tests, X-rays, orthopedic appliances, and medical equipment. The program also provides case management services, medical evaluation, and information about community resources. Most children are referred to CCS by their family doctor or specialist. (California Department of Health Care Services, California Children's Services (CCS), http://dhcs.ca.gov/ccs, accessed March 18, 2016; California Department of Health Care Services, California Children's Services Brochure, 2014)

DIVISION OF CORRECTIONAL HEALTH

The Division of Correctional Health provides 24-hour jail medical services throughout the year. Medical services provided to all inmates entering the Fresno County Jail include medical/health screenings by licensed personnel at the time of booking, nursing sick call, clinician sick call, medications, dental services, and lab services. Medical, dental, optometery, and behavioral health services are provided in the adult jail facilities and the Juvenile Justice Center by the Department of Public Health through a contract with Corizon Health. (Fresno County Department of Public Health, Division of Correctional Health, http://www.co.fresno.ca.us/divisionpage.aspx?id=20619, accessed March 18, 2016; Fresno County Department of Public Health, Division of Correctional Health – Medical Services, http://www.co.fresno.ca.us/DivisionPage.aspx?id=20611, accessed March 18, 2016)

DIVISION OF PUBLIC HEALTH NURSING

The Public Health Nursing Division of the Department of Public Health provides information and resources regarding pregnancy, parenting, and childcare. Division programs include, Babies First, Black Infant Health, Child Care Health Linkages, Child Health and Disability Prevention Program, Child RideSafe Program, Comprehensive Perinatal Services Program, Health Care Program for Children in Foster Care, High Risk Infant Program, Maternal Child and Adolsecent Health, Nurse Liaison Program, and the Nurse-Family Partnership. (Fresno County Department of Public Health, Division of Public Health Nursing, http://www.co.fresno.ca.us/Division.aspx?id=2573, accessed March 18, 2016)

REGULATORY SETTING

Section 101000 et seq., California Health and Safety Code. These codes delineate the powers and responsibilities of the County Health Officer and his agents.

KEY TERMS

There are no key terms in this section.

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PERSONS CONSULTED

None

SECTION 6.11 SCHOOLS AND CHILDCARE

INTRODUCTION

This section describes the general characteristics of Fresno County's school facilities and child care operations.

EXISTING CONDITIONS

Public school services are provided throughout the county by 32 school districts. Of the 32 school districts, 18 unified districts and one charter school district provide educational services for grades kindergarten through 12. The remaining 13 districts consist of 12 elementary school districts and one high school district. Many districts have only one school. Table 6-9 summarizes Elementary School Districts in Fresno County.

TABLE 6-9
ELEMENTARY SCHOOL DISTRICTS
Fresno County
2014-2015

District	Schools	Enrollment	High School Attended
Alvina Elementary	Alvina Elementary Charter	171	Caruthers High
Big Creek	Big Creek Elementary	51	Sierra High
Burrel Union Elementary	Burrel Union Elementary	121	Riverdale High
Clay Joint Elementary	Clay Elementary	250	Kingsburg High
Kingsburg Elementary Charter School District	Lincoln Elementary	464	Kingsburg High
	Rafer Johnson Jr. High	460	
	Reagan Elementary	694	
	Roosevelt Elementary	243	
	Washington Elementary	282	
Monroe Elementary	Monroe Elementary	197	Caruthers High
Orange Center Elementary	Orange Center Elementary	314	Washington High
Pacific Union Elementary	Pacific Union Elementary	385	Washington High
Pine Ridge Elementary	Pine Ridge Elementary	95	Sierra Unified High
Raisin City Elementary	Raisin City Elementary	883	Caruthers High
Washington Colony Elementary	Washington Colony Elementary	427	Washington Union High
Westside Elementary	Westside Elementary	854	Riverdale High School

Source: California Department of Education, Educational Demographics Unit, DataQuest, http://data1.cde.ca.gov/dataquest.

UNIFIED SCHOOL DISTRICTS

CARUTHERS UNIFIED

Caruthers Unified School District serves the southern region of Fresno County. Student enrollment in 2014-2015 was 1,428. Caruthers Unified schools are listed below.

- Caruthers Elementary
- Caruthers High School

CENTRAL UNIFIED

The Central Unified School District serves the northwest region of Fresno County. The District has 20 schools with 1,584 students enrolled in 2014-2015. Central Unified schools are listed below.

- Biola-Pershing Elementary (grades K-8)
- Central High School, East and West Campuses (grades 9-12)
- Central Learning Alternative School Site (grades K-12)
- El Captain Elementary (grades 7-8)
- Glacier Point Middle School (grades 7-8)
- Harvest Elementary School (grades K-6)
- Herndon-Barstow Elementary (grades K-8)
- Houghton-Kearney Elementary (grades K-8)
- Liddell Elementary School (grades K-6)
- Madison Elementary (grades K-8)
- McKinley Elementary (grades K-6)
- Pathway Community Day School (grades 7-12)
- Pershing High (continuation) (grades 7-12)
- Polk Elementary School (grades K-6)
- River Bluff Elementary School (grades K-6)
- Roosevelt Elementary (grades K-6)
- Saroyan (William) Elementary (grades K-6)
- Steinbeck (John) Elementary (grades K-8)
- Teague Elementary School (grades K-6)
- Tilley Elementary School (grades K-6)

CLOVIS UNIFIED

With 49 schools, the Clovis Unified School District is the second largest district in Fresno County. Student enrollment in 2014-2015 was 41,169. Clovis Unified schools are listed below.

- Alta Sierra Intermediate (grades 7-8)
- Boris Elementary (grades K-6)
- Buchanan High (grades 9-12)
- Bud Rank Elementary (grades K-6)
- Cedarwood (grades K-6)
- Century Elementary (grades K-6)
- Clark Intermediate (grades 7-8)
- Clovis Adult Education
- Clovis East High (grades 9-12)
- Clovis Elementary (grades K-6)
- Clovis High (grades 9-12)
- Clovis North High (grades 9-12)
- Clovis Online School (grades 7-12)
- Clovis Primary grades (K-3)
- Clovis West High (grades 9-12)
- Cole Elementary (grades K-6)
- Community Day Elementary (grades K-8)
- Community Day Secondary (grades 9-12)
- Copper Hill (grades K-6)
- Dry Creek Elementary (grades K-6)
- Enterprise High School (grades 9-12)
- Fancher Creek Elementary (grades K-6)
- Fort Washington Elementary (grades K-6)
- Freedom Elementary (grades K-6)
- Fugman Elementary (grades K-6)
- Granite Ridge Intermediate (grades 7-8)
- Gateway High (Continuation) (grades 6-12)
- Gettysburg Elementary (grades K-6)
- Jefferson Elementary (grades K-6)
- Kastner Intermediate (grades 7-8)
- Liberty Elementary (grades K-6)

- Lincoln Elementary (grades K-6)
- Maple Creek Elementary (grades K-6)
- Mikey Cox Elementary (grades K-6)
- Miramonte Elementary (grades K-6)
- Mountain View Elementary (grades K-6)
- Nelson Elementary (grades K-6)
- Oraze Elementary (grades K-6)
- Pinedale Elementary (grades K-6)
- Reagan Elementary (grades K-6)
- Red Bank Elementary (grades K-6)
- Reyburn Intermediate (grades 7-8)
- Riverview Elementary (grades K-6)
- Sierra Vista Elementary (grades K-6)
- Tarpey Elementary (grades K-6)
- Temperance-Kutner Elementary (grades K-6)
- Valley Oak Elementary (grades K-6)
- Weldon Elementary (grades K-6)
- Woods Elementary (grades K-6)

COALINGA-HURON UNIFIED

The Coalinga-Huron Joint Unified School District is an eleven-school district that serves the Coalinga-Huron region. Student enrollment in 2014-2015 was 4,367. Coalinga-Huron Unified schools are listed below.

- Bishop Elementary (grades K-4)
- Cambridge High (Continuation) (grades 9-12)
- Cheney Kindergarten (grade K)
- Chestnut High (Continuation) (grades 9-12)
- Coalinga High (grades 9-12)
- Coalinga Middle (grades 7-8)
- Dawson Elementary (grades 2-4)
- Huron Elementary (grades K-6)
- Huron Middle School (grades 7-8)
- Nell Dawson Elementary (grades 1-3)
- Sunset Elementary (grades 4-6)

FIREBAUGH-LAS DELTAS UNIFIED

The Firebaugh-Las Deltas Unified School District serves the western region of Fresno County. The District's five schools had a total enrollment of 2,296 students during the 2014-2015 school year. Firebaugh-Las Deltas Unified schools are listed below.

- Bailey (Hazel M.) Primary (grades K-2)
- El Puente High (continuation) (grades 9-12)
- Firebaugh High (grades 9-12)
- Firebaugh Middle (grades 6-8)
- Mills (Arthur E.) Intermediate (grades 3-5)

FOWLER UNIFIED

The Fowler Unified School District is a six-school district that serves the south central region of Fresno County. Student enrollment in 2014-2015 was 2,477. Fowler Unified schools are listed below.

- Casa Blanca Continuation (grades 9-12)
- Fowler High (grades 9-12)
- Fremont Elementary (grades 3-5)
- Malaga Elementary (grades K-5)
- Marshall Elementary (grades K-2)
- Sutter Middle School (grades 6-8)

FRESNO UNIFIED

The Fresno Unified School District is the largest in the county, with 101 schools serving the central Fresno County area. Student enrollment in 2014-2015 was 73,543. Table 6-10 lists schools in the Fresno Unified School District.

TABLE 6-10 SCHOOLS Fresno County Unified School District 2016			
Addams Elementary	Eaton Elementary	Lane Elementary	Slater Elementary
Addicott Elementary	Edison High School	Lawless Elementary	Starr Elementary
Ahwahnee Middle School	Ericson Elementary	Leavenworth Elementary	Storey Elementary
Anthony Elementary	Ewing Elementary	Lincoln Elementary	Sunnyside High School
Ayer Elementary	Figarden Elementary	Lori Ann Infant Program	Sunset Elementary
Aynesworth Elementary	Forkner Elementary	Lowell Elementary	Tehipite Middle School
Baird Middle School	Fort Miller Middle School	Malloch Elementary	Tenaya Middle School
Bakman Elementary	Fremont Elementary	Manchester GATE Elementary	Terronez Middle School
Balderas Elementary	Fresno High School	Mayfair Elementary	Thomas Elementary
Birney Elementary	Fulton School	McCardle Elementary	Tioga Middle School
Bullard High School	Gaston Middle School	McLane High School	Turner Elementary
Bullard Talent K-8	Gibson Elementary	Muir Elementary	Vang Pao Elementary
Burroughs Elementary	Greenberg Elementary	Norseman Elementary	Viking Elementary
Calwa Elementary	Hamilton K-8	Olmos Elementary	Vinland Elementary
Cambridge High School	Heaton Elementary	Patiño High School	Wawona Middle School
CART High School	Hidalgo Elementary	Phoenix Elementary Academy	Webster Elementary
Centennial Elementary	Holland Elementary	Phoenix Secondary Academy	Williams Elementary
Cesar Chavez Adult School	Homan Elementary	Powers-Ginsburg Elementary	Wilson Elementary
Columbia Elementary	Hoover High School	Pyle Elementary	Winchell Elementary
Computech Middle School	J.E. Young Academic Center	Rata 7-12	Wishon Elementary
Cooper Academy Middle School	Jackson Elementary	Robinson Elementary	Wolters Elementary
Del Mar Elementary	Jefferson Elementary	Roeding Elementary	Yokomi Elementary
Design Science High School	King Elementary	Roosevelt High School	Yosemite Middle School
DeWolf High School	Kings Canyon Middle School	Rowell Elementary	
Duncan High School	Kirk Elementary	Scandinavian Middle School	
Easterby Elementary	Kratt Elementary	Sequoia Middle School	

Source: California Department of Education, Educational Demographics Unit, DataQuest, http://data1.cde.ca.gov/dataquest.

GOLDEN PLAINS UNIFIED

The Golden Plains Unified School District is a six-school district that serves the southwest region of Fresno County. Student enrollment in 2014-2015 was 1,831. Golden Plains Unified schools are listed below.

- Cantua Elementary (grades K-8)
- Helm Elementary (grades K-8)
- Rio Del Rey High (continuation) (grades 9-11)
- San Joaquin Elementary (grades K-8)
- Tranquillity Elementary (grades K-8)
- Tranquillity High (grades 9-12)

KERMAN UNIFIED

The Kerman Unified School District is a seven-school district serving the Kerman region west of the City of Fresno. Student enrollment in 2014-2015 was 4,997. Kerman Unified schools are listed below.

- Enterprise High (grades 9-12)
- Goldenrod Elementary (grades K-6)
- Kerman High (grades 9-12)
- Kerman Middle (grades 7-8)
- Kerman-Floyd Elementary (grades K-8)
- Liberty Elementary School (grades K-6)
- Nova High (continuation) (grades 7-11)
- Sun Empire Elementary (grades K-6)

KINGS CANYON UNIFIED

The Kings Canyon Unified School District is a 16-school district serving the southeast area of Fresno County. Student enrollment in 2014-2015 was 9,775. Kings Canyon Unified schools are listed below.

- Al Conner Elementary (grades K-5)
- Alta Elementary (grades K-5)
- Citrus Middle (grades 6-8)
- Dunlap Elementary (grades K-8)
- Dunlap Leadership Academy (grades 9-12)
- Grant Middle (grades 7-8)
- Great Western Elementary (grades K-5)
- Jefferson Elementary (grades K-5)

- Kings Canyon Continuation (grades 9-12)
- Lincoln Elementary (grades K-5)
- McCord Elementary (grades K-5)
- Miramonte Elementary (grades K-6)
- Mountain View (grades 2-8)
- Navelencia Middle (grades 7-8)
- Orange Cove High School (grades 9-12)
- Reedley High (grades 9-12)
- Reedley Middle College High (grades 9-12)
- Riverview Elementary (grades K-8)
- Sheridan Elementary (grades K-5)
- Silas Bartsch (grades K-8)
- T.L. Reed (grades K-8)
- Washington Elementary (grades K-5)

LATON UNIFIED

The Laton Unified School District is a three-school district serving the Laton area of Fresno County. Student enrollment in 2014-2015 was 704. Laton Unified schools are listed below.

- Conejo Middle (grades 6-8)
- Laton Elementary (grades K-5)
- Laton High (grades 9-12)

MENDOTA UNIFIED

The Mendota Unified School District is a six-school district that serves the Mendota area in the western region of Fresno County. Student enrollment in 2014-2015 was 3,146. Mendota Unified schools are listed below.

- McCabe Elementary (grades 3-6)
- Mendota Continuation High (grades 10-12)
- Mendota Elementary School (grades K-6)
- Mendota High (grades 9-12)
- Mendota Junior High (grades 7-8)
- Washington Elementary (grades K-3)

PARLIER UNIFIED

The Parlier Unified School District, which serves the Parlier area southeast of the city of Fresno, has seven schools. Student enrollment in 2014-2015 was 3,418. Parlier Unified schools are listed below.

- Brletic (Mathew J.) Elementary (grades 4-6)
- Chavez (Caesar E.) Elementary (grades K-3)
- Martinez (John C.) Junior High (grades 7-8)
- Parlier High (grades 9-12)
- Parlier Junior High (grades 7-8)
- San Joaquin Valley High (continuation) (grades 9-12)
- S. Ben Benavidez Elementary (grades K-6)

RIVERDALE JOINT UNIFIED

The Riverdale Joint Unified School District is a four-school district in the southern area of Fresno County Student enrollment in 2014-2015 was 1,620. Riverdale Joint Unified schools are listed below.

- Fipps Primary (grades K-3)
- Horizon Continuation High (grades 10-12)
- Riverdale Elementary (grades 4-8)
- Riverdale High (grades 9-12)

SANGER UNIFIED

The Sanger Unified School District has 14 schools in the Sanger area east of the city of Fresno. Student enrollment in 2014-2015 was 11,204. Sanger Unified schools are listed below.

- Centerville Elementary (grades K-8)
- Del Rey Elementary (grades K-8)
- Fairmont Elementary (grades K-8)
- Jackson Elementary (grades K-6)
- Jefferson Elementary (grades K-6)
- Kings River High (continuation) (grades 7-12)
- Lincoln Elementary (grades K-6)
- Lone Star Elementary (grades K-8)
- Madison Elementary (grades K-6)
- Sanger High (grades 9-12)
- Taft Independent Study School (grades K-12)
- Wash (John S.) Elementary (grades K-6)

- Washington Academic Middle (grades 7-8)
- Wilson Elementary (grades K-6)

SELMA UNIFIED

The Selma Unified School District serves the Selma region southeast of the city of Fresno. With 11 schools, the District had a 2014-2015 student enrollment total of 6,447. Selma Unified schools are listed below.

- Garfield (James) Elementary (grades K-6)
- Heartland High (continuation) (grades 7-12)
- Indianola Elementary (grades K-6)
- Jackson (Andrew) Elementary (grades K-6)
- Lincoln (Abraham) Elementary (grades 7-8)
- Roosevelt Elementary (grades K-6)
- Selma High (grades 9-12)
- Terry Elementary (grades K-6)
- Washington (George) Elementary (grades K-1)
- White (Eric) Elementary (grades 2-6)
- Wilson (Woodrow) Elementary (grades K-6)

SIERRA UNIFIED

The Sierra Unified School District is a six-school district serving the Auberry region in the northeastern area of Fresno County. Student enrollment in 2014-2015 was 1,309. Sierra Unified schools are listed below.

- Foothill Elementary (grades K-6)
- Lodge Pole Elementary (alternative, grades 1-8)
- Oak Meadow Community Day School (grades 4-8)
- Sandy Bluffs Independent Study (continuation) (grades 9-12)
- Sierra Junior High (grades 7-8)
- Sierra High (grades 9-12)

WASHINGTON UNIFIED

The Washington Union High School District has four schools and serves a region southwest of the City of Fresno and one mile north of the community of Easton. Student enrollment in 2014-2015 was 2,993. Washington Unified schools are listed below.

- American Union Elementary (grades K-8)
- Washington Union High (grades 9-12)
- West Fresno Elementary (grades K-5)
- West Fresno Middle School (grades 6-8)

HIGH SCHOOL AND CHARTER SCHOOL DISTRICTS

KINGSBURG JOINT UNION HIGH SCHOOL

The Kingsburg Joint Union High School serves the south central area of Fresno County. Total student enrollment in 2014-2015 was 1,222. The District's schools include:

- Kingsburg High School (grades 9-12)
- Kingsburg Alternative Education Center (grades 9-12)

WEST PARK SCHOOL DISTRICT

The West Park School District serves the West Park area, approximately five miles southwest of downtown Fresno. Student enrollment in 2014-2015 was 657. The District's schools include:

- West Park Elementary School (grades K-8)
- West Park Charter Academy (grades K-12)

HIGHER EDUCATION

One public university and four public community colleges offer higher educational opportunities in Fresno County. California State University, Fresno is a four-year University that offers over 100 Bachelor's Degrees, 60 Master's Degrees, 6 doctoral degrees, and single- and multiple-subject teaching credentials. Student enrollment at CSU Fresno is over 24,136. Fresno City College, Clovis Community College, Reedley College, and West Hills College, Coalinga, are all public 2-year community colleges that provide Associates degrees and opportunities to transfer credits to 4-year Universities. Fresno City College is the largest, with 22,585 students enrolled for the Fall of 2015. Table 6-11 summarizes community college and university enrollment in Fresno County. (California State University, Fresno, Online Catalog, http://www.fresnostate.edu/catalog/#credentials, accessed March 29, 2016; Malhotra, Monica, Total Enrollment by Sex and Student Level, Fall 2015, February 20, 2016; California Community Colleges Chancellor's Office Management Information Systems Data Mart, http://datamart.cccco.edu/students/enrollment_status.aspx)

TABLE 6-11 COMMUNITY COLLEGE AND UNIVERSITY ENROLLMENT Fresno County Fall Semester 2015			
Institution	**Type**	**Degrees Offered**	**Student Enrollment**
California State University, Fresno	University	B.A., M.A., Doctoral, teaching credential	24,136
Clovis Community College	Community College	Associates Degree	6,399
Fresno City College	Community College	Associates Degree	22,585
Reedley College	Community College	Associates Degree	9,558
West Hills College, Coalinga	Community College	Associates Degree	2,413

Source: California Community Colleges Chancellor's Office Management Information Systems Data Mart, http://datamart.cccco.edu/students/enrollment_status.aspx, accessed March 29, 2016.

REGULATORY SETTING

K-12 school facilities and their financing are regulated primarily by the Education Code and implementing regulations. There are also sections that relate to the provision of school facilities in the Government Code, Public Contracts Code.

Mello-Roos Community Facilities Act of 1982. In 1978 Californians enacted Proposition 13, which limited the ability of local public agencies to increase property taxes based on a property's assessed value. In 1982 the Mello-Roos Community Facilities Act of 1982 (Government Code §53311-53368.3) was created to provide an alternate method of financing needed improvements and services. Mello-Roos bonds provide developers with upfront funds for infrastructure improvements. Repayment of the bonds is shifted to homebuyers through a Special Tax under Proposition 13. Sellers must fully disclose the use of Mello-Roos funding to potential home buyers.

STATE OF CALIFORNIA PROPOSITION 1A/SENATE BILL 50.

SB 50 (1998) created the present School Facility Program (SFP), which is a State/local match program for the funding of new K-12 school facilities and the modernization of existing facilities. The program was initially made operative and funded by voter passage of Proposition 1A. Program provisions have been modified by subsequent legislation. The program has been successively funded by a series of voter-approved State bonds.

SB 50 also created a number of statutory changes in the area of development fees for school facilities, the most notable effect being the pre-emption of school mitigation by the State. Satisfaction of the development fee process outlined in the statute is deemed to be "full and complete mitigation" of the impacts upon school facilities by new development, regardless of the identified level of impact. This included mitigation for the purposes of the California Environmental Quality Act. Local agencies are in effect prohibited from using the inadequacy of school facilities as a basis for denying or conditioning approvals of any "legislative or adjudicative act … involving … the planning, use, or development of real property (GC 65996(b); and from imposing mitigation (development) fees in excess of that determined by the statutory formulas.

SB 50 established a base fee for both residential (called Level 1) and commercial/industrial development. This base has been adjusted for inflation every two years. School districts must establish the nexus between the development and the need for school facilities via a fee justification study in order to impose the biannual increase. A growing district that meets statutory criteria, including participation in the SFP, may impose a higher fee for residential. The amount of the fee is determined by a process set forth in the statute, which also provides for a doubling of that fee (Level 3) when the Legislature determines that State funds are not available. This has never occurred; however, all State bond funds for new construction will be fully apportioned by mid-2009. All fees are levied and collected at the time the building permit is issued. District certification of the payment of the applicable fee is required before the city or county can issue the building permit.

KEY TERMS

There are no key terms in this section.

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PERSONS CONSULTED

None.

SECTION 6.12 OTHER COUNTY SERVICES

INTRODUCTION

This section describes the general characteristics of public services provided by the County.

EXISTING CONDITIONS

COUNTY ADMINISTRATIVE AND GENERAL SERVICES

The Board of Supervisors (BOS) is the governing body for Fresno County. The County Clerk to the Board is appointed by the BOS and is exclusively responsible to the BOS for the general administration of Merced County.

The County has 11 departments responsible for all county operations. There are six elected senior executives: Assessor-Recorder, Auditor-Controller/Treasurer-Tax Collector, County Clerk, District Attorney-Public Administrator, Sheriff-Coroner, and Superintendent of Schools. The remaining senior executives are appointed by the BOS. General services and departments provided to county citizens include the offices of the Assessor-Recorder, Auditor-Controller/Treasurer-Tax Collector, Behavioral Health, County Clerk, County Council, District Attorney, Probation, Public Defender, Public Health, Public Works and Planning, and Social Services.

ASSESSOR-RECORDER

The Assessor's Office prepares an annual assessment roll showing all taxable real and personal property, except public utilities, in Fresno County. Preparation is in accordance with the California Constitution and the State Revenue and Taxation Code. The Assessor oversees maintenance of the mapping service, administers and audit program as required by the State and provides appraisal data to LAFCo, the Planning Department, and other County departments as needed.

The Recorder's Office records, indexes, and files documents such as property transfer records, financial statements, liens, deeds, certificates of discharge, maps (parcel, subdivision, highway, assessments, and surveys), notices, marriage, birth, and death certificates. In addition, the office is responsible for examining all documents for compliance with laws for recording and providing the public with general information and certified copies of records. Filing fees, micrographic fees, and documentary transfer taxes are also collected by the office.

AUDITOR-CONTROLLER/TREASURER-TAX COLLECTOR

The Auditor is the chief accounting officer of the County and has general supervision over all officers, departments and institutions under control of the Board of Supervisors and all districts whose funds are in the County Treasury. The Controller's duties include auditing the accounts and records under the control of the Board and those of the dependent special districts. In addition, the Auditor-Controller is responsible for disbursement of claims and issuance of warrants for all County funds, special districts, County schools, school districts, and colleges; and apportions tax collections to taxing agencies such as County, cities, schools, and special districts.

The duties of the Tax Collector's Office are governed by the Revenue & Taxation Code and include the billing and collection of all real and personal property taxes. In addition, the department collects the County's Motel/Hotel Transient Occupancy Tax and administers the Senior Citizen Postponement and Property Tax Assistance Program for seniors, the blind and the disabled. The Tax Collector is also responsible for the auction of all tax default properties.

BEHAVIORAL HEALTH

The Department of Behavioral Health provides mental health and substance abuse services to adults within Fresno County. The Department consists of over 300 professionals and staff providing services in both metropolitan and rural areas.

COUNTY CLERK

The County Clerk issues marriage licenses, performs marriage ceremonies, accepts passport applications, fees, processes Fictitious Business Statements, and administers oaths of office to Notaries as well as loyalty oaths to County employees and elected officials. The Clerk also files powers of attorney for surety companies and files and posts public notices and environmental impact reports.

The County Clerk Office serves as Registrar of Voters and Elections and is responsible for maintaining voter registration rolls and indexes, as well as conducting regular, special, and statewide election as prescribed by law. Primary and general elections are the financial responsibility of the County General Fund. Special elections are paid for by the entity requiring the election services, except in the cases where an election is ordered by the Board of Supervisors as a County cost.

COUNTY COUNSEL

The County Counsel represents the County and its officials in civil litigation, defends the County in administrative law proceedings, provides written and oral legal opinions to County staff, and acts as legal advisor to County boards, commissions, committees, and special districts upon request.

DISTRICT ATTORNEY'S OFFICE

The District Attorney's Office provides prosecution and enforcement services in adult and juvenile criminal matters. The District Attorney is the chief law enforcement officer of Fresno County. The Office's staff works with local and state police agencies to investigate and prosecute those who are accused of breaking the law, and conducts prosecutions for all public offenses, including misdemeanor trials and probation violation hearings, and preliminary hearings, probation violation hearings, and trails in felony cases. Additionally, the District Attorney establishes policies and standards for filing of criminal complaints and advises the Grand Jury.

The District Attorney's Victim-Witness program provides support and advocacy services for victims of violent crimes. The Fraud and Corruption division handles insurance fraud, elder abuse, welfare fraud, environmental protection, identity theft, real estate fraud, and worker's compensation fraud.

The Sexual Assault and Child Abuse Unit handles domestic, child abuse, and sexual assault cases. This unit works closely with other agencies to effectively prosecute these cases, while providing much needed sensitivity and services to victims of sexual assault.

LIBRARY

The Fresno County Public Library System is comprised of interdependent branches providing services to all residents. At present there are five regional libraries, 24 branch libraries, 4 neighborhood libraries, the Central Library (which is the main county library and the largest), one library for the blind, and one Bookmobile. The Fresno County Public Library also includes branches that provide specific information and services. These include the Heritage and Genealogy Center, the Literacy Services Center, and the Senior Resource Center. Table 6-12 summarizes the branches and locations of the libraries in Fresno County.

In 2015 the Fresno County Public Library system had a total of 306,507 registered library users and processed 4,175,236 book checkouts. Library hours range from 13 hours per week at the Biola Library to 69 hours per week at the Betty Rodriguez Regional Library.

TABLE 6-12
FRESNO COUNTY LIBRARY BRANCHES
Fresno County
2016

Facility	Address
Betty Rodriguez Regional Library	3040 N. Cedar Avenue, Fresno, CA 93703
Central	2420 Mariposa, Fresno, CA 93721
Clovis	1155 5th Street, Clovis, CA 93612
Fig Garden	3071 W. Bullard, Fresno, CA 93711
Gillis	629 W. Dakota, Fresno, CA 93705
Heritage Center	2420 Mariposa, Fresno, CA 93721
Literacy Services Center	2420 Mariposa Street, Fresno, CA 93721
Mosqueda	4670 E. Butler, Fresno, CA 93702
Pinedale	7170 N. San Pablo, Pinedale, CA 93650
Politi	5771 N. First, Fresno, CA 93710
Senior Resource Center Library	2025 E. Dakota, Fresno, CA 93726
Sierra Vista Library	1050 Shaw Avenue, Clovis, CA 93612
Sunnyside	5566 E. Kings Canyon, Fresno, CA 93727
Talking Book	770 N. San Pablo, Fresno, CA 93728
West Fresno	188 E. California, Fresno, CA 93706
Woodward Park	944 E. Perrin, Fresno, CA 93720
Auberry	33049 Auberry Road, Auberry, CA 93602
Bear Mt.	30733 E. Kings Canyon, Squaw Valley, CA 93675
Big Creek	55185 Point Road, Big Creek, CA 93605
Fowler	306 S. 7th Street, Fowler, CA 93625
Kingsburg	1399 Draper, Kingsburg, CA 93631
Orange Cove	815 Park Blvd., Orange Cove, CA 93646
Parlier	1130 E. Parlier, Parlier, CA 93648
Piedra	25385 Trimmer Springs Road, Sanger, CA

TABLE 6-12 FRESNO COUNTY LIBRARY BRANCHES Fresno County 2016	
Facility	**Address**
Reedley	1027 E Street, Reedley, CA 93654
Sanger	1812 Seventh Street, Sanger, CA 93657
Selma	2200 Selma Avenue, Selma, CA 93662
Shaver Lake	41344 Tollhouse Rd., Shaver Lake, CA 93664
Biola	4885 N. Biola Avenue, Biola, CA 93723
Caruthers	13382 S. Henderson. Caruthers, CA 93609
Easton	25 E. Fantz, Easton, CA 93706
Firebaugh	1315 O Street, Firebaugh, CA 93622
Kerman	15081 W. Kearney Plaza, Kerman, CA 93630
Laton	6313 DeWoody, Kerman, CA 93630
Mendota	1246 Belmont Avenue, Mendota, CA 93640
Riverdale	20975 Malsbary, Riverdale, CA 93656
San Joaquin	8781 Main Street, San Joaquin, CA 93660
Tranquillity	25561 Williams Street, Tranquillity, CA 93668
Teague	4725 N. Polk Avenue, Fresno, CA 93722

Source: Fresno County Public Library, Library Branches, http://www.fresnolibrary.org/branch/all.html, accessed March 19, 2016.

According to the most recent County Librarian's Update (2014), the Fresno County Library is in the process of evaluating sites for new branches in Clovis and Reedley. Additionally, the Clinton and Politi libraries have been identified as branches that need larger and more modern facilities. The Central Library is in need of renovations, but the County Library headquarters and administrative operations must first be moved to another facility.

PROBATION

The Probation Department provides coordinated services to the courts, other justice agencies within the county, and the community. Provided services include:

- screening, investigation, disposition and treatment of juvenile status offenders and law violators;
- written probation reports and recommendations to the courts and correctional programming for those placed on probation;
- services to victims; and
- legally mandated and court ordered services in accordance with the appropriate sections of the Penal Code, Welfare and Institutions Code, Family Code, Civil Code, Code of Civil Procedure, Probate Code, and Government Code.

In 2006 the County opened a new Juvenile Justice Campus. The Juvenile Justice Campus is used primarily as a detention facility to hold minors who have committed a law violation while they are being processed through the Juvenile Court. In addition to holding minors pending court action, the Juvenile Justice Campus provides secure confinement for minors pending delivery to the California Youth Authority, other juvenile and adult justice jurisdictions, foster and group home placements, and court ordered commitments.

PUBLIC DEFENDER

The law Office of the Public Defender safeguards the interests of all residents by vigorously protecting the rights of those accused of crimes or facing civil commitments. The Public Defender's primary practice areas are: Dependency, Family Law-Child Support, Felonies, Juvenile Delinquency, Misdemeanors, Mental Health Defenses, and Proposition 47.

PUBLIC HEALTH

The Public Health Department works to promote, preserve, and protect community health by identifying community health issues, working to assure the availability of quality health services, and helping to shape public health policies. The Department incudes 6 divisions, including Children's Medical Services, Community Health, Emergency Medical Services, Environmental Health, Public Health Nursing, and Policy Planning and Communication.

Community Health Division

The Division of Community Health provides health promotion, surveillance, and disease prevention services designed to protect the health of the public, population groups, and individuals. The Department is composed of two divisions, Communicable Disease Outreach and Investigations, and Clinic Services. Communicable Disease Outreach and Investigations provides services related to mosquitoes and mosquito-borne illnesses, influenza, school health, and sexually transmitted diseases. Clinic Services provides a chest clinic, immunization services, HIV testing sites, and HIV/AIDS client services.

Environmental Health Division

The Environmental Health Division offers a variety of services and programs pertaining to public health matters. The Division oversees the Office of Emergency Services, consumer food protection programs and inspections, institutional and recreational facility inspections, the evaluation of land use development applications, a rabies and animal control program, and vector control. The Environmental Health Division manages the County's Hazardous Materials Certified Unified Program Agency, as well as the Solid Waste Local Enforcement Agency (LEA).

Public Health Laboratory

The Public Health Laboratory provides surveillance against the presence of disease producing agents which have the potential to adversely affect the health of an entire community. The Public Health Laboratory tests specimens to detect threatening organisms and shares the data with other agencies and departments to be used for the purpose of monitoring infectious disease outbreaks and environmental threats to the public's health. The information can then be used to plan containment strategies and also assess the effectiveness of various health education programs.

DEPARTMENT OF PUBLIC WORKS AND PLANNING

The Department of Public Works and Planning provides road maintenance, building permit, parks and recreation, tourism, recycling, code enforcement, planning and land use, and community development services to unincorporated areas of Fresno County. The department has over 350 staff members and includes the following divisions: Capital Projects, Community Development, Construction Management, Design, Development Services, Resources and Parks, and Road Maintenance and Operations. (Fresno County, Department of Public Works and Planning, http://www.co.fresno.ca.us/Departments.aspx?id=182, accessed March 17, 2016).

SOCIAL SERVICES

The Fresno County Department of Social Services' client population includes recipients of CalFresh, CalWorks, General Relief, and a small number of other welfare recipients. The County's Social Service client profile consists of 43.4 percent adults (95,603), and 56.6 percent children (124,681). The most common adult age is 18 years old, and the most common language of the clients is English (157,283, or 71.4 percent), with Spanish the second most common language (38,990, or 17.7 percent).

CalFresh services were provided to 223,855 clients in Fresno County in 2014. The County has seen a 225 percent increase in the CalFresh client population since the year 2000 (68,844 clients). In Fresno County 23.3 percent of the population receives services from CalFresh, an increase from 8.6% in 2000. In 2014 11.3 percent of California's residents received services from CalFresh, an increase from 4.8 percent in 2000.

Fresno County CalWorks provided services to 70,637 clients in 2014. Calworks client totals have decreased by approximately 5 percent since 2000, when the client population was 74,343.

For General Relief in 1995, the total number of clients was 1,293. Of these, 1,196 (92.5 percent) were adults, and 97 (7.5 percent) were children. The average number of people per case was 1.5.

REGULATORY SETTING

Section 6300 to 6350, Chapter 5, California Business and Professions Code. The statutes provide for a free county law library, a separate governmental entity, in each of the 58 counties of the State. The Merced County Law Library functions within the scope of these governing statutes.

Section 101000 et seq., California Health and Safety Code. These codes delineate the powers and responsibilities of the County Health Officer and his agents.

Sections 2400 through 24009, Government Code. Establish the Office of Auditors at the County level.

Section 25200. Government Code. Outlines the duties and responsibilities of the Board of Supervisors.

Section 26500, Government Code. Establishes the role and duties of the District Attorney's Office.

Sections 26900 through 26923, Government Code. Defines the duties of the Auditors office.

Section 27700, Government Code. Provides the statutory authority for the Public Defender's Office

Section 51200-51297.4 Government Code. The California Land Conservation Act of 1965--commonly referred to as the Williamson Act--enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. The assessed value of the land is reduced due to the development restriction, so that landowners enjoy the benefit of lower property taxes.

Section 5849, Part 3.6 Division 5 Welfare and Institutions Code - Mental Health Services Act (MHSA). Provides for the Department of Mental Health (DMH) to provide increased funding, personnel and other resources to support County mental health programs and monitor progress toward statewide goals for children, transition age youth, adults, older adults and families. The Act addresses a broad continuum of prevention, early intervention and service needs and the necessary infrastructure, technology and training elements that will effectively support this system.

Assembly Bill 233. Effective January 1, 1998, this legislation shifted the responsibility for the trial courts from the counties to the State of California.

Senate Bill 2140. This legislation (the Trial Court Personnel Legislation) transferred employees in the courts from County employees to State of California courts employees.

California Tax and Revenue Code. Governs the duties of the Assessor's and Tax Collector's Offices.

KEY TERMS

CalFresh. The CalFresh Program, California's version of the Supplemental Nutrition Assistance Program or SNAP and formerly known as Food Stamps, assists low-income individuals and households to purchase nutritional food.

CalWorks. California Work Opportunity and Responsibility to Kids (CalWORKs) is a cash aid program for low income families to meet their basic needs. It also provides education, employment, and training programs to help families get jobs and move towards self-sufficiency.

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PERSONS CONSULTED

None

CHAPTER 7: NATURAL RESOURCES

INTRODUCTION

This section summarizes the natural resources for the county of Fresno.

This chapter is organized into the following sections:

- Water Resources and Water Quality (Section 7.1)
- Air Quality (Section 7.2)
- Biological Resources (Section 7.3)
- Agricultural Resources (Section 7.4)
- Open Space (Section 7.5)
- Scenic Resources (Section 7.6)
- Recreation (Section 7.7)
- Mineral Resources (Section 7.8)
- Energy Resources (Section 7.9)
- Cultural and Paleontological Resources (Section 7.10)

SECTION 7.1 WATER RESOURCES AND WATER QUALITY

INTRODUCTION

This section describes the existing conditions and regulatory framework related to water resources and water quality of Fresno County.

MAJOR FINDINGS

- The Kings River is a major surface water resource in Fresno County. The San Joaquin River also provides surface water resources via the Friant-Kern Canal and the Central Valley Project Delta Export Division.
- Groundwater resources historically comprise 41 percent of the water supply in the region, with the remaining supply deriving from local and imported surface water. Fresno County overlies four groundwater sub-basins: Kings, Delta-Mendota, Westside, and Pleasant Valley.
- In years of drought, demand for groundwater resources increases to compensate for reduced surface water availability. Groundwater resources have historically been sufficient to accommodate the increased demand, but three of the four basins are currently designated by the Department of Water Resources (DWR) as high-priority and subject to a condition of critical overdraft. Basins were identified as high-priority by the California Statewide Groundwater Elevation Monitoring (CASGEM) program, which is working to improve regular and systematic monitoring of California groundwater basins, starting with high-priority basins.

- Surface water in the upper Kings River is generally of high quality due to its upland origins, but often the lower Kings River has elevated contaminant levels due, in large part, to agricultural activities.
- Groundwater pollutants throughout the County include pesticides, nitrates and total dissolved solids. As deeper groundwater is pumped because of declining groundwater levels, water quality could be impacted due to higher mineral concentrations at greater depths.

EXISTING CONDITIONS

Much of the eastern portion of Fresno County lies in the Kings River Watershed as illustrated in Figure 7-1, and this watershed is the main source of surface water in the county. The northeastern portion of the county also includes parts of the southern fork of the San Joaquin River Watershed. The drier western portion of the county drains from the Southern Coastal Ranges through three main watersheds: the Tulare Lakebed, Upper Dry, and the Middle San Joaquin-Lower Chowchilla watersheds. In Fresno County, these watersheds have five major stream systems: Little Panoche Creek, Panoche Creek, Tumey Gulch/Arroyo Ciervo, Cantua Creek, and Arroyo Pasajero. The watersheds provide important water resources to the county, as they serve to recharge the San Joaquin Groundwater Basin.

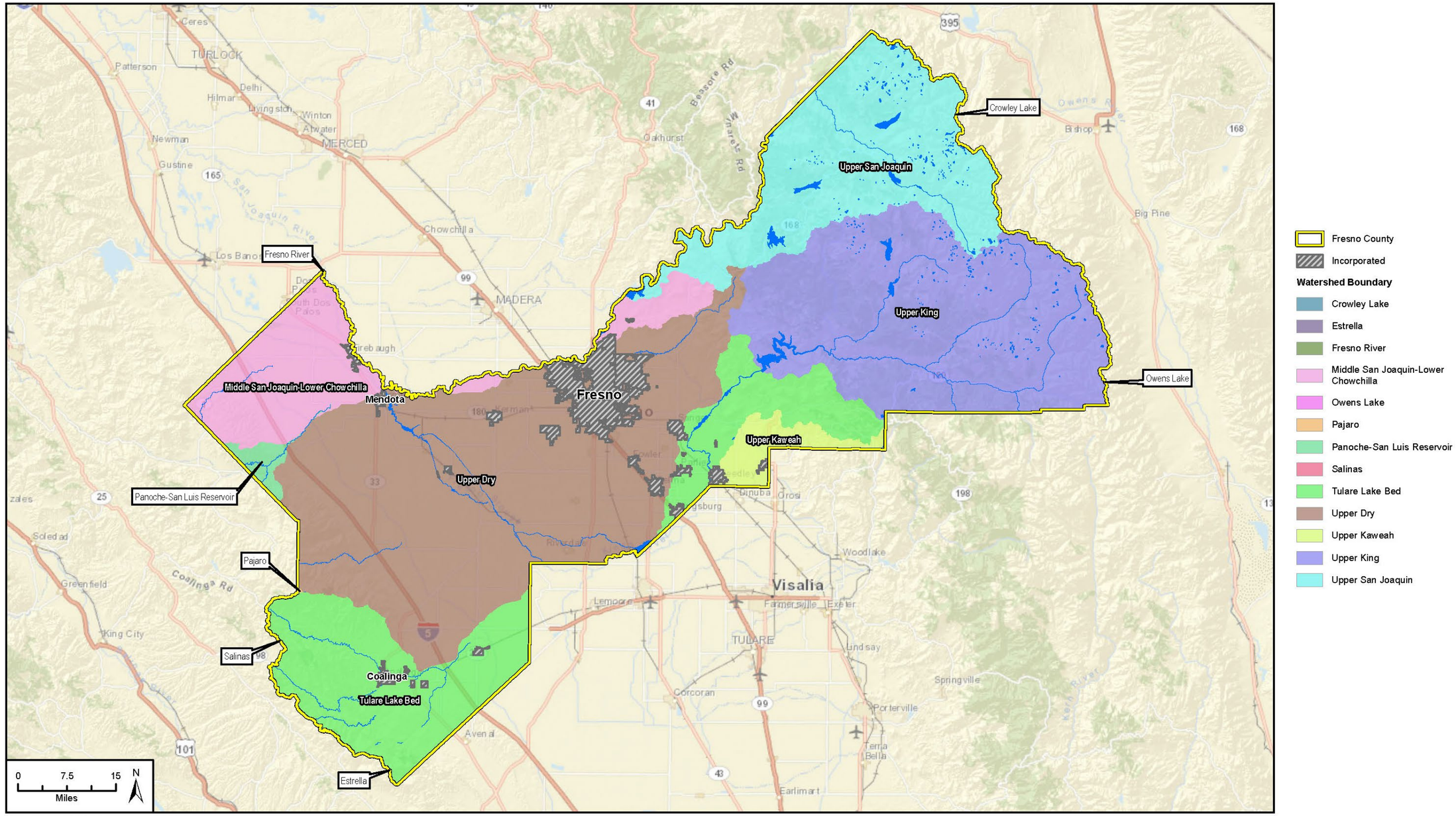
Fresno County overlies four sub-basins of the San Joaquin Groundwater Basin: the Kings, , Delta-Mendota, Westside, and Pleasant Valley. The San Joaquin Groundwater Basin underlays the central and western portions of the county and provides critical water resources to the county's residents and industries.

WATER CYCLE

The Sierra Nevada Mountains, located east of Fresno County dominates the hydrologic cycle. Precipitation in the region is largely attributed to winter storms originating in the Pacific Ocean to the west. As storms move up to higher elevations of the Sierra Nevada, precipitation falls as snow that accumulates throughout the winter months. As temperatures begin to warm in spring and summer, the accumulated winter snowpack melts, and percolates into groundwater basins to replenish groundwater resources. The remainder of the water moves through streams, rivers, and lakes toward the Central Valley and either the Tulare Lake Basin (to the southwest of Fresno County) or the Sacramento-San Joaquin River Delta (to the northwest of Fresno County). Some water is returned to the atmosphere through evapotranspiration and sublimation; this then becomes available as potential precipitation.

The lower elevations of the Pacific Coast Ranges that form the western boundary of Fresno County do not generally hold a winter snowpack. Nonetheless, the same storms that produce snowpack in the Sierra Nevada can carry large rain events to the Coastal Ranges. These rain events can potentially produce high volume runoff that will flow through streams and lakes toward the Central Valley and the Tulare Lake Basin. In Fresno County, water percolates into groundwater basins, returns to the atmosphere through evaporation, or occasionally flows to the San Joaquin River and moves to the Sacramento-San Joaquin River Delta.

FIGURE 7-1 SURFACE WATER RESOURCES



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Additional Data provided by California Department of Water Resources 2016.

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The range of temperatures, cloud cover, moisture, and evaporation levels, when combined with the effects of topography, vegetation, and development, can result in varying rainfall levels in each of the watersheds in the county. Long-term changes in snowpack and precipitation related to climate change could affect future precipitation patterns, regional availability and temperature of water, surface runoff, and sea level elevation. Furthermore, retention and diversion of surface waters for human consumption has significantly reduced runoff quantities that used to flow to downstream water bodies such as the Sacramento-San Joaquin River Delta.

WATER SUPPLY AND RESOURCES

Fresno County water resources include surface water and groundwater. Water supply to unincorporated Fresno County comes from 16 county service areas, five county waterworks districts, and numerous private water districts, irrigation districts, and individual sources. Water is sourced from the Kings River, the San Joaquin River (via the Friant-Kern Canal), the Central Valley Project (CVP) Delta Export Division, and the groundwater contained in four groundwater basins that underlie Fresno County: Kings, Delta-Mendota, Westside, and Pleasant Valley. Kings Basin Water Authority (KBWA) developed the Kings Basin Integrated Regional Water Management Plan in 2012 as a collaborative effort among 54 public, private, and non-governmental agencies to manage water resources in the Kings Basin. Annual reports provide updates to the status of measurable objectives and project implementation (KBWA 2020).

SURFACE WATER

Fresno County receives water from the Kings River and the San Joaquin River, delivered by the CVP. The Kings River Watershed and the South San Joaquin River Watershed make up most of the eastern portion of the County, as shown in Figure 7-1. Prolonged drought in California from 2011 to 2016 reduced water in the Kings River, but recent increased precipitation and snowpack have resulted in increased flows. Water supply in the Kings River is commonly reported as a measure of the percent hydrologic year (PHY), which represents the percent of river runoff compared to the long-term historical average. The latest water year summary from the U.S. Geologic Survey indicates a 25 percent increase in PHY for the Kern River (U.S. Geologic Survey 2017).

The primary storage reservoir on the Kings River is the Pine Flat Reservoir, owned and operated by the U.S. Army Corps of Engineers (USACE). Pine Flat Reservoir has a capacity of one-million acre feet of water; during the latest multi-year drought in California (2011-2016) the reservoir operated below its historic average water level, but recent increased rainfall and snow pack have resulted in current levels at Pine Flat Reservoir 115 percent above the historic average (KBWA 2020). Kings River water entitlements and deliveries from Pine Flat Reservoir are overseen by the KWRA, which also serves as the water master to manage the Kings River flow and conservation storage in Pine Flat Reservoir.

CVP water is delivered to Fresno County water users from surface water sources throughout the Sacramento and San Joaquin River Watersheds and relies on infrastructure such as the Delta-Mendota Canal and the Tracy Pumping Plant (Friant Water Authority 2020). Surface water from the San Joaquin River is provided to several water users in Fresno County who hold contracts with the Federal CVP. Water sourced from the CVP from the San Joaquin River is provided via the Friant-Kern Canal from the Millerton Lake Reservoir. This water is in the Friant Unit of the CVP and is managed by the Friant Water Authority. The Friant Unit also brings water from other parts of the CVP including the Sacramento-San Joaquin River Delta through the Cross-Valley Canals and Delta Export. As a result of prolonged drought conditions, water allocations from the Friant Division were reduced from 63 percent of full allocation in 2013 to zero percent in 2015. By comparison, long-term average Class I and Class II allocations are 94

percent and 40 percent, respectively.[1] With increased precipitation and snowpack, allocations were also increased in 2018 to 55 percent (KBWA 2020).

GROUNDWATER

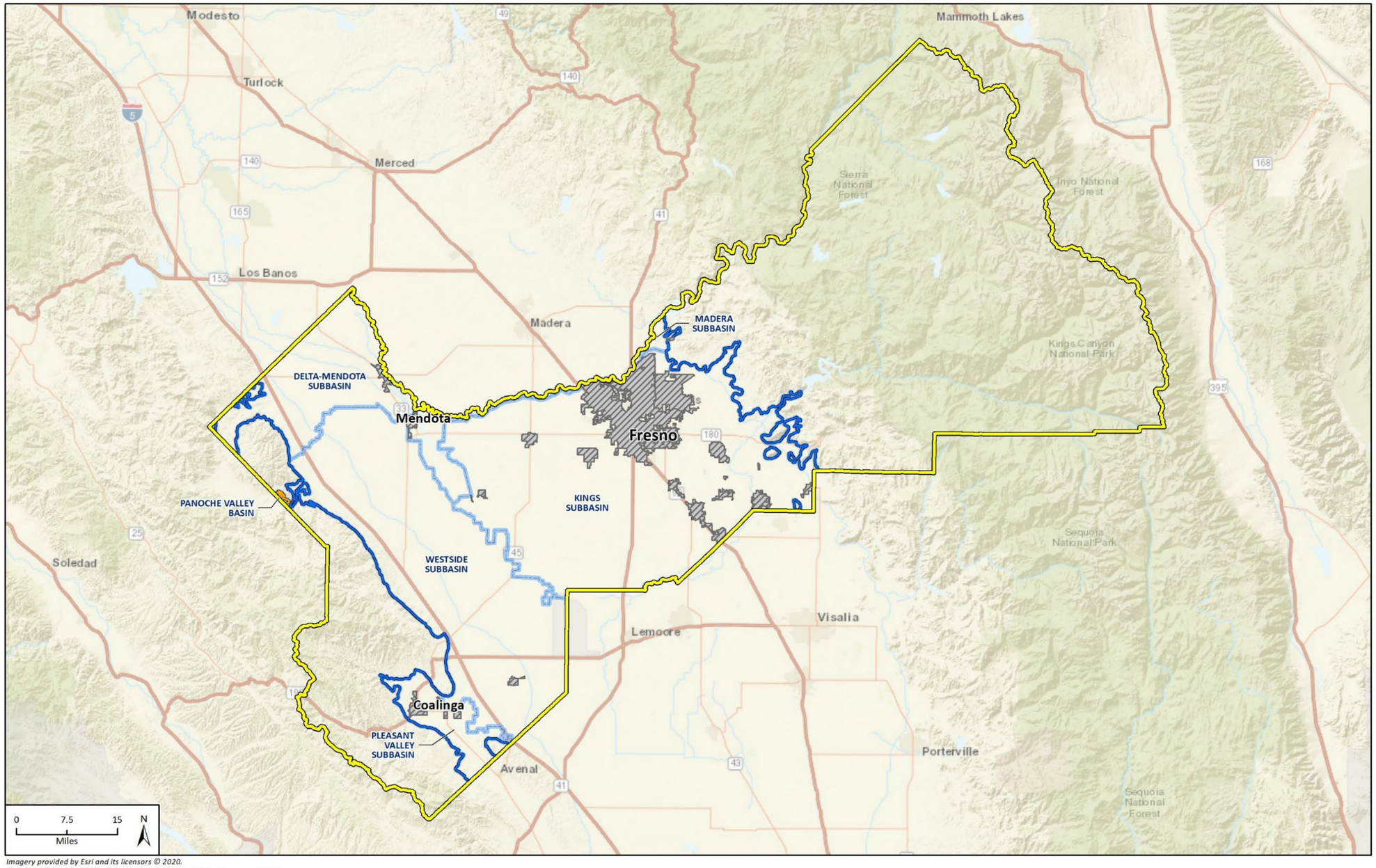
Fresno County is in the San Joaquin Valley Groundwater Basin, which is within the San Joaquin River and Tulare Lake Hydrologic Regions. The main groundwater basin is divided into four sub-basins basins: Kings, Delta-Mendota, Westside, and Pleasant Valley (Figure 7-2). The San Joaquin Valley is a structural trough up to 200 miles long and 70 miles wide that is filled with up to 32,000 feet of marine and continental sediments. Water bearing formations across the sub-basins include alluvium, flood plain deposits, continental deposits, and the Tulare Formation. Groundwater recharge is achieved through percolation into the soil of precipitation and through and stream seepage from the Kings and San Joaquin River watersheds, deep percolation or irrigation water, canal seepage, and intentional recharge (Central Valley Regional Water Quality Control Board [RWQCB] 2006).

Groundwater is an important source of agricultural and domestic water supply in Fresno County, providing 41 percent of the total water demand, on average, across the Tulare Hydrologic Region. Demand for groundwater resources increases in drought years when surface water resources are reduced. Historically, groundwater resources have made up any shortage in surface water supply, but the combination of expansive irrigated agriculture operations, increased urban use, and multiple years of drought statewide caused critical overdraft in three of the four sub-basins on which Fresno County draws. For example, it is estimated that the average annual groundwater storage in the Kings Sub-basin declined by approximately 160,000 acre-feet between 1964 and 2015. Recent attention to this situation and focused conservation efforts have increased groundwater storage in this sub-basin by 210,000 acre-feet as of 2019.

In Fresno County, DWR designated the Kings, Delta-Mendota, and Westside sub-basins as high-priority overdraft areas. These sub-basins are subject to a condition of critical overdraft under the Sustainable Groundwater Management Act (SGMA), requiring the County to form Groundwater Sustainability Agencies (GSAs) for each by June 30, 2017 (DWR 2020). In response, the County established numerous GSAs for the larger, critical sub-basins; these are listed in Table 7-1. The GSAs are responsible to develop and implement a groundwater sustainability plan to meet the sustainability goals for the basin and to ensure it operates within its sustainable yield, forestalling further undesirable results. Each GSA has adopted a groundwater sustainability plan and provides an annual report on the status of plan implementation.

[1] *Class 1 and 2 refer to the priority of water supply allocations. Class 1 is higher priority (first 800,000 acre-feet) and Class 2 is lower priority (next 1.4 million acre feet).*

FIGURE 7-2 GROUNDWATER BASINS



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Additional data provided by California Department of Water Resources, 2016.

Fig 7-2 Groundwater Basins

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TABLE 7-1 GROUNDWATER SUSTAINABILITY AGENCIES IN FRESNO COUNTY	
Sub-Basin	**GSA Member Agencies**
Delta-Mendota	Central Delta-Mendota Oro Loma City of Firebaugh City of Mendota Farmers Water District San Joaquin River Exchange Contractors Wildren Water District Fresno County – Management Area A Fresno County – Management Area B
Kings	South Kings McMullin Area Central Kings James GSA Kings River East North Fork Kings North Kings
Westside	Fresno County Westside Subbasin Westlands Water District
Pleasant Valley	Pleasant Valley Water District, the City of Coalinga and Fresno County

Source: Fresno County 2020
**The Pleasant Valley sub-basin is the only one not in critical overdraft.*

Water Quality

Land uses in the Kings River Watershed and the composition of subsurface geologic materials affect the quality of surface and groundwater in Fresno County. Water quality in the upstream reaches of the Kings River is generally considered to be high quality, but instream water quality begins to decline in downstream reaches of the Kings River as it collects surface and subsurface agricultural drainage and stormwater runoff. Agricultural drainage has been identified as the primary contaminant source in the Tulare Lake Basin. Such discharges are referred to as "non-point" sources because the pollutants are generated in multiple, spread-out locations rather than a single point. These discharges are mostly unregulated. Pollutants from agricultural drainage can introduce pesticides, fertilizers, animal waste into surface water bodies. Pollutants from urban runoff can also carry pollutants such as suspended solids, oil, grease, pesticides and pathogens.

Regulatory Setting discussion that follows indicates that the State Water Resources Control Board (SWRCB) and the RWQCBs regulate water quality in surface water and groundwater bodies. Fresno County is under the jurisdiction of the Central Valley RWQCB, which is responsible for implementation

of State and federal water quality protection guidelines. The RWQCB implements the Water Quality Control Plan for the Tulare Lake Basin (Basin Plan), a master policy document for managing water quality issues in the region. Under Section 303(d) of the Clean Water Act, states are required to develop lists of water bodies that do not meet water quality standards; these are called "impaired" waters. In the Kings River Watershed, the Kings River itself is on the Central Valley RWQCB 303(d) list (Central Valley RWQCB 2008; 2019). The pollutants listed include toxaphene, E. coli, dissolved oxygen, chlorpyrifos, sediment, pH, ammonia, specific conductivity, electrical conductivity, unknown toxicity, molybdenum. The listed pollutants are largely attributable to agricultural drainage. The most effective way to reduce the level of contamination from agricultural drainage is through implementation of best management practices (BMP) on farms that will control pollutants prior to their discharge. To address pollutants from stormwater runoff, the County has implemented point source control according to the Fresno County MS4 permit. The County's MS4 permit regulates Fresno Metropolitan Flood Control District, City of Fresno, City of Clovis, County of Fresno, and California State University Fresno for stormwater discharges from the Municipal Storm Sewer System. Other sources of pollutants can include unsanctioned dumping of agricultural-generated water, for which the County imposes fines and other enforcement measures.

Streams draining into the western portion of the county carry large volumes of sediment with naturally occurring minerals such as selenium, arsenic, boron, and asbestos. Panoche Creek is listed on the Central Valley RWQCB 303(d) list for mercury, sediment/siltation, selenium, sediment toxicity, and unknown contaminants (Central Valley RWQCB 2009; 2019).

Poor groundwater quality can be the result of geologic conditions such as the highly mineralized water. The Kings River drainage area is predominantly underlain by granitic rocks, and the water from the drainage area and groundwater system is largely calcium bicarbonate type. In the central parts of the county, where sodium bicarbonate water occurs, there is an increase in the percentage of sodium. In the northern part of the County, near the valley trough, groundwater is sodium chloride type. The average Total Dissolved Solids concentration in the Kings Subbasin in the central portion of the county is 250 parts per million (ppm) (Central Valley RWQCB 2006). Concentrations can exceed 2,000 ppm as aquifer depth increases. This increase in concentration at greater depths in the aquifer is a growing concern as groundwater levels decline due to overdraft.

Pesticides and nitrates are the two predominant groundwater pollutants found in Fresno County. Common pesticides found in the Kings Basin include nematodecide dibromochloropropane (DBCP), Triazine, and other organonitrogen herbicides, with concentrations generally being higher in the eastern portion of the valley than the western. Pesticide concentrations occur in the study area, but rarely exceed drinking water standards, except for DBCP. Nitrate concentrations in Kings Basin groundwater have frequently exceeded drinking water standards. High concentrations of nitrate are attributed to fertilizer used in agriculture throughout the county and to domestic and industrial onsite, wastewater treatment and dairy farming operations.

While pesticide concentrations are higher in the eastern portion of the Kings Basin, groundwater quality along the western portion of the county is generally lower due to high concentrations of Total Dissolved Solids, sodium sulfate, boron, selenium, and magnesium sulfate. These high concentrations limit the beneficial use of groundwater in this area (U.S. Bureau of Reclamation 2015, DWR 2006). Degraded farmland resulting from a rise in salinity in shallow groundwater along the western portion of the County has occurred from the irrigation of farmland with imported water combined with specific geologic and soil conditions, soil salinity, and inefficient irrigation water management.

Outside of the San Joaquin Groundwater Basin, the quality of groundwater in the eastern portions of Fresno County is generally high, with potential pollutants found to be well below water quality standards. Some public supply wells in the Region do have issues with various primary constituents of concern, regulated by the State Water Resources Control Board. These include arsenic, radioactive constituents (primarily gross-alpha and uranium), and nitrate. Anthropogenic stressors to the quality of the groundwater resources in the region are failing or failed septic tanks, improperly managed rangeland, and improperly sealed wells (KBWA 2014).

REGULATORY SETTING

Water in California is managed by a complex network of federal and state regulations. California administers the rights to surface water at the state level, but not rights to groundwater, which is managed under a variety of authorities including local governments. Major regulatory policies pertaining to domestic water management are summarized below.

FEDERAL

Clean Water Act**.** The primary goals of the Federal Clean Water Act (CWA), 33 U.S. Government Code Section 1251, *et seq*. are to restore and maintain the chemical, physical, and biological integrity of the nation's waters and to make all surface waters fishable and swimmable. The CWA forms the basic national framework for the management of water quality and the control of pollutant discharges. The CWA sets forth a number of objectives in order to achieve the above- mentioned goals. The CWA objectives include regulating pollutant and toxic pollutant discharges; providing for water quality which protects and fosters the propagation of fish, shellfish, and wildlife; developing waste treatment management plans; and developing and implementing programs for the control of non-point sources pollution.

The CWA provides the legal framework for several water quality regulations including the National Pollutant Discharge Elimination System (NPDES), effluent limitations, water quality standards, pretreatment standards, anti-degradation policy, non-point source discharge programs, and wetlands protection.

Section 303(d) of the CWA requires identification and listing of water-quality limited or "impaired" water bodies where water quality standards or receiving water beneficial uses are not met. Once a water body is listed as "impaired," total maximum daily loads (TMDL) must be established for the pollutants or flows causing the impairment. Once established, the TMDL allocates the loads among current and future pollutant sources to the water body. In general, where urban runoff is identified as a significant source of pollutants causing the impairments and is subject to load allocating, the implementation of and compliance with the TMDL requirements is administered through a combination of individual Industrial Stormwater Permits, the General Industrial and General Construction Stormwater Permits, and the Fresno County MS4 Permit. The U.S. Environmental Protection Agency (USEPA) has delegated the responsibility for administration of portions of the CWA to state and regional agencies, including the State of California. Accordingly, the primary regulations resulting from the CWA (i.e., NPDES program) are provided discussion of state and local regulation that follows.

STATE

Porter-Cologne Water Quality Control Act (California Water Code**).** The State of California is authorized to administer federal or state laws regulating water pollution in the State. The Porter-Cologne Water Quality Control Act (Water Code Section 13000, *et seq*.) has provisions to address requirements of the CWA, which include NPDES permitting, dredge and fill programs, and civil and administrative penalties. The Porter-Cologne Act is broad in scope and addresses issues relating to the conservation, control, and utilization of the water resources of the State. Additionally, the Porter-Cologne Act states that the quality of all the waters of the State (including groundwater and surface water) must be protected for the use and enjoyment by the people of the State.

The SWRCB and its nine RWQCBs are agencies under the umbrella structure of the California Environmental Protection Agency (CalEPA). The SWRCB has the principle responsibility for the development and implementation of California water quality policy and must formulate programmatic water quality control procedures to be followed by the RWQCBs. The Central Valley RWQCB is the region that regulates water quality permitting in Fresno County. The Central Valley Region is divided into San Joaquin and Sacramento River Basins and the Tulare Lake Basin. Fresno County is in the Tulare Lake Basin. The Central Valley RWQCB adopted the second edition of the Water Quality Control Board Basin Plan for the Tulare Lake Basin on August 17, 1995. The Basin Plan designates beneficial uses and establishes water quality objectives for groundwater and surface water in the Basin. The plan was updated and revised in May 2018.

Water Code Section 13050 defines what is considered pollution, contamination, or nuisance. Briefly defined, pollution means an alteration of water quality such that it unreasonably affects the beneficial uses of water (which may be for drinking, agricultural supply, or industrial uses). Contamination means an impairment of water quality to the degree that it creates a hazard to the public health. Nuisance is defined as anything that is injurious to health, is offensive to the senses, or is an obstruction to property use, and which affects a considerable number of people.

Discharge Permits. The SWRCB has issued a statewide NPDES General Permit for stormwater discharges associated with construction activities (known as the Construction General Permit ([NPDES No. CAS000002; Order No. 2012-0006-DWQ]). Any project that disturbs an area more than one acre requires a Notice of Intent (NOI) to discharge under the Construction General Permit. The Construction General Permit includes measures to eliminate or reduce pollutant discharges through implementation of a Stormwater Pollution Prevention Plan (SWPPP), which describes the implementation and maintenance of BMPs to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from the site during construction. The Construction General Permit contains receiving water limitations that require stormwater discharges to not cause or contribute to a violation of any applicable water quality standard. The permit also requires implementation of programs for visual inspections and sampling for specified constituents (e.g., non-visible pollutants). Any construction activities under the project that disturb more than one acre would be covered under the Construction General Permit. Fresno County has also adopted a MS4 permit (NPDES NO. CA0083500) which covers Fresno Metropolitan Flood Control District, City of Fresno, City of Clovis, County of Fresno, and California State University Fresno for stormwater discharges from the Municipal Storm Sewer System.

Sustainable Groundwater Management Act**.** Signed into law on September 16, 2014, the Sustainable Groundwater Management Act (SGMA) is a comprehensive legislation for the management of groundwater throughout the State composed of Senate Bill (SB) 1168, Assembly Bill (AB) 1739, and SB 1319. The SMGA established a new structure for managing California's groundwater resources at a local

level by local agencies. SGMA requires, by June 30, 2017, the formation of locally-controlled GSAs in the State's high- and medium-priority groundwater basins and subbasins (basins). A GSA is responsible for developing and implementing a groundwater sustainability plan (GSP) to meet the sustainability goal of the basin to ensure that it is operated in its sustainable yield, without causing undesirable results. The DWR is required to develop and adopt emergency regulations for evaluating GSPs, the implementation of GSPs, and coordination of agreements by June 1, 2016. A GSP may be any of the following (Water Code Section 10727(b)):

- A single plan covering the entire basin developed and implemented by one GSA
- A single plan covering the entire basin developed and implemented by multiple GSAs
- Multiple plans implemented by multiple GSAs and coordinated pursuant to a single coordination agreement that covers the entire basin and which is subject to Water Code Section 10727.6

The legislative intent of SGMA is to recognize and preserve the authority of cities and counties to manage groundwater pursuant to their existing powers. As such, local governments play an important land use and water management role in California and should be involved in GSA formation and GSP implementation. A GSP shall take into account the most recent planning assumptions stated in local general plans of jurisdictions overlying the basin. (Water Code Section10726.9)

- If is an area in a high- or medium-priority basin that is not under the management area of a GSA, the county in which that unmanaged area lies will be presumed to be the GSA for that area. (Water Code Section 10724(a))
- A county shall provide notification to DWR of its intent to manage the unmanaged area pursuant to Water Code Section 10723.8 unless the county notifies DWR in writing that it will not be the GSA for the area. (Water Code Section 10724(b))
- An "unmanaged area" as used in Water Code Section 10724(a) is an area of a basin that has not yet had (or will not have) a local agency file a GSA formation notice with DWR.
- Water Code Section 10724 does not give the county exclusive authority to be the GSA in a basin if other local agencies have also declared their intent to manage groundwater but have not yet resolved their service area overlap.

Water Rights. The California Constitution requires that water be used in a reasonable and beneficial manner and prohibits misuse and waste of water. Water is used beneficially when, for example, it is used to drink, grow crops, or wash cars. What defines reasonable water use depends on the circumstances. For example, it could be unreasonable to wash cars during a severe drought. All types of water rights are subject to this constitutional policy, and the SWRCB is authorized to take action to prevent unreasonable uses of water. Riparian and appropriative are the two principal types of surface water rights in California.

RIPARIAN WATER RIGHTS

A riparian water right allows a landowner bordering a watercourse to share the water flowing past his property with other riparian landowners. Riparian rights are not defined by California statutes but have been established by common law and court decisions. Permits or other government approvals are not required to exercise riparian rights. However, a permit from the USACE or some other regulatory agency, or an agreement with the California Department of Fish and Wildlife (CDFW), may be necessary to construct diversion facilities needed to exercise riparian rights.

Riparian rights extend only to natural flow and do not apply to water imported into a stream system or water released from storage in an upstream reservoir. Riparian rights do not allow a water user to store water in a reservoir during the wet season for use during the dry season. In times of shortage, riparian rights are entitled to share the supply before any appropriators may divert water. The water from riparian rights can only be used on the riparian lands and cannot be transferred or exported for use on other properties or outside the watershed.

Riparian rights ordinarily cannot be lost through nonuse. They generally remain with a property when it changes hands, but a riparian right may be impaired or lost if a parcel is subdivided or the land otherwise severed from its water source, if SWRCB approves a prescriptive appropriative right, or if a court approves allocation of a stream's water among users.

APPROPRIATIVE WATER RIGHTS

Since 1914, all new appropriations of surface water have required a permit from the State of California. The permits are issued by the SWRCB and specify the amount of water that may be diverted, purposes for the water use, time periods during which diversion may occur, and the locations of diversion, storage (including underground storage), and use. An appropriative water right permit may allow the use of water at locations outside the watershed. When the SWRCB considers an application for a permit, it evaluates whether water is available during the requested time period and potential environmental impacts, including any impacts on the rights of the public to use the waterway for navigation, commerce, fishery, recreation, aesthetic enjoyment and the preservation of open space, ecological study areas and wildlife habitat. Based on this evaluation, the SWRCB decides whether or not to issue a permit, and, if it issues a permit, what conditions to include.

Appropriative rights are limited to the amount of water that may be put to beneficial use, and a right may be lost after a period of non-use. Appropriative water rights are based on a "first come, first served" principle: the first to take water has a superior right over later appropriators. In times of shortage, all appropriators must stop diverting water, if necessary to satisfy riparian rights. There is no sharing of a shortage among appropriators. Instead, senior appropriators are entitled to exercise their rights to satisfy all of their reasonable needs before junior appropriators may divert any water.

Water flowing in subterranean streams through known and defined channels is subject to diversion, use and regulation under riparian and appropriative rights as described above. Water is considered to be flowing in a subterranean stream through a known and definite channel if it is in contact with surface water and moving in the same direction in a relatively defined channel. Groundwater not flowing in any subterranean stream through a known and defined channel is known as "percolating groundwater" and is not subject to surface water rights.

GROUNDWATER RIGHTS

Except for groundwater flowing in subterranean streams, there is no statewide statutory regulation of groundwater in California. Landowners overlying groundwater have rights to share the groundwater under their property with other overlying landowners without obtaining a permit from any State agency. Groundwater may also be used on lands that are not overlying, but this right is subordinate to the prior use of any overlying landowners. Surface water can be diverted or pumped into aquifers for later extraction, with SWRCB approval.

The courts have held that cities and counties may regulate groundwater use under their police powers to protect public health, safety, and welfare. In addition to those powers, the State Water Code provides other regulatory tools including the adoption and implementation of a groundwater management plan under the Groundwater Management Act (Water Code Section 10750-10755.4; AB 3030). Litigation has also resulted in court decisions determining groundwater use in some cases.

LOCAL

The 2000 Fresno County General Plan contains Goals and Policies aimed to protect and enhance to water resources and water quality in the County. The Policies and Implementation Programs under Goal OS-A in the Open Space and Conservation Element aim to enhance water quality and quantity in Fresno County's streams, creeks and groundwater basins. These include policies addressing water management, groundwater monitoring, groundwater recharge, water quality, and land use. Implementation programs under Goal OS-A include to develop and implement a water sustainability plan, establish and maintain a centralized water resource database, a groundwater monitoring program and land use plans to preserve groundwater recharge zones.

Kings Basin Integrated Regional Water Management Plan (IRWMP)**.** The Kings Basin IRWMP was developed by the Kings Basin Water Authority and adopted by Member Agencies October 17, 2012. The Kings Basin Integrated Regional Water Management Plan (IRWMP) is a collaborative effort among at least 54 public, private, and non-governmental agencies to manage water resources in the Kings Groundwater region (Kings Basin). The IRWMP region includes nearly all the Kings Subbasin and small portions of the Delta-Mendota, Kaweah, and Tulare Lake Subbasins. The updated IRWMP Planning horizon extends 20 years to the year 2032.

Southern Sierra Integrated Regional Water Management Plan**.** The Southern Sierra IRWMP was prepared for the Southern Sierra Regional Water Management Group (RWMG) in November of 2014 and revised in November 2018. The Southern Sierra RWMG was developed to improve coordination and collaboration on regional water management in the Southern Sierra Region and includes 18 formal members and 43 interested stakeholders in the eastern portion of Fresno County. The Southern Sierra IRWMP will address continuing development in the foothills, communities struggling to maintain water supplies, limited groundwater supplies, droughts, and the threat of climate change, considering these concerns a call for immediate action to pool resources and begin regional water management in the Southern Sierra. The planning and implementation horizon for the RWMG extends thirty years, to approximately 2043-2045.

Westside San Joaquin ***Integrated Water Resource Plan*****.** The Westside IWRP was prepared for the San Luis and Delta Mendota Water Authority (SLDMWA), which acts as the RWMG for the Westside-San Joaquin Integrated Regional Water Management Region. The SLDMWA consists of 29 Member Agencies representing approximately 1.1 million acres of federal and exchange water service contractors in the western San Joaquin Valley, including western portions of Fresno County. The IWRP is used to identify shared conflicts and issues and develop solutions or projects that can be implemented to address conflicts as well as to coordinate various water resources planning efforts.

Fresno County **Ordinance Code.** Chapter 14 of the Fresno County Ordinance Code addresses water and sewage regulations to preserve water resources and water quality throughout the County. Chapter 14.01 addresses water conservation or water supplied by the County in County Service Areas, County Service Areas and Zones of Benefit with those Service Areas or County Water Works Districts. Chapter 14.03 specifically addresses groundwater management by prohibiting the direct or indirect transfer of

groundwater outside of the County. Chapter 14.04 addresses well regulations to protect County residents from contaminated or polluted groundwater and to maintain groundwater quality.

KEY TERMS

Acre-foot /yr. The volume of water required to cover one acre of land (43,560 square feet) to a depth of one foot. One acre-foot is equal to 325,851 gallons or 1,233 cubic meters. (Section 7.1)

Aquifer. A layer of rock or sand that can absorb and hold water. (Section 7.1)

Beneficial use. Use of water either directly by people or for their overall benefit as legally defined and identified. According to the California Code of Regulations (CCR) Section659-672, the beneficial uses of water, pertaining to water rights include: domestic; irrigation; power; municipal; mining; industrial; fish and wildlife preservation and enhancement; aquaculture; recreational; stock watering; water quality; frost protection; and heat control. (Section 7.1)

Discharge. A rate of water flow, typically expressed as a unit volume of water per unit of time (e.g., cubic feet per second (cfs)). (Section 7.1)

Groundwater. Water that occurs beneath the land surface, specifically in pore spaces of saturated soil, sediment, or rock formations. Groundwater does not include moisture held by capillary action in the upper, unsaturated areas of aquifers. (Section 7.1)

Groundwater basin. An aquifer or series of aquifers with defined lateral boundaries and bottom layer. (Section 7.1)

Groundwater recharge. The natural or intentional infiltration/percolation of surface water into the zone of saturation (i.e., into groundwater). (Section 7.1)

Non-point source. A pollution source that cannot be defined at a discrete location; a dispersed or spread out source area. (Section 7.1)

Point source. A specific site from which pollution is discharged to a water body. (Section 7.1)

Runoff. Precipitation (rain or snowmelt) that is not used by plants, evaporated or infiltrated to soils, and is transported across land surfaces to streams or other surface water bodies. (Section 7.1)

Snowpack. The mass of accumulated snow in higher elevations of the county. (Section 7.1)

Watershed. The land surface area from which water drains into a common downstream point. (Section 7.1)

Water Year. A continuous twelve-month period for which hydrologic records are compiled and summarized. Months may vary by location and agency, but October 1st through September 30th is commonly used by USGS. A given water year is named for the year in which it ends, i.e., the water year from October 1, 2012, through September 30, 2013, was water year 2013. (Section 7.1)

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SECTION 7.2 AIR QUALITY

INTRODUCTION

This section describes federal and State air quality standards, local air quality planning and management, and existing air quality conditions. While climate change and greenhouse gas emission sources are often associated with air quality, in this report they are addressed in Chapter 9, Climate Change.

MAJOR FINDINGS

- Fresno County is located in the San Joaquin Valley Air Basin (SJVAB), which is under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). The San Joaquin Valley has some of the nation's worst air quality, failing to meet federal health standards for both ozone (smog) and particulate pollution (USEPA 2019).
- In Fresno County, transportation is the largest source of air pollutants, mainly from trucks (USEPA 2019). The topography of the basin inhibits air movement, giving the San Joaquin Valley ideal conditions for pollutants to become trapped, leading to poor air quality and the highest rate of childhood asthma in California.
- The SJVAPCD is currently in extreme non-attainment for federal 8-hour ozone; severe non-attainment for State 1-hour ozone; and non-attainment for State 8-hour ozone, federal and State PM_{10}, and State $PM_{2.5}$. Emissions data collected over the last several years multiple violations of the federal 8-hour ozone and $PM_{2.5}$ levels, and the State 8-hour ozone and PM_{10} levels.
- Fresno County is part of the current Community Emission Reduction Program to reduce air pollution exposure in disadvantaged communities.

EXISTING CONDITIONS

CLIMATE AND ATMOSPHERIC CONDITIONS

Fresno County is one of eight counties in the SJVAB. According to the USEPA, the San Joaquin Valley has the worst air quality in the country, with Fresno County having the worst air quality in the region. In the SJVAB, air pollution is a result of anthropogenic activities, with the largest source coming from transportation. Moreover, the regional topography provides ideal conditions for trapping air pollutants, as the San Joaquin Valley is surrounded by mountains on three sides: the Sierra Nevada Mountains to the east, the Coast Ranges to the west, and the Tehachapi Mountains to the south. To the north, the San Joaquin Valley is open to the Sacramento Valley and the San Francisco Bay Area. This bowl-shaped topography inhibits movement of pollutants out of the valley, and air pollutants become trapped.

The SJVAB is in a Mediterranean climate zone, characterized by sparse rainfall and hot, dry summers. With an average of over 260 sunny days per year, the SJVAB provides favorable conditions for ozone formation. While precipitation and fog in the winter block sunlight and reduce ozone concentrations, the fog also facilitates the formation of particular matter. Moreover, temperature inversions, which limit vertical dispersion of air pollutants, are persistent and occur 2,000 to 2,500 feet above the valley floor in the summer and 500 to 1,500 feet above the valley floor in the winter.

The SJVAPCD reports that two decades of implementing a variety of programs to reduce toxic air contaminant (TAC) emissions in the San Joaquin Valley has resulted in a significant reduction in stationary pollutant sources, such that there are no facilities in under the district's supervision that emits toxins that pose a significant risk to Valley residents under the State Air Toxic Hot Spots program (SJVAPCD 2020).

CHARACTERISTICS OF AIR POLLUTION

In general, air pollution describes the introduction of harmful particles or molecules into the atmosphere. Air pollutants can cause harm to humans, animals, and plants that breathe in or absorb these materials. The amount of harm depends on the type and concentration of the pollutant. The following describes the air pollutants found in Fresno County.

OZONE

Ozone is produced by a photochemical reaction (triggered by sunlight) between nitrogen oxides (NO_X) and reactive organic gases (ROG). Nitrogen oxides are formed during the combustion of fuels, and ROG are formed during combustion and evaporation of organic solvents. Because ozone requires sunlight to form, it mostly occurs in concentrations considered serious between the months of April and October. Ozone is a pungent, colorless, toxic gas with direct health effects on humans including respiratory and eye irritation and possible changes in lung functions. Groups most sensitive to ozone include children, the elderly, people with respiratory disorders, and those who exercise strenuously outdoors.

CARBON MONOXIDE

Carbon monoxide (CO) is a colorless, odorless, poisonous gas. The major source of CO in California is automobile traffic. Elevated concentrations are, therefore, usually only found near areas of high traffic volumes. Carbon monoxide's health effects are related to its affinity for hemoglobin in the blood. At high concentrations, carbon monoxide reduces the amount of oxygen in the blood, causing reduced lung capacity, impaired mental abilities, and heart difficulties in people with chronic diseases.

NITROGEN DIOXIDE

Nitrogen dioxide (NO_2) is a by-product of fossil fuel combustion, with the primary sources being motor vehicles and industrial boilers and furnaces. The principal form of nitrogen oxide produced by combustion is nitric oxide (NO), but NO reacts rapidly to form NO_2, creating the mixture of NO and NO_2 commonly called NO_X. Nitrogen dioxide is an acute irritant. A relationship between NO_2 and chronic pulmonary fibrosis may exist, and an increase in bronchitis in young children at concentrations below 0.3 ppm may occur. Nitrogen dioxide absorbs blue light and causes a reddish-brown cast to the atmosphere and reduced visibility. It can also contribute to the formation of PM_{10}, $PM_{2.5}$, and acid rain.

PARTICULATE MATTER

PM_{10} is particulate matter measuring no more than 10 microns in diameter, while $PM_{2.5}$ is fine particulate matter measuring no more than 2.5 microns in diameter. Suspended particulates are mostly dust particles, nitrates and sulfates. Both PM_{10} and $PM_{2.5}$ are by-products of fuel combustion and wind erosion of soil and unpaved roads and are directly emitted into the atmosphere through these processes. Suspended particulates are also created in the atmosphere through chemical reactions. The characteristics, sources, and potential health effects associated with the small particulates (those between 2.5 and 10 microns in

diameter) and fine particulates ($PM_{2.5}$) can be very different. The small particulates generally come from windblown dust and dust kicked up from mobile sources. The fine particulates are generally associated with combustion processes and are formed in the atmosphere as a secondary pollutant through chemical reactions. Fine particulate matter is more likely to penetrate deeply into the lungs and remain there and poses a health threat to all groups, but particularly to the elderly, children, and those with respiratory problems. These materials can damage health by interfering with the body's mechanisms for clearing the respiratory tract or by acting as carriers of an absorbed toxic substance.

TOXIC AIR CONTAMINANTS

TACs, or hazardous air pollutants (HAP), are regulated in California through the Tanner Air Toxics Act of 1983 (AB 1807) and the Air Toxic Hot Spot Information and Assessment Act of 1987 (AB 2588). AB 1807 sets forth a formal procedure for the California Air Resources Board (CARB) to designate substances as TACs. Research, public participation, and scientific peer review are required before CARB can designate a substance as a TAC. To date, CARB has identified more than 21 TACs and adopted USEPA's list of HAPs as TACs. Most recently, diesel PM ($PM_{2.5}$) was added to CARB's list of TACs.

AB 2588 implements the goal to collect air toxics emissions data, identify facilities with localized effects, and ascertain the health risks. TACs may include diesel, formaldehyde, benzene, acetaldehyde, and polycyclic aromatic hydrocarbons (PAH). 2017 data show 1,167 identified TAC emitter facilities in Fresno County, although most generate low to no levels of emissions. Other sources of TACs in California include vehicles, from freeways and urban roadways with more than 100,000 vehicles per day, and from rural roadways with more than 50,000 vehicles per day. For example, Highway 99 runs through Fresno County with annual average daily traffic volumes of over 100,000 vehicles, making it a significant source of TACs.

Exposure to high levels of TACs poses a health risk to sensitive populations (e.g., children, older adults, persons with compromised immune systems). CARB recommends local jurisdictions adopt land use policies to separate sensitive land uses a minimum of 500 to 1,000 feet from air toxic sources; these .recommendations are presented in Table 7-2 for mobile and stationary TACs. They are further detailed in "Air Quality and Land Use Handbook: A Community Health Perspective" (CARB 2005). The recommended setbacks are advisory and should not be interpreted as defined "buffer zones." CARB recognizes the opportunity for more detailed, site-specific analyses, and that land use agencies must balance a range of considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.

TABLE 7-2 RECOMMENDATIONS FOR SITING NEW SENSITIVE LAND USES IN CALIFORNIA	
Source Category	**Advisory Recommended Setback Distance**
Freeways and High-Traffic Roads	500 feet from a freeway or urban road with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day
Distribution centers	1,000 feet Avoid location of new sensitive land uses near entry and exit points
Rail yards	1,000 feet Within 1 mile, consider siting limitation and mitigation approaches
Ports	Immediately downwind Consult local air district
Refineries	1,000 feet
Chrome platers	1,000 feet
Dry cleaners using perchloroethylene	300 to 500 feet
Gasoline dispensing facilities	300 feet

Source: CARB 2005

Fresno County is part of the current Community Emission Reduction Program to reduce air pollution exposure in disadvantaged communities. South Central Fresno was one of the first Valley communities CARB selected for the AB 617 reassessment process. The health risk assessments will be ascertained for upwards of 300 facilities that process agricultural products, source and prepare construction materials, provide public utilities, and mine, process, and transport petroleum. Of these, a few facilities in Fresno County were identified to for health risk assessment and potential remediation efforts. One was listed as high priority; the rest were considered intermediate or low/exempt priorities for assessment.

ODORS

SJVAPCD has identified common types of facilities known to produce odors in the SJVAB. Since the intensity of an odor's source operations and its proximity to sensitive receptors influences the potential significance of odor emissions, the SJVAPCD has established screening levels and minimum distances for potential odor sources. These are provided in Table 7- 3.

TABLE 7- 4 SCREENING DISTANCES FOR POTENTIAL ODOR SOURCES	
Type of Facility	**Distance**
Wastewater Treatment Facilities	2 miles
Sanitary Landfill	1 mile
Transfer Station	1 mile
Composting Facility	1 mile
Petroleum Refinery	2 miles
Asphalt Batch Plant	1 mile

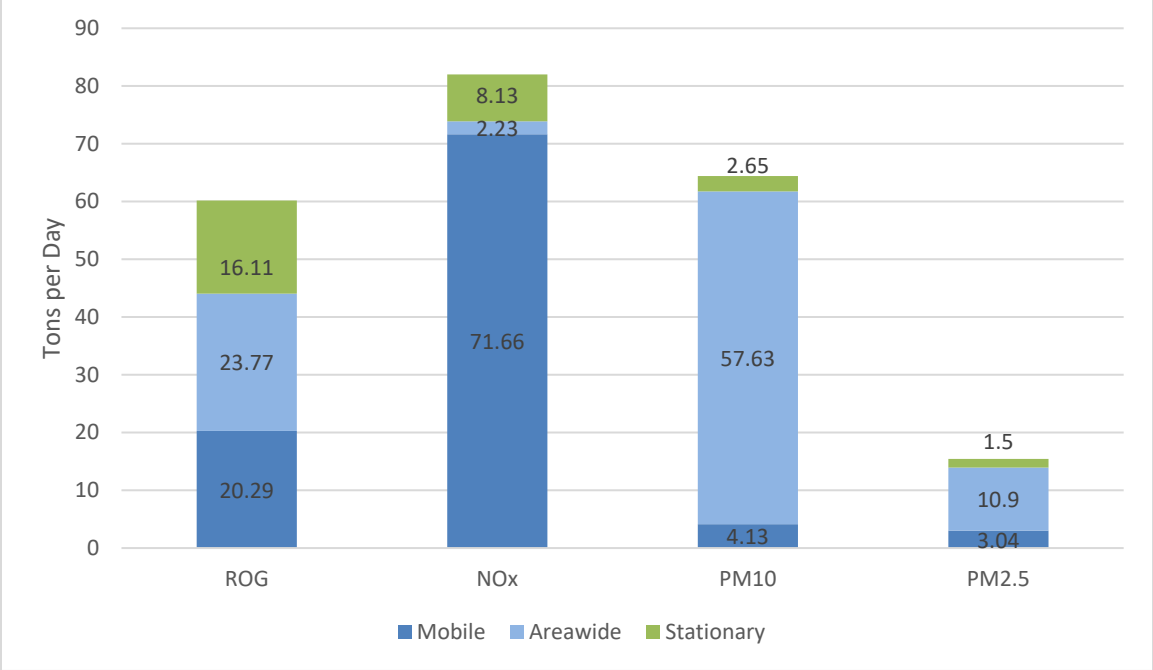
TABLE 7- 4 SCREENING DISTANCES FOR POTENTIAL ODOR SOURCES	
Type of Facility	**Distance**
Chemical Manufacturing	1 mile
Fiberglass Manufacturing	1 mile
Painting/Coating Operations (e.g., auto body shops)	1 mile
Food Processing facility	1 mile
Feed Lot/Dairy	1 mile
Rendering Plant	1 mile

Source: SJVAPCD 2015

EXISTING AIR POLLUTION SOURCES

CARB developed an emissions inventory in Fresno County for 2016 (CARB 2017). The emissions inventory is summarized in Figure 7-3. According to the inventory, mobile sources such as cars and trucks are the largest contributor to the estimated annual average for air pollutant levels of NO_X, accounting for approximately 83 percent of total NO_x emissions in Fresno County. As one of the top agricultural producing regions in California, large areawide sources (such as farming operations) are present and account for approximately 49 percent of ROG, 92 percent of PM_{10}, and 80 percent of $PM_{2.5}$.

FIGURE 7-3 FRESNO COUNTY 2016 EMISSIONS INVENTORY



Source: CARB 2017

EXISTING AIR QUALITY

The CARB compiles air quality data from a regional air quality monitoring network that provides information on ambient air pollutant concentrations of criteria air pollutants. As discussed above, the San Joaquin Valley provides ideal conditions for trapping air pollutants. Fresno County has the worst air quality in the region, which has led to having the highest rate of childhood asthma in California. Air pollution in Fresno County is expected to worsen, as the population is anticipated to grow more rapidly in the region than in any other air basin in California.

Monitored ambient air pollutant concentrations reflect the number and strength of emission sources and the influence of topographical and meteorological factors. Table 7-5 presents a three-year summary of air pollutant data collected at one of the air stations that is centrally located in Fresno County, the Fresno-Garland Air Monitoring Station. Between 2016 and 2018, the State and federal ozone, State PM_{10}, and Federal $PM_{2.5}$ levels were exceeded multiple times, but the trend is down for all pollutants in the amount and number of days in excess since 2014 and 2015 monitoring years.

TABLE 7-5
SUMMARY OF ANNUAL AIR QUALITY DATA AT THE FRESNO-GARLAND AIR MONITORING STATION IN FRESNO COUNTY

Pollutant	2016	2017	2018
Ozone, ppm - Worst Hour	0.094	0.112	0.099
Number of days of State exceedances (>0.09 ppm)	23	6.0	16
Number of days of State exceedances (>0.070 ppm)	56	68.0	38
Number of days of federal exceedances (>0.075 ppm)	37	36.0	18
Particulate Matter <10 microns, µg/m^3 Worst 24 Hours	91.9	160.1	130.4
Particulate Matter <2.5 microns, µg/m^3 Worst 24 Hours	52.7	86.0	95.7

Source: CARB 2019a, 2019b, 2019c
**Carbon monoxide data were not available for the Fresno-Garland Air Monitoring Station during the years listed.*

REGULATORY SETTING

FEDERAL

Clean Air ***Act (CAA*).** The CAA is the comprehensive federal law that regulates air emissions from stationary and mobile sources in order to control air pollution in the United States. Under the CAA, the USEPA establishes limits on six criteria pollutants through the National Ambient Air Quality Standards (NAAQS). Table 7-6 lists the current Federal and State standards for these criteria pollutants. Standards are set to protect public health and public welfare. The CAA also gives USEPA the authority to limit emissions of air pollutants coming from sources like chemical plants, utilities, and steel mills. Individual states or tribes may have stronger air pollution laws, but they may not have weaker pollution limits than those set by USEPA. Under the law, states have to develop State Implementation Plans (SIP) that outline how each State will control air pollution under the CAA.

TABLE 7-6 CURRENT FEDERAL AND STATE AMBIENT AIR QUALITY ATTAINMENT STANDARDS		
Pollutant	**Federal Standard**	**California Standard**
Ozone	0.07 ppm (8-hr avg)	0.09 ppm (1-hr avg) 0.07 ppm (8-hr avg)
Carbon Monoxide	9.0 ppm (8-hr avg) 35.0 ppm (1-hr avg)	9.0 ppm (8-hr avg) 20.0 ppm (1-hr avg)
Nitrogen Dioxide	0.100 ppm (1-hr avg) 0.053 ppm (annual avg)	0.18 ppm (1-hr avg) 0.03 ppm (annual avg)
Sulfur Dioxide	0.075 ppm (1-hr avg)	0.25 ppm (1-hr avg) 0.04 ppm (24-hr avg)
Lead	0.15 µg/m^3 (3-mo avg)	1.5 µg/m^3 (30-day avg)
Particulate Matter (PM_{10})	150 µg/m^3 (24-hr avg)	50 µg/m^3 (24-hr avg) 20 µg/m^3 (annual avg)
Particulate Matter ($PM_{2.5}$)	12 µg/m^3 (annual avg) 35 µg/m^3 (24-hr avg)	12 µg/m^3 (annual avg)

ppm= parts per million µg/m3 = micrograms per cubic meter
Source: CARB 2015

STATE

California Air Resources Board (**CARB).** In California, the CARB is responsible for preparing and enforcing the federally required SIP to achieve and maintain NAAQS and State Ambient Air Quality Standards (SAAQS), which were developed as part of the California CAA adopted in 1988. California air quality standards are identical to or stricter than federal standards for all criteria pollutants. California has also set ambient standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. The SAAQS are listed in Table 7-6.

CARB is responsible for assigning air basin attainment and nonattainment designations in California. Air basins are designated as being in attainment if the concentrations of a criteria air pollutant meet or are less than the SAAQS for the pollutant. Air basins are designated as being in nonattainment if the level of a criteria air pollutant is higher than the SAAQS. CARB is the oversight agency responsible for regulating statewide air quality, but implementation and administration of SAAQS is delegated to several regional air pollution control districts. These districts have been created for specific air basins and have principal responsibility for developing plans to meet SAAQS and NAAQS, developing control measures for non-vehicular sources of air pollution necessary to achieve and maintain SAAQS and NAAQS, implementing permit programs established for the construction, modification, and operation of air pollution sources, enforcing air pollution statutes and regulations governing non-vehicular sources, and developing employer-based trip reduction programs.

LOCAL

San Joaquin Valley Air Pollution Control District (SJVAPCD**).** The SJVAPCD is the lead air quality regulatory agency for the SJVAB. Since Fresno County is part of SJVAB, the SJVAPCD has jurisdiction over all point and area sources (except for mobile sources, consumer productions, and pesticides). The SJVAPCD also has permit authority over jurisdictional stationary sources. The SJVAPCD and CARB have joint responsibility for attaining and maintain the NAAQS and SAAQS in the SJVAB. The SJVAPCD's primary approach to implementing air quality plans is to adopt rules and regulations to the CARB that regulates emissions from construction activities and stationary sources. Regulations and rules pertaining to construction and land development include the following:

Regulation II: Permits. Describes rules for permits that are required and exempted, including standards for granting permit applications, conditional approval, and standards for permits to operate.

Regulation IV: Prohibitions. Describes new source performance standards and rules including open burning, reduction of animal matter, particulate matter and emission rates, and fuel burning.

Regulation XII: Toxic Air Pollutants. Describes rules for facilities that produce pollutants including ethylene oxide, dioxin, fluorides, asbestos, toxic metals, and perchloroethylene.

Regulation XIII: Fugitive PM_{10} Prohibitions. Describes general requirements limiting the emissions of particulate matter on open areas, paved and unpaved roads, and agricultural sources.

Regulation IX: Mobile and Indirect Sources. Describes rules for general and transportation conformity, school bus fleets, and credits for emission reductions through incentive programs.

Under state law, air districts are required to prepare a plan for air quality improvement for pollutants for which the district is in non-compliance. SJVAPCD is in nonattainment for the State and federal ozone standards, the State and federal $PM_{2.5}$ standards, and the State PM_{10} standards (see Table 7-7) and is required to prepare a plan for improvement.

The Clean Air Act requires adoption of a reasonably available control technology for areas classified as moderate or above for ozone nonattainment. The USEPA standard for 8-hour ozone is 70 parts per billion (ppb). Since the SJVAB is in extreme nonattainment at the 8-hour ozone level, the SJVAPCD adopted a Reasonably Available Control Technology (RACT) Demonstration for Ozone State Implementation Plan (SIP) in June 2014.

TABLE 7-7 ATTAINMENT STATUS DESIGNATIONS FOR THE SAN JOAQUIN VALLEY AREA BASIN		
Pollutant	**State Designation**	**National Designation**
Ozone – 1-hour	Nonattainment (Severe)	No Federal Standard
Ozone – 8-hour	Nonattainment	Nonattainment (Extreme)
Carbon Monoxide	Unclassified/Attainment	Unclassified/Attainment
Nitrogen Dioxide	Attainment	Unclassified/Attainment
Sulfur Dioxide	Attainment	Unclassified/Attainment
Lead	Attainment	No Designation/Classification
Particulate Matter (PM_{10})	Nonattainment	Attainment
Particulate Matter ($PM_{2.5}$)	Nonattainment	Nonattainment
Sulfates	Attainment	No Federal Standard
Hydrogen Sulfide	Unclassified	No Federal Standard

Source: SJVAPCD 2012

In August 2008, the SJVAPCD adopted the Climate Change Action Plan (CCAP) to assist lead agencies, project proponents, permit applicants, and interested parties to assess and reduce the impacts of project specific greenhouse gas emissions on global climate change. Climate change and greenhouse gas emissions are further discussed in Chapter 9, Climate Change.

KEY TERMS

Air Basin. A geographic area that exhibits similar meteorological and geographic conditions. California is divided into 15 air basins. (Section 7.2)

Areawide Source. Areawide sources include sources of pollution where the emissions are spread over a wide area, such as consumer products, fireplaces and wood stoves, natural gas-fueled space heaters and water heaters, road dust, landscape maintenance equipment, architectural coatings, solvents, and farming operations. Areawide sources do not include mobile sources or stationary sources. (Section 7.2)

Attainment Area. A geographic area that meets the National Ambient Air Quality Standards (NAAQS) for a criteria pollutant. (Section 7.2)

Criteria Pollutants. The six principle pollutants harmful to public health and the environment for which the USEPA has set National Ambient Air Quality Standards (NAAQS), including carbon monoxide (CO), lead, nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), and sulfur dioxide (SO_2). (Section 7.2)

Exceedance. The point at which a measured air pollution level exceeds criteria prescribed by the USEPA or the California Air Resources Board. (Section 7.2)

Mobile Source. A moving source of air pollution such as on road or off-road vehicles, boats, airplanes, lawn equipment, and small utility engines. (Section 7.2)

National Ambient Air Quality Standards (NAAQS). Standards for outdoor air pollutants established by the USEPA under authority of the Clean Air Act. (Section 7.2)

Nitrogen Oxides (NO_X). Oxides of nitrogen primarily created from the fossil fuel combustion process and area major contributors to smog and acid rain formation. (Section 7.2)

Nonattainment Area. A geographic area where air pollution levels persistently exceed National Ambient Air Quality Standards, or that contributes to ambient air quality in a nearby area that fails to meet standards. (Section 7.2)

Ozone. Ozone is a pungent, colorless, toxic gas with direct health effects on humans, including respiratory and eye irritation and possible changes in lung functions. Ozone is created when hydrocarbons and nitrogen oxides released from vehicles and industrial sources react in the presence of sunlight. Because ozone requires sunlight to form, it occurs in concentrations considered serious primarily between the months of April and October. (Section 7.2)

Ozone Precursors. Chemicals that lead to the eventual creation of ozone. (Section 7.2)

Particulate Matter. Fine metal, smoke, soot, and dust particles suspended in the air. (Section 7.2)

Reactive Organic Gases (ROG). Photochemically-reactive gases composed of non-methane hydrocarbons. (Section 7.2)

Sensitive Receptors. Populations or uses that are more susceptible to the effects of air pollution than the general population, including long-term health care facilities, rehabilitation centers, retirement homes, convalescent homes, residences, schools, childcare centers, and playgrounds. (Section 7.2)

Stationary Source. A non-mobile source of air pollution such as a power plant, refinery, distribution center, chrome plating facility, dry cleaner, port, rail yard, or manufacturing facility. (Section 7.2)

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SECTION 7.3 BIOLOGICAL RESOURCES

INTRODUCTION

This section describes the existing conditions and regulatory framework related to biological resources, habitat, and wildlife corridors in Fresno County. Fresno County is a large, biologically diverse place with several distinct ecoregions, each with its own set of vegetation and wildlife communities. A full account of all of the vegetation communities, wildlife habitats, special-status plants, special-status animals, jurisdictional waters, critical habitat, and other protected areas in Fresno County is beyond the scope of this report; instead this section provides a broad outline of the four ecoregions in the County, offers an overview of the types of vegetation communities and wildlife habitats that occur in each of these ecoregions, and offers a generalized discussion of the biological resources (special-status plants and wildlife, jurisdictional waters, and sensitive vegetation communities) known to occur in the county.

MAJOR FINDINGS

This section provides a summary of the major findings.

- The California Natural Diversity Database, California Native Plant Society, and the U.S. Fish and Wildlife Service database document 114 special-status plant species and 61 special-status animal species with records in Fresno County. Eighteen of the documented 114 specials status plants are included on state and/or federal threatened or endangered species lists, and 32 of the 61 special-status animal species are state and/or federally listed as threatened or endangered. While all special-status plants and animals are protected under the California Environmental Quality Act (CEQA), state and federally listed species have more robust legal protection and often require special permitting to ensure impacts to these species are not significant.
- Fresno County contains designated critical habitat areas for Fresno kangaroo rat (*Dipodomys nitratoides exilis*), California tiger salamander (*Ambystoma californiense*), Sierra Nevada bighorn sheep (*Ovis canadensis sierra*), Fleshy owl's-clover (*Castilleja campestris ssp. succulent*), Keck's Checker-mallow *(Sidalcea keckii*), and San Joaquin Orcutt grass (*Orcuttia inaequalis*); and proposed critical habitat areas for Sierra Nevada yellow-legged Frog (*Rana sierrae*), Yosemite toad (*Anaxyrus canorus*), and Mountain yellow-legged frog (*Rana muscosa*)
- Fresno County includes several habitat areas of importance including oak woodlands, riparian woodlands, chaparral, grassland, and vernal pools that are home to the majority of the special-status plant and animal species that occur in the County. Some of these communities are considered sensitive by the California Department of Fish and Wildlife (CDFW) and are protected as such.
- Numerous waterways and wetland areas in and surrounding Fresno County provide habitat for special-status species, and are considered waters of the United States or waters of the state. These fall under the jurisdiction of the USACE, CDFW, and/or the RWQCB. Major waterways in the County include the San Joaquin River and the Kings River. Many other features also fall under the jurisdiction of the above listed agencies including creeks, ephemeral and intermittent washes, vernal pools, freshwater emergent wetlands, freshwater ponds, and agricultural drainages.
- Fresno County has several Essential Connectivity Areas (ECA), documented by the California Essential Habitat Connectivity Project (Spencer et al. 2010). Additionally, many other natural

areas in the county, such as riparian corridors, could function as important local wildlife movement corridors.

EXISTING CONDITIONS

Fresno County is relatively large and includes several different ecoregions, resulting in diverse geology, topography, and habitats. Much of Fresno County, predominantly areas in the San Joaquin Valley, has been heavily developed for agriculture and associated infrastructure. Unincorporated areas of Fresno County continue to retain a variety of natural communities that provide habitat for protected plant and wildlife species. The following section provides a broad overview of the biogeographic regions in Fresno County and the types of natural and developed habitats that occur in those regions.

VEGETATION COMMUNITIES AND LAND COVER TYPES

The Jepson Manual (Baldwin et al. 2012), a flora of the vascular plants either native to or naturalized in California, divides California geographically into units that are based on natural landscape features and biota. The four-tiered units in this system are provinces, regions, subregions, and districts. This system reflects broad patterns of vegetation, geology, topography, and climate. Fresno County has four regions from west to east: Central Western California Region, Great Central Valley, the Sierra Nevada including the Sierra Nevada Foothills, and the High Sierra Nevada Subregions.

CENTRAL WESTERN CALIFORNIA REGION

The western edge of Fresno County is located in the Central Western California Region and supports grasslands, oak woodlands, blue oak-foothill pine woodland, riparian woodlands, and chaparral.

GREAT CENTRAL VALLEY

The central portion of Fresno County is in the Great Central Valley Region, which is primarily agricultural, but it also supports a variety of vegetation communities (generally in isolated patches and along the margins of the Valley) including grasslands, marshes, vernal pools, alkali scrub, and riparian woodlands.

SIERRA NEVADA REGION

The eastern portion of Fresno County is in the Sierra Nevada Region, subdivided into the Sierra Nevada Foothills Subregion and the High Sierra Nevada Subregion, both of which are in Fresno County. The Sierra Nevada Region supports grasslands, chaparral, serpentine chaparral, blue oak woodlands, blue oak-foothill pine woodlands, and riparian woodlands. The High Sierra Nevada Subregion supports a variety of montane conifer and hardwood forest types, montane riparian woodlands, montane chaparral, and alpine scrub. Most of eastern Fresno County, situated in the High Sierra Subregion, is in the Sequoia National Forest, Sierra National Forest, and Kings Canyon National Park.

VEGETATION COMMUNITIES AND HABITATS

The descriptions of the vegetation communities and wildlife habitats in Fresno County presented here draw from the CDFW California Wildlife Habitat Relationship (CWHR) classification system (CDFW

2016a). Fresno County has a wide diversity of tree (hardwood and coniferous forests, oak woodlands), shrub (chaparrals, coastal scrubs, alkali desert scrub), and herbaceous (grasslands) habitat types.

FORESTS AND WOODLANDS

Fresno County is home to a variety of conifer and hardwood forests and woodlands that occur in all four subregions. These tree-dominated habitats can support diverse wildlife populations. Riparian woodlands are generally the terrestrial areas adjacent to fresh water bodies forming a vegetated corridor from stream edge to floodplain edge. Riparian woodlands occur in and along the San Joaquin River and Kings River and its tributaries, as well as along the many creeks, streams, and ravines in the county. The following are descriptions of types of tree-dominated habitats that occur in Fresno County.

Oak Woodlands. Fresno County supports several types of oak (*Quercus* spp.) woodlands in three of the county's four Subergions. Valley oak (*Quercus lobata*) woodlands and woodlands occur in the South Coast Ranges of the Central Western California Region. Blue oak-foothill pine (*Pinus sabiniana*) woodland is located along the western edge of the county and in the Sierra Nevada Foothills Subregion. Oak woodland habitats provide foraging, nesting, and shelter habitat for a wide variety of birds, amphibians, reptiles, and mammals. Large trees provide suitable nesting and roosting habitat for birds and bats, including special-status species such as white-tailed kite (*Elanus luecurus*) and western mastiff bat (*Eumops perotis californicus*).

Riparian Woodlands. Riparian woodlands in Fresno County occur in all four Subregions. Valley foothill riparian woodland is associated with drainages, particularly those with low velocity flows, flood plains, and gentle topography. This habitat is generally dominated by cottonwoods (*Populus* sp.), sycamore (*Platanus racemosa*), and/or valley oak, willows (*Salix* spp.) and/or mulefat (*Baccharis salicifolia*). Valley foothill riparian woodland is distributed across most of Fresno County except for in the High Sierra Nevada Subregion where the montane riparian woodlands replace valley foothill riparian woodlands at increasing elevations. Black cottonwood (*Populus trichocarpa*) is often a dominant tree species in this habitat and in the High Sierra Nevada Subregion it is associated with aspen (*Populus tremuloides*), willows (*Salix* spp.), and other riparian trees. Riparian woodlands are rich in wildlife species, providing foraging, migration, roosting, and nesting/breeding habitat. Many migratory birds and raptors nest in riparian woodlands, including special-status Swainson's hawks (*Buteo swainsoni*), least Bell's vireos (*Vireo bellii pusillus*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), and yellow warblers (*Setophaga petechia*).

Eucalyptus Forest. Often Eucalyptus forests are planted in the South Coast Ranges (western margins of Fresno County) and the Great Central Valley Subregion as wind rows. This habitat ranges from single-species thickets with little or no shrubby understory to scattered trees over a well-developed herbaceous and shrubby understory. In most cases, eucalyptus forms a dense stand with a closed canopy. Blue gum (*Eucalyptus globulus*) and red gum eucalyptus (*E. camaldulensis*) are the most common species found in these stands.

Hardwood Stands. Hardwood stands in Fresno County includes montane hardwood and montane hardwood-conifer. Montane hardwood stands occur in the Sierra Nevada Foothill Subregion and High Sierra Nevada Subregion. These stands have dense canopies of canyon live oak (*Quercus chrysolepis*) and are associated with California black oak (*Quercus kelloggii*) and other hardwood trees. Tree species include ponderosa pine (*Pinus ponderosa*), incense cedar (*Calocedrus decurrens*), and white fir (*Abies concolor*).

Aspen stands. Aspen (*Populus tremuloides*) stands are generally located in the High Sierra Nevada Range at an elevation range of 6,500 to 9,850 feet. They usually occur along seeps, streams, and meadows. These stands have relatively open canopies and are associated with other deciduous and conifer species, except in climax communities where aspen is the dominant tree species in the canopy.

Juniper Woodland. Juniper habitats are characterized as woodlands of open to dense aggregations of junipers (*Juniperus* sp.) in the form of arborescent shrubs or small trees. Juniper woodlands generally occur in Fresno County in South Coast Range and the High Sierra Nevada Range Subregion at middle elevations, forming a transition between habitats at higher elevations. Juniper woodlands occur on virtually all exposures and slopes but are common on level to gently rolling topography.

Conifer Forests. Conifer dominated forests in Fresno County are located in the High Sierra Nevada Range Subregion. Forests habitats at lower montane areas include ponderosa pine and white fir. At the upper montane elevations, forest habitats include Jeffrey pine (*Pinus jeffreyi*), lodgepole pine (*Pinus contorta*) red fir (*Abies magnifca*). Subalpine conifer forests are open stands that support Engelmann spruce (*Picea engelmannii*), subalpine fir (*Abies lasiocarpa*), mountain hemlock (*Tsuga mertensiana*), and various pine species (*Pinus* spp.). The shrub layer in subalpine forests is often sparse, resulting in low wildlife diversity. Conifer forests provide habitat for nesting birds and roosting bats, including special-status species such as western mastiff bat, great gray owl (*Strix nebulosa*), and northern goshawk (*Accipiter gentilis*).

SHRUB DOMINATED HABITATS

Fresno County includes several shrub dominated habitats that occur in all four Subregions. Desert and alkali scrub and chaparral occur predominantly in the Coast range, San Joaquin Valley and Sierra foothills regions, but alpine dwarf scrub is present in the Sierra Mountain region.

Desert and Alkali Scrub. The South Coast Range (Central Western California Region) in Fresno County supports two types of scrub habitats: coastal and desert scrub. Coastal scrub is present along the far western margins of the County. California sagebrush (*Artemisia californica*) tends to be common in all coastal scrub habitats, and black sage (*Salvia mellifera*) and California buckwheat (*Eriogonum fasciculatum*) become more abundant in mesic areas. Desert scrub and Alkali desert scrub occur along the western edge of the San Joaquin Valley in western Fresno County. Desert scrub is characterized by open stands of broad-leaved evergreen or deciduous microphyll shrubs with a hardpan subsurface of high salt concentrations. Creosotebush (*Larrea tridentata*) is a dominant component of this habitat. Alkali desert scrub typically consists of open stands of very low to moderately high subshrubs and shrubs, which are physiognomically uniform. Shrub composition in this habitat type is typically dominated by chenopods, most notably saltbush species (*Atriplex* spp.), such as four winged (*Atriplex canescens*) saltbush and allscale (*Atriplex polycarpa).*

Chaparral. Chaparral communities are restricted to the Coast Range and Sierra foothill regions of Fresno County where they occur in three general categories: montane chaparral, mixed chaparral and chamise-redshank chaparral. Mixed chaparral and chamise-redshank chaparral (*Adenostoma fasciculatum A. sparsifolium*) occur in the Sierra foothills and Coast Range. Mixed chaparral is structurally homogeneous dominated by shrubs with evergreen leaves. At maturity, cismontane mixed chaparral typically is a dense, nearly impenetrable thicket. Mature chamise-redshank chaparral is single layered and shrub canopies often overlap. In the High Sierra Nevada Foothill Subregion (SNH) montane chaparral is associated with evergreen shrubs such as ceanothus (*Ceanothus* spp.), manzanita (*Arctostaphylos* spp.) and bitter cherry (*Prunus emarginata*) and can include deciduous or semi-deciduous shrubs.

Alpine dwarf-shrub. Alpine dwarf-shrub occurs in the High Sierra Nevada Foothill Subregion, where it is present above timberline, typically above 8,500 feet. Common shrub species are ocean spray (*Holodiscus discolor*), Greene goldenweed (*Ericameria greenei*), and mountain white heather (*Cassiope mertensiana*).

HERBACEOUS DOMINATED HABITATS

Herbaceous dominated habitats generally consist of communities primarily comprising grasses and other non-woody species. The most common of these communities is non-native grassland, which is widespread throughout Fresno County. Native perennial grasslands dominated by perennial bunch grasses such as purple needlegrass (Stipa pulchra) were historically abundant in much of Fresno County (and throughout California), but are now patchy in distribution.

Annual Grassland. Annual grassland habitat is composed primarily of non-native annual herbs and forbs and typically lacks shrub or tree cover. Common grass species include wild oat (*Avena* spp.), soft chess brome (*Bromus hordeaceous*), ripgut brome (*Bromus diandrus*), and red brome (*Bromus madritensis*). Common forb species include non-native species such as filaree (*Erodium* spp.) and bur clover (*Medicago polymorpha*). California poppy (*Eschscholzia californica*) can also be quite common in this habitat type.

Perennial Grassland. Perennial grassland habitats are dominated by perennial grass species such as California oatgrass (*Danthonia californica*), Pacific hairgrass (*Deschampsia holciformis*), and sweet vernal grass (*Anthoxanthum odoratum*). Perennial grassland habitat typically occurs on ridges and south-facing slopes, alternating with forest and scrub in the valleys and on north-facing slopes. Relic perennial grasses in annual grassland habitat occur in patches throughout California, and likely are present in Fresno County.

Annual and perennial grasslands provide foraging and nesting habitat for a wide variety of wildlife species including raptors, seed eating birds, small mammals, amphibians, and reptiles. Wildlife species typically associated with grasslands include black-tailed jackrabbit (*Lepus californicus*), California ground squirrel (*Otospermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), American badger (*Taxidea taxus*), and coyote, common garter snake (*Thamnophis sirtalis*), deer mouse, western harvest mouse (*Reithrodontomys megalotis*), California vole (*Microtus californicus*), mule deer (*Odocoileus hemionus*), western meadowlark (*Sturnella neglecta*), and savannah sparrow (*Passerculus sandwichensis*). Grasslands also provide important foraging habitat for raptors such as the American kestrel (*Falco sparverius*), and red-tailed hawk, and special-status white-tailed kite and northern harrier (*Circus cyaneus*). The endangered San Joaquin kit fox (*Vulpes macrotismutica*) and threatened California tiger salamander (*Ambystoma californiense*) are also found in and adjacent to this habitat. Grasslands can also provide important foraging habitat for golden eagles (*Aquila chrysaetos*) and Swainson's hawks.

DEVELOPED AND NON-VEGETATED HABITATS

Developed and sparsely/non-vegetated habitats are abundant in Fresno County. Developed habitats are usually sparsely or non-vegetated, are associated with urban and agricultural areas, and are highly disturbed. Species that occur in these areas are typically adapted to anthropogenic disturbance and/or are ornamental species. Sparsely vegetated habitats also tend to be associated with rock outcrops and cliffs. Developed habitats in Fresno County include rice fields, dryland grain crop, irrigated hayfield, irrigated row and field crop, deciduous orchard, evergreen orchard, vineyard, residential development, commercial development, and industrial development. Plant species in urban habitats typically consist of ornamental and other non-native invasive plant species, with large, developed areas lacking vegetation. The barren

habitat type is defined by the absence of vegetation. Any habitat with less than two percent total vegetation cover and less than 10 percent cover by tree or shrub species is defined as barren.

WETLANDS AND WATER FEATURES

Wetlands and water features include freshwater sloughs, marshes, vernal pools, wet meadows, springs and seeps, portions of lakes, ponds, rivers and streams, and all other areas that are periodically or permanently covered by shallow water, are dominated by hydrophilic vegetation, or have soils that are predominantly hydric in nature. The CHWR system maps two aquatic habitats in Fresno County, lacustrine and riverine, and two wetland habitats, fresh emergent wetland and wet meadow. Figure 7-4 shows the wetlands and waters mapped by the National Wetland Inventory (NWI) in Fresno County (USFWS 2016a). NWI features include freshwater emergent wetland, freshwater/forested shrub wetland, freshwater pond, lake, other, and riverine.

Freshwater Emergent Wetlands. Freshwater emergent wetlands include all non-tidal waters dominated by emergent herbaceous plant species, mosses, and/or lichens.

Wet meadows. Wet meadows are primarily associated with the High Sierra Nevada Subregion. A dense layer of herbaceous hydrophytic species that occur in wetlands characterize the species in the area. These include sedge (*Carex* spp.), rush (*Juncus* spp.), tufted hairgrass (*Deschampsia caespitosa*), and bentgrass (*Agrostis* spp.), but species composition can vary significantly. Shrubs and trees are absent or very sparse but can occur at the meadow edge.

Vernal Pools. Vernal Pools are seasonal wetlands that arise when small depressions fill with water during winter, gradually drying during spring, and becoming completely dry in summer. Vernal pool vegetation is characterized by herbaceous plants that begin their growth as aquatic or semi-aquatic plants and transition to a dry land environment as the pool dries. Most vernal pool plants are annual herbs. Wildlife species supported by vernal pools include special-status species such as the California tiger salamander (*Ambystoma californiense*), vernal pool tadpole shrimp (*Lepidurus packardi*), and vernal pool fairy shrimp (*Branchinecta lynchi*). Vernal pools in Fresno County occur in the Great Central Valley Subregion and Sierra Nevada Foothills Subregion at Table Mountain and near the Madera and Friant Kern Canals.

Freshwater Forested/Shrub Wetlands. Freshwater Forested/Shrub Wetlands include non-tidal waters which are dominated by trees and shrubs, with emergent herbaceous plants, mosses and/or lichens. Wetlands which lack vegetation can be included in this class if they also exhibit the same criteria as described for freshwater emergent wetlands. The vegetation found in freshwater forested/shrub wetlands are generally dominated by woody vegetation such as shrubs and trees.

Lakes. Lakes include wetlands and deep-water habitats that are located in a topographic depression or dammed river channel. These areas tend to be greater than 20 acres. Vegetation cover in this habitat is generally less than 30 percent and often occurs in the form of emergent or surface vegetation. Substrates are composed of at least 25 percent cover of particles smaller than stones.

Freshwater Ponds. Freshwater ponds include non-tidal waters with vegetative cover along its edges such as trees, shrubs, emergent herbaceous plants, mosses, and/or lichens. Freshwater ponds can be man-made or natural and typically consist of an area of standing water with variable amounts of shoreline. These wetlands and deep water habitats are dominated by plants that grow on or below the surface of the water. Freshwater ponds provide important breeding habitat for special-status species such as California red-legged frog (*Rana draytonii*) and western pond turtle (*Actinemys marmorata*).

Rivers. Riverine habitats include all wetlands and deep water habitats in natural or artificial channels that contain periodically or continuously flowing water. This system may also form a connecting link between two bodies of standing water. Substrates generally consist of rock, cobble, gravel or sand. Main rivers in Fresno County include the San Joaquin River and the Kings River. Millerton Lake and Pine Flat Reservoir are major reservoirs associated with these two rivers. This category also includes ephemeral and intermittent streams and dry washes which are common in the coast range and San Joaquin Valley regions. Fresno County supports numerous creeks, drainages, and canals. Drainages that contain water year-round or experience periodic filling and draining are of biological importance as they provide valuable foraging habitat, breeding habitat, and movement habitat for a wide variety of aquatic animals and a number of special-status species, including California red-legged frog, Sierra Nevada yellow-legged frog (*Rana sierrae*), and western pond turtle.

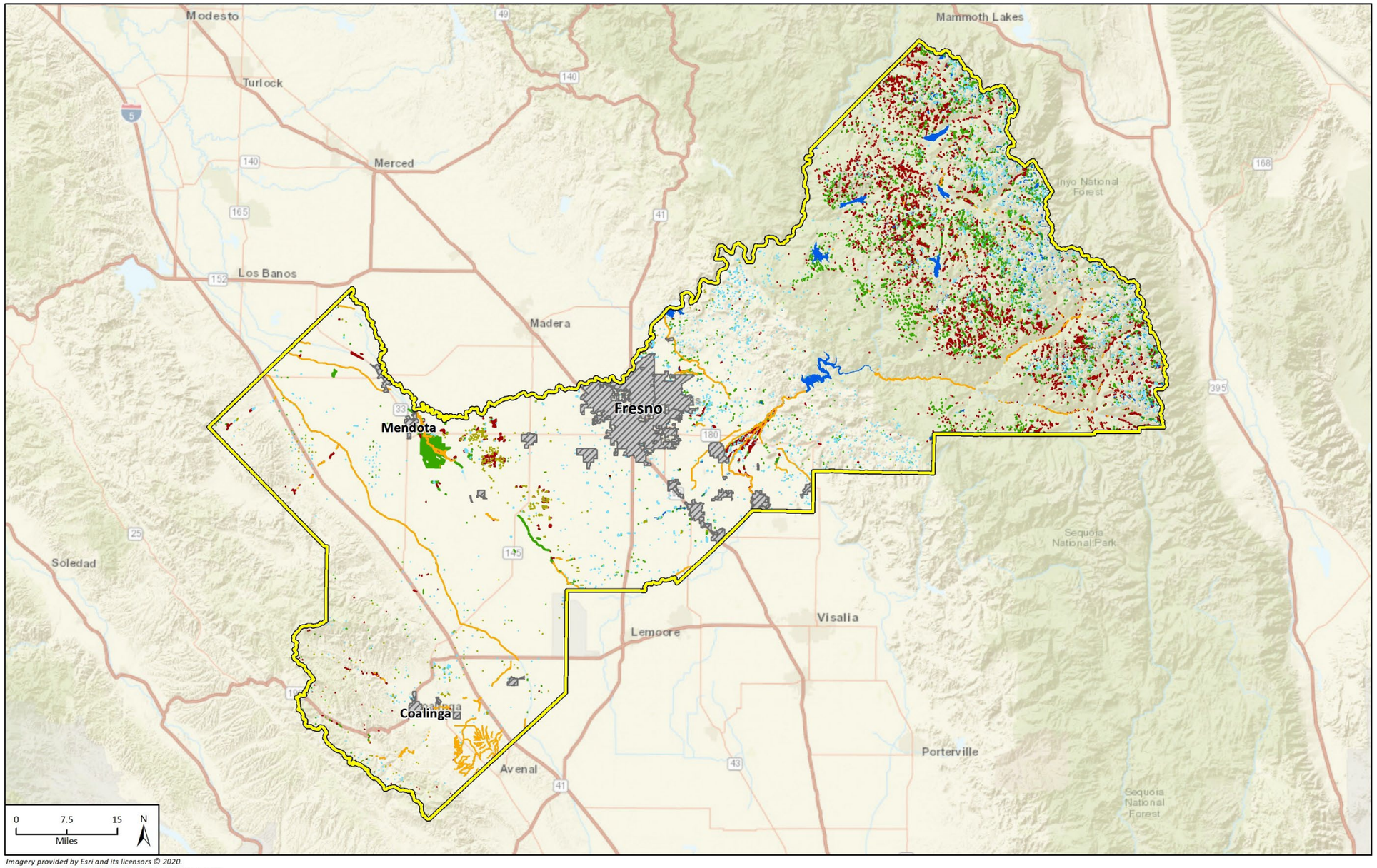
SPECIAL STATUS SPECIES

Special status species include those species that are listed as rare, threatened, or endangered by the CDFW or the USFWS, or are candidates for either state or federal listing, or have been designated as "fully protected" or "species of special concern" by USFWS and CDFW, or are other species that are tracked by the California Natural Diversity Database (CNDDB) or California Native Plant Society (CNPS), but do not fall into any of the categories cited above.

Oak woodlands, grasslands, riparian woodlands, vernal pools, and aquatic habitats are home to most of the county's special-status plant and animal species. These habitat types have the highest conservation value for preservation of rare species. Most listed and special-status species have specific habitat and micro habitat conditions, and would not generally be expected to occur outside of areas that meet those specific habitat criteria; however, a number of listed and otherwise protected species have the potential to occur in a wide range of habitats, including disturbed and developed areas. The state and federally listed San Joaquin kit fox may occur in natural lands, fallow agricultural lands, margins of active agricultural lands, and even in urban areas. A number of bird species protected under the Migratory Bird Treaty Act (MBTA) and the California Fish and Game Code (FGC) can nest in highly disturbed areas and in ornamental trees adjacent to developed areas. Sensitive species that may nest in non-natural areas includes burrowing owls and Swainson's hawk.

Table 7-8 through Table 7-11 present the special-status species known to occur, or with potential to occur, in Fresno County. The information is based on queries of several relevant scientific databases that provide information about occurrences of sensitive biological resources for Fresno County were made. These include the California Department of Fish and Wildlife (CDFW; formerly the California Department of Fish and Game) CNDDB (CDFW 2020b); the Biogeographic Information and Observation System (CDFW 2020c); the U.S. Fish and Wildlife Service (USFWS) Critical Habitat Portal (USFWS 2020b); the Information, Planning, and Conservation System Query (USFWS 2020c); and the California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants of California (CNPS 2020). The following section provides lists of special-status species with potential to occur in Fresno County based on these sources. This list is comprehensive and includes species that are documented in the county as well as species that could potentially occur in the county.

FIGURE 7-4 WETLANDS AND MAPPED WATERS IN FRESNO COUNTY



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Additional data provided by U.S. Fish & Wildlife Service, 2020.

Fig 7-2 Wetlands and Mapped Waters

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TABLE 7-8 FEDERAL AND/OR STATE LISTED SPECIAL STATUS PLAN SPECIES DOCUMENT IN OR WITH THE POTENTIAL TO OCCUR IN FRESNO COUNTY			
Common Name	**Scientific Name**	**Federal/State Status**	**CRPR Rank**
Hoover's eriastrum	Eriastrum hooveri	FD	4.2
Mariposa pussypaws	Calyptridium pulchellum	FT	1B.1
San Benito evening-primrose	Camissonia benitensis	FT	1B.1
Tompkins' sedge	Carex tompkinsii	SR	4.3
Tree-anemone	Carpenteria californica	ST	1B.2
Succulent owl's-clover	Castilleja campestris var. succulenta	FT/SE	1B.2
California jewelflower	Caulanthus californicus	FE/SE	1B.1
Palmate-bracted salty bird's-beak	Chloropyron palmatum	FE/SE	1B.1
Tracy's eriastrum	Eriastrum tracyi	SR	3.2
Boggs Lake hedge-hyssop	Gratiola heterosepala	SE	1B.2
Congdon's lewisia	Lewisia congdonii	SR	1B.3
San Joaquin woollythread	Monolopia congdonii	FE	1B.2
San Joaquin Valley Orcutt grass	Orcuttia inaequalis	FT/SE	1B.1
Whitebark pine	Pinus albicaulis	FC	
Hartweg's golden sunburst	Pseudobahia bahiifolia	FT/SE	1B.1
San Joaquin adobe sunburst	Pseudobahia peirsonii	FE	1B.2
Keck's checkerbloom	Sidalcea keckii	FE	1B.1
Greene's tuctoria	Tuctoria greenei	FE/SR	1B.1

FT: Federally Threatened
FE: Federally Endangered
FD: Federally Delisted
ST: State Threatened
SE: State Endangered
SR: State Rare

TABLE 7-9 NON-LISTED SPECIAL STATUS PLAN SPECIES DOCUMENTED OR WITH THE POTENTIAL TO OCCUR IN FRESNO COUNTY		
Common Name	**Scientific Name**	**CRPR Rank**
Abrams' onion	Allium abramsii	1B.2
Raven's milk-vetch	Astragalus ravenii	1B.3
Heartscale	Atriplex cordulata var. cordulata	1B.2
Lost Hills crownscale	Atriplex coronata var. vallicola	1B.2
Brittlescale	Atriplex depressa	1B.2
Lesser saltscale	Atriplex minuscula	1B.1
Subtle orache	Atriplex subtilis	1B.2

TABLE 7-9 NON-LISTED SPECIAL STATUS PLAN SPECIES DOCUMENTED OR WITH THE POTENTIAL TO OCCUR IN FRESNO COUNTY		
Common Name	**Scientific Name**	**CRPR Rank**
Bodie Hills rockcress	*Boechera bodiensis*	1B.3
Tulare rockcress	*Boechera tularensis*	1B.3
Upswept moonwort	*Botrychium ascendens*	2B.3
Slender moonwort	*Botrychium lineare*	1B.1
Mingan moonwort	*Botrychium minganense*	2B.2
Western goblin	*Botrychium montanum*	2B.1
Watershield	*Brasenia schreberi*	2B.3
Round-leaved filaree	*California macrophylla*	1B.2
Dwarf calycadenia	*Calycadenia pulchellum*	1B.1
Pygmy pussypaws	*Calyptridium pygmaeum*	1B.2
San Benito evening-primrose	*Camissonia benitensis*	1B.1
Mono Hot Springs evening-primrose	*Camissonia sierrae* ssp. *alticola*	1B.2
Mud sedge	*Carex limosa*	2B.2
Muir's tarplant	*Carlquistia muirii*	1B.3
Lemmon's jewelflower	*Caulanthus lemmonii*	1B.2
Hispid bird's-beak	*Chloropyron molle* ssp. *Hispidum*	1B.1
Hernandez spineflower	*Chorizanthe biloba* var. *immemora*	1B.2
Bolander’ s woodreed	*Cinna bolanderi*	1B.2
Fell-fields claytonia	*Claytonia megarhiza*	2B.3
Hall's tarplant	*Deinandra halliana*	1B.1
Recurved larkspur	*Delphinium recurvatum*	1B.2
Dwarf downingia	*Downingia pusilla*	2B.2
Sweetwater Mountains draba	*Draba incrassata*	1B.3
Tall draba	*Draba praealta*	2B.3
Mt. Whitney draba	*Draba sharsmithii*	1B.3
Sierra draba	*Draba sierra*	1B.3
Scribner's wheat grass	*Elymus scribneri*	2B.3
Hall's daisy	*Erigeron aequifolius*	1B.3
Keil's daisy	*Erigeron inornatus* var. *keilii*	1B.3
Kern River daisy	*Erigeron multiceps*	1B.2
Eastwood's buckwheat	*Eriogonum eastwoodianum*	1B.3
Western Heermann’ s buckwheat	*Eriogonum heermannii* var. *occidentale*	1B.2
Kings River buckwheat	*Eriogonum nudum* var. *regirivum*	1B.2
Monarch buckwheat	*Eriogonum ovalifolium* var. *monarchense*	1B.3
Temblor buckwheat	*Eriogonum temblorense*	1B.2
Barstow woolly sunflower	*Eriophyllum mohavense*	1B.2

TABLE 7-9 NON-LISTED SPECIAL STATUS PLAN SPECIES DOCUMENTED OR WITH THE POTENTIAL TO OCCUR IN FRESNO COUNTY		
Common Name	**Scientific Name**	**CRPR Rank**
Spiny-sepaled button-celery	*Eryngium spinosepalum*	1B.2
San Joaquin spearscale	*Extriplex joaquinana*	1B.2
San Benito fritillary	*Fritillaria viridea*	1B.2
Monarch gilia	*Gilia yorkii*	1B.2
American manna grass	*Glyceria grandis*	2B.3
Sharsmith's stickseed	*Hackelia sharsmithii*	2B.3
Winter's sunflower	*Helianthus winteri*	1B.2
Blandow's bog moss	*Helodium blandowii*	2B.3
Monarch golden-aster	*Heterotheca monarchensis*	1B.3
Short-leaved hulsea	*Hulsea brevifolia*	1B.2
California satintail	*Imperata brevifolia*	2B.1
Field ivesia	*Ivesia campestris*	1B.2
Diablo Range hare-leaf	*Lagophylla diabolensis*	1B.2
Forked hare-leaf	*Lagophylla dichotoma*	1B.1
Rayless layia	*Layia discoidea*	1B.1
Pale-yellow layia	*Layia heterotricha*	1B.1
Munz's tidy-tips	*Layia munzii*	1B.2
Panoche pepper-grass	*Lepidium jaredii* ssp. *album*	1B.2
Madera leptosiphon	*Leptosiphon serrulatus*	1B.2
Yosemite lewisia	*Lewisia disepala*	1B.2
Orange lupine	*Lupinus citrinus* var. *citrinus*	1B.2
Showy golden madia	*Madia radiata*	1B.1
Indian Valley bush-mallow	*Malacothamnus aboriginum*	1B.2
Broad-nerved hump moss	*Meesia uliginosa*	2B.2
Shevock's copper moss	*Mielichhoferia shevockii*	1B.2
Slender-stalked monkeyflower	*Mimulus gracilipes*	1B.2
Kaweah monkeyflower	*Mimulus norrisii*	1B.3
Bog sandwort	*Minuartia stricta*	2B.3
Woodnymph	*Moneses uniflora*	2B.2
Small mousetail moss	*Myurella julacea*	2B.3
Shining navarretia	*Navarretia nigelliformis* ssp. *radians*	1B.2
Prostrate vernal pool navarretia	*Navarretia prostrata*	1B.1
Rayless mountain ragwort	*Packera indecora*	2B.2
Marble rockmat	*Petrophytum caespitosum* ssp. *acuminatum*	1B.3
Yosemite popcornflower	*Plagiobothrys torreyi* var. *torreyi*	1B.2
Yosemite bog orchid	*Platanthera yosemitensis*	1B.2
Letterman's blue grass	*Poa lettermanii*	2B.3

TABLE 7-9 NON-LISTED SPECIAL STATUS PLAN SPECIES DOCUMENTED OR WITH THE POTENTIAL TO OCCUR IN FRESNO COUNTY		
Common Name	**Scientific Name**	**CRPR Rank**
Tundra thread moss	*Pohlia tundra*	2B.3
Robbins' pondweed	*Potamogeton robbinsii*	2B.3
California alkali grass	*Puccinellia simplex*	1B.2
Aromatic canyon gooseberry	*Ribes menziesii* var. *ixoderme*	1B.2
Sanford's arrowhead	*Sagittaria sanfordii*	1B.2
Chaparral ragwort	*Senecio aphanactis*	2B.2
Keck's checkerbloom	*Sidalcea keckii*	1B.1
Prairie wedge grass	*Sphenopholis obtusata*	2B.2
Tehipite Valley jewelflower	*Streptanthus fenestratus*	1B.3
Alpine jewelflower	*Streptanthus gracilis*	1B.3
Howell's tauschia	*Tauschia howellii*	1B.3
Bolander's clover	*Trifolium bolanderi*	1B.2
Caper-fruited tropidocarpum	*Tropidocarpum capparideum*	1B.1
Flat-leaved bladderwort	*Utricularia intermedia*	2B.2
Oval-leaved viburnum	*Viburnum ellipticum*	2B.3
Grey-leaved violet	*Viola pinetorum* var. *grisea*	1B.3

TABLE 7-10 FEDERAL OR STATE LISTED ANIMAL SPECIES DOCUMENTED OR WITH THE POTENTIAL TO OCCUR IN FRESNO COUNTY		
Common Name	**Scientific Name**	**Federal/State Status**
California tiger salamander	*Ambystoma californiense*	FT/ST/SSC
Nelson's antelope squirrel	*Ammospermophilus nelsoni*	ST
Yosemite toad	*Anaxyrus canorus*	FT/SSC
Longhorn fairy shrimp	*Branchinecta longiantenna*	FT
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT
Swainson's hawk	*Buteo swainsoni*	ST
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	FT/SE
Townsend's big-eared bat	*Corynorhinus townsendii*	SC/SSC
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	FT
Giant kangaroo rat	*Dipodomys ingens*)	FE/SE
Fresno kangaroo rat	*Dipodomys nitratoides exilis*	FE/SE
Willow flycatcher	*Empidonax traillii*	SE
Blunt-nosed leopard lizard	*Gambelia sila*	FE/SE/FP
California wolverine	*Gulo gulo*	ST/FP
Bald eagle	*Haliaeetus leucocephalus*	FD/SE/FP
Vernal pool tadpole shrimp	*Lepidurus packardi*	FE

TABLE 7-10 FEDERAL OR STATE LISTED ANIMAL SPECIES DOCUMENTED OR WITH THE POTENTIAL TO OCCUR IN FRESNO COUNTY		
Common Name	**Scientific Name**	**Federal/State Status**
Steelhead - Central Valley DPS	*Oncorhynchus mykiss irideus*	ST
Sierra Nevada bighorn sheep	*Ovis canadensis sierra*	FE/SE/FP
Fisher - West Coast DPS	*Pekania pennanti*	PT/CT/SSC
California red-legged frog	*Rana draytonii*	FT/SSC
Southern mountain yellow-legged frog	*Rana muscosa*	FE/SE/SSC
Sierra Nevada yellow-legged frog	*Rana sierrae*	FE/ST/SSC
Bank swallow	*Riparia riparia*	ST
Great gray owl	*Strix nebulosa*	SE
Giant garter snake	*Thamnophis gigas*	FT/ST
Least Bell's vireo	*Vireo bellii pusillus*	FE/SE
San Joaquin kit fox	*Vulpes macrotis mutica*	FE/ST
Sierra Nevada red fox	*Vulpes vulpes necator*	ST

FT: Federally threatened
FE: Federally Endangered
FP: Federally proposed
SE: State endangered
ST: State threatened
SC: State candidate
SSC: State species of special concern
FP: State fully protected

TABLE 7-11 NON-LISTED SPECIAL STATUS ANIMAL SPECIES DOCUMENTED OR WITH THE POTENTIAL TO OCCUR IN FRESNO COUNTY		
Common Name	**Scientific Name**	**State Status**
Northern goshawk	*Accipiter gentilis*	SSC
Tricolored blackbird	*Agelaius tricolor*) ⁻SSC	
Silvery legless lizard	*Anniella pulchra pulchra*	SSC
Pallid bat	*Antrozous pallidus*	SSC
Golden eagle	*Aquila chrysaetos*	FP
Short-eared owl	*Asio flammeus*	SSC
Long-eared owl	*Asio otus*	SSC
Burrowing owl	*Athene cunicularia*	SSC
Mountain plover	*Charadrius montanus*	SSC
Northern harrier	*Circus cyaneus*	SSC
Short-nosed kangaroo rat	*Dipodomys nitratoides brevinasus*	SSC
White-tailed kite	*Elanus luecurus*	FP
Northern western pond turtle	*Actinemys* [=*Emys*] *marmorata*	SSC
Kern brook lamprey	*Entosphenus hubbsi*	SSC

TABLE 7-11 NON-LISTED SPECIAL STATUS ANIMAL SPECIES DOCUMENTED OR WITH THE POTENTIAL TO OCCUR IN FRESNO COUNTY		
Common Name	**Scientific Name**	**State Status**
Spotted bat	*Euderma maculatum*	SSC
Western mastiff bat	*Eumops perotis californicus*	SSC
Mount Lyell salamander	*Hydromantes platycephalus*	SSC
Loggerhead shrike	*Lanius ludovicianus*	SSC
Western red bat	*Lasiurus blossevillii*	SSC
San Joaquin whipsnake	*Masticophis flagellum ruddocki*	SSC
Hardhead	*Mylopharodon conocephalus*	SSC
Tulare grasshopper mouse	*Onychomys torridus tularensis*	SSC
Coast horned lizard	*Phrynosoma blainvilli*	SSC
Foothill yellow-legged frog	*Rana boylii*	SSC
Yellow warbler	*Setophaga petechia*	SSC
Western spadefoot	*Spea hammondii*	SSC
American badger	*Taxidea taxus*	SSC
Le Conte's thrasher	*Toxostoma lecontei*	SSC
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	SSC

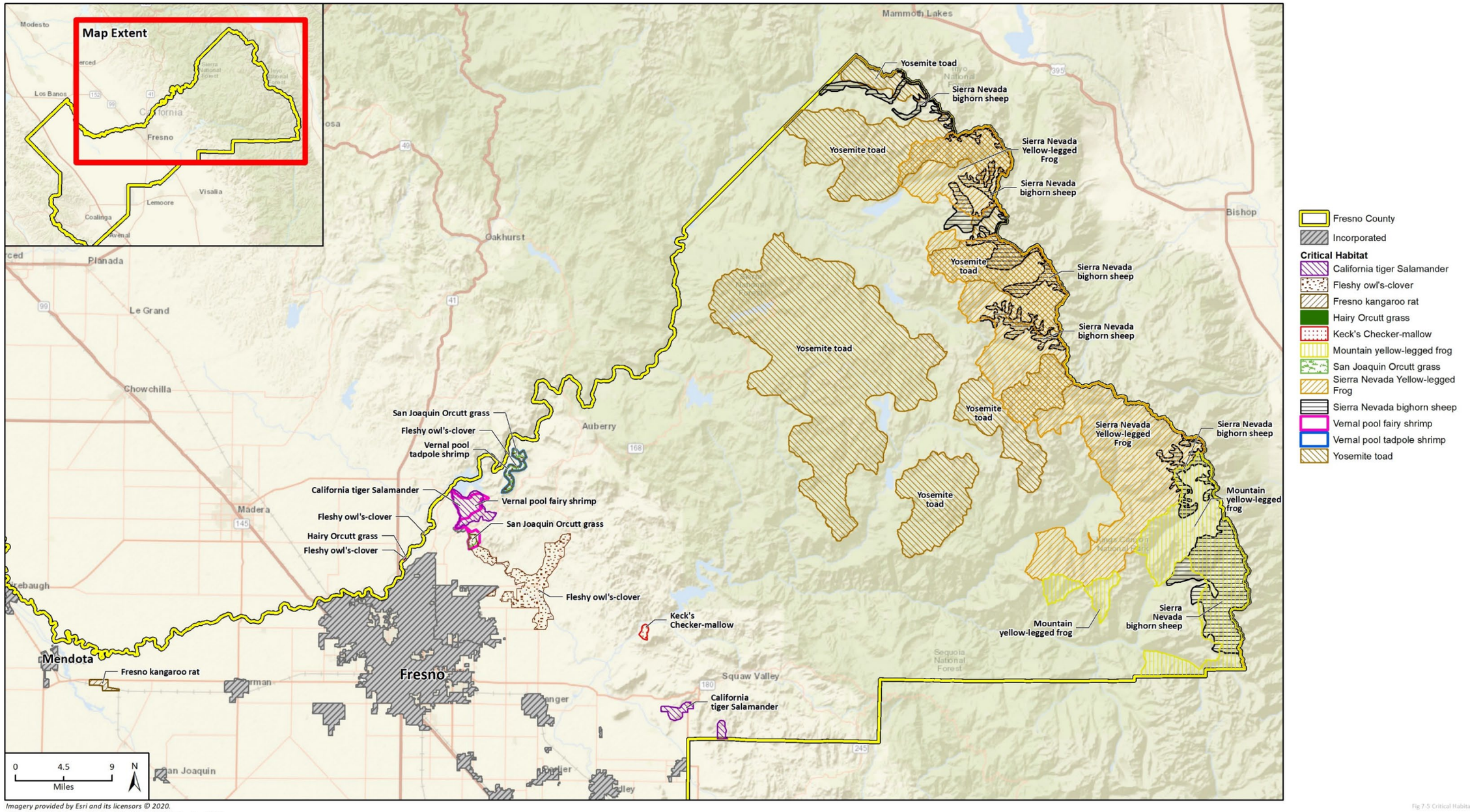
FP: State fully protected
SSC: State species of special concern

CRITICAL HABITAT

Critical habitat is a term used in the Endangered Species Act (ESA) defined as specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery. An area is designated as "critical habitat" after USFWS publishes a proposed federal regulation in the Federal Register and then receives and considers public comments on the proposal. The final boundaries of the critical habitat area, once identified, are published in the Federal Register.

Figure 7-5 presents designated critical habitat for Fresno kangaroo rat (*Dipodomys nitratoides exilis*), California tiger salamander (*Ambystoma californiense*), Sierra Nevada bighorn sheep (*Ovis canadensis sierra*), Fleshy owl's-clover (*Castilleja campestris ssp. succulent*), Keck's Checker-mallow (*Sidalcea keckii*), and San Joaquin Orcutt grass (*Orcuttia inaequalis*); and proposed critical habitat areas for Sierra Nevada yellow-legged Frog (*Rana sierrae*), Yosemite toad (*Anaxyrus canorus*) and Mountain yellow-legged frog (*Rana muscosa*).

FIGURE 7-5 DESIGNATED CRITICAL HABITAT FOR THREATENED OR ENDANGERED SPECIES IN FRESNO COUNTY



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Critical habitat data provided by U.S. Fish & Wildlife Service, 2020.

Fig 7-5 Critical Habitat

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WILDLIFE MOVEMENT CORRIDORS

Wildlife movement corridors, or habitat linkages, are generally defined as connections between habitat patches that allow for physical and genetic exchange between otherwise isolated animal populations. Such linkages may serve a local purpose, such as providing a linkage between foraging and denning areas, or they may be regional in nature. Some habitat linkages may serve as migration corridors, wherein animals periodically move away from an area and then subsequently return. Others may be important as dispersal corridors for young animals. A group of habitat linkages in an area can form a wildlife corridor network.

Habitats in a linkage are not necessarily the same as those being linked. Rather, the linkage needs only contain sufficient cover and forage to allow temporary use by species during periods of movement between or among larger areas of suitable habitat. Typically, habitat linkages are contiguous strips of natural areas, though dense plantings of landscape vegetation can be used by certain disturbance-tolerant species. Depending on the species, a linkage may require specific minimum physical characteristics (e.g., rock outcroppings, vernal pools, specific vegetation cover) to function as an effective wildlife corridor and allow those species to traverse the linkage. For highly mobile or aerial species, habitat linkages may be discontinuous patches of suitable resources spaced sufficiently close together to permit travel along a route in a relatively short period of time.

The CDFW BIOS website (CDFW 2020c), California Essential Habitat Connectivity Project: A Strategy for Conserving Connected California (Spencer et al. 2010), and Penrod et al. (2010) have all evaluated critical wildlife movement corridors throughout California. Fresno County has wildlife corridors and connectivity among three ecoregions: the Central Coast, Great Central Valley, and Sierra Nevada ecoregions (these ecoregions are roughly consistent with the ecoregions defined in The Jepson Manual [Baldwin et al. 2012] as discussed above). These ecoregions are further subdivided into ECAs that represent the most critical wildlife movement areas for long-term conservation of California's sensitive wildlife species. ECAs are large, continuous areas, and individual ECAs may overlap one another without clearly defined boundaries. The following five ECAs in three movement areas overlap the boundaries of Fresno County:

- Antcline Ridge – Joaquin Ridge
- Kettleman Hills/Las Alturas - Table Mountain/Chino Canyon
- Coyote Ridge - Owens Mountain
- Yokohl Valley/Oat Canyon - Sierra Nevada
- Coyote Ridge - Sierra Nevada

The Great Central Valley ecoregion is comprised of the valleys of Central California, bordered by the Pacific Coast Ranges on the west, the Sierra Nevada and Cascade Ranges on the east, and the Tehachapi Range on the south. Most of the land in Fresno County lies in this ecoregion. Most of this land does not support wildlife movement due to high fragmentation and conversion of natural habitats to agricultural and urban uses. Identified ECAs exist primarily in the western and eastern portions of the county adjacent to the Coast Range and Sierra Nevada mountain ranges (Figure 7-6).

The Central Coast ecoregion consists of the coastal mountains, valleys, and plains along the Pacific Ocean from about the Russian River and Sonoma Valley on the north to Point Conception on the south. The Anticline Ridge – Joaquin Ridge and Kettleman Hills/Las Alturas - Table Mountain/Chino Canyon ECAs provide important habitat connectivity between the Great Central Valley and Central Coast Range

ecoregions on the western border of Fresno County, ranging roughly from the town of Coalinga up in elevation into the Coast Ranges. These ECAs occur in the far western portion of Fresno County to the north and south of Coalinga.

The Sierra Nevada ecoregion borders the Great Central Valley ecoregion to the west and includes the mountain ranges of the Sierra Nevada. The eastern portion of Fresno County overlaps this ecoregion and provides important wildlife movement corridors. Much of this area remains as natural habitat and is protected by National Forests and National Parks. The Coyote Ridge - Owens Mountain, Yokohl Valley/Oat Canyon - Sierra Nevada, and Coyote Ridge - Sierra Nevada ECAs overlap the eastern portion of Fresno County. ECAs in this area provide critical movement corridors among habitat in the Sierra foothills and the Sierra Mountains.

Local wildlife movement corridors may be used by a range of wildlife, and can be formed by drainages, uninterrupted riparian corridors, more extensive areas of fallow agriculture lands, and other natural areas. These smaller local movement corridors may provide for access to foraging areas, localized movement associated with breeding, annual dispersal among isolated populations, and local migrations.

REGULATORY SETTING

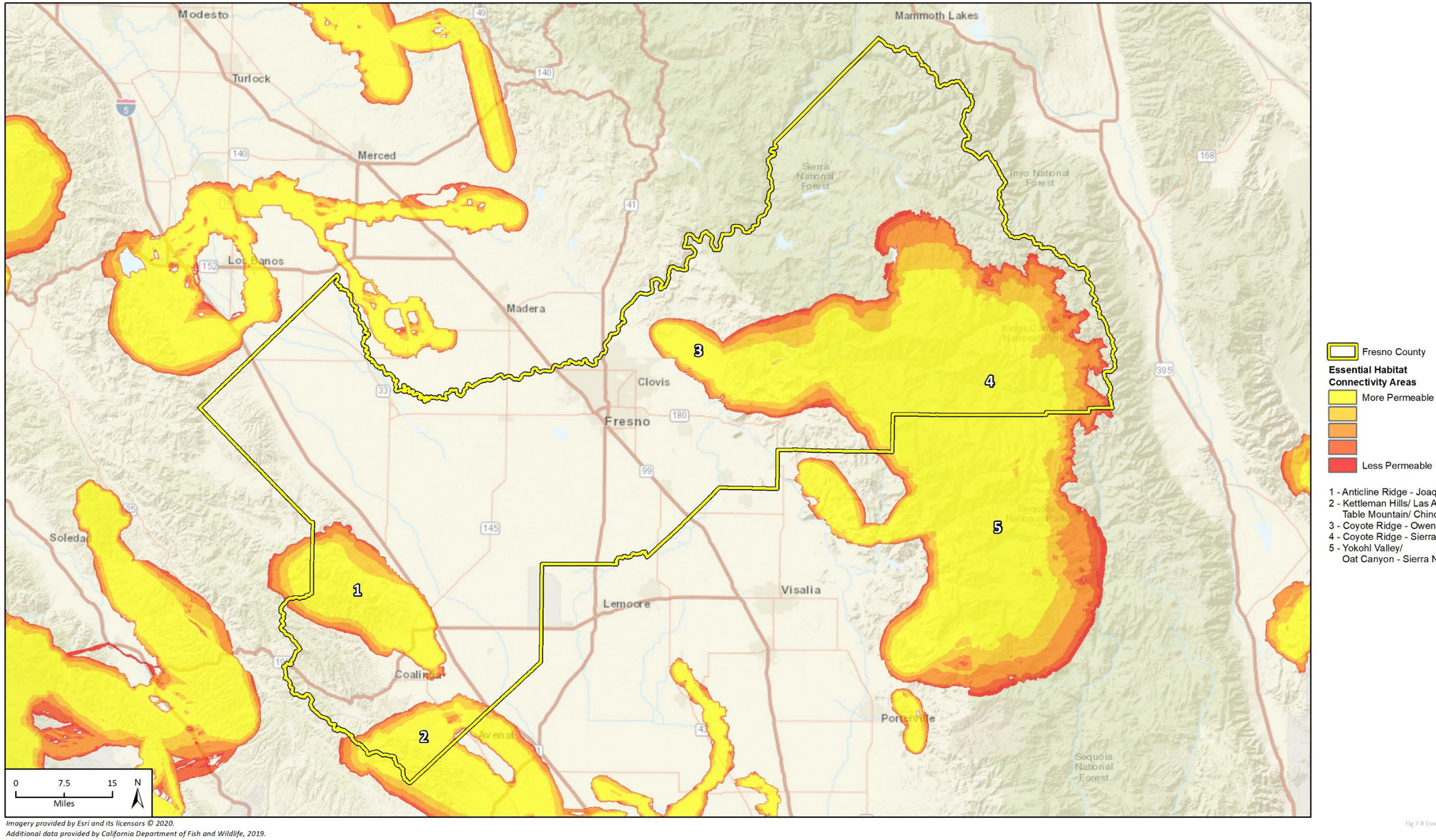
FEDERAL REGULATIONS

FEDERAL ENDANGERED SPECIES ACT

The USFWS and the National Marine Fisheries Service (NMFS) administer the Federal Endangered Species Act (FESA). The FESA requires each agency to maintain lists of imperiled native species and affords substantial protections to these "listed" species. The jurisdiction of the NMFS under the FESA is limited to the protection of marine mammals, marine fishes, and anadromous fish. All other species are subject to USFWS jurisdiction.

The USFWS and NMFS may "list" a species if it is endangered (at risk of extinction in all or a significant portion of its range) or threatened (likely to become endangered in the foreseeable future). Section 9 of the FESA prohibits the "take" of any wildlife species listed as endangered and most species listed as threatened. Take, as defined by the FESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Harm is defined as "any act that kills or injures the species, including significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering" (50 Code of Federal Regulations [CFR] 17.3).

FIGURE 7-6 IDENTIFIED ESSENTIAL CONNECTIVITY AREAS IN WESTERN FRESNO COUNTY



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Additional data provided by California Department of Fish and Wildlife, 2019.

Fig 7-8 Essential Connectivity Areas

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The FESA includes exceptions that allow an action to be carried out, despite the fact that the action may result in the "take" of listed species, where conservation measures are included for the species. Section 7 of the FESA provides an exception for actions authorized (e.g., under a Section 404 permit), funded, or carried out by a Federal agency and Section 10 provides an exception for actions that do not involve a Federal agency.

FEDERAL CLEAN WATER ACT, SECTION 404 - PROGRAMMATIC GENERAL PERMIT FOR WETLAND FILL

The CWA is the primary federal law that protects the quality of the nation's waters, including wetlands, lakes, rivers, and coastal areas. Section 404 of the CWA regulates the discharge of dredged or fill material into the waters of the United States, including wetlands. The CWA holds that all discharges into the nation's waters are unlawful unless specifically authorized by a permit; issuance of such permits constitutes its principal regulatory tool.

The USACE is authorized to issue Section 404 permits, which allow the placement of dredged or fill materials into jurisdictional waters of the United States under certain circumstances. The USACE issues two types of permits under Section 404, general permits (either nationwide permits or regional permits) and standard permits (either letters of permission or individual permits). General permits are issued by the USACE to streamline the Section 404 permitting process for statewide or regional activities that have minimal direct or cumulative environmental impacts on the aquatic environment. Standard permits are issued for activities that do not qualify for a general permit (i.e., that may have more than a minimal adverse environmental impact).

FEDERAL CLEAN WATER ACT, SECTION 401—PROGRAMMATIC WATER QUALITY CERTIFICATION

Under the CWA Section 401, applicants for a Federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the State in which the discharge would originate. Therefore, all projects that have a Federal component and may affect state water quality (including projects that require Federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401 and the State's Porter-Cologne Water Quality Control Act. In California Section 401 certification is handled by the RWQCBs. Fresno County is under the jurisdiction of the Central Valley RWQCB, which is responsible for implementation of State and Federal water quality protection guidelines. The RWQCB implements the Water Quality Control Plan for the Tulare Lake Basin (Basin Plan), a master policy document for managing water quality issues in the region.

MIGRATORY BIRD TREATY ACT

The Migratory Bird Treaty Act of 1918, as amended (MBTA), implements various treaties and conventions between the U.S. and Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Under the MBTA, taking, killing, or possessing migratory birds is unlawful, as is taking of any parts, nests, or eggs of such birds (16 U.S. Government Code 703). Take is defined more narrowly under the MBTA than under FESA and includes only the death or injury of individuals of a migratory bird species or their eggs. As such, take under the MBTA does not include the concepts of harm and harassment as defined under FESA.

STATE REGULATIONS

CALIFORNIA ENDANGERED SPECIES ACT

Administered by the CDFW, California ESA (CESA) prohibits the take of listed species and species formally under consideration for listing ("candidate" species) in California. CESA defines take as to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." (Fish and Game Code Section 86.) Under this definition, and in contrast to the FESA, CESA does not prohibit "harm" to a listed species. Furthermore, take under the CESA does not include "the taking of habitat alone or the impacts of the taking." However, the killing of a listed species that is incidental to an otherwise lawful activity and not the primary purpose of the activity constitutes a take under CESA. CESA does not protect insects, but with certain exceptions prohibits the take of plants on private land.

NATURAL COMMUNITY CONSERVATION PLANNING ACT

The Natural Community Conservation Planning (NCCP) Act was put in place to implement broad-based planning for effective protection and conservation of California's wildlife heritage while continuing to allow appropriate development and growth. The NCCP Act does not focus only on listed species and is broader in its orientation and objectives than are the ESA or CESA. The NCCP Act encourages local, state, and Federal agencies to prepare comprehensive conservation plans that maintain the continued viability of species and biological communities impacted by human changes to the landscape. The NCCP Act provides for incidental take authorization, such that covered activities resulting in incidental take of listed species may be carried out without violating CESA. Permits issued under the NCCP Act can also be broad and may include both listed species and non-listed species. No NCCPs are currently in effect or under development in Fresno County (CDFW 2016).

STATE FISH AND GAME CODE SECTION 1600-1616—MASTER STREAMBED ALTERATION AGREEMENT FOR STREAMBED MODIFICATIONS

The CDFW has jurisdictional authority over streams, lakes, and wetland resources associated with these aquatic systems under California Fish and Game Code Section 1600 et seq. CDFW has the authority to regulate work that will "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris waste or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake" (California Fish and Game Code Section 1602.). An entity that proposes to carry out such an activity must first inform CDFW, and where CDFW concludes that the activity will "substantially adversely affect an existing fish or wildlife resource," the entity proposing the activity must negotiate an agreement with CDFW that specifies terms under which the activity may be carried out in a way that protects the affected wildlife resource.

CALIFORNIA FISH AND GAME CODE 3503 (BIRD NESTS)

Section 3503 of the California Fish and Game Code makes it "unlawful to take, possess, or needlessly destroy the nests or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto." CDFW may issue permits authorizing take.

CALIFORNIA FISH AND GAME CODE 3503.5 (BIRDS OF PREY)

Section 3503.5 of the California Fish and Game Code prohibits the take, possession, or destruction of any birds of prey or their nests or eggs "except as otherwise provided by this code or any regulation adopted pursuant thereto." CDFW may issue permits authorizing take of birds of prey or their nests or eggs pursuant to CESA or the NCCP Act.

LOCAL REGULATIONS

THE FRESNO COUNTY 2000 GENERAL PLAN OPEN SPACE CONSERVATION ELEMENT GOALS AND POLICIES

- OS-D.1 The County shall support the "no-net-loss" wetlands policies of the USACE, the U.S. Fish and Wildlife Service, and the California Department of Fish and Game. Coordination with these agencies at all levels of project review shall continue to ensure that appropriate mitigation measures and the concerns of these agencies are adequately addressed.
- OS-D.2 The County shall require new development to fully mitigate wetland loss for function and value in regulated wetlands to achieve "no-net-loss" through any combination of avoidance, minimization, or compensation. The County shall support mitigation banking programs that can provide the opportunity to mitigate impacts to rare, threatened, and endangered species and/or the habitat which supports these species in wetland and riparian areas.
- OS-D.3 The County shall require development to be designed in such a manner that pollutants and siltation do not significantly degrade the area, value, or function of wetlands. The County shall require new developments to implement the use of BMPs to aid in this effort.
- OS-D.4 The County shall require riparian protection zones around natural watercourses and shall recognize that these areas provide highly valuable wildlife habitat. Riparian protection zones shall include the bed and bank of both low- and high-flow channels and associated riparian vegetation, the band of riparian vegetation outside the high-flow channel, and buffers of 100 feet in width as measured from the top of the bank of unvegetated channels and 50 feet in width as measured from the outer edge of the dripline of riparian vegetation.
- OS-D.5 The County shall strive to identify and conserve remaining upland habitat areas adjacent to wetland and riparian areas that are critical to the feeding, hibernation, or nesting of wildlife species associated with these wetland and riparian areas.
- OS-D.6 The County shall require new private or public developments to preserve and enhance existing native riparian habitat unless public safety concerns require removal of habitat for flood control or other purposes. In cases where new private or public development results in modification or destruction of riparian habitat for purposes of flood control, the developers shall be responsible for creating new riparian habitats in or near the project area. Adjacency to the project area shall be defined as being in the same watershed sub-basin as the project site. Compensation shall be at a ratio of three acres of new habitat for every one acre destroyed.
- OS-D.7 The County shall support the management of wetland and riparian plant communities for passive recreation, groundwater recharge, nutrient storage, and wildlife habitats.
- OS-D.8 The County should consider the acquisition of necessary wetland, meadows, and riparian habitat areas for parks limited to passive recreational activities as a method of wildlife conservation.

- OS-E.1 The County shall support efforts to avoid the "net" loss of important wildlife habitat where practicable. In cases where habitat loss cannot be avoided, the County shall impose adequate mitigation for the loss of wildlife habitat that is critical to supporting special-status species and/or other valuable or unique wildlife resources. Mitigation shall be at sufficient ratios to replace the function, and value of the habitat that was removed or degraded. Mitigation may be achieved through any combination of creation, restoration, conservation easements, and/or mitigation banking. Conservation easements should include provisions for maintenance and management in perpetuity. The County shall recommend coordination with the U.S. Fish and Wildlife Service and the California Department of Fish and Game to ensure that appropriate mitigation measures and the concerns of these agencies are adequately addressed. Important habitat and habitat components include nesting, breeding, and foraging areas, important spawning grounds, migratory routes, migratory stopover areas, oak woodlands, vernal pools, wildlife movement corridors, and other unique wildlife habitats (e.g., alkali scrub) critical to protecting and sustaining wildlife populations.
- OS-E.2 The County shall require adequate buffer zones between construction activities and significant wildlife resources, including both onsite habitats that are purposely avoided and significant habitats that are adjacent to the project site, in order to avoid the degradation and disruption of critical life cycle activities such as breeding and feeding. The width of the buffer zone should vary depending on the location, species, etc. A final determination shall be made based on informal consultation with the U.S. Fish and Wildlife Service and/or the California Department of Fish and Game.
- OS-E.3 The County shall require development in areas known to have particular value for wildlife to be carefully planned and, where possible, located so that the value of the habitat for wildlife is maintained.
- OS-E.4 The County shall encourage private landowners to adopt sound wildlife habitat management practices, as recommended by the California Department of Fish and Game officials and the U.S. Fish and Wildlife Service.
- OS-E.5 The County shall support preservation of habitats of rare, threatened, endangered, and/or other special-status species including fisheries. The County shall consider developing a formal Habitat Conservation Plan in consultation with Federal and State agencies, as well as other resource conservation organizations. Such a plan should provide a mechanism for the acquisition and management of lands that support special-status species.
- OS-E.6 The County shall ensure the conservation of large, continuous expanses of native vegetation to provide suitable habitat for maintaining abundant and diverse wildlife populations, if this preservation does not threaten the economic well-being of the county.
- OS-E.7 The County shall continue to closely monitor pesticide use in areas adjacent to habitats of special-status plants and animals.
- OS-E.8 The County shall promote effective methods of pest (e.g., ground squirrel) control on croplands bordering sensitive habitat that do not place special-status species at risk, such as the San Joaquin kit fox.
- OS-E.9 Prior to approval of discretionary development permits, the County shall require, as part of any required environmental review process, a biological resources evaluation of the project site by a qualified biologist. The evaluation shall be based upon field reconnaissance performed at the appropriate time of year to determine the presence or absence of significant resources and/or special-status plants or animals. Such evaluation will consider the potential for significant impact

on these resources and will either identify feasible mitigation measures or indicate why mitigation is not feasible.

- OS-E.10 The County shall support State and Federal programs to acquire significant fish and wildlife habitat areas for permanent protection and/or passive recreation use.
- OS-E.11 The County shall protect significant aquatic habitats against excessive withdrawals that could endanger special-status fish and wildlife or would interrupt normal migratory patterns.
- OS-E.12 The County shall ensure the protection of fish and wildlife habitats from environmentally degrading effluents originating from mining and construction activities that are adjacent to aquatic habitats.
- OS-E.13 The County should protect to the maximum extent practicable wetlands, riparian habitat, and meadows since they are recognized as essential habitats for birds and wildlife.
- OS-E.16 The County should preserve, to the maximum extent practicable, significant wildlife migration routes such as the North Kings Deer Herd migration corridors and fawn production areas.
- OS-E.17 Areas that have unusually high value for fish and wildlife propagation should be preserved in a natural state to the maximum possible extent.
- OS-E.18 The County should preserve, to the maximum possible extent, areas defined as habitats for rare or endangered animal and plant species in a natural state consistent with State and Federal endangered species laws.
- OS-E.19 The County should preserve areas identified as habitats for rare or endangered plant and animal species primarily through the use of open space easements and appropriate zoning that restrict development in these sensitive areas.
- OS-B.2 The County shall work closely with agencies involved in the management of forest ecosystems and shall coordinate with State and Federal agencies, private landowners, and private preservation/ conservation groups in habitat preservation and protection of rare, endangered, threatened, and special concern species, to ensure consistency in efforts and to encourage joint planning and development of areas to be preserved. The County shall encourage State and Federal agencies to give notice to and coordinate with the County on any pending, contemplated, or proposed actions affecting local communities and citizens of the County. The County will encourage State and Federal agencies to address adverse impacts on citizens and communities of Fresno County, including environmental, health, safety, private property, and economic impacts.
- OS-F.1 The County shall encourage landowners and developers to preserve the integrity of existing terrain and natural vegetation in visually sensitive areas such as hillsides and ridges, and along important transportation corridors, consistent with fire hazard and property line clearing requirements.
- OS-F.2 The County shall require developers to use native and compatible non-native plant species, especially drought-resistant species, to the extent possible in fulfilling landscaping requirements imposed as conditions of discretionary permit approval or for project mitigation.
- OS-F.3 The County shall support the preservation of significant areas of natural vegetation, including, but not limited to, oak woodlands, riparian areas, and vernal pools.
- OS-F.4 The County shall ensure that landmark trees are preserved and protected whenever possible.

- OS-F.5 The County shall establish procedures for identifying and preserving rare, threatened, and endangered plant species that may be adversely affected by public or private development projects. The County shall require, as part of the environmental review process, a biological resources evaluation of the project site by a qualified biologist. The evaluation shall be based on field reconnaissance performed at the appropriate time of year to determine the presence or absence of significant plant resources and/or special-status plant species. Such evaluation shall consider the potential for significant impact on these resources and shall either identify feasible mitigation measures or indicate why mitigation is not feasible.
- OS-F.6 The County shall require that development on hillsides be limited to maintain valuable natural vegetation, especially forests and open grasslands, and to control erosion.
- OS-F.7 The County should encourage landowners to maintain natural vegetation or plant suitable vegetation along fence lines, drainage and irrigation ditches and on unused or marginal land for the benefit of wildlife.
- OS-F.8 The County shall support the continued use of prescribed burning to mimic the effects of natural fires to reduce fuel volumes and associated fire hazards to human residents and to enhance the health of biotic communities.
- OS–F.9 The County shall require that new developments preserve natural woodlands to the maximum extent possible.
- OS-F.10 The County shall promote the preservation and management of oak woodlands by encouraging landowners to follow the Fresno County Oak Management Guidelines and to prepare an Oak Management Plan for their property. This guideline includes specific avoidance and mitigation measures that should be included in the Oak Management Plan and that should be implemented during construction and range improvement activities in oak woodlands.

KEY TERMS

CDFW. California Department of Fish and Wildlife (formerly named California Department of Fish and Game. (Section 7.3)

CESA. California Endangered Species Act of 1984 (14 CCR 670.5) (Section 7.3)

CEQA. California Environmental Quality Act (Public Resources Code, Section 21000 et seq.) (Section 7.3)

CNPS. California Native Plant Society (Section 7.3)

Critical Habitat. Specific areas designated by the USFWS as essential to the conservation of a federally listed species and which may require special management considerations or protection. On city, county, state, or private land where there is no Federal involvement, a critical habitat designation has no regulatory impact. In other words, designation of critical habitat generally does not affect non-Federal land unless and until the property owner needs a Federal permit or requests Federal funding for a project. (Section 7.3)

Endangered. A species whose survival and reproduction in the wild is in immediate jeopardy from one or more causes: including loss of habitat, change in habitat, over exploration, predation, competition, disease, or other factors. (Section 7.3)

FESA. Federal Endangered Species Act of 1973 (50 CFR 17.12) (Section 7.3)

HCP. Habitat Conservation Plan (Section 7.3)

Rare (Re. Plants). A plant species that, although not presently threatened with extinction, is present in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens. (Section 7.3)

Riparian. Of, on, or pertaining to the bank of a natural course of water. For example, riparian vegetation is composed of plant species normally found near streams, lakes, and other freshwater bodies, such as lakes, ponds, and reservoirs. (Section 7.3)

Riparian Corridors. A corridor of riparian vegetation adjacent to perennial and intermittent streams or other freshwater bodies. (Section 7.3)

Special Status Species: Rare, threatened, or endangered plant or animal species protected by Federal, State, or other agencies in accordance with any of the following: (Section 7.3)

- FESA
- CESA
- State Species of Concern list or Special Animals list (case-by-case basis
- CDFW Fully Protected Species List [Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) of the California Fish and Game Code]

- California Native Plant Protection Act (plants listed as rare, threatened, or endangered by the California Native Plant Society (CNPS); or
- Section 15380 of the CEQA guidelines.

Take. To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. (Section 7.3)

Threatened. A species that is abundant in parts of its range but declining in overall numbers and likely to become endangered in the foreseeable future throughout all or a significant portion of its range. (Section 7.3)

USACE. United States Army Corps of Engineers (Section7.3)

USEPA. United States Environmental Protection Agency (Section 7.3)

USFWS. United States Fish and Wildlife Service (Section 7.3)

USFS. United States Forest Service (Section 7.3)

Vernal pools. Vernal pools are ephemeral to seasonal depressional wetlands. These pools occur on flats and gentle slopes and typically fill with rainwater. They are underlain by hardpan or rock that slows water infiltration. During a single season, pools may fill and dry several times, typically drying up by summer. Vernal pools support specialized biota adapted to short periods of shallow inundation, including a relatively large number of threatened and endangered species. (Section 7.3)

Waters of the United States. Defined by the Clean Water Act (CWA), and include waters currently used, or used in the past for interstate or foreign commerce; interstate waters including wetlands; and other waters such as intrastate lakes, rivers, streams (including intermittent streams), wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds. waters of the United States include wetlands, which contain hydrophytic vegetation, hydric soils, and wetland hydrology; in addition to "other waters of the U.S." located below the ordinary high-water mark (OHWM). (Section 7.3)

Wetlands. Areas that are inundated or saturated by surface or groundwater to support a prevalence of vegetation typically adapted for life in saturated soil conditions. This definition of wetlands requires three wetland identification parameters to be present: wetland hydrology, hydric soils, and hydrophytic vegetation. Wetlands can be areas that are consistently inundated or seasonally inundated. Wetlands are delineated according to the USACE 1987 Wetlands Delineation Manual and are a subset of waters of the United States. (Section 7.3)

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SECTION 7.4 AGRICULTURAL RESOURCES

INTRODUCTION

Fresno County is the number one agricultural county in the nation. This section describes the existing conditions and regulatory framework related to agricultural resources in the unincorporated area of Fresno County.

MAJOR FINDINGS

- The San Joaquin Valley is California's top agricultural producing region, growing more than 250 unique crops and much of the nation's fruits, vegetables, and nuts (USEPA 2016). The annual gross value of agricultural production in the Valley is more than 25 billion dollars.
- The 2018 Fresno Council of Governments (COG) Regional Transportation Plan/Sustainable Communities Strategy) RTP/SCS projects that the total farmland consumed for new population growth through 2035 will exceed 5,000 acres. This includes the conversion of 3,833 acres of Prime Farmland, 810 acres of Farmland of Statewide Importance, and 967 acres of Unique Farmland.
- Approximately 13 percent of the Fresno County's employment is in the agricultural industry (California Employment Development Department 2020). In comparison, only three percent and two percent of the state and nation's jobs are in agriculture, respectively.
- Between 2010 and 2012, the San Joaquin Valley had a 33 percent conversion of land from irrigated farmland to urban land, the highest proportion in the state. In Fresno County, 944 acres of land was converted from irrigated farmland to urban land, the highest acreage conversion in the Valley.
- According to the California Department of Conservation (DOC), unincorporated Fresno County contains approximately 58 percent (2,180,612 acres) agricultural land, of which 36 percent (1,355,337 acres) is Important Farmland and 22 percent (825,275 acres) is Grazing Land. Of the Important Farmland, 18 percent (678,103 acres) is designated as Prime Farmland; 11 percent (404,085 acres) is designated as Farmland of Statewide Importance; five percent (179,494 acres) is designated as Farmland of Local Importance; and three percent (93,655 acres) is designated as Unique Farmland.
- Row crops are the primary crop cover in the western side of unincorporated Fresno County, while the eastern side consists of predominantly permanent crops.
- Approximately 39 percent of Fresno County is protected under either a Williamson Act contract or a Farmland Security Zone Contract. The majority of farmland in the County is under Williamson Act contracts, protecting over 1,444,107 acres of farmland. Approximately 28,975.6 acres are protected under Farmland Security Zone contracts.

EXISTING CONDITIONS

AGRICULTURAL RESOURCES

Fresno County is one of the leading farm counties in the nation because of its diverse water supply, fertile and various soil types, long growing season, and availability of work force. Agricultural resources in unincorporated Fresno County are located primarily in the western portion of the county, east of Interstate 5, south of the San Joaquin River, and west of the Friant-Kern Canal. Grazing land is primarily located at the easternmost and westernmost unincorporated areas of the county.

The State mapping of significant farmlands as part of a national Important Farmland Inventory System identifies those agricultural lands that are of Prime Importance, Statewide Importance, Unique, and Locally Important. These designations indicate which lands are actually used for cultivation. This differs from the Soil Conservation Service's Land Capability Classification system, which rates soils for their potential to support cultivation. Table 7-12 demonstrates that more than half of unincorporated Fresno County consists of Important Farmland, also depicted in Figure 7-7.

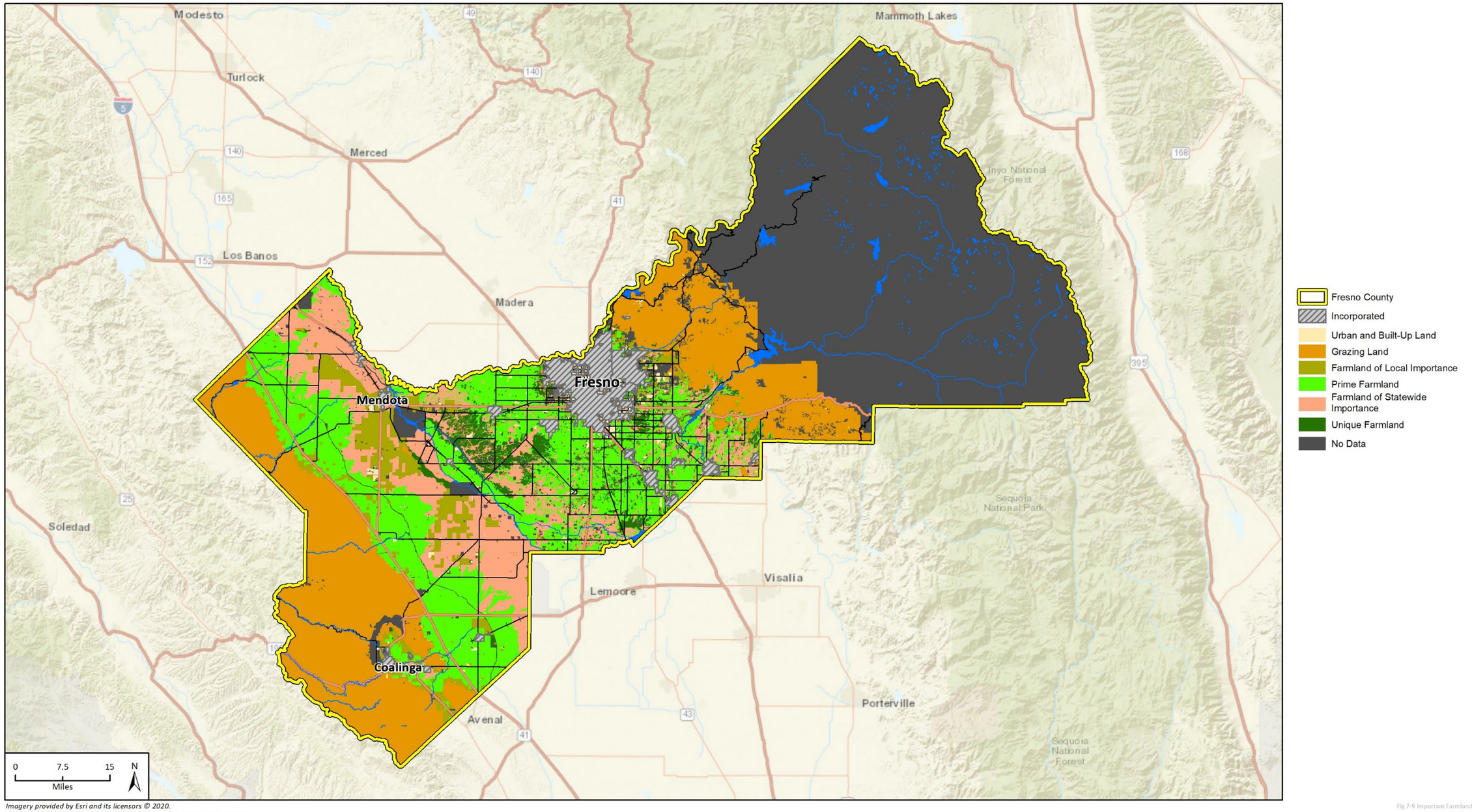
In the San Joaquin Valley, farmland conversions occurred due to the drought and salinity-related land idling. The DOC reported Fresno County as the largest example of agricultural land being reclassified to Grazing or Farmland of Local Importance. Specifically, this is the case in western Fresno County where agricultural land is intermittently not irrigated during dry years, depending on availability of water supplies. If environmental conditions change, this land could eventually be utilized, again, as irrigated farmland. Refer to the Section 7.1, Water Resources and Water Quality, for a discussion on the drought.

TABLE 7-12
IMPORTANT FARMLAND IN FRESNO COUNTY

Farmland Designation	Acres	Percent of Total Land[1]
Prime Farmland	672,208	28%
Farmland of Statewide Importance	395,148	16%
Unique Farmland	95,352	4%
Farmland of Local Importance	192,434	8%
Important Farmland Subtotal	1,355,142	**56%**
Grazing Land	822,455	34%
Agricultural Land Subtotal	2,177,597	***89%***
Urban and Built-Up Land	132,868	5%
Other Land[1]	121,847	5%
Water Area	5,121	<1%
Total Area Inventoried	2,437,433	**100%**

1 Combined confined agriculture, nonagricultural and natural vegetation, rural residential semi-agriculture and rural commercial, vacant/disturbed
Source: DOC 2018

FIGURE 7-7 IMPORTANT FARMLAND



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Additional data provided by California Department of Conservation, 2016.

Fig 7-9 Important Farmland

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Figure 7-8 shows that approximately 39 percent of Fresno County is protected under either a Williamson Act contract or a Farmland Security Zone contract. Most of the contract land is under Williamson Act contract, including 1,421,578.6 acres of farmland in renewal status, and 22,528.4 acres in non-renewal status. All Farmland Security Zone land is in renewal status and consists of 28,975.6 acres, as shown in Table 7-13.

TABLE 7-13
PROTECTED AGRICULTURAL LANDS IN FRESNO COUNTY

Protected Farmland[1]	Acres
Prime, Williamson Act contract land (renewal)	557,180
Prime, Williamson Act contract land (non-renewal)	12,092
Non-Prime, Williamson Act contract land (renewal)	864,399
Non-Prime, Williamson Act contract land (non-renewal)	10,437
Prime, Farmland Security Zone (renewal)	18,216
Prime, Farmland Security Zone (non-renewal)	0
Non-Prime, Farmland Security zone (renewal)	10,760
Non-Prime, Farmland Security Zone (non-renewal)	0
Total	**1,473,084**

[1]Includes only the unincorporated areas of the county.
Source: DOC 2016.

AGRICULTURAL CROPS

Fresno County is one of the top agricultural producing regions in the state of California and in the nation. In 2018, the total gross production value of agricultural commodities in Fresno County was 7,887,583,790 dollars.[2] This represents an increase of more than 12 percent increase over the gross production value of 2017 (Fresno County 2019). The strength of the county's agricultural economy lies in its diversity. This diversity is reflected in the more than 300 different commodities are grown in the county, many of which are illustrated in Figure 7-9. Of these 76 have a gross value of more than $1 million.

Table 7-14 lists Fresno County's top 10 ranked crops by dollar value. Nuts, fruit, dairy, and livestock continue to rank high on the list with the highest value crop being almonds at 1.2 billion dollars and grapes in second place at 1.1 billion dollars. Fresno County exports to over 95 countries around the world.

[2] All crop values are expressed as gross values. These do not account for the costs of production, marketing, transportation, and other ancillary costs. These figures do not represent net income for the commodities.

TABLE 7-14 TOP TEN RANKED CROPS IN FRESNO COUNTY	
Crop Type	**2018 Gross Value ($)**
Almonds	1,178,182,069
Grapes	1,106,858,236
Pistachios	862,144,401
Poultry*	596,477,120
Garlic	435,339,722
Milk	415,812,000
Cattle	392,235,000
Onions	370,383,721
Tomatoes	324,508,042
Mandarins	234,968,779
Total	5,507,682,000

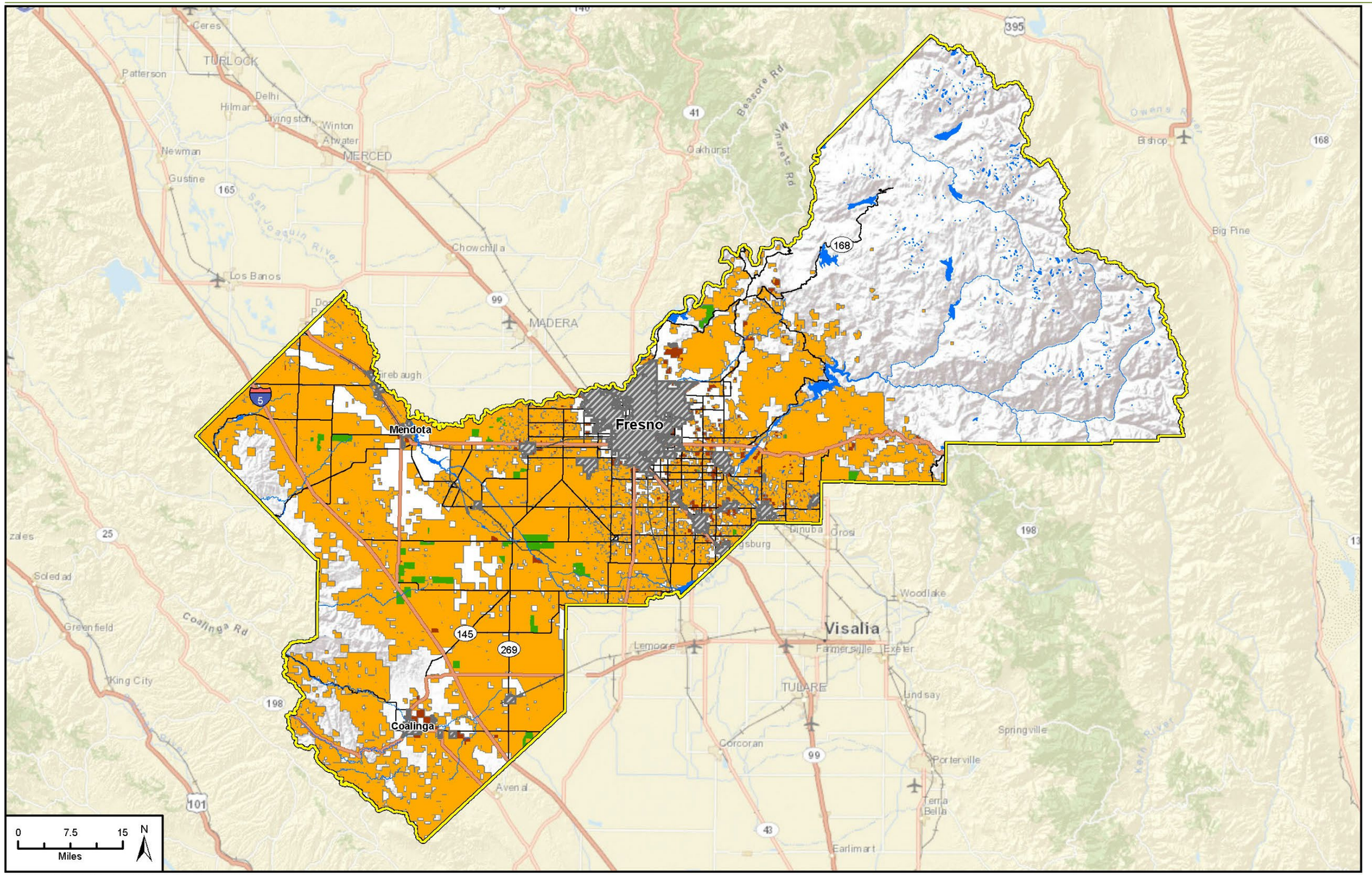
* Includes turkeys, chickens, ducks, geese, gamebirds, and eggs

Source: Fresno County 2019

CERTIFIED FARMERS' MARKETS

For over 40 years, farmers have had the right to market their products directly to consumers exempt from certain standardizations that concern packaging and labeling. Produce must meet quality standards to qualify for the certification and the standardization exemptions. Furthermore, the certification means the farmer must be personally involved in all phases of getting products to market: planting, growing, fertilizing, irrigating, cultivating, harvesting, and controlling pests. Six certified farmers' markets occur in Fresno County and allow local residents and visitors to take advantage of the high quality, fresh produce, while also creating opportunities for small farmers to market their products without the expense of commercial preparation. Fresno County Department of Agriculture issued 236 certified producer certificates for 540 properties, consisting of 10,200 acres.

FIGURE 7-8 WILLIAMSON ACT AND FARMLAND SECURITY ZONE CONTRACTS



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Additional data provided by Fresno County, 2016.

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CROPS OVERVIEW

Important field crops include cotton, alfalfa and wheat for hay, and corn silage, with a six percent increase over the previous year returns. Total gross returns for all seed crops increased by 34.05 percent, but certified alfalfa seed acreage decreased by 10 percent. Vegetable crops increased nearly 54 percent and include a range of crop types. The distribution of crops grown throughout the county appears in Figure 7-9. Livestock and poultry products total gross returns fell in 2018 by nearly two percent from their 2017 values and milk moved from number five to number six in the top 10 crop list due to a 5.73 percent decrease in the value of market milk. The value for manure increased by 48 percent over the previous year, however, as the cost per ton went up by $5.11. Apiary products and pollination services provided over $122 million in gross revenue with honey increasing in value by over $7 million. The value of pollination services went up by over 23 percent, mostly because of an increase in fruit and nut tree and melon pollination values. Figure 7-9 shows the distribution of crops throughout the county by type. Except for areas in the Sierra Mountain foothills and west of Interstate 5, most of the county is under cultivation throughout the year.

FARMLAND CONVERSION

As the information above demonstrates, productive agricultural land is a key factor in the economic stability of Fresno County and of the state. Conversion of agricultural lands occurs when residential development spreads to adjacent agricultural uses. The DOC maps important farmland and maintains statistics on the conversion of productive or potentially productive agricultural lands to other uses, and issues a report every few years, the latest in 2015. That report indicates that statewide land use conversions were lower, but that the San Joaquin Valley had the largest portion of conversions (33 percent of the total). Fresno County had the highest acreage converted from irrigated farmland to urban uses, at 944 acres (DOC 2015). Table 7-15 shows the conversion from 2016 to 2018 by land use category. Documentation on the converted uses is not published; however, as renewable energy has become more common, farmland has been converted to renewable energy production, such as solar panel arrays.

TABLE 7-15 FRESNO COUNTY CONVERSIONS BY LAND USE CATEGORY

Land Use Category	2016-2018 Acres Lost	2016-2018 Acres Gained	Net Change
Prime Farmland	7,237	3,725	-3,512
Farmland of Statewide Importance	3,945	1,960	-1,985
Unique Farmland	809	1,259	450
Farmland of Local Importance	9,946	10,597	651
Important Farmland Total	21,937	17,541	-4,396

Source: DOC 2018

REGULATORY SETTING

CALIFORNIA STATE LAWS AND REGULATIONS

FARMLAND MAPPING AND MONITORING PROGRAM

The Department of Conservation's Farmland Mapping and Monitoring Program (FMMP) monitors the conversion of the State's farmland to and from agricultural use. County-level data is collected, and a series of maps are prepared that identify eight classifications and uses based on a minimum mapping unit size of 10 acres. The program also produces a biennial report on the amount of land converted from agricultural to non-agricultural use. The program maintains an inventory of state agricultural land and updates the Important Farmland Series Maps every two years. The FMMP is an informational service only and does not constitute state regulation of local land use decisions. Agricultural land is rated according to several variables, including soil quality and irrigation availability with Prime Farmland being considered the most optimal for farming activity. Other FMMP designations include Farmland of Local Importance, Grazing Land, and Water.

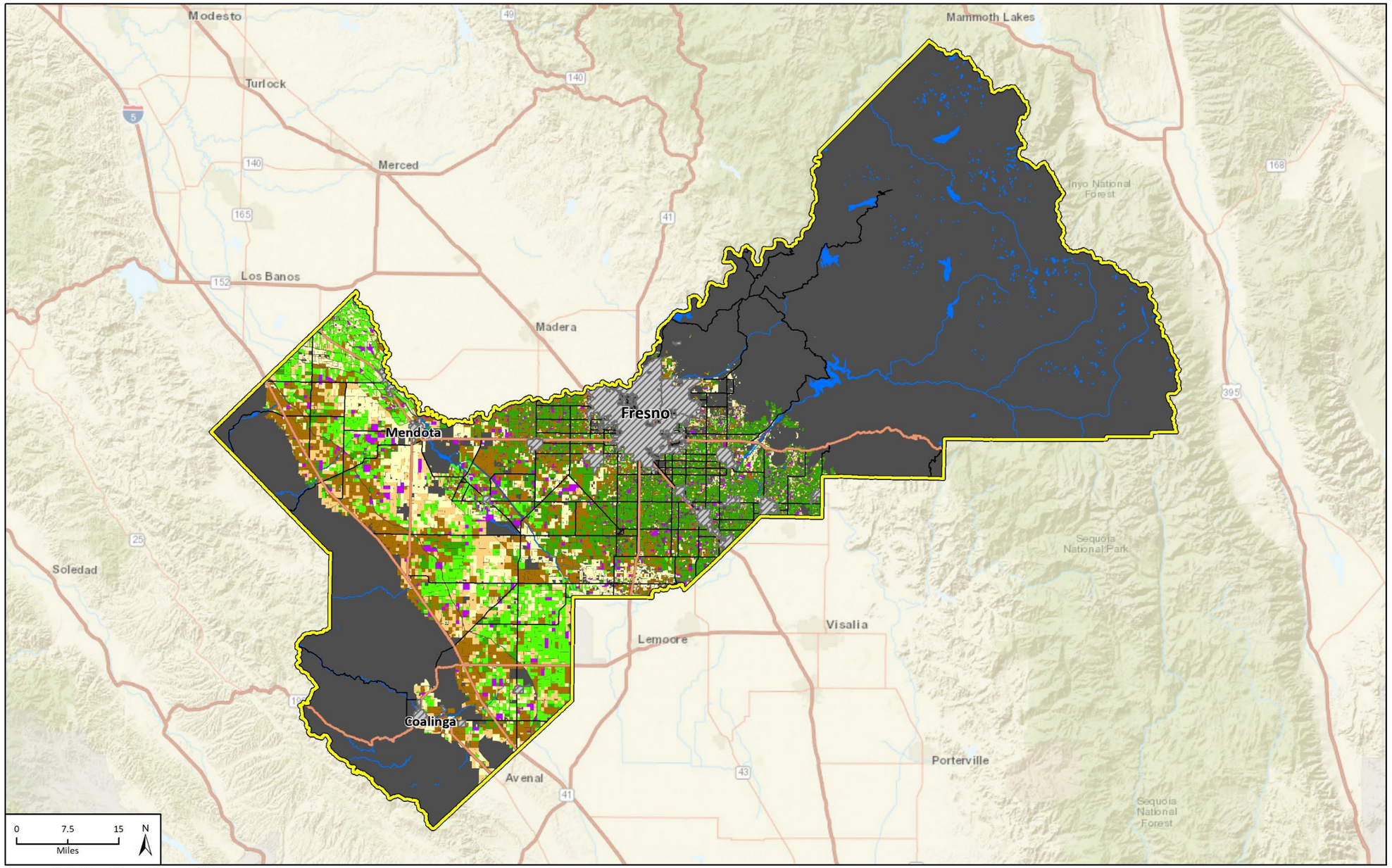
WILLIAMSON ACT (GOVERNMENT CODE SECTIONS 51200-51297.4)

Formally known as the California Land Conservation Act of 1965, this voluntary program combines compensation and regulation. In return for reduced property taxes, based on the value of agricultural use rather than open land market prices, farmland owners agree to maintain their land in agricultural production for a minimum period of time. Landowners contract with a county or city for 10-year rolling terms that are automatically renewed every year unless deliberately terminated. A newer version of this arrangement, the Farmland Security Zone program, provides for 20-year renewable contracts and greater tax reductions. Enrollment in either version is voluntary for both parties (landowners and local governments). Contracts are terminated through one of two principal procedures:

- **Contract Nonrenewal.** Initiated by either the landowner or county and resulting in a nine-year phase-out of the contract
- **Contract Cancellation.** A more demanding process that allows immediate termination, but requires the Board of Supervisors to make certain findings and imposes State fees that represent a portion of the past property tax benefits

An additional feature of the program includes the requirement that contracted parcels be located in designated "agricultural preserves".

FIGURE 7-9 DISTRIBUTION OF CROP COVER IN FRESNO COUNTY



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Additional data provided by California Department of Water Resources, 2016.

Fig 7-11 Crop Cover

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LOCAL LAWS AND REGULATIONS

LOCAL AGENCY FORMATION COMMISSION (LAFCO) BOUNDARY CONTROLS

Under California's much amended Cortese-Knox-Hertzberg Act, each county has a Local Agency Formation Commission (LAFCO) with the power to review and decide on proposals for the expansion of city or special district boundaries. LAFCOs lack official authority over land use, but their boundary decisions, especially those dealing with city expansions, can influence the local pattern of urbanization and its impact on agricultural land. However, Assembly Bill (AB) 2370 prohibits LAFCOs from approving annexations to, or a change in the sphere of influence of cities or special district that would include lands subject to a farmland security zone (FSZ) contract tor Williamson Act contract, except under specified conditions.

The Fresno County LAFCO is a five-member body with two county representatives, two city representatives, and one public member. There are also three alternate members: one county representative, one city representative, and one public member. There are three members of the LAFCO Counsel supported by LAFCO staff. State law requires LAFCOs to consider agricultural land and open space preservation in all decisions related to expansion of urban development.

FRESNO COUNTY GENERAL PLAN (2000)

The 2000 Fresno County General Plan contains goals aimed to promote the long-term conservation of productive and potentially productive agricultural lands, to accommodate agricultural-support services and agriculturally-related activities that support the viability of agriculture and that further the County's economic development goals, and to accommodate agriculture in specific land use designations in the county. The policies focus on the implementation of the County's Right-to-Farm Ordinance, direct urban growth towards cities and away from valuable agricultural lands, maintenance of a minimum parcel size in areas designated agriculture, and agricultural land preservation programs (e.g., agricultural conservation easements, new Williamson Act and Farmland Security Zone contracts, agricultural education programs, etc.). Implementation Programs for agriculture include such programs as evaluating minimum parcels sizes for sustained agricultural productivity, programs that would reduce conflicts between agricultural and non-agricultural lands (e.g., requiring buffers for new developments), review agricultural land preservation programs, and pursue grant funding for agricultural conservation easements.

FRESNO COUNTY RIGHT-TO-FARM ORDINANCE (1987)

Section 17.04.100, Right-to-Farm Notice, requires the approval of a tentative and final subdivision in 300 feet of an AE (Exclusive Agriculture), AL (Limited Agriculture), TPZ (Timberland Preserve) or RC (Resource Conservation) Zone District to be conditioned at the time of recording with the Fresno County recorder, a Fresno County Right-to-Farm Notice.

KEY TERMS

Farmland Mapping and Monitoring Program (FMMP). The DOC administers the FMMP. This program was designated by the state to inventory important farm and grazing lands by preparing Important Farmland Series maps. (Section 7.4)

Farmland Security Zone. Part of the Williamson Act; provides for 20-year renewable contracts and tax reductions (greater than under a Williamson Act contract). Enrollment is voluntary for both parties (landowners and local governments). (Section 7.4)

Farmland of Statewide Importance. Farmland similar to 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. (Section 7.4)

Field Crop. Crops (other than fruits or vegetables) that feed animals, such as corn, small grains, soybeans, and hay. (Section 7.4)

Grazing Land. Land on which the existing vegetation, whether grown naturally or through management, is suitable for grazing or browsing of livestock. Grazing Land does not include land previously designated as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance, and heavily brushed, timbered, excessively steep, or rocky lands which restrict the access and movement of livestock. (Section 7.4)

Land Idling. Land that was cultivated but now is in a state of disuse; fallow land. (Section 7.4)

Other Land. 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 40 acres. (Section 7.4)

Prime Farmland. 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. (Section 7.4)

Row Crop. A crop planted in rows wide enough to allow cultivators between the rows, such as fruits and vegetables. (Section 7.4)

Unique Farmland. Farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated but may include non-irrigated orchards or vineyards as found in some climactic zones in California. (Section 7.4)

Urban and Built-Up Land. 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. (Section 7.4)

Williamson Act. The Act creates an arrangement whereby private landowners contract with counties and cities to voluntarily restrict their land to agricultural and compatible open-space uses. The vehicle for

these agreements is a rolling 10-year contract (i.e., unless either party files a "notice of nonrenewal," the contract is automatically renewed for an additional year). In return, restricted parcels are assessed for property tax purposes at a rate consistent with their actual use, rather than potential market value. (Section 7.4)

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SECTION 7.5 OPEN SPACE

INTRODUCTION

This section describes the existing conditions and regulatory framework for open space lands in unincorporated Fresno County.

MAJOR FINDINGS

- Passive open space includes National Forest lands, National Park lands, ecological preserves, wildlife areas, wetland and riparian areas, and other areas that preserve and protect natural resources.
- Managed open space includes agricultural lands, grazing lands, and lands utilized for timber production.
- Active open space areas with recreation amenities include County parks, National Forest lands, National Parklands, bikeways, and trails.
- One officially-designated and four eligible State Scenic Highways, five County-designated Landscape Drives, seven County-designated Scenic Drives, and nine County-designated Scenic Highways are located in Fresno County. All of these help retain existing open lands and preserve scenic resources and qualities of the county, such as farmlands, foothills, and mountains.
- Given a lack of existing data related to open space in the county, an open space map should be prepared.
- A prepared open space map should be consistent with the definition of open space as defined in the Fresno County General Plan and as applied in practice by the County (see Key Terms).

EXISTING CONDITIONS

Fresno County has vast and beautiful natural resources, areas of incomparable ecological value, and a wealth of outdoor recreational opportunities. The Sierra Nevada mountain range lies to the east and includes the Sierra National Forest, Sequoia National Forest, Kings Canyon National Park, and other lands managed to protect natural resources and wildlife. The flat valley in the western part of the county is one of the most productive agricultural areas in the San Joaquin Valley and the state of California. County parks are dispersed throughout the county, offering additional recreational opportunities, such as hiking, fishing, camping, and picnic areas.

As discussed in the Fresno County General Plan, open space consists of passive open space that preserves natural resources (e.g., National Forest lands, National Park lands, and wetland and riparian areas), managed open space areas (e.g., agriculture, grazing lands, timber production), active open space for outdoor recreation (e.g., county parks), and scenic resources and roadways.

The county is fortunate to have an abundance of preserved natural resources and a wide variety of recreational spaces. Passive open space is largely located in the eastern half of the County and is owned by the United States Forest Service (i.e., Sierra National Forest and Sequoia National Forest), and the U.S. Department of Interior (i.e., Kings Canyon National Park). Other preserved open space lands include Bureau of Land Management public lands, ecological areas (i.e., Kerman Ecological Reserve and Alkali

Sink Ecological Reserve), Mendota Wildlife Area, and San Joaquin River. In addition, there are conservation easements owned by various entities, such as the San Joaquin River Parkway and Conservation Trust, and the Nature Conservancy. Active open space includes county parks and recreational trails.

Agriculture is the predominant land use in the county, of which approximately 1,355,337 acres are Important Farmlands as defined by the Farmland Mapping and Monitoring Program. Williamson Act contracts in the county protect 1,444,108 acres of farmland and Farmland Security Zone contracts protect 28,976 acres of farmland. Grazing land, located in the easternmost and westernmost parts of the county, includes approximately 825,275 acres. Refer to Section 7.4, Agriculture.

REGULATORY SETTING

STATE

SECTION 65302, GOVERNMENT CODE: CONSERVATION ELEMENT

This section of California planning law requires cities and counties to prepare a conservation element, as an aspect of a General Plan, for the conservation, development, and utilization of natural resources including water and its hydraulic force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals, and other natural resources. The conservation element is required to consider the effect of development in the jurisdiction, as described in the land use element, on natural resources located on public lands, including military installations. The conservation element may also cover all of the following: the reclamation of land and waters; prevention and control of the pollution of streams and other waters; regulation of the use of land in stream channels and other areas required for the accomplishment of the conservation plan; prevention, control, and correction of the erosion of soils, beaches, and shores; protection of watersheds; the location, quantity and quality of the rock, sand, and gravel resources. Building permits, subdivision approvals, and zoning ordinance approvals must be consistent with the local conservation element.

SECTIONS 65560-65568, GOVERNMENT CODE: OPEN SPACE LANDS

This portion of California planning law defines open space and requires local jurisdictions to prepare an open space plan as a required element of its General Plan. Building permits, subdivision approvals, and zoning ordinance approvals must be consistent with the local open space plan.

SECTION 5076, PUBLIC RESOURCES CODE: OPEN SPACE ELEMENTS AND TRAIL CONSIDERATIONS

In developing the open-space element of a general plan as specified in subdivision (e) of Section 65302 of the Government Code, every city and county shall consider demands for trail-oriented recreational use and shall consider such demands in developing specific open-space programs. Furthermore, every city, county, and district shall consider the feasibility of integrating its trail routes with appropriate segments of the state system.

LOCAL

FRESNO COUNTY GENERAL PLAN (2000)

The Open Space and Conservation Element of the existing County General Plan is concerned with protecting and preserving natural resources, preserving open space areas, managing the production of commodity resources, protecting and enhancing cultural resources, and providing recreational opportunities. The Open Space and Conservation Element sets out goals, policies, and implementation measures under three main headings: Productive Resources, Natural Resources, and Recreation and Cultural Resources. The following key policies related to the preservation, management, and expansion of open space lands in Fresno County include (See the Agriculture, Recreation, and Scenic Resources sections for more specific policies on these topics):

- To require the protection of floodplain lands and acquire public easements, where appropriate, for flood protection, wildlife preservation, groundwater recharge, and other water elements
- To encourage the sustained use of forest land as a means of providing open space and conserving natural resources
- To coordinate with agencies involved in the management of forest ecosystems (e.g., State and Federal agencies, private landowners, and private preservation/conservation groups)
- To operate with agencies involved in the regulation of timber harvest operations to ensure that County conservation goals are achieved
- To require riparian protection zones around natural water courses and recognize that these areas provide highly valuable wildlife habitat
- To consider the acquisition of wetland, meadows, and riparian habitat areas for parks limited to passive recreational activities as a method of wildlife conservation
- To support efforts to avoid the "net" loss of important wildlife habitats where practicable
- To ensure the conservation of large, continuous expanses of native vegetation to provide suitable habitat for maintaining abundant and diverse wildlife
- To encourage the development of parks near public facilities such as schools and libraries
- To work toward the acquisition of public agencies or private non-profit conservation organizations of creek corridors, wetlands, and areas rich in wildlife or of fragile ecological nature
- To encourage the development of parks near public facilities such as schools and libraries

FRESNO COUNTY ZONING ORDINANCE

The Fresno County Zoning Ordinance identifies zoning districts that are associated with open space, and these include:

"R-C" - Resource Conservation District. The R-C District is intended to provide for the conservation and protection of natural resources and natural habitat areas. The R-C District shall be accompanied by an acreage designation which established the minimum lot size that may be created in the District. Acreage designations of 40, 80, and 160 are provided for this purpose. All uses are subject to the property development standards (Section 813.5) and the following uses are permitted in the R-C District: apiaries, forest fire lookout stations, grazing, growing and harvesting of timber and forest products, home

occupations, management for watershed, fish and wildlife habitat, mobile home occupancy, one family dwelling units (not more than one dwelling per lot), uses and facilities appurtenant to timber growing and harvesting, and wildlife preserves. Other uses may be permitted subject to director review and approval or subject to a conditional use permit.

"TPZ" - Timberland Preserve Zone District. The TPZ District is intended to be an exclusive district for the growing and harvesting of timber for those uses which are an integral part of a timber management operation. A TPZ will replace the use of Williamson Act Contracts on timberland to provide a tax structure conducive to timber management operations. Land use under a TPZ will be restricted for a minimum of ten years to growing and harvesting timber, and to compatible uses approved by the County. The following uses are permitted in the TPZ District without a special permit; and are subject to the property development standards in Section 814.5: directional sign, forest fire lookout station, grazing, growing and harvesting of timber and forest products, Management for watershed, fish and wildlife habitat or hunting and fishing, non-intensive recreational activities, uses and facilities appurtenant to timber growing and harvesting, and wildlife preserves. Other uses may be permitted subject to director review and approval or subject to a conditional use permit.

"O" - Open Space Conservation District. The O District is intended to provide for permanent open spaces in the community and to safeguard the health, safety, and welfare of the people by limiting developments in areas where police and fire protection, protection against flooding by storm water and dangers from excessive erosion are not possible without excessive costs to be community. The following uses are permitted in the O District: agricultural uses provided that no dwellings be permitted (either temporary or permanent), fisheries, flood control channels, spreading grounds, settling basins, freeways, parkways, park drives, recreation areas, moderate intensity parks, playgrounds, wildlife preserves, forest preserves and such buildings and structures as are related, signs, and temporary or permanent telephone booths. Other uses may be permitted subject to director review and approval or subject to a conditional use permit.

"AE" Exclusive Agriculture District. The AE District is intended to be an exclusive district for agriculture and for those uses which are necessary and an integral part of the agricultural operation. This district is intended to protect the general welfare of the agricultural community from encroachments of non-related agricultural uses which by their nature would be injurious to the physical and economic well-being of the agricultural district. The AE District shall be accompanied by an acreage designation which establishes the minimum size lot that may be created in the District. Acreage designations of 640, 320, 160, 80, 40, 20, 5 are provided for this purpose. Parcel size regulation is deemed necessary to carry out the intent of this District.

"AL" Limited Agricultural District. The AL District is intended to protect the general welfare of the agricultural community by limiting intensive uses in agricultural areas where such uses may be incompatible with, or injurious to, other less intensive agricultural operations. The District is also intended to reserve and hold certain lands for future urban use by permitting limited agriculture and by regulating those more intensive agricultural uses which, by their nature, may be injurious to non-agricultural uses in the vicinity or inconsistent with the express purpose of reservation for future urban use. The AL District shall be accompanied by an acreage designation which establishes the minimum size lot that may be created in the District. Acreage designations of 640, 320, 160, 80, 40, 20 are provided for this purpose. Parcel size regulation is deemed necessary to carry out the intent of this District.

"A-2" District. The A-2 District is intended to be a district which will protect those areas desiring more protection than the A-1 District provides and which do not, by their nature, require exclusive agricultural zoning.

KEY TERMS

Conservation. The management of natural resources to prevent waste, destruction, or neglect.

Open Space Element. An open-space element details plans and measures for the long-range preservation and conservation of open-space lands, including open space for the preservation of natural resources, the management production of resources (including agricultural lands), outdoor recreation, and public health and safety.

Open Space Land, as defined by the Fresno County General Plan (2000) includes: Any parcel or area of land or water that is essentially unimproved and devoted to an open space use for the purposes of: 1) the preservation of natural resources; 2) the managed production of resources; 3) outdoor recreation; or 4) public health and safety.

Open Space Land, as defined by the Fresno County General Plan (2000) and as applied in practice by County staff includes: any parcel or area of land or water that is essentially unimproved and devoted to an open space use for the purpose of: 1) preservation of natural resources (e.g., National Forest, National Parks, conservation lands; wetland and riparian areas); 2) managed production of resources (e.g., agriculture, grazing, timber production); 3) outdoor recreation (e.g., County parks and recreation areas); 4) public health and safety; or 5) scenic resources and roadways.

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PERSONS CONSULTED

Khorsand, Mohammad, Senior Planner, Fresno County Planning Department. February 2016.

SECTION 7.6 SCENIC RESOURCES

INTRODUCTION

This section describes the visual and scenic resources in the unincorporated areas of Fresno County.

MAJOR FINDINGS

- There is one officially designated State Scenic Highway in Fresno County: State Route (SR) 180, extending approximately from Minkler to Kings Canyon National Park.
- There are four eligible State Scenic Highways in Fresno County, including portions of the following: State Route SR 33, SR 168, SR 180, and SR 198.
- There are five County-Designated Landscaped Drives in Fresno County, including all or portions of the following: Kearney Boulevard, Van Ness Avenue, North Van Ness Boulevard, Butler Avenue, and Minnewawa Avenue.
- There are seven County-Designated Scenic Drives in Fresno County, including all or portions of the following: Trimmer Springs Road, Piedra Road, Nicolas Road/Tollhouse Road, Dinkey Creek Road/McKinley Grove Road, Edison-Florence Lake Road, the Blossom Trail Route, and the Wild Flower Route including portions of Auberry Road north of Copper Avenue.
- There are nine County-Designated Scenic Highways in Fresno County, including: four portions of SR 168, two portions of SR 180, SR 198, Interstate 5 freeway, and Friant Road.
- There are five regional planning areas within the County, each with specific scenic amenities, such as national forest and national park lands within the Sierra Nevada mountains, preserved open space, agricultural land, range land, sensitive natural habitat, rivers, scenic drives and highways, that enhance the visual and scenic qualities of the County.
- Approximately 58 percent of the County consists of agricultural lands and 22 percent consists of grazing lands. Agricultural and grazing lands provide unbroken views of the County's ranch lands, orchards, vineyards, and field crops.
- There are 11 regional parks including eight developed and three undeveloped parks, four fishing access areas, and one boat-launch/parking facility at Shaver Lake. These parks are dispersed throughout the County and provide scenic amenities in addition to the recreation amenities, such as hiking, fishing, bird watching, and nature study.

EXISTING CONDITIONS

SCENIC RESOURCES

The scenic beauty of Fresno County is vast. The County has a rich and diverse landscape, ranging from the agricultural land of the central San Joaquin Valley, the oak woodlands of the Sierra Foothills, and finally to the rugged coniferous mountains of the Sierra Nevada mountain range. The Sierra's traverse nearly half of eastern Fresno County, and include the Sierra National Forest, Kings Canyon National Park, and Sequoia National Forest. Several large reservoirs throughout the Sierra's, such as Millerton Lake, Huntington Lake, and Shaver Lake, also provide scenic opportunities. The San Joaquin and King Rivers, originating in the Sierra Mountains, are the county's two major rivers. The majority of the scenic

highways and roadways in the County originate in the Sierra's and extend west through the foothills and agricultural lands. Agricultural lands (e.g., orchards, vineyards, and field crops) and rangelands make up over half of the County and are located west of the Friant-Kern Canal. The large farms and ranches emphasize the county's rural and farming heritage and provide unrestricted views of the County landscape. Extending west of Interstate 5, a County- Designated Scenic Highway, the Coastal Foothills showcase gentle rolling hills with and oak trees. The scenic qualities of the area are an important component of the quality of life in the County. Scenic resources also play an important role in the economic development of the region, including the expansion of tourism-based industries, and the locational decisions of businesses.

Open space, agriculture, and rangeland make up the backdrop of the County's scenic landscape. Making up almost half of the County, the Sierra Nevada mountains lie in the eastern portion of the County, and include the Sierra National Forest, Sequoia National Park, and Kings Canyon National Park. The oak-covered foothills and coniferous mountains of the Sierra National Forest include designated wilderness, reservoirs, wild and scenic rivers, trails, and scenic byways. The Sequoia and Kings Canyon National Park include huge mountains, rugged foothills, deep canyons, vast caverns, and the world's tallest trees. For example, the 3,000-year-old General Grant tree within Kings Canyon National Park is the second-largest sequoia in the world. Other open space lands in the County that provide the County's beautiful scenic backdrop include ecological reserves (i.e., Kerman Ecological Reserve and Alkali Sink Ecological Reserves), wildlife areas (i.e., Mendota Wildlife Area), and the Kings and San Joaquin River.

In addition, County regional parks and recreational trails are dispersed throughout the County, providing yet another opportunity to enjoy the recreational and scenic amenities in the County, such as hiking, picnicking, fishing, boating, nature study, and bird watching. There are 11 regional parks, including eight developed and three undeveloped parks, four fishing access areas, and one boat-launch at Shaver Lake.

Courthouse Park has been a County Park since 1872 when the Central Pacific Railroad laid out the townsite of Fresno Station and railroad owners offered the site for a park and future courthouse. In 1874, the County Courthouse moved to downtown Fresno and has been a gathering site for community activities. The County hosts many memorials and community events at the Park. The amenities at the Park include a fountain, large expanses of lawn and mature trees, benches, memorials, and statues. The County has a substantial interest in the maintenance of the history, amenities, and aesthetic qualities the Park. County Code Section 13.20.015B ensures the continued maintenance of the Park.

Agriculture lands make up approximately 58 percent of the County, while grazing land consists of 22 percent of the County. These lands provide vast open views of the County landscape, including ranch lands, orchards, vineyards, and field crops. The 2000 Fresno County General Plan includes goals and policies to protect agricultural lands by directing urban growth away from valuable agricultural lands. The 2000 Fresno General Plan includes goals and policies designed to maintain the scenic open space character of range lands, including view corridors of highways. New development is required to utilize natural landforms and vegetation in the least visually disruptive way, and design techniques that minimize the visibility of structure on hillsides, ridgelines, steep slopes, and canyons. Specifically, the Westside Rangeland planning area, located in the coastal foothills of Fresno County, west of Interstate 5, possesses unique features that are relatively isolated from major population centers. General Plan policies for this planning area include preserving the unique and open character of the Westside Rangelands (e.g., distinctive geologic landforms, watersheds, and significant biological resources). New development is required to protect the visual qualities of the area and minimize the visibility of structures on hillsides, ridgelines, steep slopes, and canyons.

SCENIC CORRIDORS

STATE SCENIC HIGHWAYS

Fresno County has one officially designated State Scenic Highway: State Route 180 (SR 180) (Figure 7-10). This scenic highway is one of California's newest State Scenic Highways and is a gateway to Kings Canyon National Park. The SR180 highway is designated as scenic from Alta Main Canal near Minkler to near the General Grant Grove section of Kings Canyon National Park and General Grant Grove section of Kings Canyon National Park to Kings Canyon National Park boundary near Cedar Grove. Within Fresno County, the highway begins at the Alta Main Canal and extends north to North Frankwood Avenue and then south to South Frankwood Avenue where it meets East Kings Canyon Road/Highway 180. The highway then continues east along E Kings Canyon Rd./Highway 180 through Squaw Valley and east of Dunlap Road where the highway finally begins its way through the Kings Canyon National Park. The views along the scenic highway are primarily of farmland and rangeland, gradually leading to views of the Sierra Nevada foothills. The scenic highway then enters Kings Canyon National Park with access to one of the deepest canyons in the United States (Kings Canyon), the highest mountain peak in the lower 48 states (Mt. Whitey), and one of the world's largest living trees (the giant sequoia).

In addition to SR 180, the California Department of Transportation (Caltrans) has identified four routes eligible for State Scenic Highway designation (Caltrans 2017):

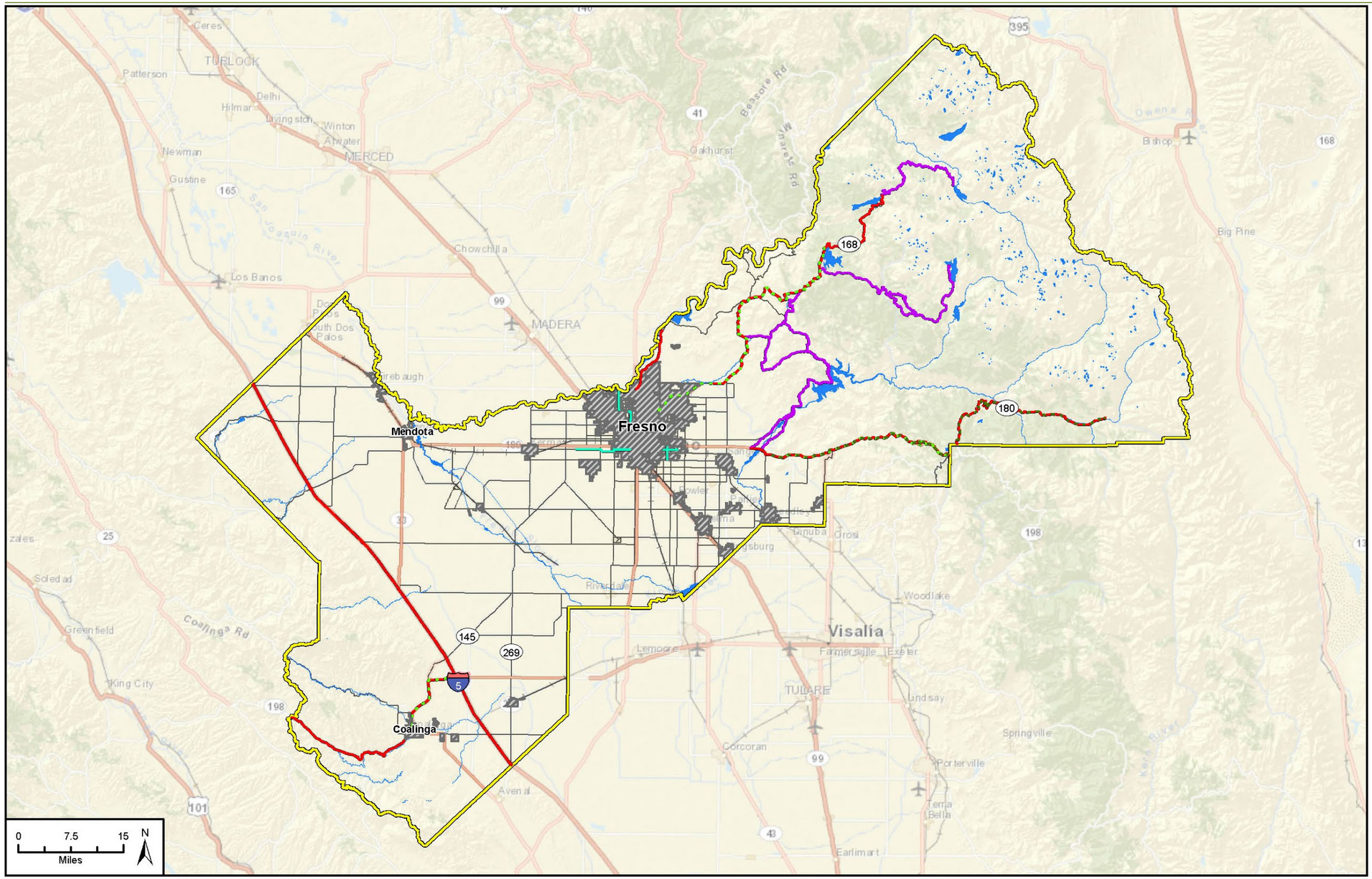
- SR 33 from SR 198 near Coalinga/SR 198 near oilfields
- SR 168 from SR 65 near Clovis/Huntington Lake
- SR 180 from SR 65 near Minkler/Kings Canyon National Park Boundary near Cedar Grove
- SR 198 from SR 33 near Oilfields/I-5

The status of a proposed scenic state highway changes from eligible to officially designated when the local governing body (i.e., Fresno County) applies to Caltrans for scenic highway approval, adopts a Corridor Protection Program, and receives notification that the highway has been officially designated a Scenic Highway.

COUNTY-DESIGNATED SCENIC ROADWAYS

The County has designated a system of scenic roadways that includes landscaped drives, scenic drives, and scenic highways (Figure 7-10). Landscaped drives are roads bordered by mature and consistent landscaping that have area wide significance. Scenic drives are rural roads traversing land with outstanding natural scenic qualities and connecting with scenic highways. Scenic highways are highways that traverse land with unique or outstanding scenic quality or provide access to regionally significant scenic and recreational areas.

FIGURE 7-10 SCENIC ROADS AND HIGHWAYS



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Additional data provided by California Department of Transportation, 2015; Fresno County, 2000

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County-Designated Landscaped Drives are roads bordered by mature and consistent landscaping that have area wide significance, and include the following:

- Kearney Boulevard from Westlawn Avenue to the City of Fresno
- Van Ness Avenue from the City of Fresno to Palm Avenue at Shaw
- North Van Ness Boulevard from Shaw Avenue to the San Joaquin River
- Butler Avenue, Peach to Fowler
- Minnewawa Avenue, Kings Canyon to Central Canal

County-Designated Scenic Drives are rural roads traversing land with outstanding natural scenic qualities and connecting with scenic highways, and include the following:

- Trimmer Springs Road from SR 180 to Trimmer, Maxson Road from Trimmer to Watts Valley Road, Watts Valley Road from Maxson Road to Pitman Hill Road, and Burrough Valley Road from Watts Valley Road to Tollhouse Road
- Piedra Road from SR 180 to Piedra
- Nicolas Road/Tollhouse Road from proposed SR 168 at Millerton Road to Dinkey Creek Road at Shaver Lake
- Dinkey Creek Road/McKinley Grove Road from proposed SR 168 to Courtright Reservoir
- Edison-Florence Lake Road from Huntington Lake to Florence Lake
- Blossom Trail Route
- Wildflower Route

County-Designated Scenic Highways are roadways that traverse land with unique or outstanding scenic quality or provide access to regionally significant scenic and recreational areas, and include the following:

- Proposed SR 168 from Friant-Kern Canal to Lodge Road
- SR 168 from Lodge Road to Pineridge
- Proposed SR 168 from Pineridge to Huntington Lake Road
- SR 168 from Huntington Lake Road to Huntington Lake
- SR 180 from Trimmer Springs road to the Tulare County Line
- SR 180 from Kings Canyon National Park boundary near General Grant Grove to Kings Canyon National Park boundary near Cedar Grove
- SR 198 from Interstate 5 Freeway to Monterey County line, excluding city of Coalinga
- Interstate 5 freeway in Fresno County
- Friant Road from city of Fresno to Lost Lake Road

BUILT AND NATURAL ENVIRONMENT

The built environment in unincorporated Fresno County is dispersed throughout the valley, foothill, and mountain areas, while most of the incorporated cities are clustered around Highway 99. The 2000 Fresno County General Plan includes five regional planning areas; and each planning area includes policies and standards to address specific resource issues, such as open space, agricultural land preservation, and environmental resource management that ultimately impact the visual and aesthetic qualities of each area. These regional planning areas include:

Coalinga Regional Plan Area: The 580-square mile area of the Coalinga Region is located in the southwestern portion of the County west of I-5. The Coalinga region is diverse and includes agricultural lands, range land, the foothills of the Coastal Ranges, mineral resource sites, soil fields, and fragile environmental resources. The General Plan Land Use Element provides goals and policies that limit development and preserve agriculture lands, range lands and sensitive natural plant and animal habitats within this planning area. The unincorporated community of Coalinga lies within this area.

Westside Freeway Sub-Regional Plan Area: This Plan area is located along the Interstate 5 freeway in western Fresno County. The Plan includes goals to manage commercial development along the freeway corridor, a County-Designated Scenic Highway, to preserve the scenic amenities along the freeway. Specific interchanges are designated for more or less intensive development or are limited to agricultural uses.

Kings River Regional Plan Area: This 19,500 Plan area is located in east-central Fresno County along the Kings River extending from the Pine Flat Dam to the Fresno-Tulare County line near Reedley. The Kings River, which originates in the Sierra Nevada and flows to the San Joaquin Valley, is a major focus of this area. The Kings River, rich in natural resources, provides natural woodlands, riparian vegetation, valuable rock, sand, and gravel resources; and water resources. The goals and policies of this Plan related to visual qualities are to protect the sensitive biological and agricultural resources along the river, preserve agriculture and open space along the river, and limit the expansion of residential and other intensive uses to areas to minimize impacts on the Kings River system and surrounding resources.

Sierra-North Regional Plan Area: This Plan area covers northeastern Fresno County, approximately 2,270 square miles or approximately one-third of the land in the County. The area is within the Sierra Nevada east of the Friant-Kern Canal and north of the Kings River. Approximately 84 percent of the planning area is federally-owned land (i.e., Sierra National Forest and Kings Canyon National Park). Privately owned grazing and timber lands are also in the plan area. The General Plan Land Use Element includes goals and policies for this plan area related to preserving visual amenities, such as limiting development, preserving agriculture and range lands, and preservation of sensitive natural plant and animal habitats. Specific Plan areas within this regional planning area include Bretz Mountain Village, Shaver Lake Forest, and Wildflower Village Specific Plans; in addition there are a small number of unincorporated communities, such as Auberry, Big Creek, and Prather.

Sierra South Regional Plan Area: The Plan area is located southeast of the Kings River Regional Plan Area, east of the Friant-Kern Canal, south of the Kings River, west of the Kings Canyon National Park, and north of Tulare County. This area includes the foothills of the Sierra Nevada mountain range. Land uses within the planning area include agriculture, rangeland, rural residential, and timber harvesting. The federal government is the largest land owner, and most of the remaining private land is preserved by land conservation contracts. The General Plan Land Use Element includes goals and policies to preserve the scenic open space character of the area and to focus new development in locations that would minimize

impacts to sensitive resources (i.e., natural habitat). There are many small unincorporated communities in within this regional planning area, such as Squaw Valley and Dunlap.

Within these five geographic areas, the County Board of Supervisors adopted six Specific Plans for unincorporated areas of the County. These plans guide development and preservation of resources (i.e., scenic resources and highways, open space, and conservation) within the planning area that supersede the County General Plan. The following describes four of the specific plans and their policies that are intended to enhance visual resources.

***Bretz Mountain Village Specific Plan**:* The Bretz Mountain Village includes an area south of Shaver Lake just east of Highway 168. The Village is intended to be developed as a recreation residential area with specific lots sizes and buildout population. The Plan provides for limited local-serving commercial uses, open space, and public/quasi-public development such as recreational facilities. Approximately half of the planning area is designated as open space.

Millerton New Town Specific Plan: The Millerton New Town Plan Area covers approximately 2,000 acres in the County. The Specific Plan envisions development of 5,074 equivalent residential units. The Specific Plan provides requirements for recreational and open space amenities.

Shaver Lake Forest Specific Plan: Shaver Lake Forest is a planned recreational-residential community in the Sierra Foothills about one mile south of Shaver Lake on Highway 168, and 50 miles northeast of Fresno. The site is densely forested with mixed conifers and some deciduous trees. The community consists single-family, condominium, recreational vehicle, and village commercial uses. A portion of the site lies within the boundaries of the Sierra National Forest. The Plan accommodates a range of uses, such as residential, Village Community Center, Recreational Facilities, and Community Facilities. New development can be accommodated within the Plan area but should be compatible with the foothill and mountain resources by providing necessary consideration for scenic and natural resource conservation and environmental protection; while areas surrounding development should remain in a semi-natural state to protect the natural environment and amenity of the area. Much of the plans standards and criteria for Planned Residential Developments focus on providing protection to visual resources, including natural resources; and include providing protection to rock outcroppings and unscreened ridge areas with sufficient setbacks, careful placement of permanent structures to protect view corridors, providing appropriate landscaping and visual buffers to minimize visual impacts on scenic roadways, and incorporation of aesthetic buffers. The Plan also includes a Conservation Element that includes goals and policies for planned open space preservation, conservation and management of natural resources, and conservation of scenic highways.

Wildflower Village Specific Plan: The Plan area is located about two miles southwest of Shaver Lake and abuts the Shaver Lake Forest Specific Plan area. Wildflower Village is intended to accommodate mostly seasonal residential and recreational land uses. The Plan designates over half of the plan area as protected open space.

REGULATORY SETTING

State of California

Streets and Highways Code

A California highway may be designated as scenic depending on how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes on the traveler's enjoyment of the view.

When a city or county nominates an eligible scenic highway for official designation, it must identify and define the scenic corridor of the highway, defined by the motorist's line of vision (a reasonable boundary is selected when the view extends to a distant horizon). The city or county must also adopt ordinances to preserve the scenic quality of the corridor, including: 1) regulation of land use and density of development; 2) detailed land and site planning; 3) control of outdoor advertising (including a ban on billboards); 4) careful attention to and control of earthmoving and landscaping; and 5) careful attention to design and appearance of structures and equipment.

Fresno County General Plan (2000)

The 2000 Fresno County General Plan contains scenic resource and scenic roadway goals and policies aimed to conserve, protect, maintain the scenic quality of land, including land adjacent to scenic roads in the County, and discourage development that degrades areas of scenic quality. Scenic resource policies focus on encouraging the preservation of scenic views, identifying and mapping significant scenic resources, developing a program to manage these resources, and requiring development to incorporate natural features and to minimize impacts to the scenic qualities of the site. Scenic roadways policies include encouraging the designation of scenic roadways (i.e., landscaped drives, scenic drives, and scenic highways), managing scenic roadways based on specific principles, requiring new development along designated scenic roadways to follow certain criteria, and pursuing scenic highway designation from the State of California.

Fresno County Ordinance Code

> **Section 17.48.010 – Design and Improvement Standards:** Design and improvements shall conform to Chapters 17.04 through 17.60 and the improvement standards. Design shall also provide for adequate traffic circulation and should promote the extension of aesthetic values.

Fresno County Zoning Ordinance

The primary purpose of the Fresno County Zoning Ordinance is to classify and regulate the highest and best use of buildings, structures, and land located in the unincorporated area of the county in a manner consistent with the Fresno County General Plan. The zoning ordinance achieves these purposes through various standards and regulations, including the following:

Section 850 – Overlay Districts: The purpose of an Overlay District is to modify specific provisions of the underlying zone district(s). Overlay Districts will generally be applied to areas that have different underlying zone districts but have unique features or characteristics that are common to the parcels that are located within the overlay district. Overlay Districts shall be identified by suffixing the applicable overlay letters next to the underlying zone district designation.

Section 850.A.5 – Property Development Standards: The following property development standards and those in Section 855 shall apply to all land and structures in the Mountain Overlay District. Property development standards of the underlying district shall be appropriate only when specific reference is made below. No lot in a Mountain Overlay District shall be developed which is not adequate in size to accommodate the proposed structures and uses to include required and essential vehicular movement and storage, pedestrian movement, landscaping, and sewage disposal fields with consideration for snow storage and preservation and enhancement of scenic and open space values. Provisions of Section 855-A through 855-N, Property Development Standards, shall apply.

Section 26C3c (9) – Planned Commercial Developments. A commercial development plan shall be prepared and shall contain the specified information, including the location and treatment of scenic roadways.

Section 26C4c (8) – Planned Industrial Developments: An industrial development plan shall be prepared and shall contain specified information, including the location and treatment of scenic roadways.

Section 850.C – "HB" Highway Beautification Overlay Standards: The Highway Beautification Overlay standards (HBOS) are intended to promote consistent aesthetic standards for future development within County jurisdictional lands along SR 99. These regulations allow for growth in commerce while securing an aesthetically attractive character for future development along SR 99. The "HB" Overlay Standards shall apply to all property within 1,000 feet of the outside boundaries of the SR 99 ultimate right-of-way. Any new use or expansion of an existing use approved after the effective date of this ordinance and located within the "HBOS" boundaries shall be subject to the provisions of this Section.

KEY TERMS

Scenic Corridor. The visible land area adjacent to a transportation corridor right of way and generally described as the "view from the road."

Scenic Resource. Areas valued for their scenic quality.

State Scenic Highway. A highway officially designated by the State Scenic Highway Advisory Committee as scenic after application from a local jurisdiction, and only when the highway is identified on State Scenic Highway Master Plans.

Scenic Vista. An area designated, signed, and accessible to the public for purposes of viewing and sightseeing.

Landscape Drive. Roads bordered by mature and consistent landscaping that have area wide significance.

Scenic Drives. Rural roads traversing land with outstanding natural scenic qualities and connecting with scenic highways.

Scenic Highways. Highways that traverse land with unique or outstanding scenic quality or provide access to regionally significant scenic and recreational areas.

Visual Intrusions. Natural or constructed elements viewed from the highway that adversely affect the scenic quality of a corridor.

REFERENCES

Reports/Publications

Fresno County. General Plan. Adopted October 3, 2000.

Fresno County. Shaver Lake Forest Specific Plan. Amended June 1993.

Fresno County. Zoning Ordinance. December 6, 2011.

Fresno County, Final Environmental Impact Report. Prepared for the Fresno County General Plan Update. August 2000.

Websites

California Department of Transportation. California Scenic Highway Mapping System. http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/scenic_hwy.htm. June 5, 2020.

California State Parks. http://www.stateparks.com/sierra.html. June 2020.

Visit Sequoia. http://www.visitsequoia.com/General_Grant_Tree.aspx. June 2020.

SECTION 7.7 RECREATION

INTRODUCTION

This section describes the park and recreational opportunities in unincorporated Fresno County.

MAJOR FINDINGS

- The County Resources/Parks Division maintains 12 regional recreation facilities including parks, fishing access areas, and a boat-launch/parking facility at Shaver Lake. These areas provide amenities for picnicking and camping, active recreation (e.g., softball, soccer, volleyball, and disc golf), and passive recreation (e.g., fishing, bird watching, hiking).
- The County Resources/Parks Division has 23 full-time park maintenance employees (including three park supervisors, two maintenance employees, 15 parks grounds keepers, and three tree trimmers), and from 15 to 20 seasonal summer employees.
- The parkland standard in the Fresno County General Plan (2000) is five to eight acres of County-owned improved parkland per 1,000 residents in the unincorporated areas. Unincorporated Fresno County has a population of 170,990 people (as of 2018) and contains 1,578 acres of County parks (California Department of Finance 2019). The County, therefore, exceeds the parkland standard of five acres per 1,000 residents but falls short of the eight-acre standard.
- The Quimby Act enables the County to require the dedication of land and/or payment of fees in accordance with local authority and State law, to ensure funding for the acquisition and development of public recreation facilities. However, the County has traditionally chosen not to enforce the Quimby Act but reserves the right to enforce it in the future.
- In addition to County park facilities, Fresno County residents have access to many other recreational opportunities in State and national parks, forest lands, and recreational facilities associates with dams, reservoirs, and reserves.
- The Fresno County Regional Bicycle and Recreational Trails Master Plan was adopted on September 24, 2013, and provides a comprehensive, long-range view for the development of an extensive regional bikeway and recreational trails network that connects cities and unincorporated areas countywide. Fresno County and the Fresno Council of Governments (COG) are currently in the process of developing the 2020 Fresno County Regional Trails Plan as an update to the existing Master Plan.

  The existing Class I, II, and III bikeways in Fresno County total approximately 93 miles. For example, there are approximately six miles of existing Class I bike paths under the County's jurisdiction travelling along the Kearney Frontage Road from Brawley Avenue to Kearney Park, the Belmont Trail that travels along the McKenzie Avenue alignment from Willow Avenue to Clovis Avenue, and the Van Ness Trail that travels along the west side of Van Ness Avenue from Keats Avenue to Herndon Avenue.

EXISTING CONDITIONS

Fresno County has a variety of recreational opportunities that are both scenic and functional and involve significant natural resources. The county contains regional parks, State and national parks, national forests, wilderness areas, ecological reserves, and other resources. The primary responsibility for development and maintenance of the County park system lies with the County Resources/Parks Division.

PARKS AND RECREATIONAL FACILITIES

The primary responsibility of the Fresno County Parks Division is to provide, develop, and maintain regional parks and landscaped areas. Regional recreational facilities maintained by the division include eight developed and three undeveloped park sites, two fishing access areas, and one boat launching ramp. These areas are used for a variety of activities, such as picnicking, fishing, hiking, jogging, bird watching, nature study, non-organized sports, barbecues, softball, soccer, overnight camping, and passive recreation. County parks include 1,578 acres of parkland that are available for recreation by county residents.

Fresno County does not own or operate any public golf courses, but privately owned golf courses occur throughout the unincorporated county. The County does not provide or manage any organized sports, education, or special events or programs. County Parks Division staff maintain the County's park and recreation facilities and include 23 full-time park maintenance employees (including three park supervisors, two maintenance employees, 15 parks grounds keepers, and three tree trimmers) and between 15 to 20 seasonal employees.

In addition to County park facilities, Fresno County residents have access to many other recreational opportunities in State and federally operated parks, forest lands, and recreational facilities associated with dams, reservoirs, and reserves. Some of these parks include the Sierra National Forest, Sequoia National Forest, Sequoia National Park, and Kings Canyon National Park Many of these facilities, listed in Table 7-16, are internationally recognized national park and wilderness areas, and attract national and international visitors. Figure 7-11 offers a map of the park and recreation facilities in the area.

TABLE 7-16
PARK AND RECREATION FACILITIES IN UNINCORPORATED FRESNO COUNTY

Facility[1]	Acres	Amenities
Avocado Lake Park *Established in 1957 when Fresno County signed a lease with the Wildlife Conservation Board.*	210	Day-use facility Picnic facilities, including group picnic (reservation) areas Playground Swimming and fishing 83-acre fishing lake Boat launch ramp
Choinumni Park *Purchased by Fresno County in 1971 with acquisition and development funds from the 1964 State Park Bond Act and Federal Land and Water Conservation Act.*	170	Day-use area Picnic facilities, including two group picnic areas 75 overnight camp sites One group camping area

TABLE 7-16 PARK AND RECREATION FACILITIES IN UNINCORPORATED FRESNO COUNTY		
Facility[1]	**Acres**	**Amenities**
		Picnic sites Hiking trails Trailer dump station Fishing access
Courthouse Park *In downtown Fresno, this park is the site of the County Courthouse, a core of community activity since the 1870s*	19.8	Historic park connected to courthouse, facilities for events, formal gardens with public art
Kearney Park *Became the first County park in 1949 with the signing of an agreement with the Regents of the University of California.*	225	Day-use and picnic facilities, including group reservation areas Sports facilities, including soccer fields, horseshoe pits, softball fields, and playground areas Kearney Mansion historic building Disc golf course War Dad's Memorial
Laton-Kingston Park *County purchased the site in 1969; former site of the town of Kingston, the park is on the Kings River near the site of a former toll bridge.*	103	Picnic facilities, including three group picnic areas with shelters Soccer fields Swimming in Kings River and beach area
Los Gatos Creek Park *Purchased by the County in 1961; was the former site of a nearby Native American village and parks of El Camino Viejo between Los Angeles and San Francisco.*	50	Day use Large group picnic area Baseball field
Lost Lake Recreation Area *Established in 1959 with an agreement with the State Wildlife Conservation Board. In 1959 additional acres were purchased for this San Joaquin River park. Two miles below the Friant Dam*	438	Day use area and picnic facilities with shelters, including group areas 70-acre nature study area 38-acre lake Beach volleyball complex Fishing Hiking Bird watching Softball field 37-site campground

TABLE 7-16 PARK AND RECREATION FACILITIES IN UNINCORPORATED FRESNO COUNTY		
Facility[1]	**Acres**	**Amenities**
		Trailer dump station
Skaggs Bridge Park *Located on the San Joaquin River near SR 145, once a steam paddleboat stop. Acquired in 1974.*	18.13	Day use and picnic facilities Fishing Swimming Playgrounds
Winton Park *Originally developed by the Fresno County Sportsmen's Club in 1954 with a lease from the BLM. Acquired by the County in 1961.*	42	Day-use and picnic facilities Fishing Walking Trail
Fishing Access	**Acres**	**Amenities**
Pine Flat Handicap Fishing Access *Developed with the help of the Kings River Conservancy, located on the USACE-operated Pine Flat Reservoir.*	3.5	Picnic areas and Fishing access
Three Rocks Fishing Access	n/a	Picnic areas Fishing access to California Aqueduct
Undeveloped Parks	**Acres**	**Amenities**
China Creek Park *Creek Park is 120 acres of Valley Oak woodlands and savanna located in the Kings River floodplain near Centerville off SR 180. This is an undeveloped Fresno County Park that resembles the local area before settlement in the mid to late 1800's. Among its many features are huge Valley Oak trees, some estimated to be over 200 years old, elderberry, rushes, lizard tail, and many other wildflowers and native plants. The creek is a historic tributary of the Kings River that is now used as an irrigation channel planted with native vegetation.*	120	Two small lakes Creek Bird sanctuary Trails
Thornburn Access Park	7.4	Park land along Kings River Picnic Area Restroom Facility
Kings River Green Belt Park	155	Grazing land and trees bordering the Kings River

TABLE 7-16
PARK AND RECREATION FACILITIES IN UNINCORPORATED FRESNO COUNTY

Facility[1]	Acres	Amenities
Boat Launch	**Acres**	**Amenities**
Shaver Lake Launch Ramp *The County leases the lunch ramp facility land from the Southern California Edison Company.*	3	Primary boat launch ramp area for the public at Shaver Lake Access to shoreline fishing Parking lot - 100 boat trailer units
Cemeteries	**Acres**	**Amenities**
Liberty/Veterans Cemetery	**5**	**Cemetery**
County Cemetery (Potters)	**5.85**	**Cemetery**
Total*	**1,575.7**	

Source: County of Fresno 2016.
** Does not include Park Circle Drive recreation facility, which measures approximately 2.76 acres*

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FIGURE 7-11 PARK AND RECREATION AREAS

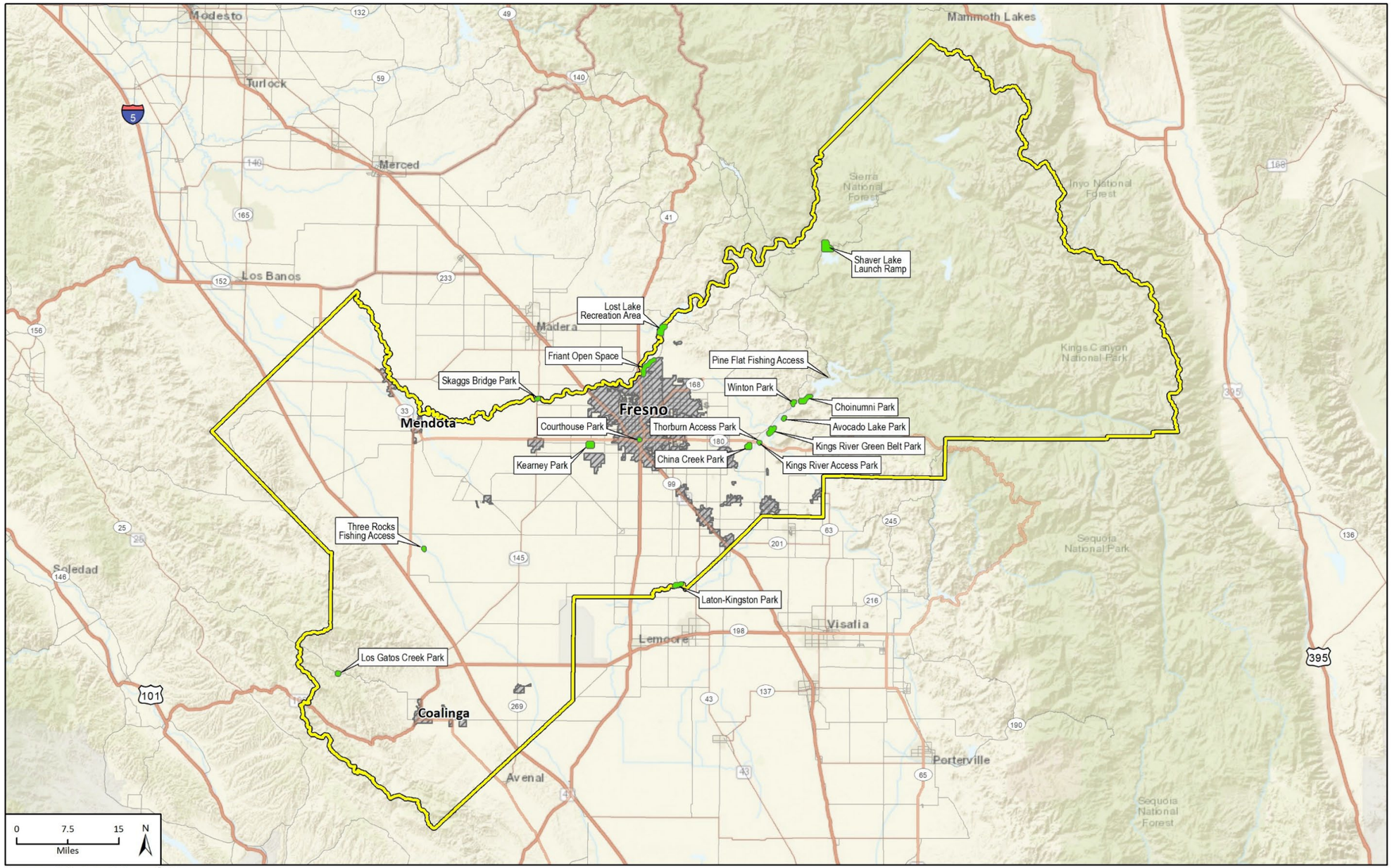

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Fig 7-11 Parks and Recreation Areas

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SAN JOAQUIN RIVER

The San Joaquin River is a principal natural feature in Fresno County and the entire San Joaquin Valley. The San Joaquin River Parkway provides major recreational facilities along the river corridor and has significant natural habitat areas. The major recreational facilities along this river include the Riverside Municipal Golf Course, the San Joaquin Country Club, the, Woodward Park, Lost Lake Regional Park, and Skaggs Bridge Regional Park. Recreational amenities include fishing, bike trails, and local elementary school playgrounds, which are open to public use after hours and on the weekends.

RECREATIONAL TRAILS

Recreational bicycle riding takes place primarily in the cities, unincorporated communities, and on rural roads and trails in the eastern section of Fresno County. While many Fresno County communities have bikeways that provide both local and regional service, pedestrian and recreational (including bicycling, equestrian, and hiking) facilities are more localized and do not form a contiguous regional system. Recreational trails are designed primarily for the recreational use of bicyclists, pedestrians, or equestrians, or any combination thereof. They are intended to be primarily off-street facilities, although some recreational trails designed for bicycle use only may be on-street bikeways. There are approximately six miles of Class I bike paths, 86 miles of existing Class II bike lanes, and approximately one mile of an existing Class III bike route.

REGULATORY SETTING

STATE

CA Government Code Sections 65560–65568- Open Space Lands. This section of California planning law defines open space and requires cities and counties to prepare and carry out open space plans, along with state and regional open space plans, to accomplish the objectives of a comprehensive open space program as a required element of its General Plan. Building permits, subdivision approvals, and zoning ordinance approvals must be consistent with the local open space plan.

Section 5076, Public Resources Code. Open-Space Elements and Trail Considerations. This law requires that during development of the General Plan, counties shall consider trail-oriented recreational use and shall consider such demands in developing specific open-space programs. Further, cities shall consider the feasibility of integrating their trail routes with appropriate segments of the State system.

Section 66477, Government Code, Subdivision Map Act (Quimby Act). This law authorizes local jurisdictions to require the dedication of land and/or the payment of in-lieu fees, or a combination of both, for park or recreational purposes. The required land dedication and/or fees are based on the residential density, parkland cost, and other factors. Land dedicated and fees collected pursuant to the Quimby Act may only be used for the purpose of developing new or rehabilitating existing neighborhood park or community park or recreational facilities to serve the subdivision. The maximum land dedication and/or fee allowed under current State law is equivalent to providing three acres of parkland per 1,000 persons, unless the park acreage of a municipality exceeds that standard, in which case the maximum dedication is five acres per 1,000 residents.

REGIONAL

SAN JOAQUIN RIVER PARKWAY MASTER PLAN

The San Joaquin River Parkway Master Plan was adopted for the San Joaquin River Conservancy Governing Board on July 20, 2000. The State Legislature passed Assembly Bill No. 3121, which provided funds for a San Joaquin River Parkway Task Force to seek community participation in the planning process to develop a plan based on general goals described in the legislation. Task Force members included representatives of state and local governmental agencies and various organizations with interest in the river and effects of the parkway. Through additional state legislation, the San Joaquin River Conservancy was created to serve as a managing entity for and to promote and establish the proposed Parkway. The Parkway Plan area includes portions of Fresno and Madera County and the City of Fresno, and is approximately 23 miles long, from river mile 267.6 at the face Friant Dam to SR 99 at river mile 243.2 on both sides of the river. Approximately 2,900 acres of the estimated total acres (including 1,950 acres in Fresno County) that are not publicly owned or operated and are in the general Parkway area may be sought in the future for acquisition by the Conservancy for public use as recreation areas, trail corridors, or other natural reserves. The Parkway plan is intended to further the process of carrying out the policies and meeting the goals of the County's General Plan.

FRESNO COUNTY REGIONAL BICYCLE AND RECREATIONAL TRAILS MASTER PLAN

The Fresno County Board of Supervisors adopted the Fresno County Regional Bicycle and Recreational Trails Master Plan on September 24, 2013. The Plan was created through the coordinated efforts of the Fresno County Department of Public Works and Planning, the Council of Fresno County Governments, the Fresno Cycling Club, the City of Fresno Bicycle Pedestrian Advisory Committee, various government and non-profit agencies, and citizens interested in improving the bicycling environment in Fresno County. The purpose of the Plan is to meet the requirements of the 2006 Measure "C" Transportation Sales Tax Extension, Local Transportation Program by adding recreational trails to the plan. The County of Fresno, Department of Public Works and Planning, Design Division, is responsible for implementing the plan and is currently in the process of updating the plan.

LOCAL

FRESNO COUNTY GENERAL PLAN

The Open Space and Conservation Element is concerned with protecting and preserving natural resources, preserving open space areas, managing the production of commodity resources, protecting and enhancing cultural resources, and providing recreational opportunities. The Open Space and Conservation Element sets out goals, policies, and implementation measures under three main headings: Productive Resources, Natural Resources, and Recreation and Cultural Resources. Policies under Parks and Recreation seek to enhance recreational opportunities in the county by encouraging the further development of public and private recreation lands and requiring development to help fund additional parks and recreation facilities. Recreational trail policies seek to enhance recreational opportunities in the county by encouraging the development of a countywide trail system of hiking, riding, bicycling trails and paths suitable for active recreation and transportation and circulation. Key recreation policies include:

- To support the policies of the San Joaquin River Parkway Master Plan and protect the River as an aquatic habitat, a recreational amenity, an aesthetic resource, and a water source
- To support the management of riparian and plant communities for passive recreation
- To promote the continued and expanded use of national forest, national park, and other recreational areas to meet the recreational needs of County residents
- To strive to maintain a standard of 5 to 8 acres of County-owned improved parkland per 1,000 residents in the unincorporated areas
- To consider the use of existing entities or the creation of a district to generate funds for the acquisition and development of parkland
- To encourage the development of parks near public facilities (i.e., schools, community halls, libraries, and museums) and encourage joint-use agreements whenever possible
- To develop recreation plans for recreation corridors (e.g., Kings River and the Friant-Millerton area)
- To develop a countywide Recreational Trail Master Plan and coordinate development of the Plan with the San Joaquin River Conservancy
- To encourage the preservation or advance acquisition of desirable trail routes (e.g., linear open space along rail corridors)

KEY TERMS

Active Recreation. A mix of recreation uses that involve some form of built infrastructure or constructed facilities, such as athletic fields, concession stands, golf courses, tennis or basketball courts, baseball fields, children's playgrounds, dog parks, or paved bike paths. (Section 7.7)

Class I Bikeway (Bike Path). Facilities with exclusive right of way, with cross flows by vehicles minimized. Unless adjacent to an adequate pedestrian facility, Class I bikeways are for the exclusive use of bicycles and pedestrians, therefore any facility serving pedestrians must meet accessibility requirements. (Section 7.7)

Class II Bikeway (Bike Lane). Bike lanes are established along streets in corridors where there is significant bicycle demand, and to accommodate bicyclists through corridors where insufficient room exists for side-by-side sharing of existing streets by motorists and cyclists. (Section 7.7)

Class III Bikeway (Bike Route). Provides for shared use with pedestrian or motor vehicle traffic, which are established by placing bike route signs along roadways. Additional enhancement of Class II facilities can be provided by adding shared roadway markings along the route. (Section 7.7)

Commercial Recreation Facilities. Facilities serving recreational needs but operated for private profit (e.g., riding stables, tourist attractions, and amusement parks). (Section 7.7)

Local Open Space Plan. The open-space element of a county or city general plan adopted by the board or council, either as the local open-space plan or as the interim local open-space plan. (Section 7.7)

Open Space Land. Any parcel or area of land or water that is essentially unimproved and devoted to an open space use for the purposes of: 1) the preservation of natural resources; 2) the managed production of resources; 3) outdoor recreation; or 4) public health and safety. (Section 7.7)

Passive Recreation. A mix of non-motorized or non-consumptive recreational uses, such as wildlife viewing, hiking, biking, and canoeing that typically occur on undeveloped or minimally-improved lands. (Section 7.7)

Recreational Area. Any public or private open space set aside for, or primarily oriented to, recreational use. This includes parks and community centers. (Section 7.7)

Wilderness Area. A natural environment that has not been significantly altered/modified by human activity. They are typically undisturbed wild natural areas that do not have developed roads or other types of infrastructure. (Section 7.7)

REFERENCES

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SECTION 7.8 MINERAL RESOURCES

INTRODUCTION

This section summarizes the mineral resources and aggregates found in the County of Fresno. Oil and gas resources are addressed in Section 7.9, Energy.

MAJOR FINDINGS

- Important aggregate (mineral) resources used in construction exist in Fresno County in two locations along the San Joaquin River Resource Area and the Kings River Resource Area.

EXISTING CONDITIONS

California geology is separated into 11 general geomorphic provinces or regions. Fresno County is primarily located in the Great Valley and Sierra Nevada Geomorphic provinces. The Great Valley Province is a broad alluvial plan, extending from the northern part of the Sacramento Valley to the southern part of the San Joaquin Valley. This province is approximately 50 miles wide and 400 miles long. The county is in the San Joaquin Valley section of this province. The western portion of the county extends through this province to the eastern section of the Ranges Geomorphic Province.

The Great Valley Province is a trough in which sedimentation has occurred since the Jurassic Period (about 208 to 144 million years ago). Most of the sedimentation in the Great Valley Province, however, occurred in the Cenozoic Era (beginning 65 million years ago). Sediments in the San Joaquin Valley are generally of two types: the upper sediments range from the recent Holocene Epoch to Oligocene Epoch (37 to 24 million years ago); the lower sediments are composed of marine rocks of the Pliocene Epoch (5.3 to 1.6 million years ago) to Eocene Epoch (58 to 37 million years ago). These sediments average approximately 2,400 feet in thickness in the Great Valley Province, but the deepest deposits in the San Joaquin Valley can be more than 9,000 feet thick in portions of the Tulare Basin, which is partly located in Fresno County.

The Sierra Nevada Geomorphic Province parallels the western side of the Great Valley Geomorphic Province and is a tilted fault block formed by historical tectonic plate action. This province is also approximately 400 miles long. The eastern portion of the county extends into this province, where the province is characterized by high, rugged scarp, while the western side tends to have gentler slopes, averaging about two degrees. Deep river canyons along the western slope cut this province. Many of these rivers form large alluvial fans as they leave the mountainous area of the Sierra Nevada Province and enter the flat, level terrain of the Great Valley Province. The most notable in the Fresno County region are the alluvial fans of the San Joaquin River and the Kings River.

Historically, Fresno County is known for being mineral rich with abundant aggregate resources and high value commodities such as granite and marble, oil, coal, and gold, silver, copper, mercury, and asbestos. Fresno County has 623 records of mineral resource sites including extraction mines, processing facilities, and known mineral deposit occurrences. The San Joaquin River Resource Area is on the northern county line of Fresno and Madera counties, and is part of the alluvial materials from the San Joaquin River. It covers an estimated 4,271 acres; the California Geologic Survey identified aggregate resources in this area as being MRZ-1 and MRZ–2. This resource area extends from the Lost Lake Recreation Area to the

Riverside Municipal Golf Course, approximately 15 miles. The San Joaquin River Resource Area averages about 0.5 miles along its width. This resource area generally follows the historical floodplain of the San Joaquin River. The Kings River Resource Area is an alluvial fan that underlies the county. This resource area covers an estimated 16,380 acres and is designated as MRZ-2. These classifications are discussed in detail below (U.S. Geologic Survey 2016).

MINERAL RESOURCE ZONES

The State Department of Conservation, Division of Mines and Geology classifies Mineral Resource Zones in order to map areas throughout the state that contain regionally significant mineral resources. Mineral Resource Zones (MRZ) are defined as follows:

- MRZ-1 is classified as an area where adequate information indicates there are no significant mineral deposits present, or where there is little likelihood for mineral deposit presence.
- MRZ-2 is classified as an area with adequate information indicating significant mineral deposits are present and or a high likelihood for mineral deposit presence.
- MRZ-3 is classified as an area of undetermined mineral resource significance based on available data which may suggest or infer mineral occurrence.
- MRZ-4 is classified as an area of unknown mineral resource significance or no known mineral occurrence.

In Fresno County, the land parcels parallel to the San Joaquin River and Kings River are mapped as Mineral Resource Zone 2 (MRZ-2), which means mineral resources are present and available in this area. While both areas contain MRZ-2 deposits, the San Joaquin River Resource Area also contains MRZ-1 deposits primarily surveyed in the western side of Fresno County. All remaining areas surveyed were classified as MRZ-3 (County of Fresno 2010). Figure 7-12 provides a map of the MRZ-2 mineral resource deposit zones.

MINERAL RESOURCE AVAILABILITY

According to the U.S. Bureau of Mines Minerals Availability System and the USGS Mineral Resources Data System, 623 records of mineral resources documented within Fresno County. Of these 623 records, 190 are identified as "Occurrences," 165 are locations of past production identified as "Past Producers," 93 sites are productive and identified as "Producers," 43 are identified as "Prospect," and 132 have an unknown development status.

A variety of mineral resources found in Fresno County, listed below. Aggregate resources and chromium are the two primary mineral resources mined today. Demand for tungsten is on the rise because of its durability and wide range of uses and its mining may increase in the future.

- Aggregate Resources (sand, gravel, stone)
- Asbestos
- Barium-Barite
- Beryllium
- Bismuth
- Calcium
- Chromite
- Chromium
- Clay
- Copper
- Diatomite
- Dimension
- Emery
- Feldspar
- Fuller's Earth

- Gemstone
- Gravel
- Iridium
- Lead
- Magnesite
- Mica
- Palladium
- Phosphates
- Quartz
- Sand
- Tungsten
- Zinc
- Gold
- Gypsum
- Iron
- Limestone
- Manganese
- Molybdenum
- Petroleum resources
- Platinum
- Rhodium
- Silver
- Tin
- Granite
- Gypsum-Anhydrite
- Kyanite
- Marble
- Mercury
- Metals and other minerals
- Phosphorus
- Pumice
- Ruthenium
- Stone, crushed/broken
- Uranium

The current mineral resource extraction site producers are listed in Table 7-17 and the mineral resource producers and occurrences are shown in Figure 7-13.

TABLE 7-17
CURRENT MINERAL RESOURCE SITES AND STATUS, FRESNO COUNTY

Site Name	Commodity	Development Status / Operation Type / Reporter year	Land Ownership Category, Year
Raymond Quarry Plant No.2	Granite (primary)	Producer/ Surface 1980	unknown
Rockfield Pit & Mill, Plant #124	Sand and Gravel, Construction (primary)	Producer/ Surface 1983	unknown
River Rock Pit	Sand and Gravel, Construction (primary)	Producer/ Surface 1991	1991 / Calmat of Central California
River Rock Pit and Mill	Sand and Gravel, Construction (primary)	Producer/ Surface 1979	1979/ unknown
Pinedale Rock Co. Pit	Gold (secondary), Silver (Secondary), Sand and Gravel, Construction (primary)	Past Producer/ Surface 1993	Industrial Asphalt, Inc, 1963
Sanger Rock and Sand Co.	Sand and Gravel, Construction (primary)	Producer/ Surface 1990	2012/ Calmat Company
Central Rock and Sand Co.	Sand and Gravel, Construction (primary)	Unknown/ Surface 1983	unknown
Central Valley Ready Mix	Sand and Gravel, Construction (primary)	Producer/ Surface 1983	unknown

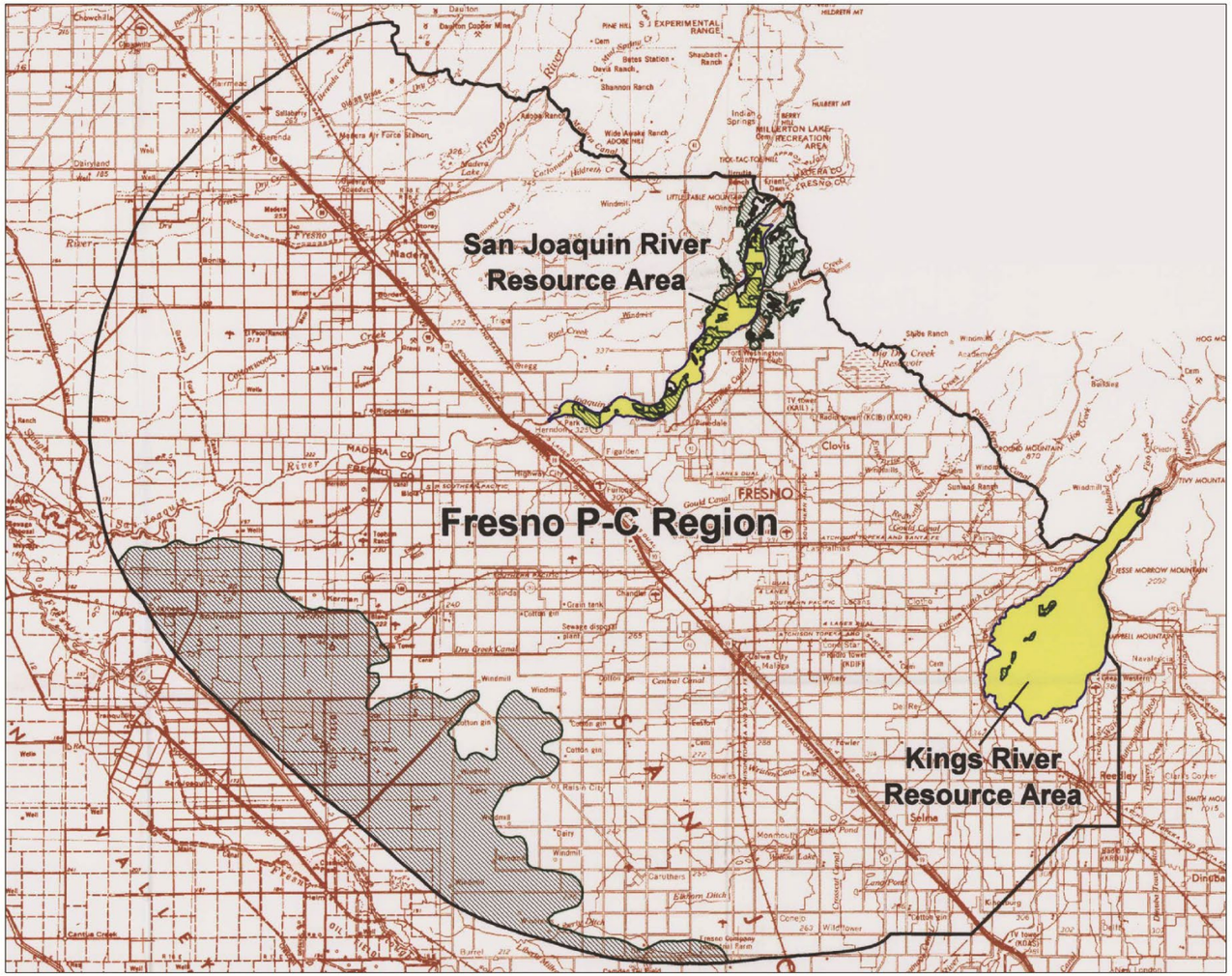
TABLE 7-17 CURRENT MINERAL RESOURCE SITES AND STATUS, FRESNO COUNTY			
Mendota Plant	Calcium (primary)	Producer/ Processing Plant 1983	1981/ Spreckels Sugar Division, Amstar Corp.
Coalinga Pit	Sand and Gravel, Construction (primary)	Producer/ Surface 1990	1981, 1990/ Granite Construction Co.
Coalinga Mine	Gypsum-Anhydrite (primary)	Occurrence 1983	unknown
Coalinga Asbestos	Asbestos	Past Producer/ Surface 1994	unknown

Source: USGS 2016

AGGREGATE RESOURCES

Fresno County's mineral rich history and rapid rates of extraction made it a leading producer of mineral and aggregate resources, which resulted in an imbalance between local supply and the demand for materials. According to the California Geological Survey Department of Conservation's *Aggregate Sustainability in California* (2018), the Fresno region does not have enough supply to meet the current demand with existing aggregate resources that are permitted for extraction. CGS estimated the 50-year demand for aggregate resources at 556 million tons of aggregate, but only 305 million tons were permitted for extraction, leaving 251 million tons of unmet demand for aggregate. The county is one of four regions in California faced with limited, permitted aggregate reserves. Two primary areas are identified as target aggregate resource areas in the county: the San Joaquin River Resource Area (extends generally from just southwest of the Friant Dam to Herndon), and the Kings River Resource Area (extends to the east and northeast of Sanger).

FIGURE 7-12 MINERAL RESOURCE ZONES



MRZ-1
Areas where adequat 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 adequat information indicates that significant mineral deposits are present, or where it is judged that a high likelihood for their presence exists.

MRZ-3
Areas containing mineral deposits, the significance of which cannot be evaluated from available data.

Source: Department of Conservation, Division of Mines and Geology, 1999.

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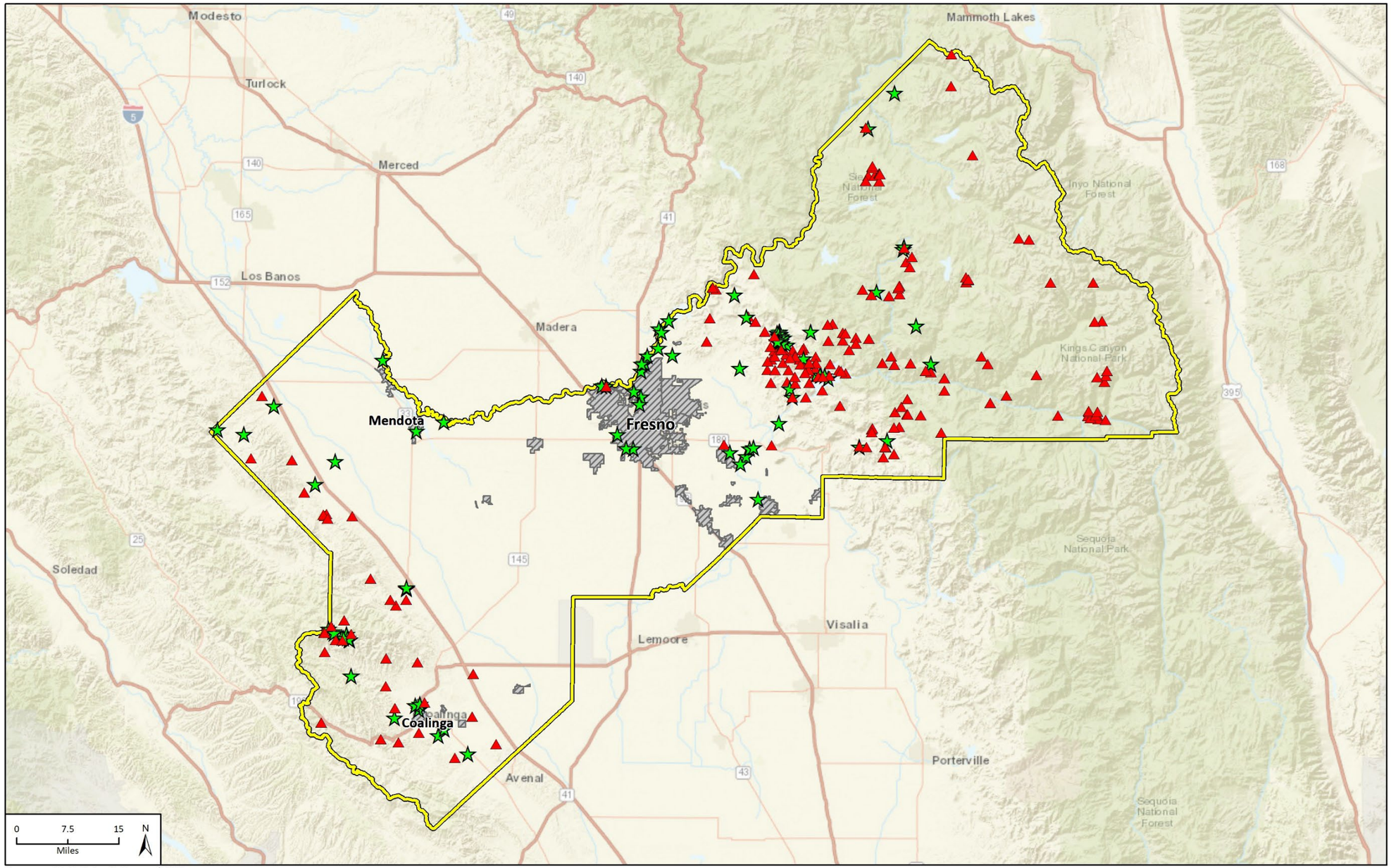
FIGURE 7-13 MINERAL RESOURCES AND PRODUCERS IN FRESNO COUNTY



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Additional data provided by U.S. Geological Survey, 2011.

Fig 7-15 Mineral Resources and Producers

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REGULATORY SETTING

This section describes the regulatory framework related to the extraction and processing of mineral resources in Fresno County.

FEDERAL

***U.S. Department of the Interior's Minerals Availability System*:** Identifies between 15-17 rare Earth minerals as critical resources for United States Department of Defense (DOD) applications or resources which are critical to national security. It recommends the development of a comprehensive approach to help ensure a secure supply of each resource and identifies risks as well as timeframes for actions.

STATE

SURFACE MINING AND RECLAMATION ACT OF 1975 (SMARA)

SMARA requires the California State Geologist to classify land based on criteria such as the presence of absence of significant mineral deposits located within areas subject to urban expansion or land uses which are incompatible with mining. It encourages the production, conservation, and protection of California's mineral resources and requires that the State Mining and Geology Board map areas throughout the state that contain regionally significant mineral resources, such as the MRZ-2 areas in Fresno County.

LOCAL

***Fresno County General Plan*.** The 2000 Fresno County General Plan, specifically the Open Space and Conservation Element contains goals and policies aimed to protect and enhance mineral resources. Policies OS-1 through OS-11 are intended to ensure that land uses adjacent to mineral areas or operations are compatible such that impacts to the mineral resource or impacts associated with mineral resource recovery to adjacent land uses is minimized.

***San Joaquin River Parkway Master Plan*.** The San Joaquin Regional Parkway Plan is a regional resource management plan for the San Joaquin River. The Parkway Plan contains several mineral resources goals and objectives that support the Parkway purposes.

KEY TERMS

Aggregate. A mineral resource formed by the conjunction or collection of particles into a whole mass or sum (Section 7.8)

Mineral Resource Zones. A classification of State lands into four geographic zones: 1) areas of no mineral resource significance (MRZ-1); 2) areas of identified mineral resources significance (MRZ-2); 3) areas of undetermined mineral resource significance (MRZ-3); and areas of unknown mineral resources potential (MRZ-4). (Section 7.8)

Occurrence. Ore mineralization in outcrop, shallow pit or pits, or isolated drill hole. Grade, tonnage, and extent of mineralization essentially unknown. No production has taken place and there has been no or little activity since discovery with the possible exception of routine claim maintenance. (Section 7.8)

Prospect. A deposit that has gone beyond the occurrence stage. That is subsequent work such as surface trenching, adits, or shafts, drill holes, extensive geophysics, geochemistry, and/or geologic mapping has been carried out. Enough work has been done to at least estimate grade and tonnage. The deposits may or may not have undergone feasibility studies that would lead to a decision on going into production. (Section 7.8)

Producer. A mine in production at the time the data was entered. An intermittent producer that produces on demand or seasonally with variable lengths of inactivity is considered a producer. (Section 7.8)

Past Producer. A mine formerly operating that has closed, where the equipment or structures may have been removed or abandoned. (Section 7.8)

Plant. A processing plant (smelter, refiner, beneficiation, etc.) that may or may not be currently producing at the time of data entry. A plant will have no geological information associated with it. (Section 7.8)

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SECTION 7.9 ENERGY RESOURCES

INTRODUCTION

Fresno County relies on a variety of renewable resources, such as solar and hydropower, and non-renewable (oil and natural gas) energy sources to meet the local, regional, and statewide demand for energy. This section outlines the various types of energy produced in Fresno County, their production capacities, and applications.

MAJOR FINDINGS

- Fresno County has a rich history of oil and gas recovery operations, primarily in the western portion of the county, as half the county overlies the Monterey Shale formation and its significant oil reserves. Operations for extraction of these resources are anticipated to continue in the future and existing regulations and County-wide policies minimizing conflicts with adjacent land uses should continue to be a priority.
- Renewable energy production, primarily solar energy, has increased dramatically in Fresno County in the last 20 years, as the demand for renewable energy to replace non-renewable energy sources has been spurred by federal, state, and local regulations and public request.
- There are currently 57 solar power plants and in 2019 the County received hundreds of applications for permits for solar facilities (including small scale residential, and larger commercial and industrial facilities).
- With the increase in demand for renewable energy, and the need for additional facilities to accommodate the demand, land use compatibility and conflicts between such facilities and adjacent uses must be considered as part of land use planning process.

EXISTING CONDITIONS

NON-RENEWABLE ENERGY SOURCES

This section describes non-renewable forms of energy and fuel production facilities in Fresno County.

OIL AND GAS

Oil production has a rich history in Fresno County, particularly in the Coalinga area in western Fresno County. Extensive oil recovery operations occur mostly to the north of Coalinga. Natural gas and natural gas liquids occur in oil sands or with oil in an overlying gas cap, or as dry gas in separate zones in oilfields and in gas fields. Approximately half of Fresno County overlies the Monterey Shale formation, which contains significant oil reserves. According to the California Department of Conservation's Geologic Energy Management Division (CalGEM), oil fields tapping into the Monterey Shale formation produced 5.6 million barrels of oil in 2013 and 509.4 cubic feet of gas, ranking Fresno County as the sixth highest producer of oil production in California.

In Fresno County, oil and gas production resulted in 497,200 barrels of oil and 49,700 million cubic feet of gas from 1,686 producing wells operated by 19 operators. In 2014, the Coalinga oil field at the western edge of Fresno County, produced 6.1 million barrels of oil and 252 trillion cubic feet of gas. This oil field

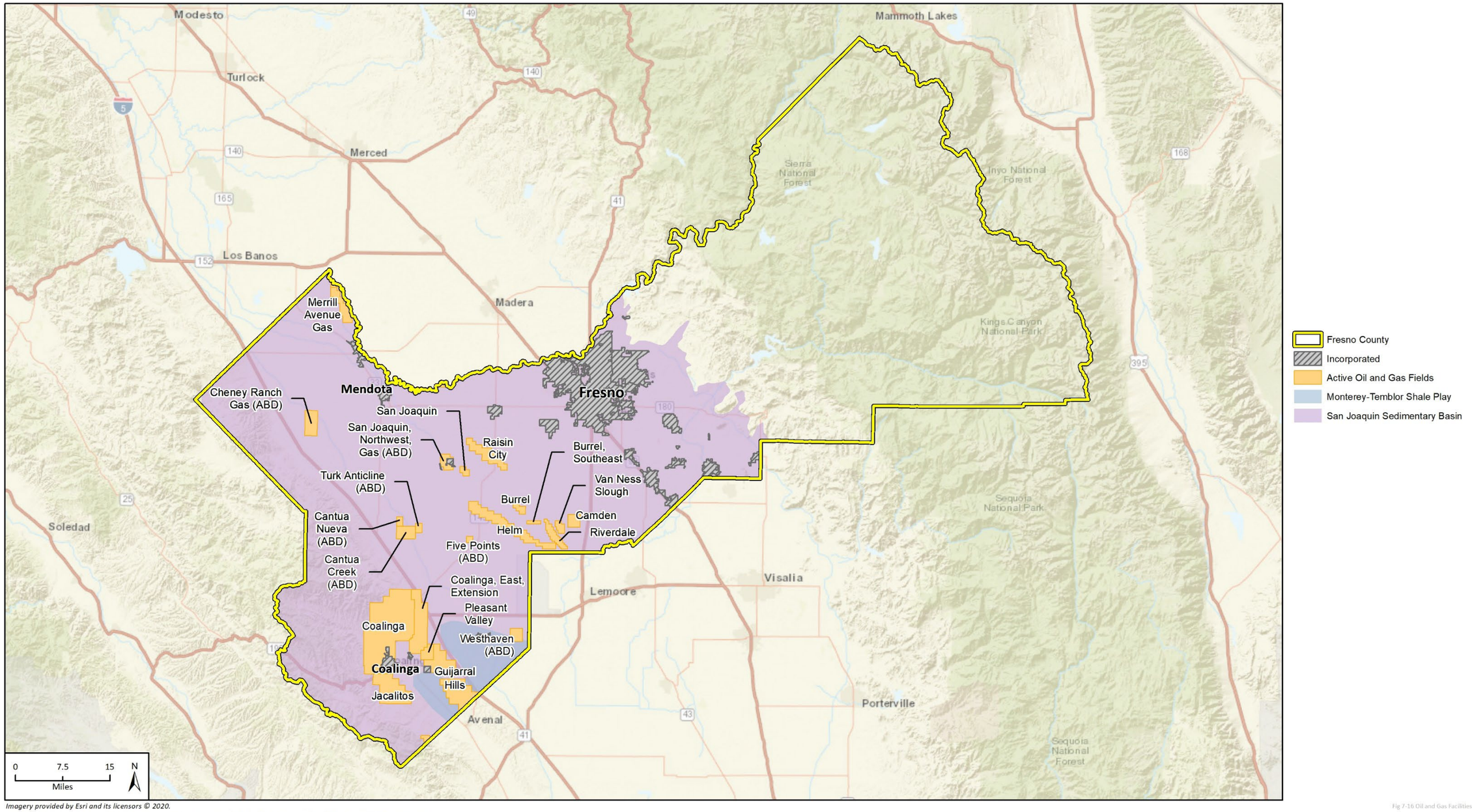
is the largest oil field in the county and produces the bulk of Fresno County's oil and gas energy resources. Other nearby oilfields include Raisin City, Riverdale, and Helm. Figure 7-14 illustrates the locations of the oilfields and the Monterey Shale formation in Fresno County. Table 7-18 illustrates the top 20 oil and gas producing companies with data from September 2015 which shows the total production for 1,867 total active wells in Fresno County.

TABLE 7-18
TOP PRODUCING OIL AND GAS WELLS OPERATING IN SEPTEMBER 2015

Operator Name	Oil Barrels produced (BBLS)	Gas Produced (MCF)	# of Active Wells
Aera Energy LLC	216,420	19,480	802
C. Case Company	1,633	1,569	5
Cal Energy Company	33	0	9
Cases' Used Equipment	488	260	4
Chambers & Mouren	1,135	0	4
Chevron U.S.A. Inc.	355,527	98	715
Crimson Resource MGMT. Corp.	873	330	5
First Oil And Gas Company	175	0	25
H.T. Olsen Oil & Gas Operations	428	0	6
Holmes Western Oil Corp.	13,574	0	85
James S. Anderson	1,067	0	19
Kelpetro Operating, Inc.	905	0	5
New Opportunity Exploration, Inc.	311	0	1
Reef Ridge Energy Company LLC	107	2	1
Seneca Resources Corp.	23,299	0	131
The Termo Co.	2,570	713	1
Vintage Production California LLC	1,288	2,554	4
West American Energy Corporation	136	58	3
West Side Rentals	18	0	1
White Knight Production LLC	15,010	13,476	41
Total	***614,997***	***38,540***	***1,867***

Source: Drilling Edge 2016
BBLS = barrels
MCF = million cubic feet

FIGURE 7-14 OIL AND GAS FACILITIES



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Additional data provided by California Department of Conservation, 2020 and U.S. Energy Information Administration, 2011, 2015.

Fig 7-16 Oil and Gas Facilities

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NATURAL GAS FACILITIES

Natural gas and natural gas liquids are extracted from the same general fields as oil production operations. Beyond this source, two natural gas power plants operate in Fresno County: Midway and Malaga. The Midway plant is located in the western part of Fresno County in Firebaugh, near Interstate 5 and has a capacity of 120 megawatts (MW) (Starwood 2020). The Malaga Plant, located near the community of Malaga between Highway 99 and SR 180, has a capacity of 96 MW (NAES Corporation 2020).

RENEWABLE AND ALTERNATIVE ENERGY

SOLAR

The United States generated approximately 4.1 trillion kilowatt hours (net) of electricity in 2019, with solar power contributing 0.4 percent of the total energy produced for the country (U.S. Energy Information Administration 2020). In 2019, the Solar Energy Industries Association reported 27,400 megawatts of solar capacity installed in California alone, providing 31 percent of the state's renewable energy generation. This energy was generated by approximately 748 operating solar power plants that produced 28,463 gigawatt hours of energy. Fresno County has 57 solar power plants with a production capacity of up to approximately 175 megawatts (as shown in Table 7-19, CEC 202). There are 19,735 total records for solar contracts in Fresno County from 2002-2015.

In 2019 there were approximately 57 commercial solar facilities installed and operating in in Fresno County; thousands more were installed and operational at residential, government, and commercial facilities. Figure 7-15 presents the solar projects for the last five years in Fresno County. Of these systems, there were 5,879 residential solar applications completed, 66 completed commercial applications, 23 industrial facilities, two non-profits, one educational facility, and one "other government" application completed. Completed solar applications 2015 increased 24 percent compared to 2014. Compared to 2010, the amount of completed applications in 2015 increased 85 percent.

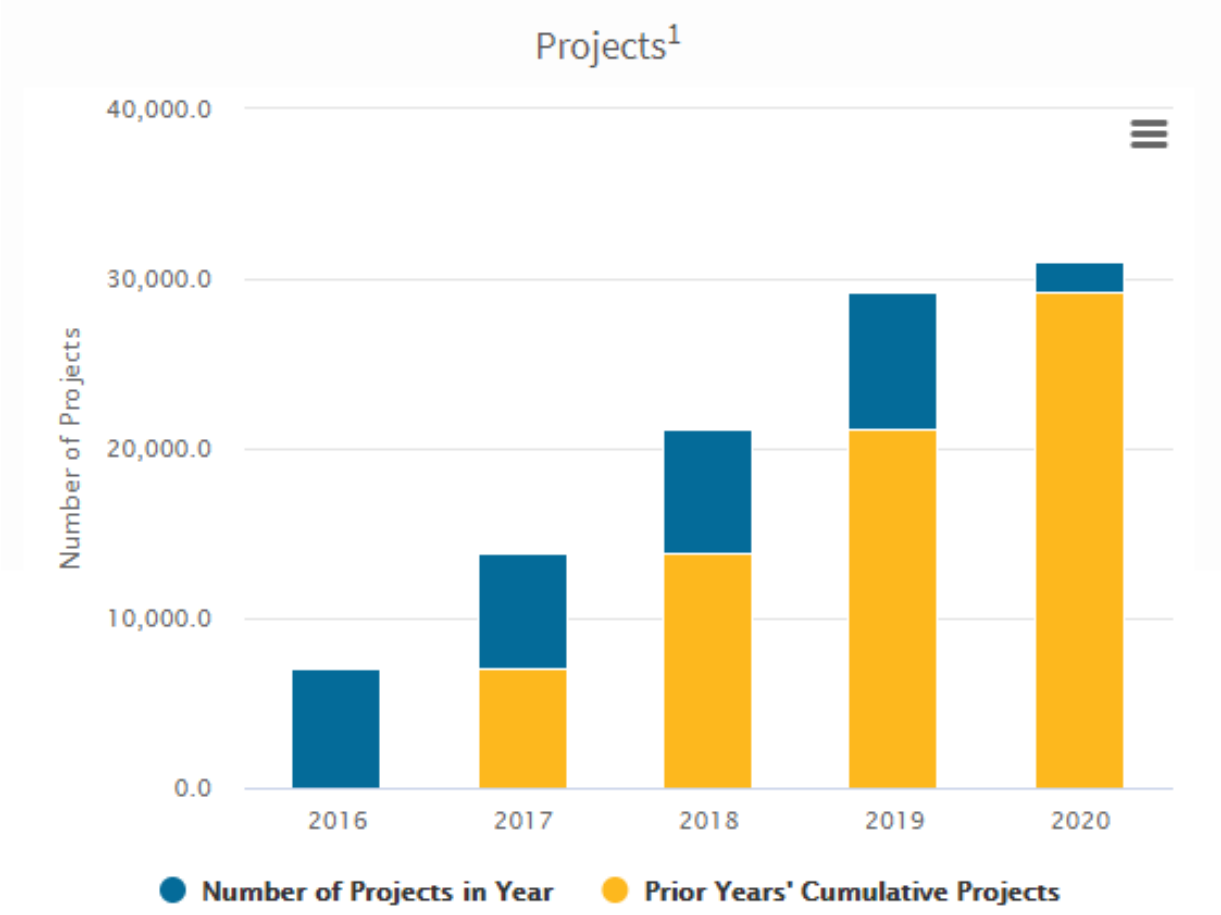
TABLE 7-19
SOLAR POWER PLANTS, FRESNO COUNTY

Plant Name	Megawatt Production	Year Online
San Joaquin Solar 1 & 2	106.8	2008
Pleasant Valley State Prison	1.22	2014
Coalinga State Hospital (single-source operation for on-site power)	2	2014
West Gates Solar Station	10	2013
Los Gatos Tomato Products (single-source operation for on-site power)	1	2012
Huron Solar Station	20	2012
Gates Solar Station	20	2013
Westlands Solar Farm	18	2014
Oro Loma 1	20	2017

TABLE 7-19 SOLAR POWER PLANTS, FRESNO COUNTY		
Plant Name	**Megawatt Production**	**Year Online**
Oro Loma 2	10	2017
CalRENEW-1	5	2010
North Star Solar	61.6	2015
Citizen Solar B	5	2015
Kerman Photovoltaic	0.5	Unknown
Golden State Vintners	1	2012
La Joya Del Sol	1.5	2012
Adams East LLC	19	2014
Tranquillity LLC	200	2016
Giffen Solar Station	10	2012
Placer Solar	20	2015
Burford Giffen	20	2017
Giffen Solar Park	20	2017
Stroud Solar Station	20	2011
Fresno Solar South	1.5	2015
Fresno Solar West	1.5	2015
Fowler Packing Company Inc. (single-source operation for on-site power)	1	2012
Kingsburg 1 & 2	3.7	2013
Cantua Solar Station	20	2012
Westside Solar Station	20	2010
Buford Five Points Solar Park (Excelsior)	60	2016
Westside 1	20	2017
Whitney Point	20	2017
Five Points Solar Station	15	2011
Jackson Michael	1	2012
George Jackson	1	2012
TOTAL PRODUCTION CAPACITY	**1,005.76**	

Source: CEC 2020

FIGURE 7-15 OIL AND GAS FACILITIES



Source: California Distributed Generation Statistics 2020
[1]Projects are grouped by Application Approved Date (Permission to Operate Date). "Projects" refer to a given interconnection address/project. Some projects contain multiple interconnection applications.

WIND

Fresno County is not an ideal location for wind-generated energy facilities. Nonetheless, two small-scale residential wind turbines are installed in Fresno County, each producing less than 100 kilowatts (KW) each (CEC 2017). One turbine is located in the northwestern portion of the County near Firebaugh, and the second is near Clovis.

It is important to note that the United States Navy has special use airspace and military training routes throughout California which includes portions of Fresno County. The Navy has noted that large-scale wind farm development has the potential to adversely affect military airspace use and operations. As such, China Lake Ranges has expressed interest in all wind farm project proposals within their RAIMORA footprint.

HYDROELECTRICTY

There are 19 hydroelectric generation facilities in Fresno County. Table 7- 20 lists the plant name and capacity of each of these facilities.

TABLE 7- 20
HYDROELECTRIC POWER PLANTS, FRESNO COUNTY

Plant Name	Online Capacity (MW)
Friant	30.57
Kings River	52
Haas	144
Balch 2	108
Balch 1	34
Pine Flat	165
Kerckhoff 1	25.2
Kerckhoff 2	155
Helms	1212
Big Creek 3	177
Portal	10
Shaver Micro 1	1
Big Creek 8	64.5
Big Creek 2	67.1
Big Creek 2A	98.5
Eastwood	199
Big Creek 1	82.9
River Outlet	2
Kings River Hydro	1

Source: CEC 2020

BIOMASS AND BIOFUEL

Biomass is non-fossilized and biodegradable organic material originating from plants, animals and micro-organisms that can be utilized for fuel. Fresno County has two operating biomass facilities: Rio Bravo Fresno and Mendota, with a capacity to generate 77.3 MW of power combined. These facilities produce energy from urban waste materials, forestry and agricultural materials, and other biomass waste such as construction wood waste, landscape tree trimmings, pallet wood, mill residue, mill chips, or other urban development tree clearing operations.

The county also has a number of biofuel production facilities that produce one or more of the following biomass-derived transportation fuels: ethanol, biodiesel, renewable diesel, rendered animal fat, or vegetable oil. Biodico Sustainable Biorefineries is a biofuel production company operates in Five Points in Fresno County, located at the old Spreckels Sugar plant site, which closed in 2008. The facility is estimated to produce 20 million gallons of biodiesel annually from all a variety of feedstocks including

sugar beets, animal fats, waste vegetable oils, algae, jatropha, and brassicas. Sugar beets have been grown in western Fresno County for more than 100 years and now they are utilized for their energy value rather than refined sugar. The Biodico facility in Fresno County also produces biogas through anaerobic digestion of liquid waste materials. This biogas is composed of approximately 50-80 percent methane and 20-50 percent carbon dioxide. The methane can be purified and compressed to replace conventional natural gas, or it can be burned directly in locally available generators or turbines for sustainable energy production.

REGULATORY SETTING

This section describes the regulatory framework related to the extraction and processing of energy resources in Fresno County.

FEDERAL

Energy Policy Act of 2005**.** The Energy Policy Act of 2005 was passed by Congress to encourage the domestic production of oil and gas, electricity, and other forms of energy. The Act clarified issues relating to the application of the Safe Drinking Water Act to hydraulic fracturing and the application of the EPA's storm water rules to oil and gas production sites (namely, that these do not apply to oil and gas construction drilling and production activities). The Energy Policy Act also included a renewable fuel program (the renewable fuel standard) which sets the minimum volumes of renewable fuels that must be used in fuel in an effort to reduce emissions of greenhouse gases. This program was expanded by the Energy Independence and Security Act (EISA) of 2007 and subsequent acts of Congress. The renewable fuel standard established targets for renewable fuel consumption, which increase yearly and requires 36 billion gallons of renewable fuels by 2022.

STATE

Department of Conservation's Division of Oil, G***as, and Geothermal Resources (CalGEM)***All California oil and gas wells (development and prospect wells), enhanced-recovery wells, water-disposal wells, service wells (i.e., structure, observation, temperature observation wells), core-holes, and gas-storage wells, onshore and offshore (within three nautical miles of the coastline), located on state and private lands, are permitted, drilled, operated, maintained, plugged and abandoned under requirements and procedures administered by CalGEM.

Public Resources Code Section 3208.1The State Oil and Gas Supervisor is authorized to order the re-abandonment of any previously plugged and abandoned oil and/or gas well when construction of any structure over or in the proximity of the well could result in a hazard. In addition, if any plugged and abandoned or unrecorded wells are damaged or uncovered during excavation or grading, the State requires specific notification and remedial plugging operations.

LOCAL

The Fresno County General Plan. The existing General Plan contains the following policies related to oil and gas facilities and operations:

- Policy OS-C.13 The County shall require a special permit for certain oil and gas activities and facilities as specifically noted in the Oil and Gas Development Matrix (Table OS-C.1) due to their potential significant adverse effects on surrounding land or land uses.
- Policy OS-C.14 The County shall permit by right small-scale oil and gas activities and facilities that can be demonstrated to not have a significant adverse effect on surrounding or adjacent land uses in an established oil and gas field, an established oil and gas field in urban areas, or non-urban areas.
- Policy OS-C.15 The County may permit oil refineries to locate within areas designated by the General Plan for industrial uses. Limited oil refining plants may be permitted to locate in non-urban areas provided: the plant is limited to only fractionating and blending operations; the plant is within an established oil and gas field or within one mile of the exterior boundary of each of two or more noncontiguous oil and gas fields; the site has access to both natural gas and crude oil transmission pipelines and a system of feeder pipelines from nearby gas and oil fields; the plant is limited to a refining capacity of 15,000 barrels of crude oil per day; and the site has been previously used for refining purposes.
- Policy OS-C.16 The County shall require manufacturing and marketing activities and facilities that serve the petroleum industry to be located in the appropriate areas designated by the General Plan.
- Policy OS-C.17 The County shall require the timely reclamation of oil and gas development sites upon termination of such activities to facilitate the conversion of the land to its primary land use as designated by the General Plan.
- Policy OS-C.18 The County shall establish procedures to ensure that exploration and recovery of mineral resources, including oil and natural gas, will occur under appropriate locational and operational standards within the Agriculture and Westside Rangeland.
- Policy OS-C.19 The County shall require non-petroleum-related discretionary projects proposed on abandoned oil fields to demonstrate that abandonment and cleanup have taken place in compliance with regulations administered by the State Division of Oil and Gas (California Public Resources Code Section 2300 et seq.) as part of the due diligence procedures.

KEY TERMS

Biomass. Non-fossilized and biodegradable organic material originating from plants, animals and micro-organisms, including products, byproducts, residues and waste from agriculture, forestry and related industries as well as the non-fossilized and biodegradable organic fractions of industrial and municipal wastes, including gases and liquids recovered from the decomposition of non-fossilized and biodegradable organic material. (Section 7.9)

Biofuel production facility. A production facility that produces one or more of the following biomass-derived transportation fuels: ethanol, biodiesel, renewable diesel, rendered animal fat, or vegetable oil. (Section 7.9)

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SECTION 7.10 CULTURAL AND PALEONTOLOGICAL RESOURCES

INTRODUCTION

This section describes the existing conditions and regulatory framework related to cultural and paleontological resources in Fresno County. The cultural resources found in Fresno County trace the rich history of settlement by Native Americans, Europeans, Mexicans, and others in the area. Remnants of these settlements as well as periods of economic and social change are reflected in the cultural resources that have been identified. Paleontological resources are generally focused on the depositional environment of the southern Central Valley. This section provides a broad review of the cultural and paleontological history of the region and provides a context for General Plan policy development as it relates to cultural and paleontological resources.

MAJOR FINDINGS

- Fresno County contains numerous historical resources, including 41 resources listed as National Register of Historic Places (NRHP), seven as California State Historical Locations (CSHL), and 13 as Points of Interest (POI). These resources include homes of important early settlers, theaters, and rail depots. Most of the NRHP resources (30) are in or near the city of Fresno.
- Additional significant or important cultural resources exist throughout Fresno County, including prehistoric and historic sites (e.g, burials, rock art, historic structures). Prehistoric and historic archaeological resources could be identified on the surface or subsurface of undeveloped areas or in the subsurface of developed areas.
- Paleontological resources have been found throughout Fresno County and include scientifically significant resources like Cretaceous mosasaurs (giant sea reptiles from the Age of Dinosaurs), Miocene horses, and Ice Age mammoths. Paleontological resources may be unearthed during future ground disturbing activities within the county.

EXISTING CONDITIONS

CULTURAL SETTING

Cultural resources comprise districts, structures, buildings, sites, areas of traditional use, or objects with historical, architectural, cultural, archaeological, or scientific importance. These resources include archaeological resources (historic and prehistoric), architectural resources (built structures), and traditional cultural properties (properties important to Native American groups for ancestral, religious, spiritual, or traditional reasons).

PREHISTORIC CONTEXT

California has been divided into eight archaeological regions (and sub-regions therein), based on common language stock and shared cultural traditions (Moratto 1984, Rosenthal et al. 2007). Fresno County lies mainly in the Central Valley archaeological region but overlaps to the east with the Sierra Nevada region and to the west slightly with the Central Coast region. The Central Valley region extends from

approximately Shasta Lake in the north to the Tehachapi Range in the south, a distance of over 400 miles. In addition to language and culture, the prehistory of California can be understood in the context of time, and it is generally divided into three broad time periods: Paleoindian Period (ca. 11,550 - 8,550 B.C.), Archaic Period (Lower, Middle, and Upper, ca. 8,550 B.C. - A.D. 1100) and Emergent Period (A.D. 1000 - European Contact [ca. 16th century]) (Fredrickson 1973, 1974; Rosenthal et al. 2007). The prehistoric chronological sequence for the Central Valley presented below is based on Rosenthal et al. (2007) and Moratto (1984).

PALEOINDIAN PERIOD (11,550 - 8,550 B.C.)

Little is known about the Paleoindian period in the Central Valley. Geoarchaeological studies have demonstrated that erosion and deposition have buried or destroyed early archaeological deposits. Most claims of ancient human occupation have been dismissed by Moratto (1984) based on radiocarbon dating. Currently, the earliest accepted date of human occupation in the Central Valley ranges from 11,550 to 9,550 B.C. and comes from fluted projectile points similar to Clovis points found at sites near Tracy Lake and the Tulare Lake Basin (Rosenthal et al. 2007).

LOWER ARCHAIC PERIOD (8,550 – 5,550 B.C.)

Climate change at the end of the Pleistocene caused significant periods of alluvial deposition beginning around 9,050 B.C. The Lower Archaic, like the Paleoindian Period, is represented only by limited isolated finds. Only one Lower Archaic site (CA-KER-116) has been identified in the Central Valley proper, and only a few others are in the foothills surrounding the valley (Rosenthal et al. 2007).

Typical Lower Archaic artifacts include flaked stone crescents and stemmed points. The identification of projectile points and a diverse faunal assemblage at CA-KER-116 point to hunting being an important subsistence activity. Milling tools and plant remains are largely absent in the valley, thus plant use during the Lower Archaic remains unclear. Several foothill sites contain milling implements and evidence of the use of nut crops such as acorn and pine (Lajeunesse and Pryor 1996). The relationship between foothill and valley floor adaptations is largely unknown during the Lower Archaic. However, distinct adaptations are apparent in the Middle Archaic, and it is possible that these divergent traditions first emerged in the Lower Archaic (Rosenthal et al. 2007).

MIDDLE ARCHAIC PERIOD (5,550 - 550 B.C.)

The Middle Archaic began with substantial climate change to much warmer, drier conditions. Tulare Lake shrank and eventually disappeared. Alluvial fans and floodplains stabilized after an initial period of deposition in 5,550 B.C. Archaeological deposits dating to the Middle Archaic are rare in the Central Valley proper due to these geomorphic changes. Where evident, the Middle Archaic record has revealed a pattern of organized subsistence strategies and increased residential stability. The archetypal pattern of the Middle Archaic has been identified as the Windmiller Pattern. This pattern is represented by extended burials oriented to the west and a sophisticated material culture (Rosenthal et al. 2007). Middle Archaic sites are relatively common in the foothills surrounding the Central Valley and show relatively little change from the Lower Archaic (McGuire 1995).

During this time, the mortar and pestle become more widespread suggesting a shift toward more intensive subsistence practices. Fishing technologies, such as bone gorges, hooks, and spears, also appear during the Middle Archaic suggesting a new focus on fishing. Several other technologies become apparent during this time. Baked-clay impressions of twined basketry, simple pottery, and other baked clay objects

have been found at several sites. Personal adornment items also become more frequent. Exchange with outside groups is evidenced by the presence of obsidian, shell beads and ornaments (Rosenthal et al. 2007; Moratto 1984). Trade also seemed to be focused on utilitarian items such as obsidian or finished obsidian tools from at least five separate sources (Moratto 1984).

UPPER ARCHAIC PERIOD (550 B.C. – A.D. 1100)

The Upper Archaic began with the onset of a markedly cooler, wetter climate. The environmental conditions of the Upper Archaic were characterized by the return of lakes that had disappeared during the Middle Archaic and renewed alluvial fan and floodplain deposition. The Upper Archaic is better represented in the archaeological record than earlier periods. Cultural diversity was more pronounced and is marked by contrasting material cultures throughout the valley (Rosenthal et al. 2007).

Numerous specialized technologies were developed during this period, such as bone tools and implements, manufactured goods such as *Olivella* and *Haliotis* beads and ornaments, well-made ceremonial blades, and ground-stone plummets (a stone object used as a fishing sinker or ceremonially). People living in the San Joaquin Valley region traded with neighboring groups for obsidian.

Upper Archaic period economies varied by region throughout the Central Valley. Economies were primarily focused on seasonal resources such as acorns, salmon, shellfish, rabbits, and deer (Rosenthal et al. 2007).

EMERGENT PERIOD (A.D. 1100 – HISTORIC PERIOD)

The stable climatic conditions of the Upper Archaic continued into the Emergent Period. Sporadic research has been conducted in the San Joaquin Valley on this time period, and only the Panoche Complex on the western edge of the valley has been formally defined for this time period (Moratto 1984). After A.D. 1000, many of the technologies witnessed during the Archaic disappeared to be replaced by cultural traditions witnessed at European contact. The most important technological change during the Emergent Period was the replacement of the atlatl by the bow and arrow as the preferred hunting method sometime between A.D. 1000 and 1300.

Increased social complexity is evidenced by increased variation in burial types and offerings, and larger residential communities. Grave offerings such as shell beads, ornaments, and ritually "killed" mortars and pestles are often found in burials. Pottery was frequently obtained through trade with groups living in the foothills to the east. The Panoche side-notched point became important in the western side of the San Joaquin Valley (Rosenthal et al. 2007). In addition to the side-notched point, the Panoche Complex featured large circular structures, flexed burials, marine shell beads, bone awls, milling stones, and mortars and pestles (Moratto 1984).

As with the Archaic Period, Emergent Period economies varied geographically, though throughout the Central Valley, fishing and plant harvesting increased in importance. Most Emergent residential sites contain diverse assemblages of mammal and bird remains and large amounts of fish bone. After 1,000 years ago, the mortar and pestle become the dominant tool type and small seeds increase in archaeological deposits over time (Rosenthal et al. 2007).

ETHNOGRAPHIC CONTEXT

Fresno County overlaps with three major archaeological regions: Central Valley, Sierra Nevada, and Central Coast (Moratto 1984: Figure 1). These include six traditional ethnographic territories (comprising multiple tribes and moieties), defined separately from the archaeological regions with which they overlap (Smithsonian Institution and Heizer 1978). The ethnographic territories are: Northern Valley Yokuts (Central Valley, Wallace 1978b), Southern Valley Yokuts (Central Valley, Wallace 1978a), Foothill Yokuts (Central Valley, Spier 1978b), Mono (Sierra Nevada, Spier 1978a), Owens Valley Paiute (Sierra Nevada, Spier 1978a), and Salinan (Central Coast, Hester 1978).

YOKUTS

Three Yokut tribes traditionally occupied Fresno County: the Northern Valley, Southern Valley, and Foothill Yokuts (Wallace 1978a). The distinction between the three Yokut tribes is based primarily on language dialect, but also ecological factors related to subsistence and local innovations (Mithun 2001; Silverstein 1978; Wallace 1978a, 1978b).

The Yokuts established permanent villages. Residential structures were most often of two types: single-family dwellings and larger communal residences that housed ten families or more. Villages frequently included mat-covered granaries and a sweathouse (Mithun 2001).

Yokuts subsistence was based on a mixed economy focused on fishing, collecting, and hunting small game. Fishermen employed tule rafts and caught fish with nets, spears, basket traps, and bow and arrow. Yokuts often gathered mussels and hunted turtles in lakes, rivers, and streams. Wild seeds and roots contributed a large portion of the Yokuts diet. Tule roots were gathered, dried, and pounded into a flour to be prepared as a mush. Tule seeds and grass and flowering herb seeds were prepared in the same way. Leaves and stems of certain plants, such as clover and fiddle-neck, were also collected. Acorns, a staple of most California Native Americans, were not readily available in the Yokuts ethnographic territory. Some Yokuts tribes journeyed to neighboring groups to trade for acorns. Waterfowl was frequently hunted with snares, nets, and bow and arrow. Land mammals and birds contributed a smaller part of the Yokuts diet. Small game was occasionally taken in snares or traps or shot with bows and arrows (Spier 1978b; Wallace 1978a, 1978b).

The basic economic unit among the Yokuts was the nuclear family. Totemic lineages were based on patrilineal descent. Totem symbols were passed from father to offspring and families sharing the same totem formed an exogamous lineage. Totems were associated with one of two moieties (social or ritual groups), a division which played a role during ceremonies and other social events (Wallace 1978a).

Yokuts were split into self-governing local groups, most often including several villages. Each group had a chief who directed ceremonies, mediated disputes, handled punishment of those doing wrong, hosted visitors, and provided aid to the impoverished. In certain cases, settlements had two chiefs, one for each moiety. Other political positions included the chief's messenger and the spokesman (Wallace 1978b). Shamans were also an important part of Yokuts village life. Shamans were able to gain their power through a dream or vision. If after this vision the man accepted the role as shaman, he would pray, fast, and acquire talismans to aid him in his future work. Shamans had the ability to heal the sick and served the primary role in religious life (Wallace 1978b).

Yokuts technology depended primarily on tule. Stems of the plant served as the raw material for baskets, cradles, boats, housing, and many other items. Tools such as knives, projectile points, and scraping tools

were made from imported lithic materials as stone was not readily available in the Central Valley. Marine shells secured through trade with coastal peoples were used in the manufacture of shell money and personal adornment items (Wallace 1978a).

MONACHE OR MONO

The Monache or Mono were not a single group but comprised at least six (6) tribal groups united by language (Spier 1978a). They shared a distinct Numic language with the Owens Valley Paiute (discussed below). The social and cultural identity of the Mono tribes was based primarily on language and location, though they all inhabited a relatively small, mountainous region to the east of the Yokuts (Hester 1978).

Mono settlements were typically small and loosely organized, with huts or hamlets arranged in proximity instead of a central village area (Spier 1978a). Lineages were the main kinship unit among the Mono, though at least one tribe, the North Fork, possessed moieties (Spier 1978a). Each lineage had a totemic creature (e.g., eagle or roadrunner) that partially signified tribal duties (Gayton 1948). For example, the Eagle lineage provided chiefs while the Roadrunner or the Dove lineage provided the chief's messengers. It was not uncommon for more than one chief to be in office simultaneously, and settlements that were too small might not even have one (Spier 1978a).

The Mono subsisted primarily on hunting, fishing, and gathering wild plants. This system required the Mono to move about seasonally, shifting to higher or lower elevations as temperatures varied (Spier 1978a). Deer was a main staple, but pine nuts were also prized and were either gathered directly or traded for. Other food items included bear, ground squirrels, rabbits, pigeons, fish, acorns, manzanita berries, insects and grubs, and yucca.

Obsidian was most often used for knives, scrapers, and arrow points (Spier 1978a). One major source area was near the present Devil's Postpile National Monument (just north of Fresno County), within the northern Mono area. Laurel and juniper wood bows were usually sinew-backed and different arrow types were used depending on the size of intended game (e.g., birds or deer). The Mono were also skilled basket-makers, making cooking baskets and baby cradles among other forms (Spier 1978a).

OWENS VALLEY PAIUTE

The Owens Valley Paiute territory was located on the eastern side of the high Sierra and into the eastern portion of Fresno County and were Numic speakers belonging to the Uto-Aztecan language family (Moratto 1984).

Unlike other Great Basin tribes who were not sedentary, the Owens Valley Paiute were subdivided into sedentary land-owning groups who occupied the territory year-round in permanent villages (Bettinger 1982). Short-term temporary camps were also established by the Owens Valley Paiute for resource procurement. Leadership among the Owens Valley Paiute was hereditary, with headmen being responsible for organizing communal work and festivals during which goods were redistributed amongst the tribe (Basgall 1983; Bettinger and King 1971; Hall 1983; Jackson 1985).

The Owens Valley Paiute are considered to have had a relatively complex socio-political culture, largely because of their elaborate redistribution system for goods and exchange network (Bettinger and King 1971). Ethnographic evidence suggest that the Owens Valley Paiute engaged in the trade of salt, pinyon pine nuts, obsidian, sinew-backed bows, rabbit blankets, moccasins, mountain sheepskins, baskets, sealed

water bottles in exchange for shell money beads, acorns and acorn meal, cane for arrows, manzanita berries, and well-made Yokuts baskets (Hall 1983).

Salinan

The primary Salinan territory was the middle and upper Salinas Valley and the Coast Ranges almost as far south as San Luis Obispo (Hester 1978; Shipley 1978). Salinan territory extended inland as far east as the western edge of Fresno County where it bordered the territory of the Yokuts (Hester 1978). The Salinan language was of Hokan stock and included at least two mutually intelligible dialects, with possibly a third observed along the coast that went extinct before it could be recorded (Hester 1978; Kroeber 1925).

Twenty-one possible villages have been associated with Salinan tradition including the major Migueleños village, *t'šolám* or *Cholami*. Although no permanent sites have been identified in the coastal ranges, logistical foraging and hunting camps in these areas are likely. Houses were dome-shaped and use of communal structures and subterranean sweathouses has been recorded (Hester 1978).

Very little has survived of Salinan material culture. However, some baskets of varying shapes and sizes have been collected and represent Salinan basketry. Bone and stone tools were manufactured and have been recovered in limited amounts. The Salinan tool kit is similar to many groups in this region and includes projectile points, scrapers, stone bowl mortars, arrowshaft straighteners, and bone awls.

Historical Context

Post-European contact history of the state of California is generally divided into three periods: the Spanish Period (1769-1822), the Mexican Period (1822-1848), and the American Period (148-present).

Spanish Period (1769-1822)

Juan Rodriguez Cabrillo in 1542 led the first European expedition to observe what is now called southern California. For more than 200 years, Cabrillo and other Spanish, Portuguese, British, and Russian explorers sailed the Alta (upper) California coast and made limited inland expeditions, but they did not establish permanent settlements (Bean 1968; Rolle 2003).

Gaspar de Portolá and Franciscan Father Junipero Serra established the first Spanish settlement in Alta California at Mission San Diego de Alcalá in 1769, the first of 21 missions erected by the Spanish. In 1772, Pedro Fages led the first Europeans into the southernmost part of the San Joaquin Valley (Johnson et al. 1993; Wallace 1978), stopping at a village on the shores of Buena Vista Lake before heading towards San Luis Obispo (Wallace 1978). The next prominent European to enter the valley was Francisco Garcés in 1776 (Wallace 1978). In the early 1800s numerous expeditions were made into the Central Valley to search for land for new missions or to recapture runaway neophytes (Hoover et al. 2002). However, the Spanish never succeeded controlling the region and no missions were established in the Central Valley because the area was considered to be uninhabitable and of limited resources.

During this period, Spain deeded ranchos to prominent citizens and soldiers, though very few in comparison to the subsequent Mexican Period. To manage and expand their herds of cattle on these large ranchos, colonists enlisted the labor of the surrounding Native American population (Engelhardt 1927a, 1927 b). Very few of the Central Valley tribes came under the control of the Spanish missions or ranchos. However, numerous runaway neophytes fled to the Central Valley, influencing local populations (Wallace

1978). The increased local population and contact with diseases brought by Europeans greatly reduced the Native American population (McCawley 1996) along the coast and in the Central Valley.

Mexican Period (1822-1848)

The Mexican Period commenced when news of the success of the Mexican Revolution (1810-1821) against the Spanish crown reached California in 1822. This period was an era of extensive interior land grant development by the Mexican government, and exploration by American fur trappers west of the Sierra Nevada Mountains. Beginning in 1833, mission lands were conferred as rancho grants. Governor Pío Pico and his predecessors made more than 600 rancho grants between 1833 and 1846, putting most of the state's lands into private ownership for the first time (Gumprecht 1999). However, no ranchos were established in the Central Valley proper (Wallace 1978).

American Period (1848-present)

The American Period officially began with the signing of the Treaty of Guadalupe Hidalgo in 1848, in which the United States agreed to pay Mexico $15 million for the conquered territory, including California, Nevada, Utah, and parts of Colorado, Arizona, New Mexico, and Wyoming. Settlement of California continued dramatically in the early American Period.

The discovery of gold near Sacramento in 1848 led to the California Gold Rush, though the first California gold was discovered in Los Angeles County in Placerita Canyon near the San Fernando Mission in 1842 (Guinn 1977; Workman 1935:26). In 1850, California was admitted into the United States and by 1853, the population of California exceeded 300,000. Thousands of settlers and immigrants continued to move into the state, particularly after the completion of the transcontinental railroad in 1869. Today, the Central Valley is the nation's leading agricultural producer with numerous farms and crops grown throughout the county.

Fresno County

Fresno County was first reached by the Spanish during the early 18th century during an exploration to find suitable locations for an inland chain of missions. However, the Spanish explorers and those who followed failed to settle the region. Other explorers and traders visited the region during the 1840s including fur traders and gold prospectors. Following the Gold Rush, a sudden increase in population led to the establishment of several permanent counties in California.

When Fresno County was first established on April 19, 1856, it included parts of Mariposa, Merced, and Tulare counties. The present boundaries of Fresno County were established in 1909. Fresno County underwent four major stages of development including the initial mining period, which continued into the 1860s. However, substantial gold mining during the Gold Rush period occurred to the north of modern Fresno County along the Mother Lode area of the middle Sierra Nevada foothills. Sheep and cattle raising were the primary industry from the 1860s to 1874, then general farming from the 1870s, with a later transition to irrigated row crops. Moses J. Church developed some of the County's first canals known as "Church Ditches," fostering an era of prosperous irrigated row crop farming (Winchell 1933). This irrigation led to extensive cultivation of wheat in the county. Shortly after the first canals were established, Francis Eisen, an established vintner and leader of the wine industry in Fresno County, began the raisin industry in 1875 after he accidently let his grapes dry on the vine. To this day, Fresno County produces more than 350 commercial crops and is home to 1.88 million acres of the world's most productive farmland (Fresno County Farm Bureau 2007).

The discovery of oil in western Fresno County, near the town of Coalinga, brought an economic boom during the early part of the 20th century. By 1910 Coalinga Oil Field was the most productive oil field in California and continues to be a productive field today.

Known Cultural Resources

According to the Office of Historic Preservation, seven resources in Fresno County are listed as California State Historical Landmarks (CSHL), 41 are listed on the National Register of Historic Places (NRHP; includes both archaeological and historical), 13 are listed as points of interest, but no resources are listed on the California Register of Historical Resources (CRHR) (Table 7-21 and Figure 7-16).

TABLE 7-21
FRESNO COUNTY HISTORIC RESOURCES

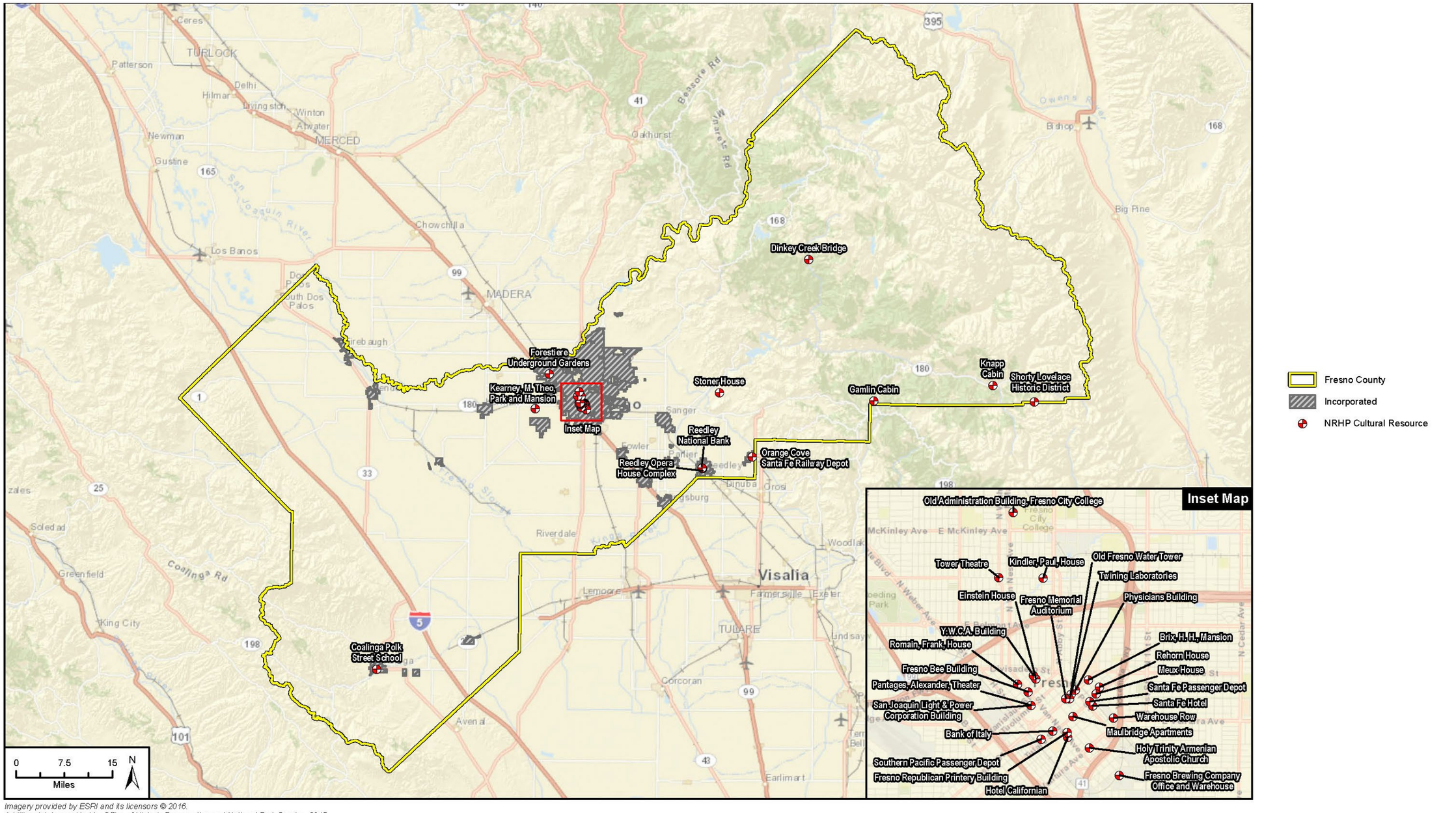
Resource Name	Designation
Alexander Pantages Theater	NRHP
Arroyo de Cantua	CSHL
Bank of Italy	NRHP
Ben Gefvert Ranch Historic District	NRHP
Birdwell Rock Petroglyph Site	NRHP
Coalinga Station	POI
Coalinga Polk Street School	NRHP
Dinkey Creek Bridge	NRHP
Einstein Home/Y.W.C.A. Activity Building	POI
Einstein House	NRHP
Fig Garden Woman's Club	POI
Forestiere Underground Gardens	CSHL, NRHP
Fort Miller	CSHL
Fowler's Switch	POI
Frank Romain House	NRHP
Fresno Bee Building	NRHP
Fresno Brewing Company Office and Warehouse	NRHP
Fresno City	CSHL
Fresno County Hall of Records	NRHP
Fresno Memorial Auditorium	NRHP
Fresno Republican Printery Building	NRHP
Fresno Sanitary Landfill	NRHP
Gamlin Cabin	NRHP
H.H. Brix Mansion	NRHP, POI
Holy Trinity Armenian Apostolic Church	NRHP
Hotel Californian	NRHP
Kingsburg Railroad Depot	POI
Knapp Cabin	NRHP
M. Theo Kearney Park and Mansion	NRHP, POI
Maulbridge Apartments	NRHP
Meux House	NRHP, POI

TABLE 7-21
FRESNO COUNTY HISTORIC RESOURCES

Resource Name	Designation
Old Administration Building, Fresno City College	NRHP
Old Fresno Water Tower	NRHP
Orange Cove Santa Fe Railway Depot	NRHP
Paul Kindler House	NRHP
Physicians Buildings	NRHP
Reedley National Bank	NRHP
Reedley Opera House Complex	NRHP
Rehorn House	NRHP
San Joaquin Light & Power Corporation Building	NRHP
Santa Fe Hotel	NRHP
Santa Fe Passenger Depot	NRHP
Settlement Academy	POI
Shorty Lovelace Historic District	NRHP
Site of First Junior College in California	CSHL
Site of the Fresno Free Speech Fight of the Industrial Workers of the World	CSHL
Southern Pacific Passenger Depot	NRHP
Stoner House	NRHP
Sycamore House	POI
Temporary Detention Camps for Japanese Americans-Fresno Assembly Center	CSHL
Tollhouse	POI
Tower Theatre	NRHP
Twining Laboratories	NRHP
Warehouse Row	NRHP
Y.W.C.A. Building	NRHP
Y.W.C.A. Residence	POI

Source: Office of Historic Preservation and National Park Service 2015.

FIGURE 7-16 FRESNO COUNTY HISTORIC RESOURCES



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Additional data provided by Office of Historic Preservation and National Park Service, 2015.

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PALEONTOLOGICAL SETTING

Paleontological resources, also known as fossils, are the remains, traces, or imprints of once living organisms preserved in rocks or sediment. Paleontological resources are most commonly found in sedimentary rock units and are normally discovered in cliffs, ledges, steep gullies, or along wave-cut terraces where vertical rock sections are exposed. Fossil material may be exposed by a trench, ditch, or channel during subsurface construction.

Paleontologists examine invertebrate fossil sites differently than vertebrate fossil sites. Invertebrate fossils in microscopic form such as diatoms, foraminifera, and radiolarians can be so prolific as to constitute major rock material in some areas. Invertebrate fossils normally are marine in origin, widespread, abundant, fairly well preserved, and predictable as to fossil locale. Therefore, the same or similar fossils can be located at numerous sites throughout central California. Vertebrate fossil sites are usually found in non-marine or continental deposits. Vertebrate fossils of continental material are usually rare, sporadic, and localized (SVP 2010).

Known Paleontological Resources

Fresno County is geologically diverse, as it encompasses portions of three different geomorphologic provinces in the state: Great Valley, Sierra Nevada, and Coast Ranges (CGS 2002). Because of this juxtaposition, Fresno County includes many different geologic units of multiple rock types, spanning nearly two billion years of Earth history, from the late Cenozoic (Holocene to Recent) to the early Proterozoic (Paleo-proterozoic) (CGS 2010; see Table 7-22 and Table 7-23).

A number of these units, including Cenozoic and Mesozoic terrestrial and marine rocks, have produced a variety of fossils. A search of the University of California Museum of Paleontology's online collections database reveals over 2,200 known fossil localities in Fresno County containing marine and terrestrial vertebrates (N=207), invertebrates (N=1,151), microfossils (N=998), and plants (N=37). The Plio-Pleistocene alluvial deposits in the center of the county near Fresno, and the Cretaceous marine deposits in the western part of the county near Coalinga are especially fossil-rich (Figure 7-17).

TABLE 7-22
GEOLOGIC TIME SCALE, FRESNO COUNTY

Era	Period	Epoch	Age (millions of years ago)1
Cenozoic	Quaternary	Holocene	Recent – 0.0117
		Pleistocene	0.0117 – 2.58
	Neogene (Tertiary)	Pliocene	2.58 – 5.33
		Miocene	5.33 – 23.03
	Paleogene (Tertiary)	Oligocene	23.03 – 33.9
		Eocene	33.9 – 56.0
		Paleocene	56.0 – 66.0
Mesozoic	Cretaceous	Lower/Upper	66.0 – 145.0
	Jurassic	Lower/Middle/Upper	145.0 – 201.3
	Triassic	Lower/Middle/Upper	201.3 – 252.17
Paleozoic	Permian	Cisuralian/Guadalupian/Lopingian	252.17 – 298.9

TABLE 7-22 GEOLOGIC TIME SCALE, FRESNO COUNTY			
Era	**Period**	**Epoch**	**Age (millions of years ago)1**
	Carboniferous	Pennsylvanian/Mississippian	298.9 – 358.9
	Devonian	Lower/Middle/Upper	358.9 – 419.2
	Silurian	Llandovery/Wenlock/Ludlow/Pridoli	419.2 – 443.4
	Ordovician	Lower/Middle/Upper	443.4 – 485.4
	Cambrian	Terrenevian/Series 2/Series 3/Furongian	485.4 – 541.0
Neo-proterozoic[2]	Ediacaran		541.0 – ~635
	Cryogenian		~635 – 850
	Tonian		850 – 1000
Meso-proterozoic	Stenian		1000 – 1200
	Ectasian		1200 – 1400
	Calymanian		1400 – 1600
Paleo-proterozoic	Statherian		1600 – 1800
	Orosirian		1800 – 2050
	Rhyacian		2050 – 2300
	Siderian		2300 – 2500

[1]Numerical ages based on Global Boundary Stratotype Section and Points (GSSP) for their lower boundaries, as ratified by the International Commission on Stratigraphy, in Cohen et al. (2013). Rocks older than the Paleozoic have less secure upper and lower boundary dates.
[2]Epochs have not been named for rocks older than the Paleozoic.

Source: Cohen et al., 2013.

TABLE 7-23 GEOLOGIC UNITS, FRESNO COUNTY			
Major Rock Type	**Geologic unit**	**Description**	**Age**
Sedimentary	(Q) Quaternary alluvium and marine deposits	Alluvium, lake, playa, and terrace deposits; unconsolidated and semi-consolidated. Mostly non-marine but includes marine deposits near the coast.	Pliocene to Holocene

TABLE 7-23 GEOLOGIC UNITS, FRESNO COUNTY			
Major Rock Type	**Geologic unit**	**Description**	**Age**
Sedimentary	(Qg) Quaternary glacial deposits	Glacial till and moraines. Found at high elevations mostly in the Sierra Nevada.	Pleistocene
Sedimentary	(QPc) Quaternary/Tertiary loosely consolidated deposits	Pliocene and/or Pleistocene sandstone, shale, and gravel deposits; in part Miocene	Pliocene to Pleistocene
Sedimentary	(Tc) Tertiary non-marine rocks, undivided	Sandstone, shale, conglomerate, breccia, and ancient lake deposits.	Paleocene to Pliocene
Sedimentary	(Mc) Miocene non-marine rocks	Sandstone, shale, conglomerate, and fanglomerate.	Pliocene and Oligocene
Sedimentary	(E) Eocene marine rocks	Shale, sandstone, conglomerate, and minor limestone; in part Oligocene and Paleocene.	Paleocene to Oligocene
Sedimentary	(Ec) Eocene non-marine rocks	Sandstone, shale, and conglomerate.	Eocene
Sedimentary	(Ku) Upper Cretaceous marine rocks	Upper Cretaceous sandstone, shale, and conglomerate.	Late Cretaceous
Sedimentary	(Kl) Lower Cretaceous marine rocks	Lower Cretaceous sandstone, shale, and conglomerate.	Early Cretaceous
Sedimentary	(KJf) Franciscan Complex	Franciscan complex sandstone with smaller amounts of shale, chert, limestone, and conglomerate. Includes Franciscan mélange, except where separated.	Jurassic to Cretaceous.

TABLE 7-23 GEOLOGIC UNITS, FRESNO COUNTY			
Major Rock Type	**Geologic unit**	**Description**	**Age**
Sedimentary	(J) Jurassic marine rocks	Shale, sandstone, minor conglomerate, chert, slate, limestone; minor pyroclastic rocks.	Jurassic
Sedimentary	(ls) Paleozoic or Mesozoic limestone	Limestone, dolomite, and marble whose age is uncertain but probably Paleozoic or Mesozoic.	Paleozoic or Mesozoic
Sedimentary	(Pm) Permian marine sedimentary rocks	Shale, conglomerate, limestone and dolomite, sandstone, slate, hornfels, quartzite; minor pyroclastic rocks.	Pennsylvanian to Triassic
Sedimentary	(Pz) Paleozoic marine rocks, undivided	Undivided Paleozoic metasedimentary rocks. Includes slate, sandstone, shale, chert, conglomerate, limestone, dolomite, marble, phyllite, schist, hornfels, and quartzite.	Later Proterozoic (?) to Mesozoic (?)
Plutonic	(grMz) Mesozoic granitic rocks	Granite, quartz monzonite, granodiorite, and quartz diorite.	Early to late Cretaceous
Plutonic	(um) Ultramafic rocks, chiefly Mesozoic	Ultramafic rocks, mostly serpentine. Minor peridotite, gabbro, and diabase.	Middle to late Jurassic
Plutonic	(gb) Mesozoic gabbroic rocks	Gabbro and dark dioritic rocks.	Triassic to Cretaceous

TABLE 7-23 GEOLOGIC UNITS, FRESNO COUNTY			
Major Rock Type	**Geologic unit**	**Description**	**Age**
Metamorphic	(m) Pre-Cenozoic metasedimentary and metavolcanic rocks, undivided	Undivided pre-Cenozoic metasedimentary and metavolcanic rocks of great variety. Mostly slate, quartzite, hornfels, chert, phyllite, mylonite, schist, gneiss, and minor marble.	Early Proterozoic to Cretaceous
Metamorphic	(gr-m) Pre-Cenozoic granitic and metamorphic rocks, undivided	Granitic and metamorphic rocks, mostly gneiss and other metamorphic rocks injected by granitic rocks.	Mesozoic to Precambrian.
Metamorphic	(mv) Undivided pre-Cenozoic metavolcanic rocks	Undivided pre-Cenozoic metavolcanic rocks. Includes latite, dacite, tuff, and greenstone; commonly schistose.	Ordovician (?) to Permian (?)
Volcanic	(Qv) Quaternary volcanic flow rocks	Quaternary volcanic flow rocks; minor pyroclastic deposits.	Miocene to Pliocene
Volcanic	(Tv) Tertiary volcanic flow rocks	Tertiary volcanic flow rocks; minor pyroclastic deposits.	Pliocene
Volcanic	(Mzv) Mesozoic volcanic rocks	Undivided Mesozoic volcanic and metavolcanic rocks. Andesite and rhyolite flow rocks, greenstone, volcanic breccia and other pyroclastic rocks; in part strongly metamorphosed. Includes volcanic rocks of Franciscan Complex: basaltic pillow lava, diabase, greenstone, and minor pyroclastic rocks.	Triassic to Cretaceous

TABLE 7-23 GEOLOGIC UNITS, FRESNO COUNTY			
Major Rock Type	**Geologic unit**	**Description**	**Age**

Source: California Geologic Survey 2010.

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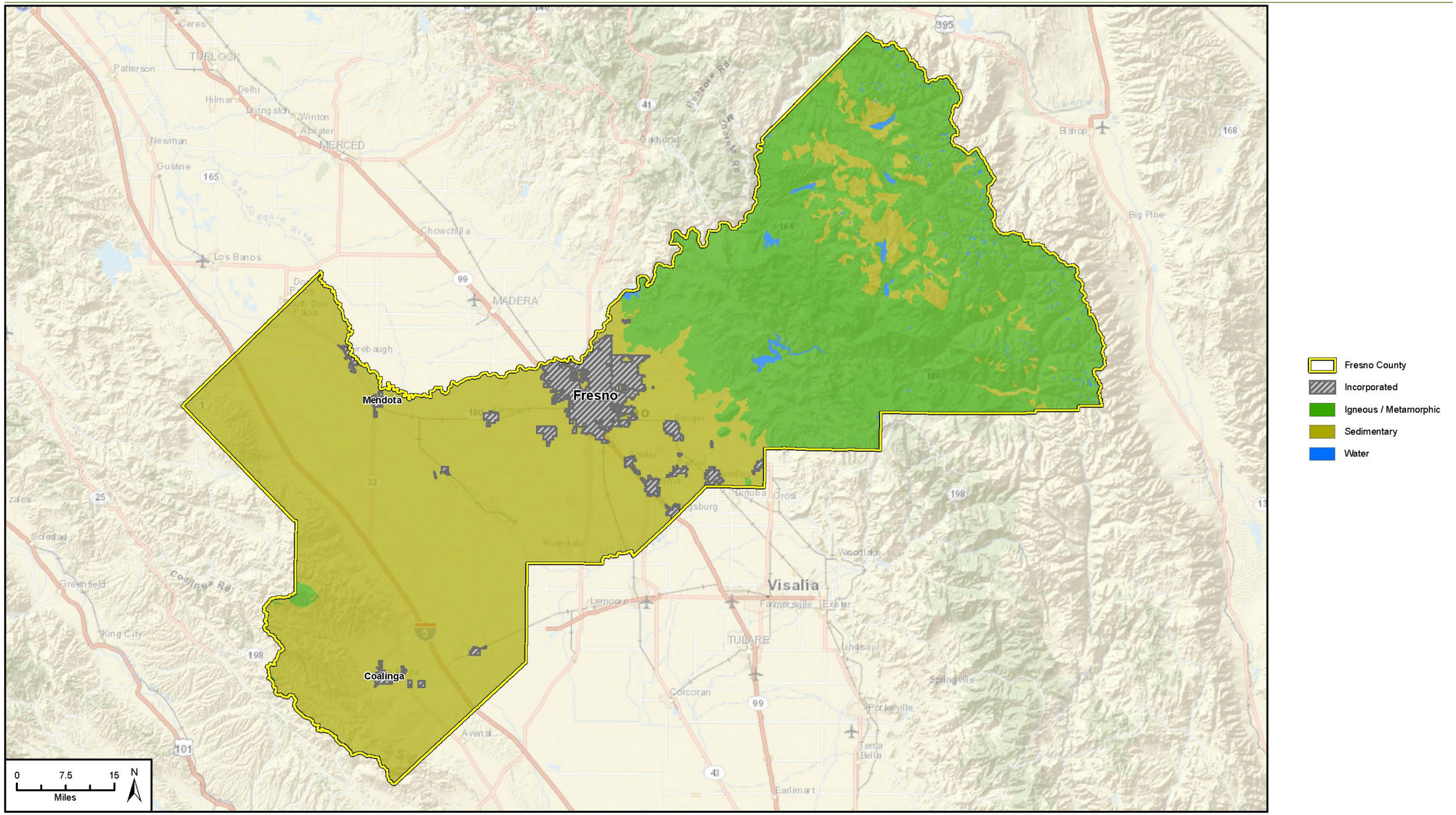
FIGURE 7-17 GEOLOGIC ROCK TYPES, FRESNO COUNTY



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Additional data provided by California Geological Survey State Map 2010.

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REGULATORY SETTING

Federal, State, and local governments have developed laws and regulations to protect significant cultural and paleontological resources that may be affected by actions that they undertake or regulate. Basic federal and state laws including the National Environmental Policy Act (NEPA), the National Historic Preservation Act (NHPA), and the California Environmental Quality Act (CEQA), have been established to preserve and protect historic and archaeological resources considered to be significant on the national, state, regional, or local level.

The Fresno County General Plan provides goals, objectives, policies, and treatment for the identification and protection of cultural and paleontological resources considered significant.

STATE

The California Environment Quality Act (CEQA), including the CEQA Statutes (Public Resources Code [PRC] Sections 21083.2 and 21084.1), the CEQA Guidelines (Title 14 California Code of Regulations [CCR], Section 15064.5), and PRC 5024.1 (Title 14 CCR, Section 4850 et seq.) requires a lead agency to determine whether a project may have a significant impact on historical resources. These statutes and regulations, as amended, are summarized in an annually updated handbook.

Properties that can be expected to be directly or indirectly affected by a proposed project must be evaluated for California Register of Historical Resources (CRHR) eligibility (PRC Section 5024.1). The purpose of the register is to maintain listings of the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from material impairment and substantial adverse change. The term "historical resources" includes a resource listed in, or determined to be eligible for listing in, the CRHR, a resource included in a local register of historical resources, and any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant (CCR Section 15064.5(a)). The criteria for listing properties in the CRHR were expressly developed in accordance with previously established criteria developed for listing in the National Register of Historic Places (NRHP). The California Office of Historic Preservation (OHP 1995:2) regards "any physical evidence of human activities over 45 years old" as meriting recordation and evaluation.

According to PRC Section 5024.1(c)(1–4), a resource may be considered historically significant if it retains integrity and meets at least one of the following criteria. A property may be listed in the CRHR if the resource:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage
- Is associated with the lives of persons important in our past
- Embodies the distinctive characteristics of a type, period, region or method of installation, or represents the work of an important creative individual, or possesses high artistic values
- Has yielded, or may be likely to yield, information important in prehistory or history

Under CEQA, if an archeological site is not a historical resource but meets the definition of a "unique archeological resource" as defined in PRC Section 21083.2, then it should be treated in accordance with the provisions of that section. A unique archaeological resource is defined as follows:

An archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information
- Has a special and particular quality such as being the oldest of its type or the best available example of its type
- Is directly associated with a scientifically recognized important prehistoric or historic event or person

Resources that neither meet any of these criteria for listing in the CRHR nor qualify as a "unique archaeological resource" under CEQA PRC Section 21083.2 are viewed as not significant. Under CEQA, "A nonunique archaeological resource need be given no further consideration, other than the simple recording of its existence by the lead agency if it so elects" (PRC Section 21083.2[h]).

Impacts that adversely alter the significance of a resource listed in or eligible for listing in the CRHR are considered a significant effect on the environment. Impacts to historical resources from the proposed project are thus considered significant if the project physically destroys or damages all or part of a resource, changes the character of the use of the resource or physical feature within the setting of the resource which contribute to its significance or introduces visual, atmospheric, or audible elements that diminish the integrity of significant features of the resource.

FEDERAL

Federal regulations for cultural resources are governed primarily by Section 106 of the National Historic Preservation Act (NHPA) of 1966. Section 106 consultation is required when a project involves a federal undertaking. The definition of a federal undertaking in 36 Code of Federal Regulations (CFR) 800.16(y) includes projects requiring a Federal permit, license or approval. Cultural resources are considered during federal undertakings chiefly under Section 106 of the NHPA of 1966 (as amended) through one of its implementing regulations, 36 CFR 800 (Protection of Historic Properties), as well as the NEPA. Properties of traditional religious and cultural importance to Native Americans are considered under Section 101(d)(6)(A) of the NHPA, and Section 106 36 CFR 800.3–800.10. Other federal laws include the Archaeological Data Preservation Act of 1974, the American Indian Religious Freedom Act (AIRFA) of 1978, the Archaeological Resources Protection Act (ARPA) of 1979, and the Native American Graves Protection and Repatriation Act (NAGPRA) of 1989, the Paleontological Resources Preservation Act (PRPA) of 2009, among others.

Section 106 of the NHPA (16 U.S. Government Code 470f) requires federal agencies to take into account the effects of their undertakings on any district, site, building, structure, or object that is included in or eligible for inclusion in the NRHP and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on such undertakings (36 CFR 800.1). Under Section 106, the significance of any adversely affected historic property is assessed and mitigation measures are proposed to reduce any impacts to an acceptable level. Historic properties are those significant cultural resources that are listed in or are eligible for listing in the NRHP (36 CFR 60.4).

FRESNO COUNTY

The current General Plan for Fresno County provides specific policies for managing cultural and paleontological resources. These policies are provided below.

Policy OS-J: To identify, protect, and enhance Fresno County's important historical, archaeological, paleontological, geological, and cultural sites and their contributing environment, and promote and encourage preservation, restoration, and rehabilitation of Fresno County's historically significant resources in order to promote historical awareness, community, identity, and to recognize the county's valued assets that have contributed to past county events, trends, styles of architecture, and economy.

- OS-J.1 Preservation of Historic Resources: The County shall encourage preservation of any sites and/or buildings identified as having historical significance pursuant to the list maintained by Fresno County Historic Landmarks and Records Advisory Commission
- OS-J.2 Historic Resources Consideration: The County shall consider historic resources during preparation or evaluation of plans and discretionary development projects.
- OS-J.3 Minimize Impacts: Whenever a historical resource is known to exist on a proposed project site, the County (i.e., Fresno County Historic Landmarks and Records Advisory Commission) shall evaluate and make recommendations to minimize potential impacts to said resource.
- OS-J.4 Site Protection and Mitigation: The County shall require that discretionary development projects, as part of any required CEQA review, identify and protect important historical, archaeological, paleontological, and cultural sites and their contributing environment from damage, destruction, and abuse to the maximum extent feasible. Project-level mitigation shall include accurate site surveys, consideration of project alternatives to preserve archaeological and historic resources, and provision for resource recovery and preservation when displacement is unavoidable.
- OS-J.5 Archaeological Sites Confidentiality: The County shall, within the limits of its authority and responsibility, maintain confidentiality regarding the locations of archaeological sites in order to preserve and protect these resources from vandalism and the unauthorized removal of artifacts.
- OS-J.6 Native American Consultation: The County shall solicit the views of the local Native American community in cases where development may result in disturbance to sites containing evidence of Native American activity and/or sites of cultural importance.
- OS-J.7 Historical Sites Inventory: The County shall maintain an inventory of all sites and structures in the County determined to be of historical significance.
- OS-J.10 Cultural Resources Preservation: The County shall use the State Historic Building Code and existing legislation and ordinances to encourage preservation of cultural resources and their contributing environment.

KEY TERMS

Advisory Council on Historic Preservation. A federal agency that advises the president and Congress on matters of historic preservation and oversees the review of projects under Section 106 of the National Historic Preservation Act (NHPA) (Section 7.10)

California State Historical Landmarks. Buildings, sites, features, or events of statewide historical significance (Section 7.10)

California Points of Interest. Sites buildings, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value (Section 7.10)

California Register of Historical Resources. A list of cultural resources determined by the State Historical Resources Commission to be of architectural, historical, archaeological, or cultural significance at the state level(Section 7.10)

Cultural Resources. Observable evidence of past human activities that is at least 45 years old, including prehistoric or historic archaeological sites, historic built-environment resources, traditional cultural properties and landscapes, and paleontological resources (Section 7.10)

National Register of Historic Places (NRHP). A list of cultural resources determined by the National Park Service to be of historic, cultural, architectural, archaeological, or engineering significance at the national level (Section 7.10)

Historic Property. Any cultural resource listed in or eligible for listing in the National Register of Historic Places (Section 7.10)

Paleontological Resources. Any fossilized remains, traces, or imprints of once living organisms preserved in rock or sediment (Section 7.10)

Preservation. According to the NHPA, includes identification, evaluation, recordation, documentation, curation, acquisition, protection, management, rehabilitation, restoration, stabilization, maintenance, research interpretation, conservation, and education; the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. (Section 7.10)

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CHAPTER 8: HAZARDS AND SAFETY

INTRODUCTION

This chapter summarizes the hazards and safety issues for Fresno County. It is organized into the following sections:

- Geologic and Seismic Hazards (Section 8.1)
- Flood Hazards (Section 8.2)
- Fire Hazards (Section 8.3)
- Aviation Hazards (Section 8.4)
- Hazardous Materials (Section 8.5)

SECTION 8.1 GEOLOGIC AND SEISMIC HAZARDS

INTRODUCTION

This section identifies earthquake faults and areas in Fresno County that may be susceptible to seismic activity and describes the history of seismic activity in the region. It then assesses seismic hazards related to earthquakes and geologic hazards and their risk in Fresno County. Finally, the section describes the regulatory framework related to geologic and seismic hazards in Fresno County.

FINDINGS

- Fresno County has major active or potentially active faults, including the Ortigalita Fault in the Panoche Valley and the Nunez Fault northwest of Coalinga. The Clovis Fault is a concealed fault near Clovis but is not considered to be active.
- Active fault zones exist just outside the county, including the San Andreas Fault to the west and the Sierra Nevada Fault Zone to the east. These faults present seismic ground shaking hazards throughout the county.
- Greater ground shaking potential is present in the western part of the county.
- No specific countywide assessments to identify liquefaction hazards have been performed.
- Expansive soils are present along the foothills in Kings Canyon National Park and along Fresno Slough from Madera to Kings County.
- Excessive groundwater pumping in the Central Valley has created land subsidence of up to 28 feet (southwest of Mendota), mostly in the central and western areas of the county.
- Landslide hazards in the county are found in the foothill and mountain areas of the Sierra Nevada where fractured and steep slopes are present, areas of the Pacific Coast Range where less

consolidated or weathered soils overlie bedrock, and areas along the San Joaquin River where inadequate ground cover accelerates erosion.

EXISTING CONDITIONS

FAULTING AND SEISMICITY

Generally defined, an earthquake is an abrupt release of accumulated energy in the form of seismic waves when movement occurs along a fault. The severity of an earthquake generally is expressed in two ways: magnitude and intensity. The energy released, measured on the Moment Magnitude (MW) scale, represents the magnitude of an earthquake. The Richter Magnitude (M) scale has been replaced in most modern building codes by the MW scale because the MW scale provides more useful information to design engineers.

The intensity of an earthquake is measured by the Modified Mercalli Intensity (MMI) scale, which emphasizes the current seismic environment at a particular site and measures ground shaking severity according to damage done to structures, changes in the earth surface, and personal accounts. Table 8-1 identifies the level of intensity according to the MMI scale and describes that intensity with respect to how it would be received or sensed by its receptors.

TABLE 8-1
MODIFIED MERCALLI INTENSITY SCALE

Intensity	Description
I	Not felt except by a very few under especially favorable conditions
II	Felt by a few people at rest, especially in upper floors of buildings
III	Felt noticeably indoors, but not always recognized as a quake; vibration like a passing truck
IV	Felt indoors by many and outdoors by few. Sensation like heavy truck striking building
V	Felt by nearly everyone. Some breakage of windows, dishes, and plaster
VI	Felt by all; some heavy furniture moved; falling plaster; damage small
VII	Damage negligible in buildings of good design and construction
VIII	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings; walls, monuments, chimneys fall
IX	Damage considerable; buildings shift off foundations
X	Most masonry and frame structures destroyed; railroad rails bent
XI	Few structures remain standing; bridges destroyed
XII	Damage total; lines of sight and level are distorted; objects thrown into the air

Source: USGS 2015

Faults are categorized as active, potentially active, and inactive. A fault is classified as active if it has moved during the Holocene time (during the last 11,000 years). A fault is classified as potentially active if it has experienced movement in Quaternary time (during the last 1.8 million years). Faults that have not moved in the last 1.8 million years are generally considered inactive.

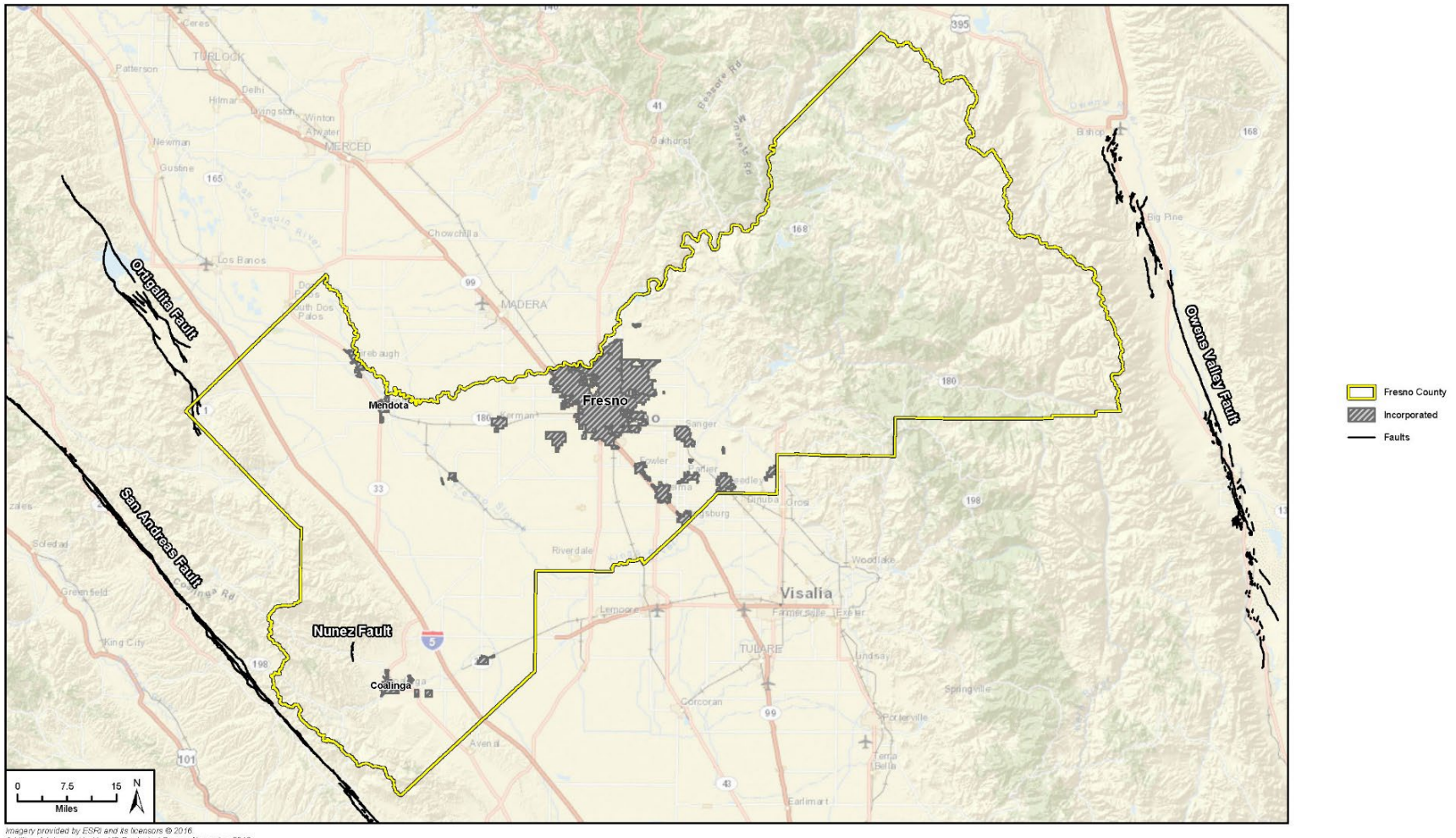
REGIONAL FAULTING AND SEISMICITY

The majority of Fresno County is not in an earthquake fault zone as designated by the Alquist-Priolo Earthquake Fault Zoning Act. However, there are a number of active and potentially active faults in and adjacent to Fresno County, as shown on Figure 8-1. The county is bounded on the east and west by active fault zones along the southern California Coastal Range and the Sierra Nevada Range.

Two active or potentially active faults, shown on Figure 8-1, are identified in the western portion of the county by the Alquist-Priolo Earthquake Fault Maps (California Department of Conservation 2010). The Nunez fault is a historically active and relatively minor oblique-slip fault that dips steeply eastward and is located in the southwest part of the county, northwest of the city of Coalinga. The Ortigalita fault is a complex zone of reverse, normal, and right-lateral strike-slip faults located in the northwest most corner of the county in the Panoche Valley area that is considered a Quaternary active. The Clovis fault is a concealed fault believed to be northwest trending, located approximately six miles east of the city of Clovis, and extending from approximately the San Joaquin River to Fancher Creek. The Clovis fault is a Pre-Quarternary fault and is not considered active.

The San Andreas Fault Zone trends northwest through the Coastal Range roughly parallel to the western boundary of Fresno County. The San Andreas Fault comes within two miles of the county line along the southwest border, south of State Route (SR) 198. The San Andreas Fault is considered active and is of primary concern in evaluating seismic hazards throughout Fresno County. The Sierra Nevada Fault Zone, primarily defined by the Owens Valley Fault, lies east of the county, along the eastern slope of the Sierra Nevada. This is a lengthy and complex fault system containing both active and potentially active faults (California Department of Conservation 2010).

FIGURE 8-1 REGIONAL FAULTS



SEISMIC HAZARDS

Hazards associated with earthquakes include primary hazards, such as surface rupture and ground shaking, and secondary hazards, such as liquefaction and tsunamis. These hazards are described below.

- **Surface Rupture:** Surface rupture represents the breakage of ground along the surface trace of a fault, the intersection of the fault surface area ruptured in an earthquake within the earth's surface. Fault displacement occurs when material on one side of a fault moves relative to the material on the other side of the fault. This can have particularly adverse consequences when buildings are located in the rupture zone. It is not feasible from a structural or economic perspective to design and build structures that can accommodate rapid displacement involved with surface rupture. Amounts of surface displacement can range from a few inches to tens of feet during a rupture event. Surface rupture is generally limited to a linear zone a few yards wide.
- **Ground shaking:** The major cause of structural damage from earthquakes is ground shaking. The intensity of ground motion expected at a particular site depends upon the magnitude of the earthquake, the distance to the epicenter, and the geology of the area between the epicenter and the property. Greater movement can be expected at sites located on poorly consolidated material, such as alluvium, in proximity to the causative fault, or in response to a seismic event of great magnitude. Although Fresno County is situated in a zone of relatively low seismic activity, the fault systems along the western and eastern boundaries of the county have potential to produce high magnitude earthquakes throughout the county. A high magnitude earthquake along these faults could cause moderate intensity ground shaking in the county. The western part of the county is the most susceptible to ground shaking due to regional geology and the proximity of the San Andreas fault (USGS 2008).
- **Liquefaction:** Liquefaction is a seismic phenomenon in which loose, saturated granular and non-plastic fine-grained soils lose their structure or strength when subjected to high-intensity ground shaking. Liquefaction occurs when three general conditions exist: 1) shallow groundwater, within the top 50 feet of the ground surface; 2) low-density non-plastic soils; and 3) high-intensity ground motion. No specific countywide assessments to identify liquefaction hazards have been performed, but areas with shallow groundwater generally are found in the valley where soil types are mostly coarse or high in clay content, and thus not conducive to liquefaction. Areas in western and eastern parts of the county, which are subject to greater ground shaking, generally have groundwater at greater depths (Fresno County 2009). This would minimize potential for liquefaction.
- **Settlement:** Settlement can occur in poorly consolidated soils during ground shaking. During settlement, ground shaking physically rearranges the soil materials to result in a less stable alignment of the individual minerals. Settlement of sufficient magnitude to cause significant structural damage is normally associated with rapidly deposited alluvial soils or improperly founded or poorly compacted fill. The only urban area directly affected by settlement is Coalinga.

SOIL HAZARDS

Hazards associated with soils include erosion, expansiveness, landslides, and subsidence. These hazards are described below.

- **Soil Erosion:** Erosion refers to the removal of soil by water or wind. Factors that influence erosion potential include the amount of rainfall and wind, the length and steepness of the slope, and the amount and type of vegetative cover. Soils in the eastern part of the county have been identified as having moderate to high erosion potential. These soils generally are located in the Sierra Nevada and the foothills where slopes exceed 30 percent (NRCS 1971). Many of these soils are located in the Sierra National Forrest, Sequoia National Park, or Kings Canyon National Park. In the western part of the county, soils located in the Coast Range foothills have also been identified as being associated with moderate to severe sheet and gully erosion. Additionally, soils in the western part of the county are particularly susceptible to erosion due to human activity. These soils are often associated with recent alluvial fans in the central part of the western area (NRCS 2006).
- **Expansive Soils:** Soils with relatively high clay content are considered expansive due to the capacity of clay minerals to take in water and expand to greater volumes. Highly expansive soils can cause structural damage to foundations and roads without proper structural engineering and require detailed geologic investigations and costlier grading applications. This makes highly expansive soils less suitable for development. Expansive soils can be found predominantly in the eastern part of the county in a northwest trending belt approximately parallel to the Friant-Kern Canal foothills in Kings Canyon National Park. Another expansive soil formation is located along the Fresno Slough from Madera County to Kings County (NRCS 1971).
- **Landslides:** The geologic and topographic character of an area determines its potential for landslides. Steep slopes, the extent of erosion, and the rock composition of a hillside can aid in predicting the probability of slope failure. Common triggering mechanisms of slope failure include undercutting slopes by erosion or grading; saturation of marginally stable slopes by rainfall or irrigation; and shaking of marginally stable slopes during earthquakes. Landslide hazard areas include foothill and mountain areas of the Sierra Nevada where fractured and steep slopes are present, areas of the Coastal Range where less consolidated or weathered soils overlie bedrock, and areas along the San Joaquin River where inadequate ground cover accelerates erosion. Areas along Highway 168 in eastern Fresno County and Highway 198 in western Fresno County have been identified as areas potentially affected by landslides (Fresno County 2009). The western part of the county has been identified as having a moderate risk of landslides, while the central and eastern areas have a low risk (State of California 2013). Landslides are associated with sloping land. According to the Fresno County Multi-Hazard Mitigation Plan, areas of steep slopes occur in the western part of the county (AMEC 2018).
- **Subsidence:** Subsidence occurs below the surface when subsurface pressure is reduced by the withdrawal of fluids (e.g., groundwater, natural gas, or oil) resulting in sinking of the ground. Subsidence is common in parts of the Central Valley where subsidence of more than 20 feet has occurred in the past 50 years. Areas susceptible to subsidence are typically composed of open-textured soils that become saturated. In some areas along the valley trough and in parts of western Fresno County, groundwater pumping has caused subsidence of the land surface. Periods of

drought tend to exacerbate subsidence trends due to increased pumping of groundwater. Specific areas where subsidence has been a problem include the Westlands Water District and the Pleasant Valley Water District.

REGULATORY SETTING

State and local regulations and policies govern development in seismic, soil, and flood hazard zones and in mineral resource areas.

STATE

Alquist-Priolo Earthquake Fault Zoning Act. The Alquist-Priolo Earthquake Fault Zoning Act was signed into law in 1972 (14 California Code of Regulations (CCR) §§ 3600 et seq.). The purpose of this Act is to prohibit the location of most structures for human occupancy across the traces of active faults and to thereby mitigate the hazard of fault rupture. Under the Act, the State Geologist is required to delineate "Earthquake Fault Zones" along known active faults in California (14 CCR §3601). Prior to January 1, 1994, "Earthquake Fault Zones" were referred to as "Special Studies Zones" (California Department of Conservation, 2011). Cities and counties affected by the zones must regulate certain development projects in the zones. They must withhold development permits for sites in the zones until geologic investigations demonstrate that the sites are not threatened by surface displacement from future faulting (14 CCR §3603). As shown on Figure 8-1, parts of western Fresno County are in fault hazard zones.

Seismic Hazards Mapping Act. The California Geologic Survey, formerly the California Department of Conservation (DOC), Division of Mines and Geology (CDMG), provides guidance with regard to seismic hazards. Under the CDMG Seismic Hazards Mapping Act (1990), seismic hazard zones are to be identified and mapped to assist local governments in land use planning (California Public Resources Code §§ 2690 et seq.). The intent of these maps is to protect the public from the effects of strong ground shaking, liquefaction, landslides, ground failure, or other hazards caused by earthquakes. In addition, CDMG's Special Publications 117, "Guidelines for Evaluating and Mitigating Seismic Hazards in California," provides guidance for the evaluation and mitigation of earthquake-related hazards for projects in designated zones of required investigations.

California Building Code. California law provides standards for building design through the California Building Code (CBC) (CCR Title 24). Chapter 23 of the CBC contains specific requirements for seismic safety. Chapter 29 regulates excavation, foundations, and retaining walls. Chapter 33 of the CBC contains specific requirements pertaining to site demolition, excavation, and construction to protect people and property from hazards associated with excavation cave-ins and falling debris or construction materials. Chapter 70 of the CBC regulates grading activities, including drainage and erosion control. Construction activities are subject to occupational safety standards for excavation, shoring, and trenching as specified in California Division of Occupational Safety and Health (Cal/OSHA) regulations (CCR Title 8).

LOCAL

Fresno County General Plan. The 2000 Fresno County General Plan contains goals, policies and implementation programs that address seismic and geologic hazards in the county. Polices and implementation programs under Goal HS-D in the Health and Safety Element aim to minimize the loss of life, injury, and property damage due to seismic and geologic hazards. Policies include the requirement of geologic and soils investigations for developments as well as to improve on our body of knowledge, and compliance with state seismic and building standards and compatible land use. Implementation programs include updating County maps and the General Plan Background Report.

Fresno County Ordinance. The Fresno County Ordinance (Title 15, Chapter 15.08 Building Code) adopts by reference the 2010 California Building Code with no amendments related to earthquake hazards.

Fresno County Multi-Hazard Mitigation Plan. The County and participating jurisdictions developed the Multi-Hazard Mitigation Plan to make the County and its residents less vulnerable to hazard events (AMEC 2018). The plan was originally approved by FEMA in 2009 and then comprehensively updated in 2018. The plan covers human-caused hazards, as well as natural hazards, such as avalanches, floods, earthquakes, landslides, and soil hazards.

KEY TERMS

Active Fault. A fault that has ruptured in the past 11,000 years.

Alquist-Priolo Earthquake Fault Zoning Act. Passed into law following the destructive February 9, 1971 San Fernando earthquake, the Alquist-Priolo Act provides a mechanism for reducing losses from surface fault rupture on a statewide basis by identifying active faults and prohibiting the siting of most structures for human occupancy across traces of active faults that constitute a potential hazard to structures from a surface faulting or fault creep.

Earthquake Fault Zone. Regulatory zones around active faults. The zones vary in width, but average about one-quarter per mile wide.

Erosion. the process by which material is worn away from the earth's surface.

Expansive Soils. Soils that greatly increase in volume when they absorb water and shrink when they dry out.

Fault. Planar or gently curved fracture in the rocks of the Earth's crust, where compressional or tensional forces cause relative displacement of the rocks on the opposite sides of the fracture

Holocene Faults. Faults have evidence of movement in the last 11,700 years. Holocene faults are considered active.

Liquefaction. During ground shaking, soil grains consolidate, pushing water towards the surface and causing a loss of strength in the soil.

Modified Mercalli Intensity Scale. The scale currently used in the US to evaluate the effects of earthquakes. This scale, composed of increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, is designated by Roman numerals. It does not have a mathematical basis; instead, it is an arbitrary ranking based on observed effects.

Richter Scale. A numerical scale for expressing the magnitude of an earthquake on the basis of seismographic oscillations. The scale is logarithmic and a difference of one represents an approximate thirtyfold difference in magnitude.

Subsidence. The sinking of ground when subsurface pressure is reduced by the withdrawal of fluids (e.g., groundwater, natural gas, or oil).

Surface Rupture. Movement on a fault that breaks through to the surface.

Quaternary Faults. Faults that have been recognized at the surface and which have evidence of movement in the past 1.6 million years.

SECTION 8.2 FLOOD HAZARDS

INTRODUCTION

This section contains a description of the flood hazards within Fresno County. The existing conditions that create physical risks associated with potential flooding from various regional and local water sources and the regulatory requirements for flood management are important aspects to future land use decisions throughout the county, and guide local and community-level emergency response needs.

FINDINGS

- During storm events, the Valley is subject to flooding from high stream flows due to their large drainage basins. Flows originating in the mountains and foothills contribute to the drainage and flooding problems on the valley floor. While the flooding potential in the fall and winter is generally from rain, spring flooding is a result of rapid snow melt in the mountains.
- A relatively broad levee flood protection zone (LFPZ) is identified along the San Joaquin River, with depths less than three feet indicated west of the river, but greater than three feet all along the east side of the river (Figures 8-2 and 8-9). Several areas protected by project levees in the east county would also have inundation areas that are primarily less than three feet but include some deeper areas.
- 23 dams could cause substantial flooding in Fresno County in the event of a failure. The majority of these dams are in the San Joaquin River or Kings River watersheds in the eastern part of the county. Both incorporated and unincorporated areas are at risk of damage from flooding in the event of a dam failure. Generally, the areas at risk are large urban and rural areas downstream and below the dams on the valley floor. There have not been any failures of major dams in Fresno County.
- Flood issues in western Fresno County are varied in scope and unique in nature. Many creeks in the area are prone to high flows and significant erosion, but most of the region is unpopulated, so flooding poses little threat to life or personal property.
- Flood issues in central Fresno County are associated with the San Joaquin River, Kings River, and several other stream systems.
- Over time, encroachment of vegetation, substantial sedimentation, and land subsidence have considerably reduced the channel capacity of the San Joaquin River.
- The flooding potential from creeks and streams between the San Joaquin and Kings Rivers in the east has been substantially eliminated by the completion of the Redbank-Fancher Creeks Flood Control Project.
- Uncontrolled creeks within the Kings River system, notably Mill Creek, continue to challenge management of Pine Flat Dam and Kings River flood control during consecutive large storm events.

EXISTING CONDITIONS

Flooding is a natural occurrence in the Central Valley because the Valley is a natural drainage basin for thousands of watershed acres of Sierra Nevada and Coast Range foothills and mountains. Fresno County is at risk of three kinds of flooding:

- **Localized flooding.** Localized flooding problems are often caused by flash flooding, severe weather, or an unusual amount of rainfall in a short period of time, typically in winter and spring. Flooding from these intense weather events usually occurs in areas experiencing an increase in runoff from impervious surfaces associated with development and urbanization as well as inadequate storm drainage systems.
- **Riverine flooding.** Riverine flooding is the most common type of flooding in Fresno County and is caused by prolonged rainfall, sometimes combined with snowmelt, occurring in the late spring and early summer when temperatures warm. This type of flooding, defined as a watercourse exceeding its "bank-full" capacity, generally occurs as a result of prolonged rainfall, or rainfall that is combined with already saturated soils from previous rain events. In the Fresno County region, riverine flooding is largely caused by heavy and continued rains, sometimes combined with snowmelt, increased outflows from upstream dams, and heavy flow from tributary streams. These intense storms can overwhelm the local waterways as well as the integrity of flood control structures. The warning time associated with slow rise floods assists in life and property protection.
- **Dam failure flooding.** Flooding from failure of one or more upstream dams is also a concern to the Fresno County region. A catastrophic dam failure could easily overwhelm local response capabilities and require mass evacuations to save lives. Impacts to life safety will depend on the warning time and the resources available to notify and evacuate the public. Major loss of life could result, and there could be associated health concerns as well as problems with the identification and burial of the deceased.

WATERWAYS AND FLOOD CONTROL SYSTEMS

Flooding in Fresno County occurs primarily along the Kings River in the central-eastern part of the county, Dry Creek, and some sections of the San Joaquin River. A variety of mechanisms are employed to reduce exposure to flooding, including flood control reservoirs, acquisition of development rights, levee systems, and watershed treatment.

The following description of storm drainage and flood control systems in unincorporated areas of Fresno County is divided into three geographic regions:

- Western Fresno County
- Central Fresno County
- Eastern Fresno County

For purposes of this discussion, Western Fresno County extends eastward from the Coast Range to Fresno Slough; Central Fresno County extends eastward from Fresno Slough to the Sierra Nevada foothills; and Eastern Fresno County extends from the Sierra Nevada foothills to the Great Western Divide, marking the eastern border of the county.

WESTERN FRESNO COUNTY

Western Fresno County is largely unpopulated. The majority of land in the area is used for agriculture and grazing. Interstate 5 and the California Aqueduct pass in a north-south direction through western Fresno County. Large watersheds in the Coast Range drain stormwater eastward into the valley and the Fresno Slough. The Cities of Coalinga, Huron, and San Joaquin experience flooding during heavy rain events.

Geography, Rainfall, and Soils

Western Fresno County consists of the Coast Range, which lies at the county's western boundary with San Benito and Monterey Counties, and the San Joaquin Valley area between the Range and the Fresno Slough. A complex system of streams drains the eastern slope of the Coast Range into the Valley. Annual precipitation ranges from 6 to 8 inches; during storm events, however, the Valley is subject to flooding from high stream flows due to their large drainage basins. The Coast Range soils are also subject to erosion since stormwater runoff typically carries large volumes of sediment.

Rivers, Streams, and Existing Flood Control Facilities

Western Fresno County contains five major stream systems that flow from the Coast Range: Little Panoche Creek, Panoche Creek, Tumey Gulch and Arroyo Ciervo, Cantua Creek, and Arroyo Pasajero. The location, capacity, and managing agency for each stream system and associated flood control facility is summarized in Table 8-1. The data available for mapping storm drainage and flood control systems within unincorporated areas in Fresno County is shown in Table 8-2. The following is a description of each stream system and flood control facility.

Little Panoche Creek

Little Panoche Creek is located in the northwestern corner of Fresno County. It is managed for flood control purposes by the California Department of Water Resources (DWR). DWR operates and maintains a detention dam and reservoir (Little Panoche Reservoir) on the creek approximately 3 miles west of I-5. The facility was constructed by the Bureau of Reclamation to provide flood protection for the California Aqueduct. It was designed for a 100-year storm and has a storage capacity of 820 acre-feet. When storage levels in the reservoir exceed 820 acre-feet, the dam's uncontrolled spillway releases water. Little Panoche Creek then flows under I-5 and the California Aqueduct. The creek ends at a retention basin located east of the aqueduct. When the retention basin fills with stormwater during high flows, stormwater is pumped into the aqueduct.

Panoche Creek

Panoche Creek is located south of Little Panoche Creek in northwestern Fresno County. It flows under I-5 and across the California Aqueduct, which is siphoned in large pipes under the creekbed. The estimated 100-year peak flow for Panoche Creek is 22,000 cubic feet per second (cfs). On the east side of the aqueduct, the water is not channelized and flows overland. During high creek flows, stormwater may flood agricultural land and portions of the city of Mendota.

Tumey Gulch and Arroyo Ciervo

Tumey Gulch and Arroyo Ciervo are located in central-western Fresno County and flow easterly from Ciervo Mountain. The estimated 100-year peak flow for Tumey Gulch is 3,600 cfs and for Arroyo Ciervo, 900 cfs. No flood control facilities exist on the streams, although the California Aqueduct obstructs their eastward flow. During periods of high stream flow, sediment-laden floodwater may form ponds west of the aqueduct. These ponds may spill stormwater and sediment into the aqueduct during storm events.

Cantua Creek System

The Cantua Creek system includes Arroyo Hondo, Cantua Creek, Salt Creek, Martinez Creek, and Domengine Creek in central-western Fresno County. These creeks drain the east side of Joaquin Ridge, crossing I-5 between Kamm Road and Fresno-Coalinga Road. The estimated 100-year peak flow from the Cantua Creek system is 8,300 cfs. As with Tumey Gulch and Arroyo Ciervo, stormwater from the Cantua Creek system may form ponds west of the California Aqueduct during periods of high flow. Interstate 5 has been inundated by Cantua Creek during large storm events.

Arroyo Pasajero Stream System

The Arroyo Pasajero stream system encompasses the largest drainage area in western San Joaquin Valley. The major creeks in the system are Los Gatos, Warthan, Jacalitos, and Zapato-Chino creeks. The system drains through the cities of Coalinga and Huron and under I-5 between El Dorado and Jayne Avenues. Water from these streams is collected in a ponding basin on the west side of the California Aqueduct. The cities of Coalinga and Huron at most risk when flooding of this system occurs. Sediment containing naturally occurring asbestos washes downstream and is deposited in the ponding basin. During flood events, there is potential for the Arroyo Pasajero Stream System to cause physical damage to the Aqueduct and I-5. There is also a potential for floodwaters to wash asbestos fibers into the aqueduct.

TABLE 8-1 MAJOR FLOOD CONTROL FACILITIES AND STREAM SYSTEMS: WESTERN COUNTY

Facility/Water Body	Location	Capacity[1]	Managing Agency
Little Panoche Reservoir	3 miles west of I-5 in the northwest corner of the County	820 acre-ft	Department of Water Resources
Little Panoche Creek	Flows easterly from the north side of the Panoche Mt. in the northwest corner of the county	N/A	Department of Water Resources
Panoche Creek	Flows eastward just north of Panoche Road crossing I-5 approximately one mile north of the Panoche Road interchange	N/A	Department of Water Resources
Tumey Gulch and Arroyo Ciervo	Flows eastward from Ciervo Mt. crossing I-5 between Panoche Road and Harlan Avenue	N/A	Department of Water Resources
Cantua Creek	Flows easterly between Ciervo Hills and Three Sisters crossing I-5 just south of Coaling-Mendota Road interchange	2,200 cfs[2] (bank full at approximately 10-year event)	Department of Water Resources

TABLE 8-1 MAJOR FLOOD CONTROL FACILITIES AND STREAM SYSTEMS: WESTERN COUNTY			
Facility/Water Body	**Location**	**Capacity[1]**	**Managing Agency**
Arroyo Pasajero (including Los Gatos, Warthan, Acalitos, and Zapata-Chino Creeks)	This stream drains the largest drainage basin in the western San Joaquin Valley, flowing from the hills of the Coastal Range west of Coalinga and Pleasant Valley, through Coalinga and westerly across I-5 and terminating in a constructed ponding basin west of the aqueduct	2,500 cfs (typ. Flow)[2] 36,000 cfs 100-year peak flow[2]	Department of Water Resources, U.S. Army Corps of Engineers, Bureau of Reclamation

Source: Fresno County General Plan, 2017; Fresno Metropolitan Flood Control District
Note: The numbers in this table are design capacity and actual river capacity may vary significantly
[1]Department of Water Resources
[2]River channel capacity is difficult to define due to significant changes in the river conditions over time, variance in channel conditions and geometry along a given river reach, and assumptions made in developing hydraulic models.

EASTERN FRESNO COUNTY

Eastern Fresno County is located primarily in the Sierra Nevada. Precipitation falls mainly as snow and the region is characterized by smaller local watersheds that drain to the reservoirs upstream of Millerton and Pine Flat Lakes. Flows originating in the mountains and foothills contribute to the drainage and flooding problems on the valley floor.

Eastern County Streams

Most of the streams are controlled by the US Army Corps of Engineers or by the Fresno Metropolitan Flood Control District, protecting the City of Fresno from potential flood damage; others are uncontrolled, such as Wahtoke Creek.

Some of the flood control efforts in eastern Fresno County streams include:

- **Redbank Reservoir.** Redbank Reservoir, formed by Redbank Dam, is located on Redbank Creek north of Shaw Avenue. The reservoir has a gross pool capacity of 1,030 acre feet, and receives water from the Redbank Creek watershed. The reservoir is operated for flood control by the Fresno Metropolitan Flood Control District.
- **Redbank-Fancher Creeks Flood Control Project.** The Project comprises a system of two dams, three detention basins, and canals to protect developed areas in and around the city of Fresno from a 200-year storm. The project was built by the Corps and is managed and operated by the Fresno Metropolitan Flood Control District (FMFCD). Fancher Creek Reservoir has a capacity of 9,712 acre-feet and retains water from Fancher and Hog Creeks, and some flows from Redbank Creek. Fancher Dam diverts flows via canals around Fresno. Redbank Creek Detention Basin (940 acre-feet) contains local flows from Redbank Creek downstream from Redbank Dam. Alluvial Drain Detention Basin and Pup Creek Detention Basin have capacities of 305 and 559 acre-feet, respectively, and can each regulate discharges into Dry Creek at 25 cfs.

- **Big Dry Creek Reservoir.** Big Dry Creek Reservoir, with a capacity of 30,200 acre-feet, retains flows from Big Dry Creek and Dog Creek and diverts flows via Little Dry Creek to the San Joaquin River at a rate of up to 700 cfs. During a flood event, no water is typically released from Big Dry Creek Dam; however, during a severe flood event, it may be necessary to release water from the reservoir.

CENTRAL FRESNO COUNTY

Central Fresno County includes the area between the valley floor around Fresno Slough and eastward to the Sierra Nevada foothills, including Millerton Lake to Pine Flat Lake. As this area is the county's population center, storm drainage and flood control systems are largely designed to protect urban development. Streams in central Fresno County generally flow from out of Sierra Nevada to the east and westward to the valley bottom.

Geography, Rainfall, and Soils

The western slope of the Sierra Nevada drains into central Fresno County via the San Joaquin and Kings Rivers, as well as several small creeks and stream systems. Central Fresno County runs along the Sierra Nevada foothills at elevations around 500 feet on the east and slopes down to the Fresno Slough on the valley floor and drains to the north. Average annual precipitation in the central Fresno County area varies from six to eight inches. While the flooding potential in the fall and winter is generally from rain, spring flooding is a result of rapid snow melt in the mountains. Soils in the foothills are typically medium to coarse-textured, and gravelly or rocky. Soils in the floodplains are generally level, very deep, and well-drained. Soils in the valley floor are fine and poorly-drained.

Rivers, Streams, and Existing Flood Control Facilities

The San Joaquin and the Kings Rivers flow westerly from the Sierra Nevada into central Fresno County. The Fresno Slough, also known as the North Fork of the Kings River, is connected to the San Joaquin River by the James Bypass, a manmade canal that directs floodwater from the Kings River to the San Joaquin River. Three dams have been constructed to control flows on the rivers: Friant and Mendota Dams on the San Joaquin River and Pine Flat Dam on the Kings River. Pine Flat Dam is operated primarily for flood control purposes. Friant Dam was constructed and is managed by the U.S. Bureau of Reclamation (USBR) as part of the Central Valley Project (CVP). Although Friant Dam does serve to reduce release volumes in the main San Joaquin River channel, it was not sited, designed, or engineered for the purpose of flood control. Any flood control capability of the Friant Unit is incidental to its function as a diversion facility. Mendota Dam is operated primarily for irrigation.

In addition to the flood control facilities on the San Joaquin and Kings Rivers, a number of reservoirs and detention basins have been constructed on streams east of the Fresno-Clovis area to prevent urban flooding. These facilities include Redbank Dam and the Redbank-Fancher Creeks Flood Control Project. The Redbank-Fancher Creeks Flood Control Project consists of two dams (Big Dry Creek Dam and Fancher Creek Dam), three detention basins (Redbank Creek, Pup Creek, and Alluvial Drain Detention Basins), and canals to convey discharges around developed areas. The Friant-Kern Canal draws water from Millerton Lake at Friant Dam and flows south along the foothills toward Bakersfield.

Drainage systems and flood control facilities are described in detail below. Table 8-2 also summarizes the location, capacity, and managing agency for each stream system and flood control facility in central and eastern Fresno County.

San Joaquin River

The San Joaquin River forms the boundary between Madera and Fresno Counties. It flows from the Great Western Divide in the Sierra Nevada southwest along the northern border of Fresno County where it is joined by flows from the North Fork of the Kings River. From there, the river flows northwest up the San Joaquin Valley toward the Delta.

San Joaquin River flows are regulated by Friant Dam, which is the most significant of several dams along the river. Located in the north-central part of the county, Friant Dam was completed in 1942 by the U.S. Bureau of Reclamation (USBR) as part of the Central Valley Project (CVP). The reservoir, Millerton Lake, has a storage capacity of about 520,500 acre-feet. The CVP Friant Unit consists of Friant Dam and Millerton Lake, the Friant-Kern Canal, which runs south to Kern County, and the Madera Canal which runs northwesterly to Madera County. Releases from Friant Dam to the San Joaquin River and the Friant-Kern Canal provide service to water users within Fresno County.

The storage capacity of Millerton Lake is inadequate for full flood protection during wet years and emergency releases may result in flooding problems downstream. The storage-to-runoff ratio for Millerton Lake is 60 percent, which provides limited flexibility in the operation of Friant Dam. The US Army Corps of Engineers has evaluated the operational plans for all the dams in the San Joaquin River system to determine the possibility of coordinated releases to reduce the likelihood of coincident peak flows downstream with some success. Nevertheless, in 1997, emergency releases from Friant Dam combined with large storm events and several levee breaks downstream contributed to flooding along the San Joaquin River. Although Friant Dam does serve to reduce release volumes in the main San Joaquin River channel, it was not sited, designed, or engineered for the purpose of flood control. Any flood control capability of the Friant Unit is incidental to its function as a diversion facility. The amount of capacity in Millerton Lake that the US Bureau of Reclamation keeps available for runoff varies throughout the year according to defined operating criteria that have been developed and agreed to by Federal agencies (USBR, U.S. Army Corps of Engineers) and state agencies, most notably the Department of Water Resources (DWR). The Madera Canal also serves to release runoff volumes from the San Joaquin River.

The Friant-Kern Canal carries irrigation water from Millerton Reservoir southeast to Kern County. The average annual delivery from the canal is about one million acre-feet with a design capacity of 5,000 cfs. There is a spillway into the Kings River just upstream of a double barrel 24½-foot diameter (i.e., two 24½-foot pipes) siphon under the river. Although the canal was constructed by the USBR and is normally managed by the Friant-Kern Water Users Authority, floodwater in the canal is managed by the Corps. During times of flooding, water from the Friant-Kern Canal may not be releasable to the Kings River since the Corps may not want additional flows on the river.

Mendota Pool is a 5,000 acre-foot reservoir created by Mendota Dam. It is located just outside the city of Mendota on the San Joaquin River. The primary function of the dam is storage of irrigation water for agriculture, although the water level in the pool also functions to maintain water levels in the Mendota Wildlife Management Area. Mendota Pool provides little or no flood protection. Mendota Dam contains flows from the San Joaquin River as well as discharge and releases from the Kings River via the North Fork (Fresno Slough and James Bypass). The Delta-Mendota Canal conveys Delta water to Mendota Pool

from the north and several irrigation channels divert flows from it. The USBR, in coordination with the Central California Irrigation District, manages this system as part of the Central Valley Project. The USBR has proposed replacing the existing structure with a new Mendota Dam, which may raise the water level in the pool.

Southern California Edison (SCE) and Pacific Gas and Electric (PG&E) own and operate a number of dams and reservoirs on the San Joaquin River and its tributaries upstream of Friant Dam. The most notable of these are Edison Lake and Florence Lake. These upstream storage facilities are operated for the production of electric energy and have a combined capacity of about 609,530 acre-feet. Their operation does affect the flow of water into Millerton Lake and subsequently the timing and availability of releases to Friant Unit Contractors. None of these storage facilities is designed or operated for flood control, and the Corps currently has no jurisdiction over releases from these structures. Cumulative flood releases from the upper San Joaquin River dams could overwhelm Friant Dam.

From Friant to Gravelly Ford, the San Joaquin River is part of the Designated Floodway Program administered by the State Reclamation Board. Land use restrictions and river management practices allow the river to meander, flood the overbanks, and remain in a relatively natural state. Downstream of Gravelly Ford, the river is confined by levees. The design capacity of the San Joaquin River from Friant Dam to Chowchilla Bypass is in excess of 8,000 cfs, while the channel capacity downstream is reduced. The major San Joaquin River "choke point" in Fresno County is the reach near Mendota and Firebaugh, which has a channel capacity of 8,000 cfs. Beyond that point, San Joaquin River channel capacity continues to decrease for some distance due to lack of annual flooding and natural channel clearing since Friant Dam was constructed. Further downstream, the river channel has been deepened and widened by historic flows of the Merced River, Tuolumne River, and other tributaries.

In addition to release from Friant Dam, two uncontrolled streams, Cottonwood Creek and Little Dry Creek, add significantly to the river flows below Friant during heavy precipitation. Historically, prior to the development of flood control system, large areas within the San Joaquin Valley were within the river's floodplain. As development has encroached into the floodplain, the river has been confined to a relatively narrow channel constrained by levees, which has reduced the carrying capacity of the river. Most of the flow (as much as 5,500 cfs) from Friant Dam is diverted northward to the Chowchilla Bypass about 11 river miles upstream from Mendota Dam. Downstream of Chowchilla Bypass, the river is not confined by levees (within Fresno County) and generally carries no more than 2,500 cfs.

Kings River

The Kings River flows from the Sierra Nevada southwest through the central part of Fresno County and into Tulare County at Reedley. North of Hanford the river branches with the South Fork flowing southward to the Tulare Lakebed. The North Fork joins Fresno Slough, which conveys flows north to the San Joaquin River at Mendota Pool. Several sloughs and canals branch off of the river and are used for water storage and to convey irrigation water.

The Kings River flows are regulated by Pine Flat Dam, which was completed in 1954 with the primary purpose of flood protection. Pine Flat Reservoir, located 16 miles northeast of Sanger in the east central part of the county, has a storage capacity of approximately one million acre-feet. The flood control functions of the facility are managed by the Corps while the releases for irrigation diversion are managed by the Kings River Water Association (KRWA).

Pine Flat Dam is similar to Friant Dam in that its operating parameters for allocating reserve capacity change throughout the precipitation year. Management of the reservoir space is based on forecasts, expected runoff patterns, snow measurements, and expected fill date. The objective is to exactly fill the reservoir without spilling. With a large volume available for snow melt and a sufficient storage to runoff ratio, Pine Flat Dam operations normally avoid emergency spillage.

Downstream of Pine Flat Dam, the Kings River is managed for flood control by the Kings River Conservation District in cooperation with Corps, DWR, and local irrigation districts. Releases from Pine Flat Dam and flows from two uncontrolled streams, Holland Creek and Mill Creek, provide the majority of the river's flow. Numerous sloughs and irrigation canals branch off the Kings River; the capacity of the river is more than 13,000 cfs. The Kings River flood control facilities include many miles of levees in central Fresno County. There are three weirs on the river, Army Weir, Crescent Weir, and Stinson Weir. The natural river branches to the north fork (also known as Fresno Slough), which flows to join the San Joaquin River at Mendota Pool, and the south fork, which flows to Tulare Lakebed. Army Weir is located on this branch, just upstream from SR 41. Crescent Weir is located at the Crescent Bypass southwest of 22nd and Excelsior Avenues. The Crescent Bypass flows to Fresno Slough. Stinson Weir is located near the confluence of Murphy Slough and Fresno Slough at Elkhorn Avenue. Normal flows are held by these weirs in the main channel. During storm events, as much as 4,750 cfs is diverted to the North Fork and the San Joaquin River. As much as 3,200 cfs can then be diverted to the Crescent Bypass. Any flow above approximately 10,000 cfs is divided equally between the north and south forks.

In practice, flow management on the Kings River is carefully coordinated between anticipated weather, upstream flows, and ability of downstream users to receive the water. Significant adjustment may be necessary, and a variety of operations options are considered, including storing or routing water through alternate sloughs or requesting users to accept additional water. Fresno Slough and the James Bypass are normally dry except for groundwater seepage and irrigation returns. Flow is diverted to the South Fork only in very wet years.

The hydraulic capacity of the rivers and the ability to accommodate major flood events has increased from mining and subsequent reclamation activity; aggregate mining has occurred along the San Joaquin and Kings Rivers, mostly outside the main river channels.

Redbank Reservoir

Redbank Reservoir, formed by Redbank Dam, is located on Redbank Creek north of Shaw Avenue. The reservoir has a gross pool capacity of 1,030-acre feet and receives water from the Redbank Creek watershed. The reservoir is operated for flood control by the Fresno Metropolitan Flood Control District.

Redbank-Fancher Creeks Flood Control Project

The Project comprises a system of 2 dams, 3 detention basins, and canals to protect developed areas in and around the city of Fresno from a 200-year storm. The project was built by the Corps and is managed and operated by the Fresno Metropolitan Flood Control District (FMFCD). Fancher Creek Reservoir has a capacity of 9,712 acre-feet and retains water from Fancher and Hog Creeks, as well as some flows from Redbank Creek. Fancher Dam diverts flows via canals around Fresno. Redbank Creek Detention Basin (940 acre-feet) contains local flows from Redbank Creek downstream from Redbank Dam. Alluvial Drain Detention Basin and Pup Creek Detention Basin have capacities of 305 and 559 acre-feet, respectively and can each regulate discharges into Dry Creek at 25 cfs.

Big Dry Creek Reservoir

Big Dry Creek Reservoir, with a capacity of 30,200 acre-feet, retains flows from Big Dry Creek and Dog Creek and diverts flows via Little Dry Creek to the San Joaquin River at a rate of up to 700 cfs. During a flood event, no water is typically released from Big Dry Creek Dam. During a severe flood event, however, it may be necessary to release water from the reservoir.

TABLE 8-2 MAJOR FLOOD CONTROL FACILITIES AND STREAM SYSTEMS: EASTERN AND CENTRAL COUNTY

Facility/Water Body	Location	Capacity	Managing Agency
Millerton Reservoir*	17 miles northeast of SR 99 on the San Joaquin River in the north central part of the county	520,500 acre-ft[1]	U.S. Bureau of Reclamation
Pine Flat Reservoir	16 miles northeast of Sanger on the Kings River in the east central part of the county	1,000,000 acre-ft[1]	U.S. Army Corps of Engineers
Mendota Pool	On the San Joaquin River at Mendota where the river turns north and Fresno Slough joins the river in the northwestern part of the country	5,000 acre-ft[2]	U.S. Bureau of Reclamation
Big Dry Creek Reservoir	West of Friant-Kern Canal and north of Tollhouse Road on Big Dry Creek	30,200 acre-ft[1]	Fresno Metropolitan Flood Control District
Redbank Reservoir	7 miles east of Clovis, 3 miles southwest of the Friant-Kern Canal between Dog Creek and Fancher Creek in the central part of the county	1,030 acre-ft	Fresno Metropolitan Flood Control District
Fancher Creek Reservoir	East of the Friant-Kern Canal at the confluence of Fancher and Hog creeks	9,712 acre-ft[1]	Fresno Metropolitan Flood Control District
Redbank Creek Detention Basin	On Redbank Creek north of McKinley Avenue and west of DeWolf Avenue	940 acre-ft[1]	Fresno Metropolitan Flood Control District
Pup Creek Detention Basin	On Pup Creek south of Herndon Avenue and east of Temperance Avenue	559 acre-ft[1]	Fresno Metropolitan Flood Control District
Alluvial Drain Detention Basin	On Alluvial Drain west of Temperance Avenue and north of Nees Avenue	305 acre-ft[1]	Fresno Metropolitan Flood Control District
Eastern and Central Fresno County 1997	Flows from the Sierra Nevada southwest along the northern border of the county to Mendota where it turns to flow to the northwest. Forms the border between Fresno and Madera counties	8,000 cfs[1**] (Friant Dam to Chowchilla) 2,500 cfs[1,] (to Mendota) 4,500 cfs[1,] (Mendota Dam to Sand Slough)	U.S. Bureau of Reclamation, U.S. Army Corps of Engineers, and Local Irrigation Districts
Kings River	Flows from the Sierra Nevada to Sanger and Reedley and into Kings County boundary to Army Weir above Hwy 41 where the normal flow is diverted to the North Fork. Excess flows are diverted to Tulare Lakebed	13,000 cfs[3**]	Kings River Conservation District

TABLE 8-2 MAJOR FLOOD CONTROL FACILITIES AND STREAM SYSTEMS: EASTERN AND CENTRAL COUNTY			
Facility/Water Body	**Location**	**Capacity**	**Managing Agency**
Fresno Slough & James Bypass	A seasonal waterway system which connects the Kings River near Laton and Lemoore NAS to the San Joaquin River at Mendota Pool during flood events	4,750 cfs[1]	U.S. Army Corps of Engineers
Friant-Kern Canal	Flows southeasterly from Millerton Lake through Orange Cove continuing on to Bakersfield. Crosses five feet below Kings River via a 24.5 ft diameter 3,000 ft siphon	5,000 cfs[1]	Friant-Kern Water Users' Authority, U.S. Bureau of Reclamation, U.S. Army Corps of Engineers
Holland Creek Diversion Channel	South of the Friant-Kern Canal where it crosses Trimmer Springs Road	Peak channel capacity is 1,044 cfs	Fresno Metropolitan Flood Control District
Fancher Creek Detention Basin	Southwest corner of McKinley Avenue and McCall Avenue	Ultimate capacity is 1,802 ac/ft.	Fresno Metropolitan Flood Control District
Pup-Enterprise Detention Basin	East side of DeWolf Avenue, just south of Herndon Avenue	Ultimate capacity is 200 ac/ft.	Fresno Metropolitan Flood Control District
Big Dry Creek Detention Basin	North of Freeway 168 and Dakota Avenue	Ultimate capacity is 251 ac/ft.	Fresno Metropolitan Flood Control District
Dry Creek Extension Basin	Northwest corner of Annadale Avenue and Brawley Avenue	Ultimate capacity is 854 ac/ft.	Fresno Metropolitan Flood Control District

Source: Fresno County General Plan, 2017; Fresno Metropolitan Flood Control District

*Friant Dam/Millerton Reservoir is not sited, designed, or operated to function as a flood control facility, and any such capability is incidental to its function as a diversion facility.

**River channel capacity is difficult to define due to significant changes in the river conditions over time, variance in channel conditions and geometry along a given river reach, and assumptions made in developing hydraulic models. The numbers provided in this table are design capacity and actual river capacity may vary significantly.

[1]*Source: U.S. Army Corps of Engineers*

[2]*Source: Central California Irrigation District*

[3]*Source: Kings River Conservation District*

INCORPORATED AREAS

Fresno County contains 15 incorporated cities, most of which, operate their own storm drainage and flood control systems. Exceptions are the cities of Fresno and Clovis, which are managed by the Fresno Metropolitan Flood Control District. Many cities also rely on levee maintenance by the U.S. Army Corps of Engineers and irrigation districts to provide flood protection from flood-prone creeks and rivers.

FLOOD HAZARD ZONES

Official floodplain maps are maintained by the Federal Emergency Management Agency (FEMA). FEMA determines areas subject to flood hazards and designates these areas by relative risk of flooding on a map for each community, known as the Digital Flood Insurance Rate Map (DFIRM). A 100-year flood is considered for purposes of land use planning and protection of property and human safety. A 100-year flood is defined as a flood event that has a one percent chance of occurring in any given year. It is important to note that the delineation of areas within the 100-year floodplain represents a statistical probability for the long-term average occurrence of flooding. Flooding can occur in a 100-year floodplain more often or less often than once in a hundred years. Smaller floods have an even greater chance of occurring in any year and pose hazards as well. Areas that are flooded less often only become inundated as a result of more uncommon and extreme precipitation/runoff events. The boundaries of the 100-year floodplain are delineated by FEMA based on hydrology, topography, and modeling of flow during predicted rainstorms. The analysis of predicted flooding does not account for the effects of continued land subsidence or the rise in sea level associated with climate change. FEMA-designated 100-year and 500-year flood plains in Fresno County were updated under the Map Modernization Program and became effective on February 18, 2009 (see Figure 8-2).

The State of California (DWR) completed 'best available map' (BAM) that displays 100- and 200- and 500-year floodplain maps using data compiled from several sources on October 15, 2008 (shown in Figure 8-2, Figure 8-3, and Figure 8-4). These maps are available to interactively view at the DWR website link at: http://gis.bam.water.ca.gov/bam/. The floodway maps displayed on the BAM have no regulatory status and do not replace the FEMA or CVFPB regulatory maps but are intended to support community-based flood risk management and multi-hazard planning. They may identify all areas subject to flooding, but they depict estimate areas with potential exposure to flooding at three different storm probabilities: those with a 1 percent chance of being equaled or exceeded in a given year (100-year), those with a 0.5 percent chance of being equaled or exceeded in a given year (200-year), and those with a 0.2 percent chance of being equaled or exceeded in a given year (500-year). There are four sources used in the compilation of BAM data:

- FEMA Effective data is shown for the 100- and 500-year floodplains (shown in Figure 8-2).
- Data from regional and special studies of floodplains developed from approximate assessment procedures from local agencies are shown for the 100- and 500-year floodplains.
- The United States Army Corps of Engineers completed the Sacramento and San Joaquin River Basin Comprehensive Study in 2002. This data is the only source that shows a 200-year floodplain, as well as the 100- and 500-year floodplains (shown in Figure 8-3)
- Data from the California Department of Water Resources Awareness Floodplain Mapping project are also shown for the 100-year floodplain. This map shows an approximation of flood hazard areas that are currently not yet mapped as a regulated floodplain (shown in Figure 8-4).

The Department of Water Resources also provides an interactive viewing map for designated floodway data, collected by the Central Valley Flood Protection Board. This link to view this map is available at the same webpage as the BAM: http://gis.bam.water.ca.gov/bam/.

The State of California (DWR) completed levee flood protection zone (LFPZ) maps in December 2008 of areas that may be inundated if a project levee fails (from water surface elevations at the top of the levee, which may be from a storm event even larger than the levee's design storm). The LFPZ map of the San Joaquin River shows a considerable area within Fresno County that may be inundated if the project levees fail (see Figure 8-5). The focus of the maps is to depict areas vulnerable in the event that project levees fail, but the areas in these flood zones may be subject to flooding due to other sources or factors (such as failure or overtopping of non-project levees) flows that exceed the design capacity of levees or flows from other surface water sources not protected against by levees. A relatively broad LFPZ is identified along the San Joaquin River, with depths less than three feet indicated west of the river, but greater than three feet all along the east side of the river (Figure 8-2). Several areas protected by project levees in the east county would also have inundation areas that are primarily less than three feet but include some deeper areas.

FIGURE 8-2 100-YEAR AND 500-YEAR FLOODPLAINS

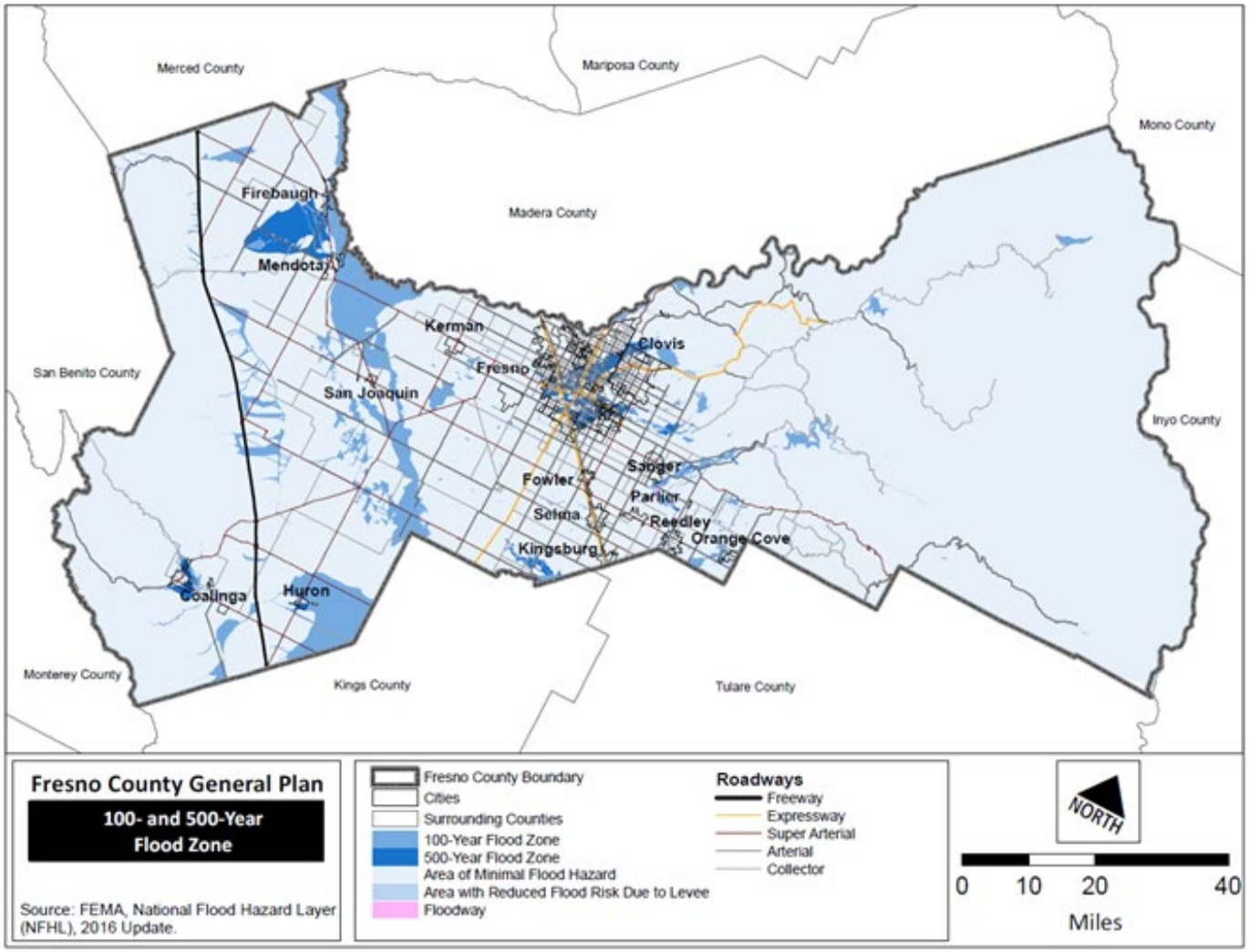


FIGURE 8-3 100- 200- AND 500-YEAR FLOODPLAINS

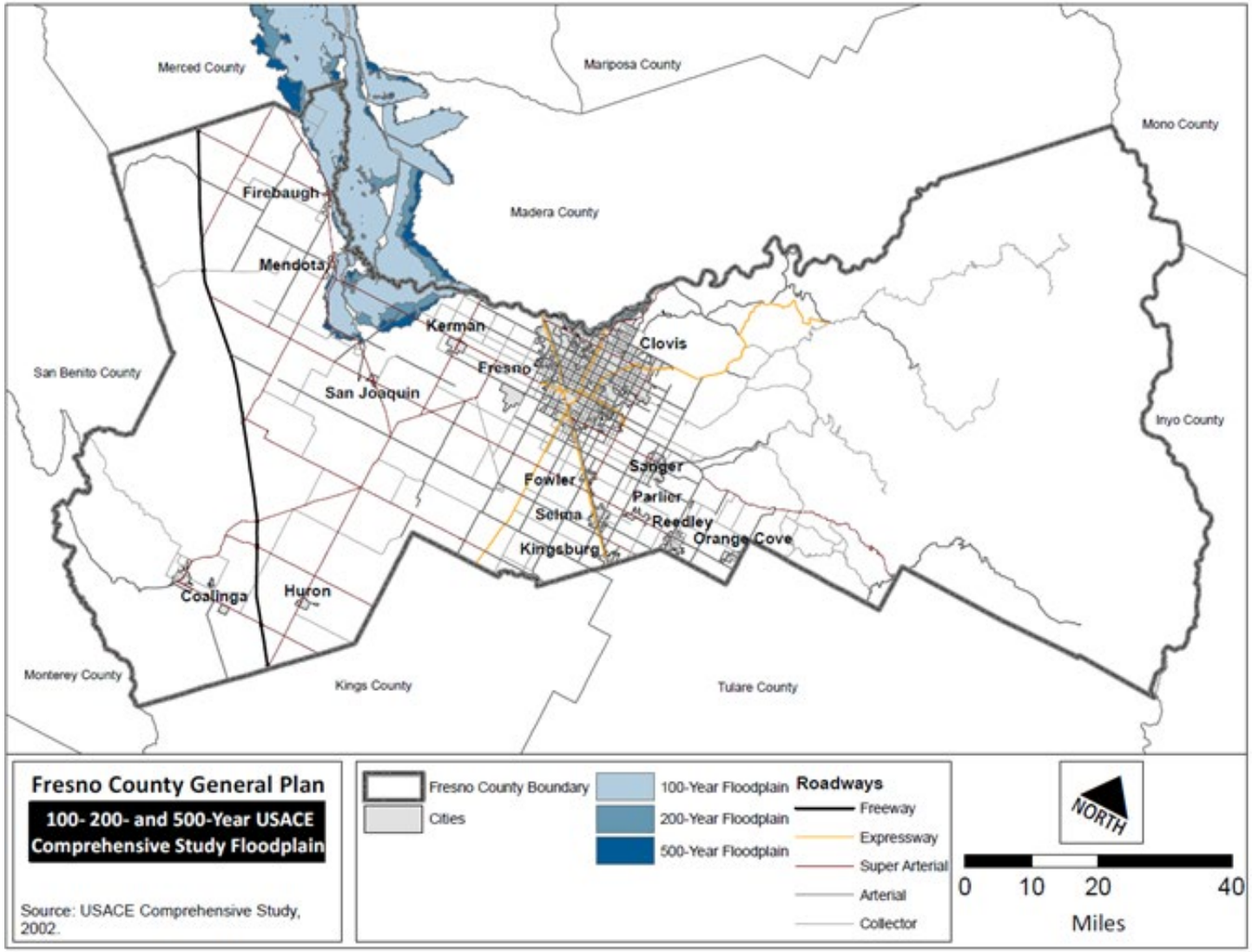


FIGURE 8-4 AWARENESS FLOODPLAIN

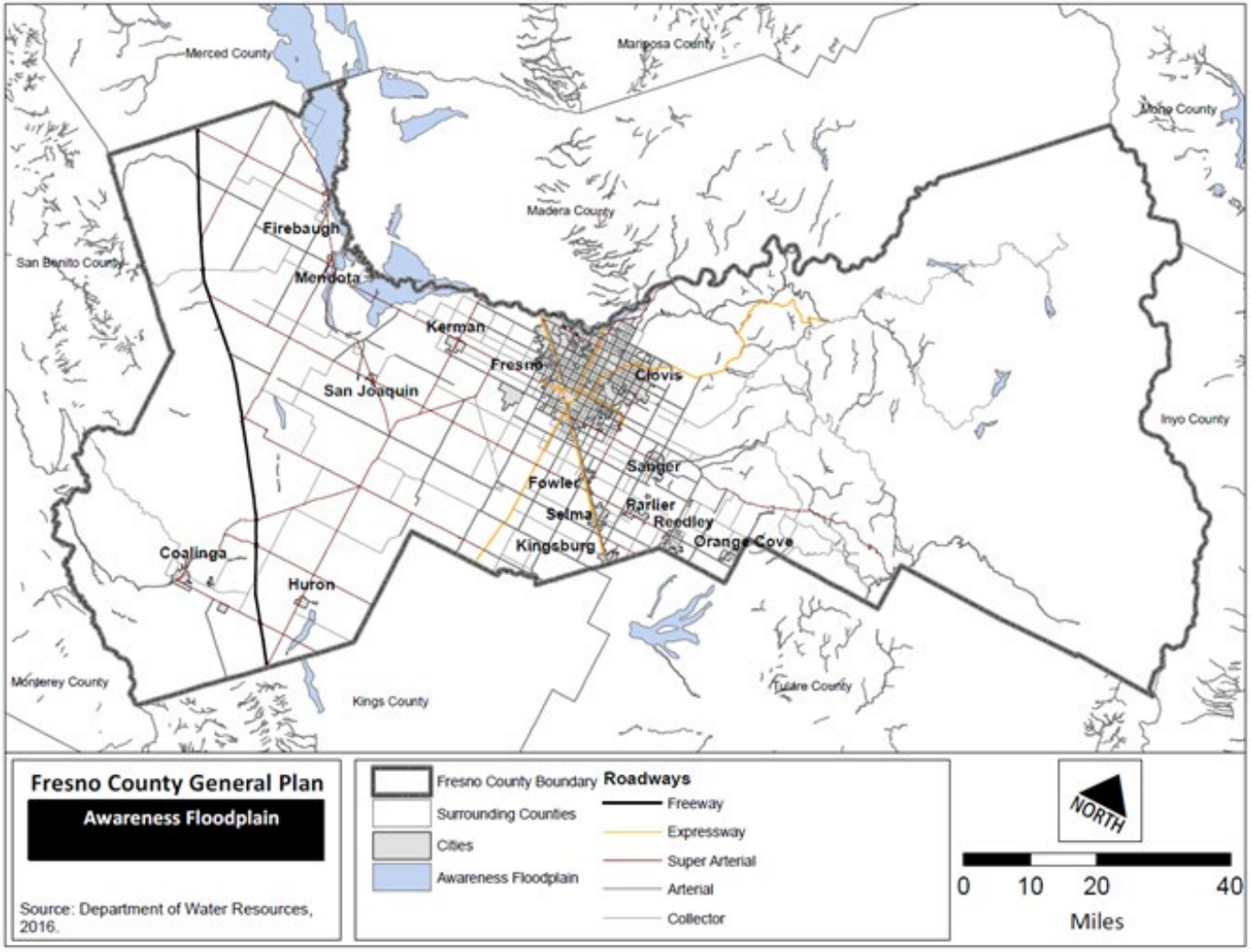
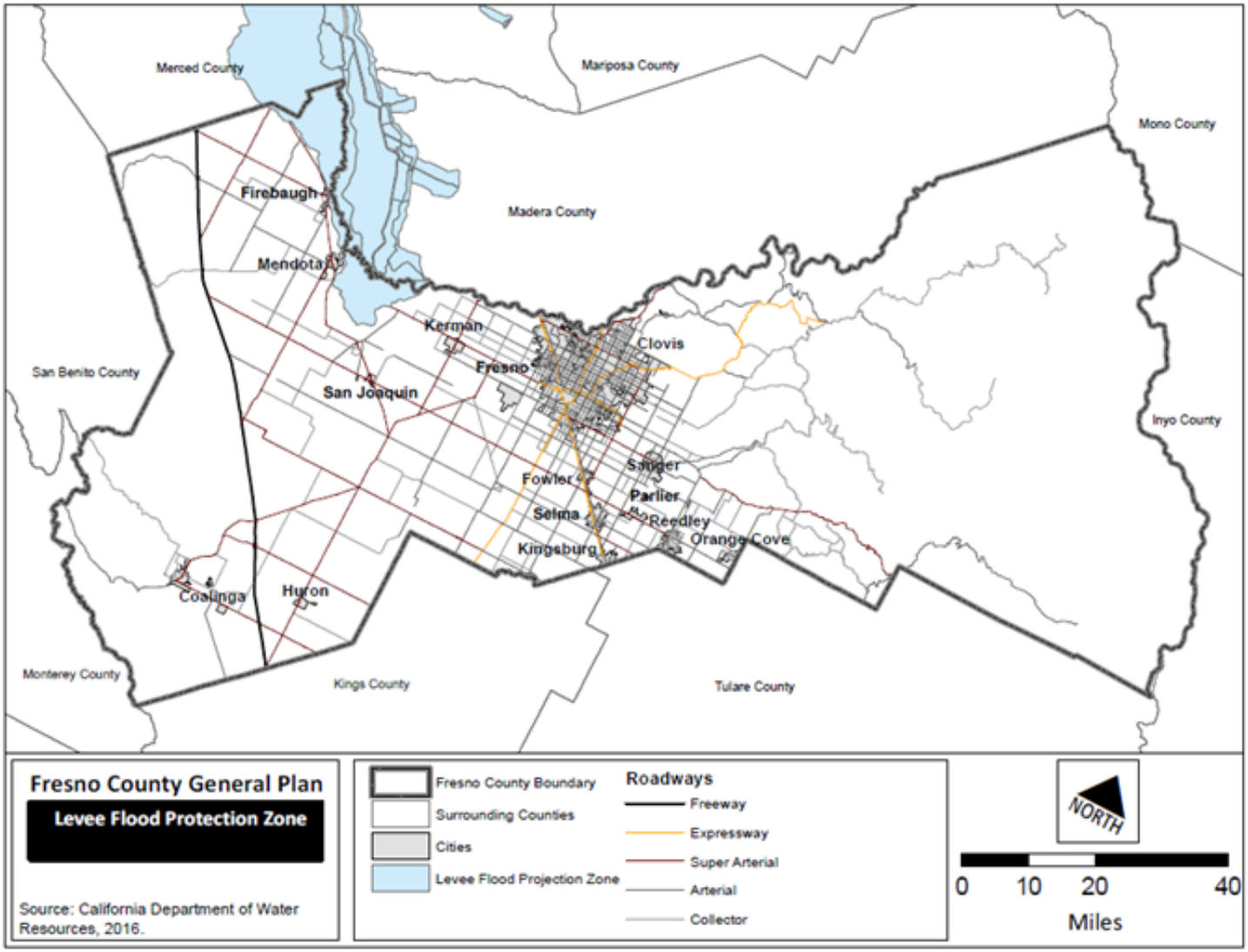


FIGURE 8-5 LEVEE FLOOD PROTECTION ZONE



DAM FAILURE INUNDATION

Dam failure can result from a number of natural or human activities, such as earthquakes, erosion, improper siting, rapidly rising floodwaters, and structural and design flaws. Flooding due to dam failure can cause loss of life, damage to property, and other ensuing hazards. Damage to electric-generating facilities and transmission lines associated with hydro-electric dams could also affect life support systems in communities outside the immediate hazard area.

According to the Fresno County Operational Area Master Emergency Services Plan, there are several hundred dams located within Fresno County designed for flood control, electrical generation, stock watering purposes, irrigation storage, and recreation. Of these, 23 dams could cause substantial flooding in Fresno County in the event of a failure. Most of these dams are in the San Joaquin River or Kings River watersheds in the eastern part of the county. Three of the dams mitigate stream run-off from foothills in the northeast of the county, protecting the Fresno-Clovis metropolitan area. One of the dams protects the northern part of the county's valley floor from stream run-off in the foothills in the west side of the county. One dam, Crane Valley, is located in nearby Madera County. Identified dam failure-flood inundation areas in Fresno County are shown in Table 8-3.

Pursuant to Government Code section 8589.5, the California Office of Emergency Services (CalOES) Dam Safety program collects and reviews dam failure maps for State jurisdictional dams. The estimated areas of inundation from potential failure of 25 dams located in Fresno County and Crane Valley dam (in Merced County) are shown in Figure 8-6 through Figure 8-8. Fancher Creek and Fancher Creek Detention are shown as one combined area and Redbank and Redbank Detention are also shown as one combined area. There are seven State jurisdictional dams located in Fresno County that were unable to provide data and their inundation areas are not provided in the figures: Alluvial Drain Detention, Bear Diversion, Mendota Diversion, Mono Creek Diversion, Mud, Portal PH Forebay, Reynolds Weir, and Stinson Weir. Some other dams in the county are not required to submit inundation mapping to CalOES and receive a waiver due to their small size and/or rural location.

Both incorporated and unincorporated areas of Fresno County are at risk of damage from flooding in the event of a dam failure. Generally, the areas at risk are large urban and rural areas downstream and below the dams on the valley floor. Additionally, other areas outside the county could be affected by a dam failure within the county; depending on the dam, these areas include the counties of Kings, Madera, Merced, and Tulare.

LIKELIHOOD OF DAM FAILURE

Between 1976 and 1983 there were 14 dam failures in Fresno County, none of which involved the County's 23 major dams, according to the Fresno County Operation Area Master Emergency Services Plan. These dam failures were due to inadequate maintenance and unauthorized and inadequate construction.

Given the history of dam failures and the large number of dams within the county, many of which are at risk of failure, there is potential for future dam failures; however, there has not been any failure of major dams in the county and future failures are more likely to occur with smaller dams causing minimal or no damage.

TABLE 8-3
DAMS WITH POTENTIAL TO CAUSE DAMAGING FLOODS
Fresno County

Dam	Owner	Stream	Type	Capacity (Acre-feet)[1]
Balch Afterbay	Pacific Gas & Electric	North Fork Kings River	Constant Radius Arch	318
Balch Diversion	Pacific Gas & Electric	North Fork Kings River	Variable Radius Arch	1,295
Balsam Meadow	S. California Edison Co.	West Fork Balsam Creek	Rockfill	2,040
Big Creek No. 4	S. California Edison Co.	Big Creek	Constant Radius Arch	100
Big Creek No. 6	S. California Edison Co.	San Joaquin River	Constant Radius Arch	993
Big Creek No. 7	S. California Edison Co.	San Joaquin River	Gravity	35,000
Big Dry 1017-	Fresno Metro. Flood Control District	Big Dry Creek/Dog Creek	Earth	30,200
Courtright	Pacific Gas & Electric	Helms Creek	Rockfill	123,300
Crane Valley	Pacific Gas & Electric	North Fork Willow Creek	Hydraulic Fill	45,410
Fancher Creek	Fresno Metro. Flood Control District	Fancher Creek & Hog Creek	Earth	9,600
Florence Lake	S. California Edison Co.	South Fork San Joaquin River	Multiple Arch	64,406
Friant	U.S. Bureau of Reclamation	San Joaquin River	Gravity	520,500
Griffen Reservoir	Harris Farms, Inc.	Tributary Holland Creek	Earth	900
Hume Lake	U.S. Forest Service	Ten Mile Creek	Multiple Arch	1,410
Huntington Lake	S. California Edison Co.	Big Creek	Gravity	88,834
Little Panoche	U.S. Bureau of Reclamation	Little Panoche Creek	Earth	5,580
Mammoth Pool	S. California Edison Co.	San Joaquin River	Earth	123,000
Pine Flat	U.S. Corps of Engineers	Kings River	Gravity	1,000,000
Redbank	Fresno Metro. Flood Control District	Redbank Creek	Earth	1,100
Sequoia Lake	YMCA, Inc.	Mill Flat Creek	Earth & Rock	1,370
Shaver Lake	S. California Edison Co.	Stevenson Creek	Gravity	135,283
Vermilion Valley	S. California Edison Co.	Mono Creek	Earth	125,000
Wishon	Pacific Gas & Electric	North Fork Kings River	Rockfill	118,000

[1]One acre foot=326,000 gallons.

Source: Fresno County Multi-Hazard Mitigation Plan, May 2018, from Fresno County Operational Area Dam Failure Evacuation Plan, 2003.

FIGURE 8-6 POTENTIAL DAM FAILURE INUNDATION AREAS: BATCH AFTERBAY/DIVERSION, COURTRIGHT, HUME LAKE, LITTLE PANOCHE, PINE FLAT, RED BANK, SHAVER, VERMILLION VALLEY

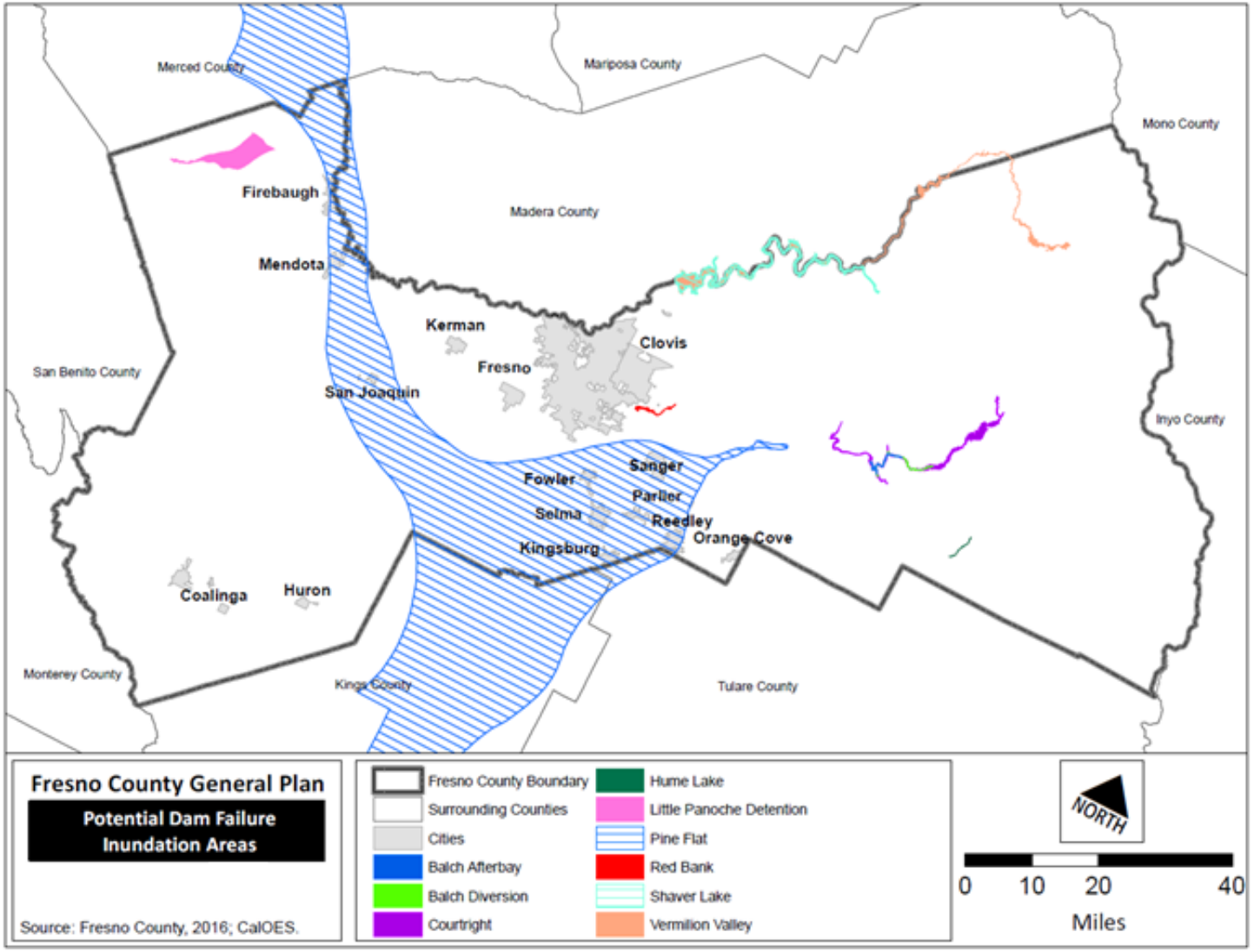


FIGURE 8-7 POTENTIAL DAM FAILURE INUNDATION AREAS: BALSAM MEADOW, BIG CREEK (4, 6, 7), BIG DRY CREEK, FLORENCE LAKE, GIFFEN RES, SEQUOIA LAKE, FRIANT

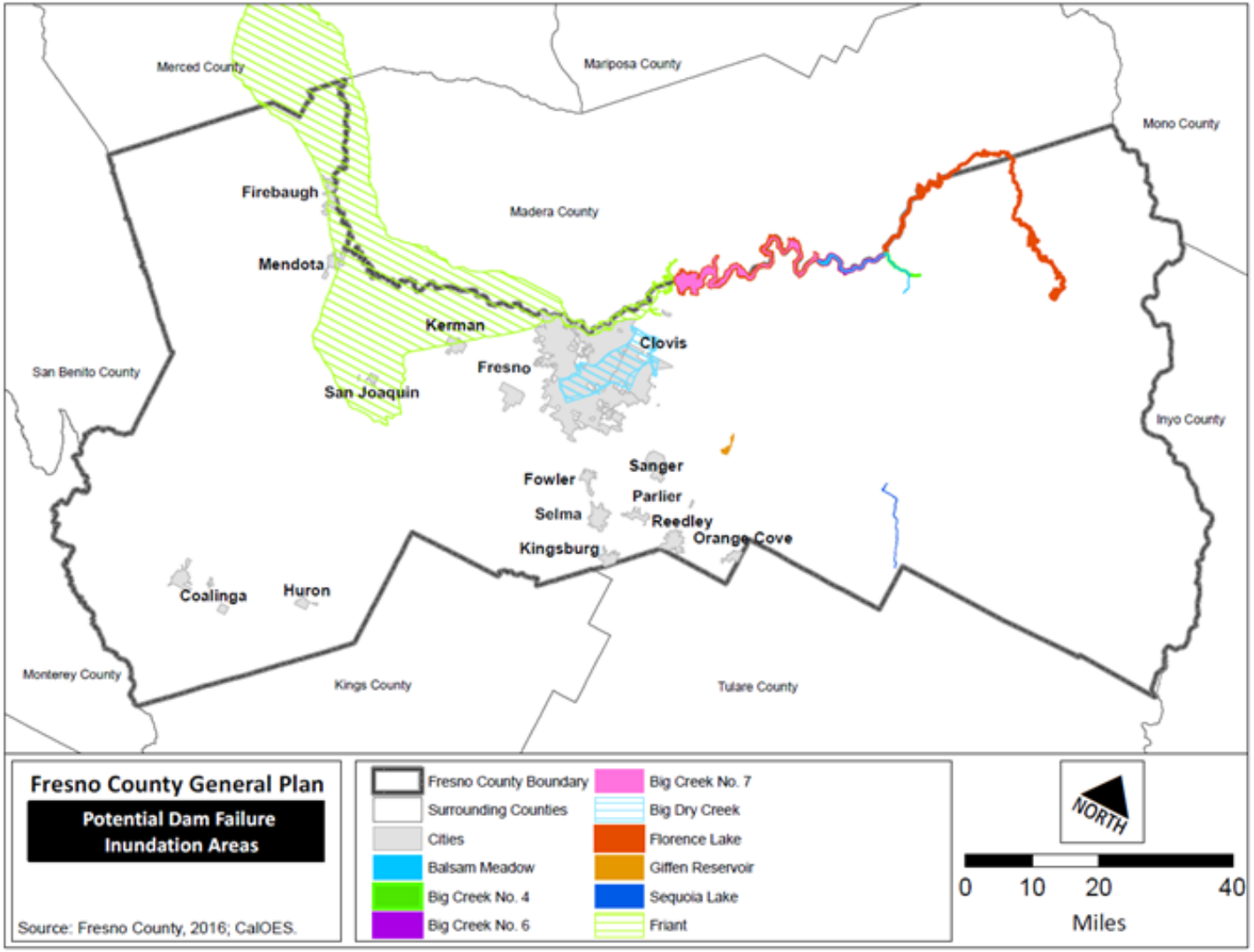
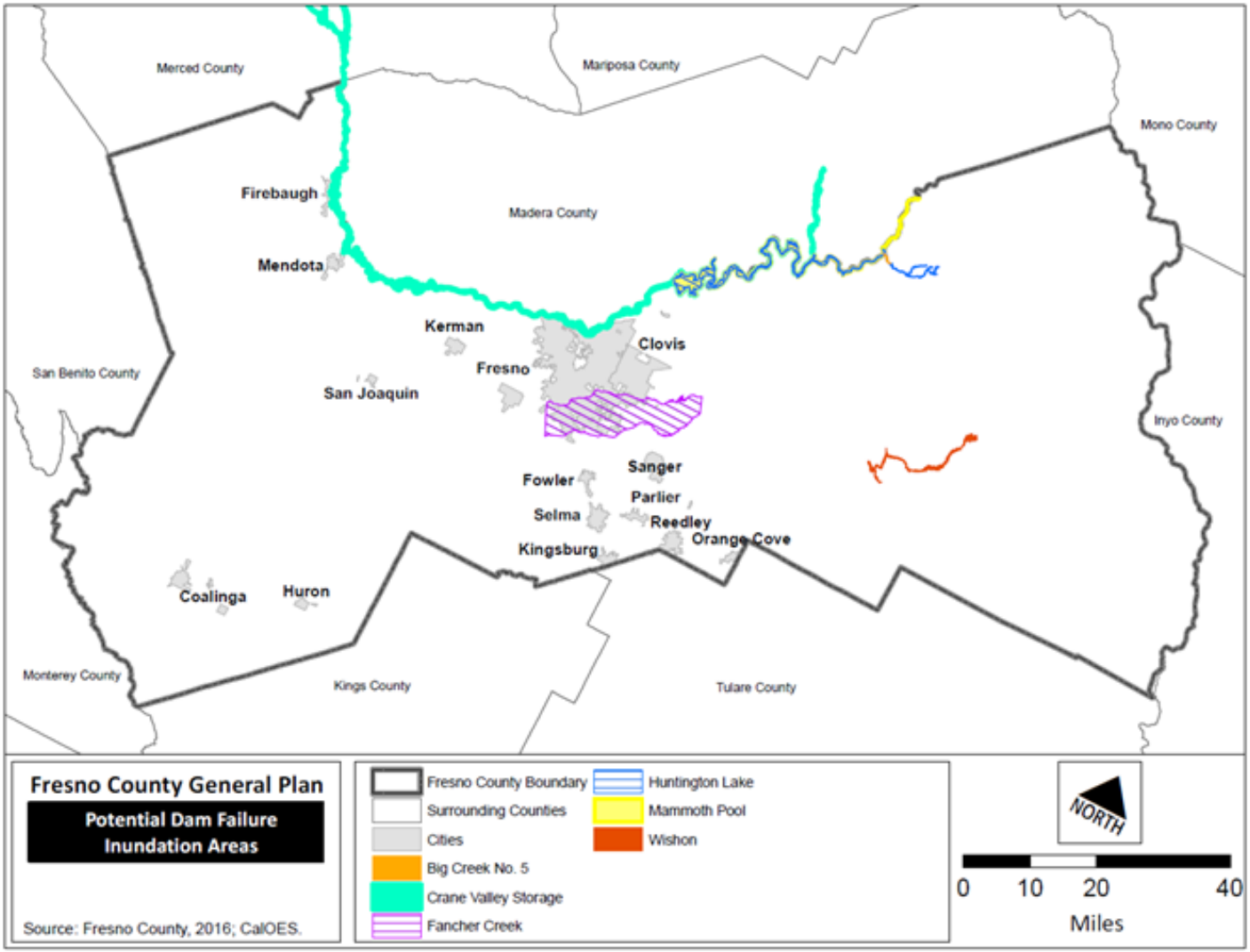


FIGURE 8-8 POTENTIAL DAM FAILURE INUNDATION AREAS: BIG CREEK 5, CRANE VALLEY, FANCHER CREEK, HUNTINGTON LAKE, MAMMOTH POOL, WISHON



LEVEE FAILURE

A levee is a raised area that runs along the banks of a river or canal and help to reinforce banks and prevent flooding. While levees provide strong flood protection, they are not free from risk. Levees are designed to protect against a specific flood level and could be overtopped during severe weather events. Levees reduce, not eliminate, the risk to individuals and structure behind them. A levee system failure or overtopping can create severe flooding and high-water velocities. No levee provides protection from events for which it was not designed, and proper operation and maintenance are necessary to reduce the probability of failure. Figure 8-9. There are three primary risks to levee integrity in Fresno County:

- Earthquake failure
- High water failure
- Dry weather failure.

EARTHQUAKE FAILURE

Seismic risk in Fresno County is characterized as moderate-to-high because of many active faults in the region. Seismic risk to levees is related to liquefaction, ground settlement, and cracking. Figure 8-1 illustrates the location of faults in Fresno County.

HIGH WATER FAILURE

High water in the County can overtop levees. High water also increases the hydrostatic pressure on levees and their foundations, causing instability. The risk of through-levee and under-levee seepage failures increases as well.

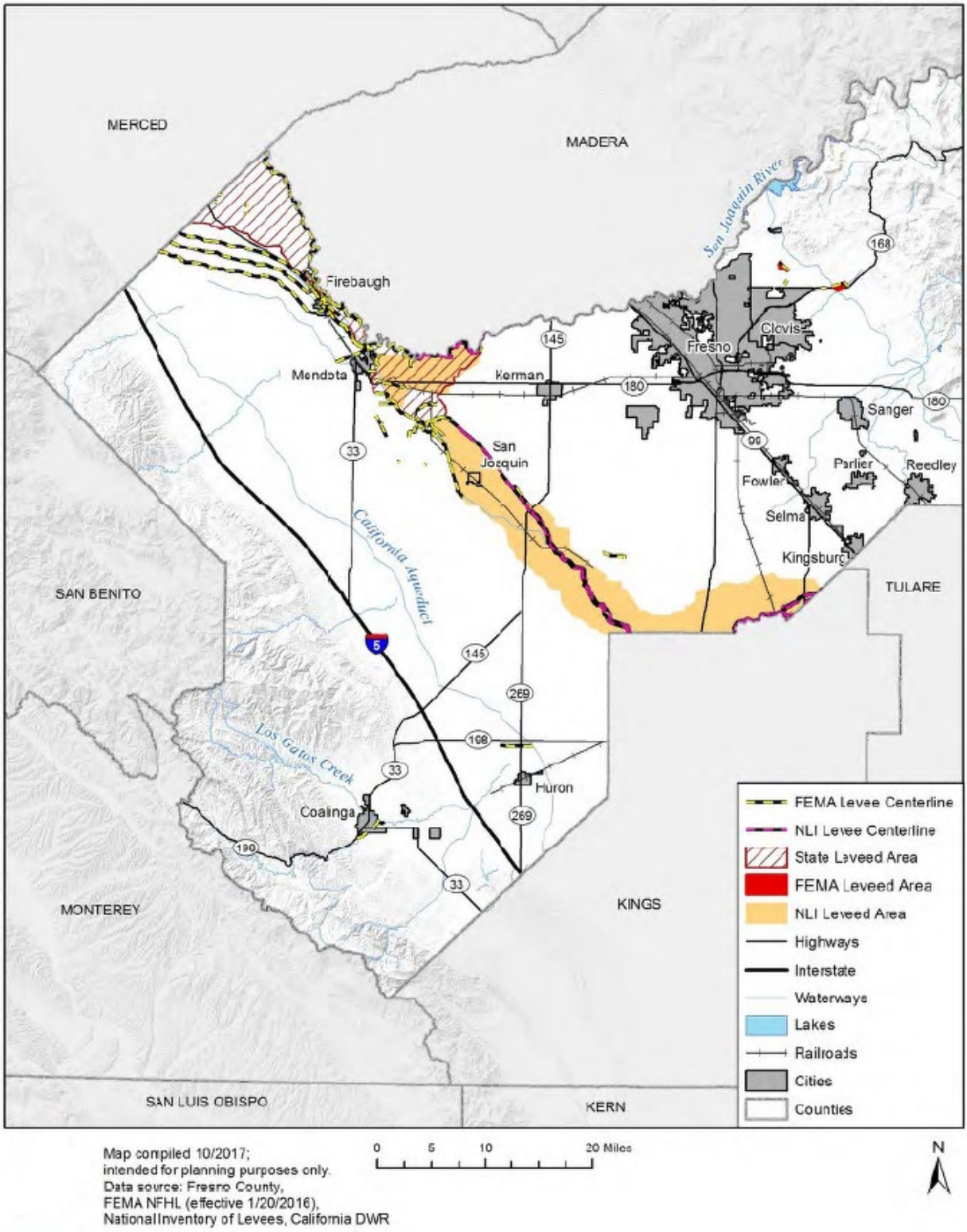
Under-seepage refers to water flowing under the levee through the foundation materials, often emanating from the bottom of the landside slope and ground surface and extending landward from the landside toe of the levee. Through-seepage refers to water flowing through the levee prism directly, often emanating from the landside slope of the levee. Both conditions can lead to failure by several mechanisms, including excessive water pressures causing foundation heave and slope instabilities, slow progressing internal erosion, and piping leading to levee slumping.

DRY WEATHER FAILURES

Dry weather, or sunny-day, failures are levee breaches that are not flood or seismic related. These failures typically occur between the end of the late snowmelt from the Sierras, in late May, and the beginning of the rainy season, in early October. Sunny-day failures are addressed separately from flood-induced failures to differentiate between winter and summer events. Aside from seismic events, factors that can cause levee failures in the County in the summer period are different than the factors that can cause winter failures.

Under-seepage and through-levee seepage are slow processes that tend to work through time by removing fines from levee and foundation material during episodes of high river levels. Cumulative deterioration through the years can lead to foundations ultimately failing in dry weather by means of uncontrollable internal erosion that leads to slumping and cracking of levees.

FIGURE 8-9 LEVEE SYSTEM



FLOOD ISSUES IN FRESNO COUNTY

Historical records indicate that nine significant flood events occurred in Fresno County between the 1840s and 1900. River flooding in the 1980s and 1990s led to the major revisions by FEMA of the 100-year flood flows in the San Joaquin River channel and a new FIRM for the area. FIRMs were revised in the early 1990s following construction of major detention structures in the eastern part of the county; these revisions show a reduced 100-year flood risk in the metropolitan area from the San Joaquin River. The Fresno County Multi-Hazard Mitigation Plan outlined information on more recent flood events:

- Winter 1995: Rain and snow caused flooding first in the eastern part of Fresno County, but ultimately affected the entire valley region. Damage occurred, including the loss of homes, roads, and bridges; other effects included some damage to dam facilities.
- 1995: A series of floods, mostly in the western county, caused significant damage and ultimately a state of disaster was declared for the county on federal, state, and local levels. The results of the flooding included road closures, destruction of a bridge on Interstate 5, destruction of 20 homes, displacement of 300 to 400 people, damage of crops (losses exceeded $8.6 billion), damage to public facilities (estimated at $5 million), economic and other damage to businesses (estimated $9 million), and the death of 7 people.
- 1997: Rain and snow in areas of high elevation caused downstream flooding in the valley. The flooding resulted in damage to fisheries, wildlife, homes, bridges, roads and other infrastructure located near waterways. The cost of the losses was estimated in the hundreds of millions of dollars.
- 1998: Fresno County experienced extreme amounts of rain between September 1998 and June 1998; the rain during this period was called El Niño rains. The amount of rain resulted in federal, state, and local declarations of emergency. Damage from this flooding included buildings and crops, with an estimated economic impact of $38-48 million.
- April 2005: The city of Parlier experienced extreme rain a short period of time (3 inches in 20 minutes). Flooding resulted from the overwhelmed drainage system and 25 homes and businesses were flooded. The cost of the damages was estimated at $700,000. The City and County declared the flooding a local disaster.
- 2005-2006: Flooding occurred in low-lying areas throughout the county due to above average rainfall that caused flood control basins to overflow. Property damage was estimated at $1.4 million within the unincorporated county and $600,000 in other jurisdictions. Due to the time of year, damage to crops was minimal.
- April 2006: Above average levels of rainfall and snowmelt impacted river drainage in the west side of the county from the San Joaquin and Kings rivers. State and local disasters were declared in the county due to the potential damage from possible failure of levees, canals, or river channels. DWR sent a flood flight team and construction crews and hand crews worked to minimize the effects of the flooding; damage was minimal due to the extensive efforts done on the system during the event.
- July 2006: Thunderstorms above the north end of Huntington Lake resulted in flash floods that caused a variety of damage, including private boats (costs estimated at $250,000), local infrastructure (costs estimated at $200,000), loss of power in some areas, temporary closure of a road, and temporary closure of Huntington Lake for recreational use. Cleanup and search and rescue costs were estimated at $175,000.

FLOOD ISSUES IN WESTERN FRESNO COUNTY

Flood issues in western Fresno County are varied in scope and unique in nature. Many creeks in the area are prone to high flows and significant erosion, but most of the region is unpopulated, so flooding poses little threat to life or personal property. Major facilities subject to flooding include I-5 and the California Aqueduct. Downstream urban areas subject to flooding include the cities of Coalinga, Huron, and Mendota. Important wetland habitat in the Mendota Wildlife Management Area is also subject to flooding and may be impacted by sediments carried by flood flows from these creeks.

In 1995, I-5 was flooded by the Arroyo Pasajero and Cantua Creek storm runoff. High stream flows in the Arroyo Pasajero washed out a bridge, while high flows in Cantua Creek inundated the Cantua Creek culvert and flooded the highway. Since that time, the Arroyo Pasajero bridge has been replaced with a structure to accommodate high stream flows. DWR is currently (2015) working to address flooding at Cantua Creek through the Cantua Creek Stream Group Improvements Project. The project proposes to acquire approximately 860 acres of new flood easements, raise more than 9,000 linear feet of canal embankment to provide extra storage capacity, clear sediment from drain inlets, and raise vulnerable infrastructure.

During large storm events, the California Aqueduct is flooded by high flows from Arroyo Pasajero. Consequently, DWR and the Westlands Water District have proposed projects to relieve the threat of flooding from this stream system. The leading alternative involves enlargement of the Westside Retention Basin, construction of an Eastside detention basin, a siphon or flume to divert waters from entering the California Aqueduct, and a diversion channel to convey water from the aqueduct to a detention basin. Other stream systems obstructed by the aqueduct may pose a flooding hazard during periods of high flow when ponds form on the west side of the aqueduct. The streams carry large amounts of sediment and, when ponds fill with sediment, water and sediment spill into the aqueduct. The U.S. Bureau of Reclamation, Army Corps of Engineers, DWR, and the Westlands Water District are studying the situation.

Various stream systems also flood developed areas in western Fresno County during storm events. Creeks that feed into Arroyo Pasajero flow through the city of Coalinga, creating flood hazards and preventing development in impacted areas. Downstream, Arroyo Pasajero is prone to flooding the road into the city of Huron. After crossing the California Aqueduct, Panoche Creek flows overland and floods both agricultural land and portions of the city of Mendota.

The Mendota Wildlife Management Area receives water from Panoche Creek, which drains into Mendota Pool. During storm events, the sediments carried in Panoche Creek contain high levels of selenium and arsenic, which may degrade the water quality within the Mendota Wildlife Management Area.

FLOOD ISSUES IN CENTRAL AND EASTERN FRESNO COUNTY

Flood issues in central Fresno County are associated with the San Joaquin River, Kings River, and several other stream systems. The San Joaquin River from Gravelly Ford to the Chowchilla Bypass outside Fresno County is confined by a levee system. The design capacities of the river are shown in Table 8-2. These capacities are considered safe carrying capacities with three feet of allowable freeboard. Over time, encroachment of vegetation, substantial sedimentation, and land subsidence have considerably reduced channel capacity. Erosion, seepage, and prolonged high water can compromise levee integrity. Levee maintenance is generally under the jurisdiction of local reclamation or irrigation districts. The reach between Friant Dam and Gravelly Ford is part of the Designated Floodway Program administered by the

State Reclamation Board. Uncontrolled flooding from the San Joaquin River between the Chowchilla Bypass and Dos Palos tends to flow into Madera County north of Mendota.

The USBR is studying improvements to Mendota Pool. The area has shown evidence of significant subsidence, possibly affecting levee height and river invert (i.e., bottom of low-flow channel), as well as the pool depth. It has been suggested that Mendota Dam may be useful in retaining sediments from being transported downstream and further reducing channel capacity of the San Joaquin River, but this may adversely affect management of the Mendota Wildlife Area. Construction of a new dam at Mendota may improve flood control capabilities of lower reaches of the San Joaquin. Mendota Dam is of limited usefulness for flood control purposes. The flooding hazards in the region are from Panoche Creek to the west and flooding into Madera county downstream from Mendota Pool.

The flooding potential from creeks and streams between the San Joaquin and Kings Rivers in the east has been substantially eliminated by the completion of the Redbank-Fancher Creeks Flood Control Project.

Uncontrolled creeks within the Kings River system, notably Mill Creek, continue to challenge management of Pine Flat Dam and Kings River flood control during consecutive large storm events. In 1997, water was not released from Pine Flat due to large flows in Mill Creek, pushing the limits of the system. If another large event occurred before Pine Flat Reservoir releases could provide adequate storage space and the Mill Creek watershed was still saturated, rapid runoff in Mill Creek and an emergency spill at Pine Flat would have overwhelmed the system. In the event of a major release from Pine Flat Dam, downstream flooding would occur over agricultural lands near the riverbanks and possibly within the cities of Reedley and Kingsburg.

REGULATORY SETTING

Agencies at the Federal, State, and local levels work to protect from food hazards by identifying and managing vulnerable lands and designing, constructing, and maintaining flood protection facilities. The nationwide floods in 2005 and heightened concern for levee safety have led to expanded legislation enacted to improve flood protection, with emphasis on the Sacramento and San Joaquin River drainages. Regulatory change can be expected as many of the mandates from recent legislation are currently (2009) evolving, therefore the discussion of specific legislation relevant to the Fresno County general plan cross references the overseeing agencies.

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)

FEMA is the Federal agency that oversees floodplains and manages the nation flood insurance program. FEMA prepares Flood Insurance Rate Maps (FIRM) for communities participating in the Federal flood insurance program; these maps designate flood insurance rate zones. Fresno County's FIRMs were recently (February 2009) updated as part of FEMA's Map Modernization program, which converted paper FIRMs to digital FIRMs (DFIRMs). These maps identify the regulatory floodplain in order to assist communities in their efforts to make land use and floodplain management decisions in compliance with the national flood insurance program (NFIP) requirements. However, FEMA studies and maps are not necessarily an accurate or current reflection of all physical flood risk or hazards.

Fresno County and the incorporated cities within Fresno County are participants in the Federal flood insurance program and must meet FEMA standards for flood protection facilities and floodplain management. FIRMS for Fresno County were updated under the Map Modernization Program and became effective on February 18, 2009.

U.S. ARMY CORPS OF ENGINEERS (USACE)

The USACE is the Federal agency that studies, constructs, and operates regional-scale flood protection systems in partnership with State and local agencies. Specific agreements between the USACE and its State and local partners on projects are used to define shared financial responsibilities and regulations that affect the local partners. In the Fresno County region, the Fresno Metropolitan Flood Control District along with the USACE as the federal agency, are responsible for the Redbank-Fancher Creeks Flood Control Project, which consists of a system of facilities and operations which control the flows of the Fresno County Stream Group.

CALIFORNIA DEPARTMENT OF WATER RESOURCES, DIVISION OF FLOODPLAIN MANAGEMENT (DWR)

DWR is the State agency that studies, constructs, and operates regional-scale flood protection systems, in partnership with Federal and local agencies. DWR also provides financial, technical, and emergency response assistance to local agencies related to flooding. Assembly Bill 1147 signed into law in 2001, recommended establishment of a Floodplain Task Force that examined issues in 2002 and developed over 30 recommendations for improved floodplain management in California (USACE 2002).

CENTRAL VALLEY FLOOD PROTECTION BOARD (FORMERLY RECLAMATION BOARD)

In 2007, Assembly Bill 5 (AB 5) was adopted, which renamed the Reclamation Board as the Central Valley Flood Protection Board (CVFPB). AB 5 reconfigured the membership Board and required the CVFPB to be independent of the DWR. Senate Bill 17 (SB 17) was also adopted in 2007 and contained similar provisions to AB 5, renaming and reorganizing the Reclamation Board as the CVFPB and directing DWR to prepare and the CVFPB to adopt a State Plan of Flood Control. The mission of the CVFPB is to control flooding along the Sacramento and San Joaquin Rivers in cooperation with various agencies to maintain the integrity of the existing flood control system and designated floodways via authority over encroachment permits (http://www.recbd.ca.gov/). Regulations for this agency are found in California Code of Regulations (CCR) Title 23, Division 1.

In the Fresno County region, the CVFPB is responsible for operation of the Alta Main canal, Byrd Slough, Cameron Slough (within the Kings River designated floodway), Cole Slough, Dog Creek, Five Mile Slough, Globe Slough, James Bypass (with Kings County), Kings River (to Pine Flat Reservoir), and the Lower San Joaquin River Flood Control project (with Madera and Merced counties).

FLOODSAFE CALIFORNIA

FloodSAFE California is a strategic multifaceted program initiated by DWR in 2006 with a draft strategic plan circulated to the public in June 2008 (DWR 2008). As of February 2016, the June 2008 draft is the most recent plan available. FloodSAFE is guiding the development of regional flood management plans, which encourage regional cooperation in identifying and addressing flood hazards. Regional flood plans include flood hazard identification, risk analyses, review of existing measures, and identification of potential projects and funding strategies. The plans emphasize multiple objectives, system resiliency, and compatibility with State goals and Integrated Regional Water Management Plans (IRWMP). DWR has the lead role to implement FloodSAFE and will work closely with state, tribal, federal, and local partners to help improve integrated flood management systems statewide.

The FloodSAFE Program is designed to help improve integrated flood management statewide with a significant emphasis on the Central Valley where communities and resources face high risk of catastrophic damage. The FloodSAFE Program is designed with the recognition that eliminating unacceptable risks of flood damage statewide will take decades.

Achieving the FloodSAFE Vision will require significant resources, and DWR does not have sufficient funds to achieve FloodSAFE objectives without substantial federal and local cost participation. Most of the State's funds currently available to help implement FloodSAFE are provided by Propositions 1E and 84. The legislature allocated these bond funds for specific purposes and regions, placing a high priority on improving flood protection and preparedness in the Central Valley and Delta as soon as possible due to the high potential of loss of life and property.

FEMA is a sponsor for the California Levee Database (CLD). The CLD is a GIS resource tool for storing and retrieving statewide levee attribute information and technical resources data for levee evaluation. Within FloodSAFE, the Central Valley Floodplain Evaluation and Delineation (CVFED) Project will provide 100-, 200-, and 500-year floodplain maps as well as datasets that meet FEMA, USACE, and DWR standards. The information collected by CVFED can be used for FEMA's Digital Flood Insurance Rate Map (DFIRM) production, USACE Flood Damage Reduction Feasibility Studies, and DWR planning studies.

SENATE BILL 5 (SB 5)

A critical requirement of SB 5 that pertains directly to Fresno County is that urban and urbanizing areas in the San Joaquin Valley will be required to achieve or make adequate progress toward achieving 200-year protection by the year 2015 to continue to approve development in the floodplain. Also, key to the Fresno County General Plan is that within two years after the CVFPB adopts the Central Valley Flood Protection Plan, cities and counties must amend their general plans to contain the following:

- Information from the Central Valley Flood Protection Plan, including the location of the facilities of the State Plan of Flood Control, the location of other flood management facilities, and the locations of flood hazard zones;
- Goals policies and objectives, based on the data and analysis above, for the protection of lives and property that will reduce the risk of flood damage;
- Feasible implementation measures designed to carry out these goals, policies and objectives;
- Requires cities and counties within the Sacramento-San Joaquin Valley to amend their zoning ordinances to be consistent with the general plan, within 36 months after the Central Valley Flood Protection Plan is adopted, but no more than 12 months after the general plan is amended.
- Prohibits a city or county within the Sacramento-San Joaquin Valley from approving a development agreement, discretionary permit, discretionary entitlement, ministerial permit, tentative map, or parcel map for any property within a flood hazard zone unless the city or county finds, based on substantial evidence, one of the following:

- The property is protected by facilities of the State Plan of Flood Control or other flood management facilities to urban levels of flood protection for urban areas (i.e. protection from 200-year flood event), or the national FEMA standard for non-urbanized areas;
- The city or county has imposed conditions on the development that will protect the property to the standards described above;

- The local flood management agency has made adequate progress on the construction of a flood protection system, which will result in flood protection equal to or better than the standards described above.
  - Prohibits a city or county within the Sacramento-San Joaquin Valley from actions that would result in the construction of a new residence within a flood hazard zone, unless the city or county makes, based on substantial evidence, one of the three findings described above.
  - Requires that the urban level of flood protection be achieved for urban and urbanizing areas by 2025.
  - Provides the opportunity for a local agency to prepare a local plan of flood protection. These plans must:
- Contain a strategy to meet the urban level of flood protection, including planning for residual flood risk and system resiliency;
- Identify all types of flood hazards;
- Identify and assess the risk associated with facilities providing flood protection for current and future flood hazard areas;
- Identify existing and proposed flood corridors;
- Identify improvements needed to bring the system up to flood protection standards and the costs of those improvements;
- Contain an emergency response and evacuation plan for flood-prone areas;
- Contain a strategy to achieve multiple benefits, including flood protection, groundwater recharge, ecosystem health, and reduced maintenance costs over the long term;
- Contain a long-term funding strategy for all improvements and ongoing maintenance and operation of flood protection facilities;
  - If the plan is prepared by a local agency other than a city or county, the preparing agency must consult with the cities and counties who have jurisdiction over the planning area, to ensure that the plan is consistent with local general plans;
  - Locally prepared flood protection plans must also be consistent with the Central Valley Flood Protection Plan.
  - Directs counties to collaborate with cities within its jurisdiction to develop emergency response plans within 24 months of the adoption of the Central Valley Flood Protection Plan;
  - Directs cities and counties to collaborate with the state and local flood management agencies to develop cost effective ways to reduce flood risks to existing economically disadvantaged communities in nonurban areas. Also directs cities and counties to collaborate with the state and local flood management agencies to develop funding mechanisms to finance local flood protection responsibilities by January 1, 2010.

Under SB 5, DWR adopted the 2012 Central Valley Flood Protection Plan (2012 CVFPP). The CVFPP is California's strategic blueprint to improve flood risk management in the Central Valley. With the adoption of the 2012 CVFPP, DWR funded six regionally led Regional Flood Management Plans (RFMPs) that describe local and regional flood management priorities and challenges. These RFMPs also identify potential funding mechanisms and site-specific improvement needs. These regional plans provide valuable perspectives from regional and local flood managers that help inform and align CVFPP investment strategies and implementation. The RFMPs also provide a platform for meaningful

engagement among DWR and local and regional flood planning entities across the Sacramento River and San Joaquin River basins.

The CVFPP is scheduled to updated in 2022 to evaluate progress made since passage of major State bonds in 2007 and will recommend future management actions led by State, local, and/or federal agencies to continue implementation of the CVFPP. This update will focus on three key themes:

- Climate Resilience
- Project Implementation, Accomplishments, and Performance Tracking
- Alignment with Other State Efforts

This Update will continue to build on the significant amount of work completed over the past 15 years to better understand and develop priorities to improve flood risk management in the Central Valley. DWR will continue to support RFMP planning efforts during this update cycle. Regional groups can participate by updating previously provided lists of priority projects and related content, support related efforts that are advancing implementation, and continue to identify potential funding mechanisms and site-specific improvement needs.

ASSEMBLY BILL 162 (AB 162)

AB 162 signed into law in October 2007 makes changes to local planning to incorporate improvements in providing protection from flooding. Those provisions relevant to Fresno County are:

- Requires cities and counties to identify in the land use element of their general plan those areas subject to flooding, according to floodplain mapping prepared by FEMA or DWR. It would also require that the next time the housing element is revised after December 31, 2015, the following also be undertaken:
  - The conservation element must identify rivers, creeks, streams, flood corridors, riparian habitat, and land that may accommodate floodwater for the purposes of groundwater recharge and stormwater management.
  - The safety element must include information regarding flood hazards and must establish a set of comprehensive goals, policies, and objectives, based on specified information for the protection of the community from unreasonable flood risks.
  - Identify new information not available during the last update of the safety element that would provide criteria for cities and counties that have flood plain management ordinances to comply with the provisions of this law.
- Requires cities and counties within the boundaries of the Sacramento and San Joaquin Drainage District to submit the draft safety element or amended safety element to the CVFPB and to every local agency that provides flood protection to the land covered by the safety element. Further requires:
  - That the plans be submitted at least 90 days prior to the adoption of the plan;
  - That the CVFPB and local agencies provide comments to the city or county no more than 60 days after receiving the draft; and
  - Requires that the city or county consider the recommendations made by the CVFPB and local agencies or provide findings that describe the reasons why the recommendations were not accepted.

- Requires city and counties within the Sacramento and San Joaquin Drainage District to refer their general plans to the CVFPB, in addition to the other state, local, and federal agencies required by the Planning and Zoning Law.
- Requires councils of governments, while developing methodologies for distributing existing and projected regional housing needs within the cities and counties in their jurisdiction, to exclude lands not adequately protected from floods in their determination of lands suitable for urban development.

ASSEMBLY BILL 70 (AB 70)

AB 70 applies to local jurisdictions that approve new development in previously undeveloped areas protected by a state flood control project. The law states that the local jurisdiction may share liability for any flood damage that occurs to properties in that development unless they take reasonable precautions to protect that development. In this case, reasonable precautions means that they implement reasonable and feasible actions to mitigate the potential property damage to the new development from any flood risks about which they are aware at that time of approval.

FRESNO COUNTY

As a community participating in the Federal flood insurance program, Fresno County is responsible for implementing FEMA floodplain management regulations. The Fresno County zoning code contains specific requirements limiting and discouraging development in various flood zones designated on FIRM maps. The County also requires construction of individual storm water detention basins for new development to limit peak flows to pre-project conditions.

KEY TERMS

California Aqueduct. Also called the San Luis Canal. Jointly funded by federal and state sources, the California Aqueduct crosses through western Fresno County. It is managed by the California Department of Water Resources (DWR).

Canals. Lined or unlined open channels used to convey stormwater and/or irrigation water.

Capacity. Volume of flow for which a treatment facility has been designed. Also referred to as "design capacity". Actual flow through the facility may be more or less than the design capacity. However, flows exceeding the design capacity may not be treated as effectively as flows at or below design capacity. The capacity of natural streams and channels refers to the volume of flow that the channel is known or has been calculated to be able to contain without over-topping its banks. Normally, the capacity of a channel allows for flow volume plus freeboard.

Cubic Feet per Second (cfs). Standard flow measurement denoting the number of cubic feet of water that passes a given point across the full cross section of the flow during a one second period.

Drainage Basin. A geographic area that includes all the area from which surface water and precipitation will drain to a common discharge point.

Exceedance Probability. The probability that a precipitation or runoff event of a specified size will be equaled or exceeded in any given year.

FEMA. Federal Emergency Management Agency, the Agency that oversees floodplain management and the national flood insurance program

FIRM. Flood Insurance Rate Map prepared by FEMA for flood insurance and floodplain management purposes

Floodplain. As defined by the Federal Emergency Management Agency, any land area susceptible to being inundated by water from any source. The 100-year flood (base flood) has a one percent chance of being equaled or exceeded in any given year.

Floodplain Management. The implementation of policies and programs to protect floodplains and maintain their flood control function.

Freeboard. An allowance between the estimated free water surface of a water body and the top of the wall, dam, or levee that contains it. The freeboard is calculated to allow for wave action, eddies and other anomalies and is generally on the order of 2-5 feet.

Frequency. How often a streamflow of particular magnitude will occur, expressed as its return period or exceedance probability.

Groundwater Recharge. Water from precipitation, irrigation, or other sources that infiltrates the soil and percolates downward below the root zone to the groundwater reservoir.

Levee. A dike or embankment that confines flow in a stream channel to protect adjacent land from flood waters. A levee designed to provide 100-year flood protection must meet FEMA standards.

Level of Protection. The degree of protection that a drainage or flood control measure provides, typically expressed as the largest frequency flow event that can occur without flooding.

One Hundred Year (100-year) Flood. The flood magnitude that has a one percent (1%) chance of occurring in any given year.

Ponding Basin. A constructed waterbody designed to recharge groundwater and/or temporarily hold stormwater until it can percolate into the soil, evaporate, or be pumped out.

Precipitation. Includes any moisture falling from the atmosphere in liquid form as rain or drizzle, or in the frozen form as snow, sleet, or hail. Usually expressed as the measurable depth of water in a day, month or year.

Regulatory Floodplain. Typically refers to the floodplain area that would be inundated by the 100-year flood event and is designated by FEMA but could be the floodplain area as determined by a State or local agency as their floodplain management area.

Retention Basin. A reservoir constructed for flood control purposes to retain upstream flows which may or may not be released later at moderated flow.

Return Period. The statistical estimate of number of years (#-year) likely between occurrences of a flood event of equal or greater magnitude.

Riparian Habitat. An area where a plant or animal lives on or adjacent to a water supply such as a riverbank, lake, or pond.

Runoff. Water that is removed from the soil by surface drainage or subsurface drainage.

Sediment. Soil and other suspended solids carried by a stream or overland flow and redeposited downstream

Stream System. Multiple streams that drain a common drainage basin and discharge into the same or an adjacent body of water.

Subsidence. The gradual vertical displacement (lowering) of a large portion of land due to long-term withdrawals of groundwater, oil or natural gas. Subsidence caused by groundwater withdrawal occurs where the groundwater basin is overdrafted and long-term recharge is inadequate to maintain the water table. Some areas of the Central Valley have subsided more than 20 feet over the past 50 years.

SECTION 8.3 FIRE HAZARDS

INTRODUCTION

This section summarizes the existing conditions of fire hazards in Fresno County, including fire prevention and suppression, fire construction standards, and urban and wildland fire hazards. While future development will bring challenges for fire safety, it will also bring opportunities to expand services and facilities to serve the county's demand for fire protection.

FINDINGS

- Wind, steepness of terrain, and naturally volatile or hot-burning vegetation contribute to wildland fire hazard potential. Where there is human access into wildland areas, such as the Sierra Nevada and Coast Range foothills, the risk of fire increases because of a greater chance for human carelessness and historic and current fire management practices.
- Fresno County has very little land in Very High Fire Hazard Severity Zones.
- CAL FIRE's surface fuel model identifies grass as the most common wildland fire fuel in Fresno County. Grass is considered a light fuel that burns rapidly with a short period of intense, maximum heat output.
- CDF/Fresno County Protection District fire prevention efforts have concentrated on loss-reduction programs and high-intensity public education campaigns. Combined with aggressive civil and criminal action programs, ignitions have been held to a moderate level; however, fire prevention staffing levels preclude many additional programs or projects.

EXISTING CONDITIONS

Both urban and wildland fire hazards exist in Fresno County, creating the potential for injury, loss of life, and property damage. Urban fires primarily involve the uncontrolled burning of residential, commercial, or industrial structures due to human activities. Wildland fires affect grass, forest, and brushlands, as well as any structures on these lands. Such fires can result from either human-made or natural causes. The type and amount of fuels, topography, and climate are the primary factors influencing the degree of fire risk.

The four primary causes of fires in 2018 remained similar to that of years past, with the defined categories being other and undetermined (363), arson (355), equipment use (114), and debris burning (219), according to the 2009 Prefire Management Plan for CAL FIRE's Fresno-Kings Unit.

WILDLAND FIRE HAZARDS

Throughout California, communities are increasingly concerned about wildfire safety as increased development in the foothills and mountain areas and subsequent fire control measures have affected the natural cycle of the ecosystem. Wildfire safety is particularly important during fire season, which lasts from June through October each year. During this time, fire conditions are heightened from a combination of low rainfall and humidity, accumulation of vegetation, intense sunlight, high temperatures, and high winds. Suppression of natural fires allows the understory to become dense, creating the potential for larger and more intense wildland fires. Wind, steepness of terrain, and naturally volatile or hot-burning vegetation contribute to wildland fire hazard potential. Where there is human access into wildland areas,

such as the Sierra Nevada and Coast Range foothills, the risk of fire increases because of a greater chance for human carelessness and historic and current fire management practices. Human activities such as smoking, debris burning, and equipment operation are the major causes of wildland fires.

Fire Hazard Rating and Models

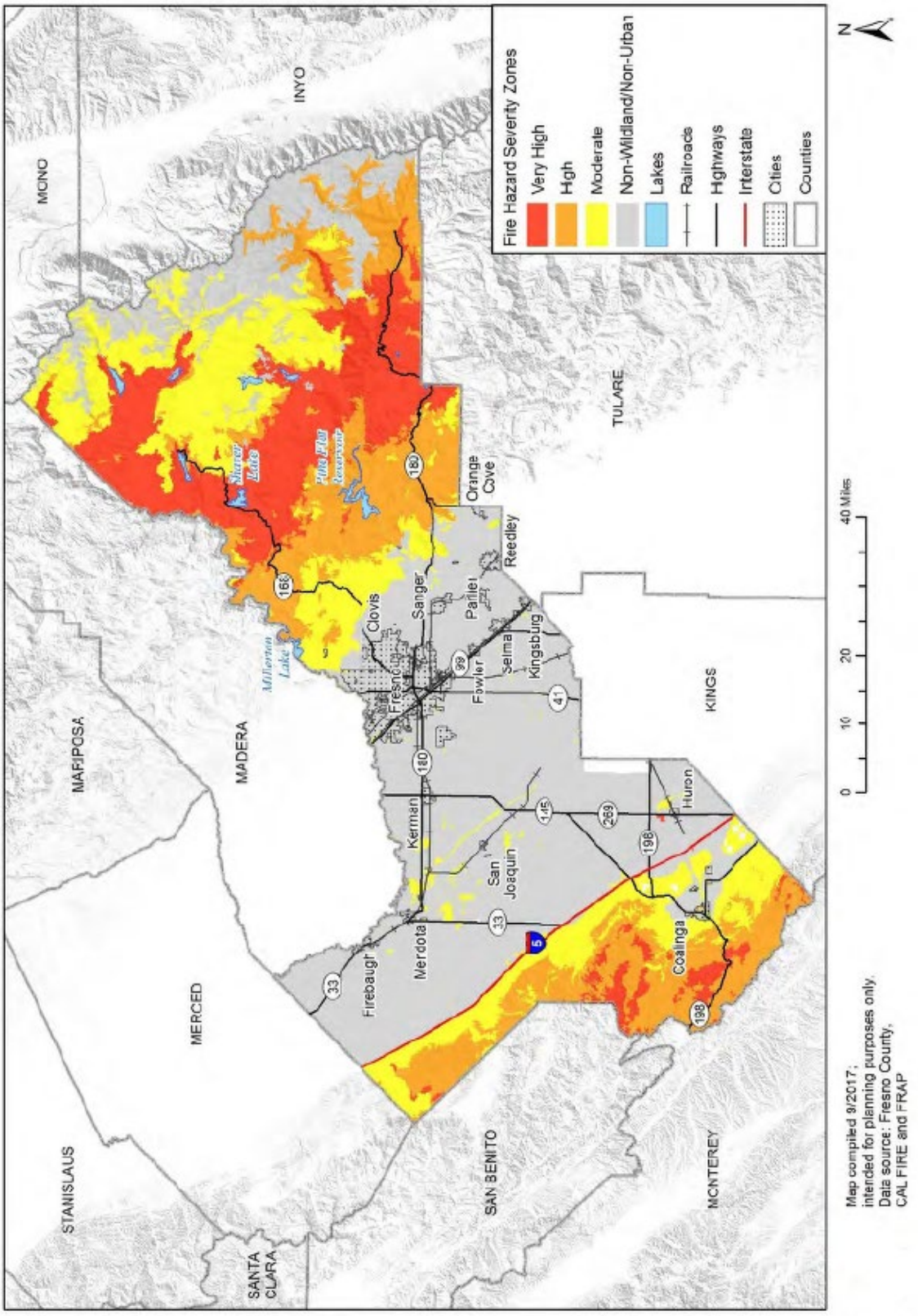
To assist state and local entities in assessing the hazards associated with wildland fires, particularly in the wildland urban interface (WUI), CAL FIRE's Fire and Resource Assessment Program (FRAP) has developed a series of computer models to assess fire hazard. FRAP's data collection and models provide detailed analysis and mapping of fuels, fire weather, historical fire occurrences, and ignition location and frequency, all of which they have analyzed and modeled to develop fire hazard severity rankings for lands throughout California. Other models used in wildfire planning determine fire threat based on fuel type, calculate all the fire parameters to determine a rank to prioritize fuel reduction projects, and measure the fire protection agencies level of successful fire suppression.

FIRE HAZARD SEVERITY ZONES (FHSZ)

Determining wildfire hazards and severity zones in Fresno County involves assessing the presence of fire prone vegetation, weather, topography, assets at risk, and the fire protection system's ability to deal with the occurrence of wildfire. Each parameter helps determine where a fire is likely to start as well as once ignited, the direction it will spread, the intensity at which it can burn, and how efficiently fire protection services can respond. Identifying Fire Hazard is a way to measure the physical fire behavior so that people can predict the damage a fire is likely to cause. Fire hazard measurement includes the speed at which a wildfire moves, the amount of heat the fire produces, and the burning fire brands (i.e. sparks/embers) that the fire sends ahead of the flaming front. The FRAP fire hazard model considers several parameters to determine wildfire hazard severity zones, including: topography, such as steepness of slopes, since fires burn faster as they burn up-slope; weather (e.g. temperature, humidity, and wind), which have a significant influence on fire behavior; and the surface vegetation fuel coverage, also known as wildland fuels.

California Public Resources Code (PRC 4201-4204) and California Government Code 51175-89 direct CAL FIRE to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. These zones, referred to as Fire Hazard Severity Zones (FHSZ), then define the application of various mitigation strategies to reduce risk associated with wildland fires. CAL FIRE completed public hearings for the adoption of FHSZ for State Responsibility Areas (SRAs) in 2007, and adopted FHSZ maps for SRAs in November 2017, as shown in Figure 8-10.

FIGURE 8-10 FIRE HAZARD SEVERITY ZONES



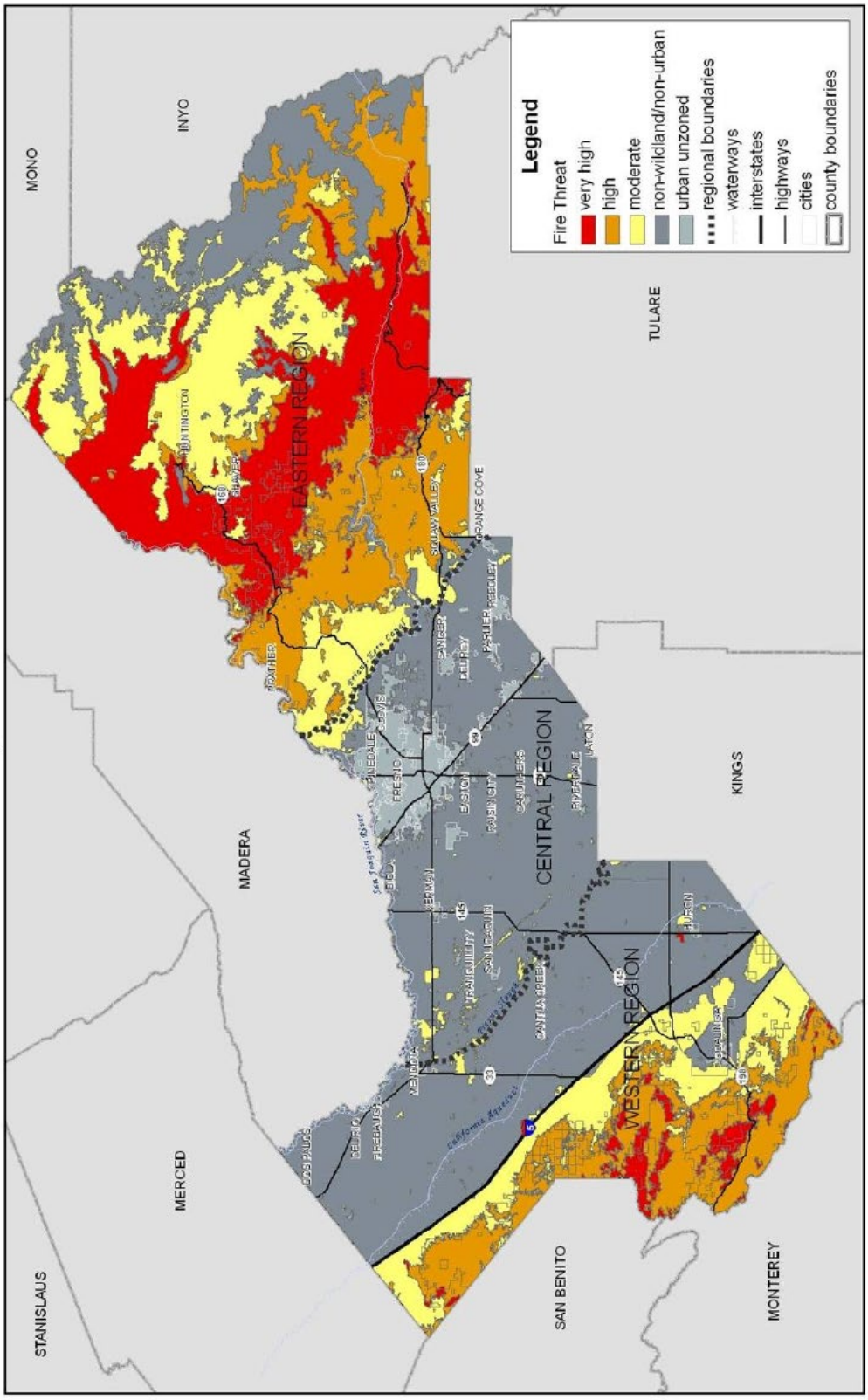
FIRE THREAT

Fire Threat is a combination of two factors: (1) fire frequency, or the likelihood of a given area burning, and (2) potential fire behavior (hazard). These two factors are combined to create four threat classes ranging from moderate to extreme. Fire threat can be used to estimate the potential for impacts on various assets and values susceptible to fire. Impacts are more likely to occur and/or be of increased severity for the higher threat classes.

To assess Fire Threat, CAL FIRE has developed a Fuel Rank assessment methodology to identify and prioritize pre-fire projects designed to reduce the potential for large catastrophic fire. The fuel ranking methodology assigns ranks based on expected fire behavior for unique combinations of topography and vegetative fuels under a given severe weather condition (wind speed, humidity, temperature, and fuel moistures). CAL FIRE also uses Fire Rotation class intervals, which are calculated from fifty years of fire history on land areas grouped into "strata" based on fire environment conditions. These strata are defined by climate, vegetation, and land ownership. The Fire Rotation interval is the number of years it would take for past fires to burn an area equivalent to the area of a given stratum. Finally, Fire Rotation values are grouped into classes. In the fire threat analysis, more frequent fire is ranked higher to reflect a greater concern for non-fire tolerant assets such as housing. CAL FIRE then calculated a numerical index of fire threat based on the combination of fuel rank and fire rotation, which are grouped into four threat classes. For assessing threat of wildland fire to people, FRAP buffers this Fire Threat attribute depending on whether it is an urban area or area of little or no threat, and all other areas; this reflects the greater resistance that urban areas and areas of little or no threat (such as agriculture lands) offer to the spread of wildland fire.

Figure 8-11 depicts the county fire threat and fuel levels as modeled by FRAP based on frequency, or likelihood of a fire in a given area and potential fire behavior or hazard. The rating is divided into four classes: extreme, very high, high, and moderate fire threat. For example, an area may be susceptible to high fire risk and hazards within a location identified as a WUI because the surrounding environment is undeveloped forest, typically on the edge of an urban area containing assets at risk.

FIGURE 8-11 FIRE THREAT



FUEL RANKING

Fuel, in the context of wildland fire, refers to all combustible material available to burn on an area of land. Each fuel has its own burning characteristics based on factors such as moisture content, volume, arrangement, crown cover, size, and the plants genetic makeup. In an attempt to predict fire spread, the U.S. Forest Service has developed 13 fuel models that categorize fuels by their burn characteristics. The fuel model characteristics have been used to determine planning belts for a certain area. Knowledge of fire behavior in various fuel types is essential for designing a defensive plan against wildfire. Fires in grass burn rapidly but can be stopped by a roadway or plowed fire breaks. Fires in brush often burn with an intensity that prevents fire crews from safely applying water to the flame front. Fires in timber can ignite new fires (called spot fires) miles ahead of the main blaze, making control efforts very difficult and dangerous. Wide scale pre-fire management programs can help reduce the likelihood of a potential wildfire catastrophe.

Figure 8-12 shows surface fuel model vegetation types in the county, which have a large influence on fire behavior. CAL FIRE's surface fuel model identifies grass as the most common wildland fire fuel in Fresno County. Grass is considered a light fuel that burns rapidly with a short period of intense, maximum heat output.

The Fire Rating System defined in Table 8-4 describes the characteristics and potential intensity of fires, including the effect on the ability to manage and suppress fires. Such characteristics should be understood in light of the wildfire risks and history of occurrence in Fresno County, as identified on Figure 8-13 Fire conditions up through Class 5 are possible in Fresno County, primarily in the unincorporated areas.

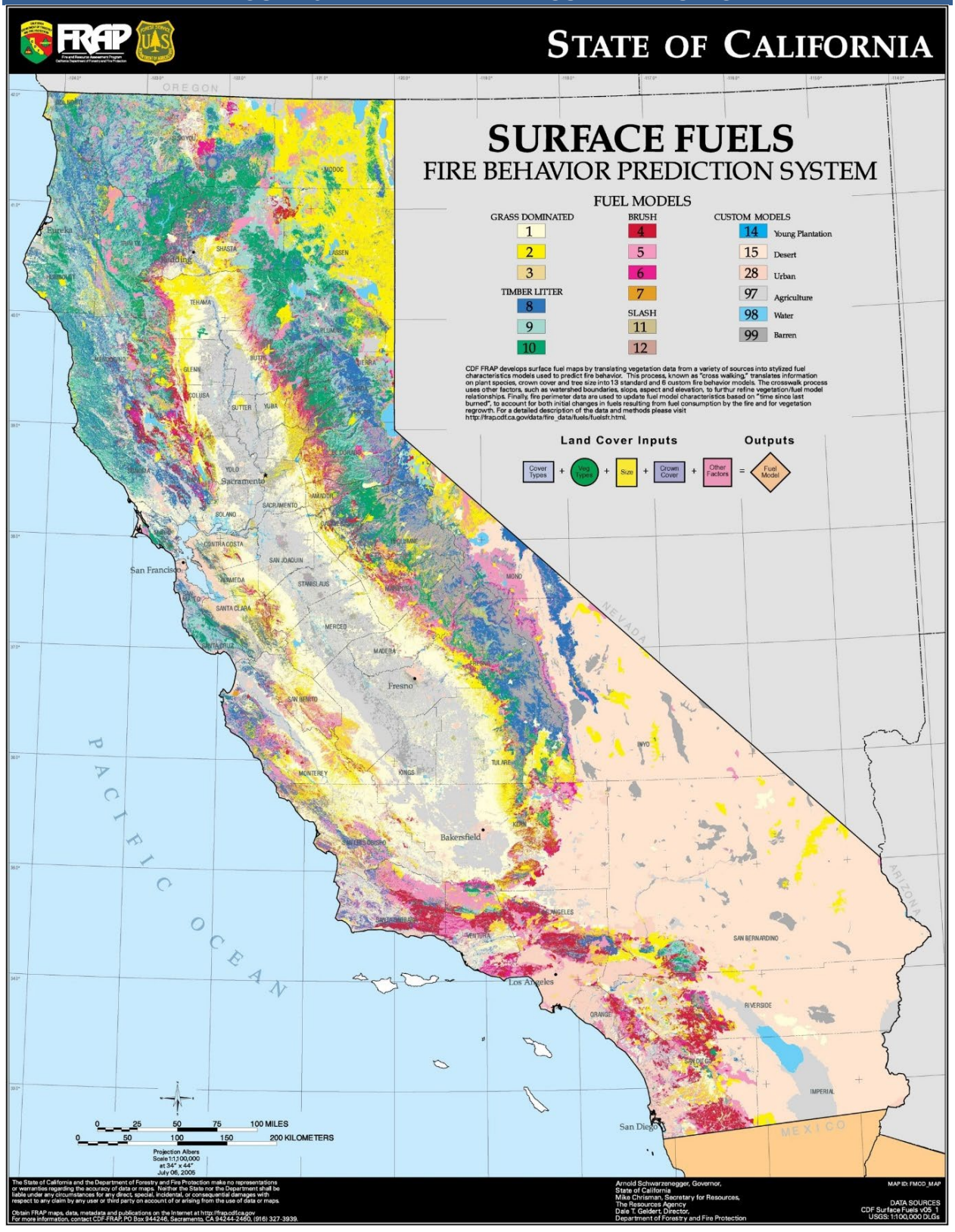
TABLE 8-4
FIRE DANGER RATING SYSTEM

Rating	Basic Description	Detailed Description
CLASS 1: Low Danger (L) COLOR CODE: Green	Fires not easily started	Fuels do not ignite readily from small firebrands. Fires in open or cured grassland may burn freely a few hours after rain, but wood fires spread slowly by creeping or smoldering and burn in irregular fingers. There is little danger of spotting.
CLASS 2: Moderate Danger (M) COLOR CODE: Blue	Fires start easily and spread at a moderate rate	Fires can start from most accidental causes. Fires in open cured grassland will burn briskly and spread rapidly on windy days. Woods fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel – especially draped fuel -- may burn hot. Short-distance spotting may occur, but is not persistent. Fires are not likely to become serious and control is relatively easy.

TABLE 8-4 FIRE DANGER RATING SYSTEM		
Rating	**Basic Description**	**Detailed Description**
CLASS 3: High Danger (H) COLOR CODE: Yellow	Fires start easily and spread at a rapid rate	All fine dead fuels ignite readily, and fires start easily from most causes. Unattended brush and campfires are likely to escape. Fires spread rapidly and short-distance spotting is common. High intensity burning may develop on slopes or in concentrations of fine fuel. Fires may become serious and their control difficult, unless they are hit hard and fast while small.
CLASS 4: Very High Danger (VH) COLOR CODE: Orange	Fires start very easily and spread at a very fast rate	Fires start easily from all causes and immediately after ignition, spread rapidly and increase quickly in intensity. Spot fires are a constant danger. Fires burning in light fuels may quickly develop high-intensity characteristics - such as long-distance spotting - and fire whirlwinds, when they burn into heavier fuels. Direct attack at the head of such fires is rarely possible after they have been burning more than a few minutes.
CLASS 5: Extreme (E) COLOR CODE: Red	Fire situation is explosive and can result in extensive property damage	Fires under extreme conditions start quickly, spread furiously and burn intensely. All fires are potentially serious. Development into high intensity burning will usually be faster and occur from smaller fires than in the Very High Danger class (4). Direct attack is rarely possible and may be dangerous, except immediately after ignition. Fires that develop headway in heavy slash or in conifer stands may be unmanageable while the extreme burning condition lasts. Under these conditions, the only effective and safe control action is on the flanks, until the weather changes or the fuel supply lessens.

Source: Fresno County Multi-Jurisdictional Mitigation Plan, 2018

FIGURE 8-12 WILDLAND FIRE SURFACE FUELS



FIRE PREVENTION AND SUPPRESSION

Public protection classifications are designated by the Insurance Services Office (ISO). The ISO bases its classifications on a number of factors, including fire department location, equipment, and staffing; water supply; and communications abilities. Ratings range from 1 to 10, with 1 being the best possible fire protection, and 10 being the worst. ISO ratings in Fresno County range from 5 to 8. The locations and ratings are described in more detail in Chapter 5, Public Services.

Fresno County and Fig Garden Fire Protection Districts are under contract with the City of Fresno Fire Department to provide structural and vegetative fire protection services within Fresno County. The CDF is responsible for providing fire protection to State Responsibility Areas (SRAs). SRAs are areas in which the State Board of Forestry has determined that the State has the financial responsibility for fire prevention and suppression in accordance with *Public Resources Code* Section 4102. In recognition of the severity of wildland fire hazard in certain areas of California, the State enacted legislation requiring local jurisdictions with State Responsibility Areas (SRAs) to adopt minimum recommended standards pertaining to road standards for fire equipment access, standards for identifying streets, roads, and buildings, minimum private water supply reserves for emergency fire use, and fuel breaks and greenbelts to achieve fuel reductions. With certain exceptions, all new development and construction in SRAs after July 1, 1991 must meet the new standards. The State requirements do not supersede more stringent local regulations.

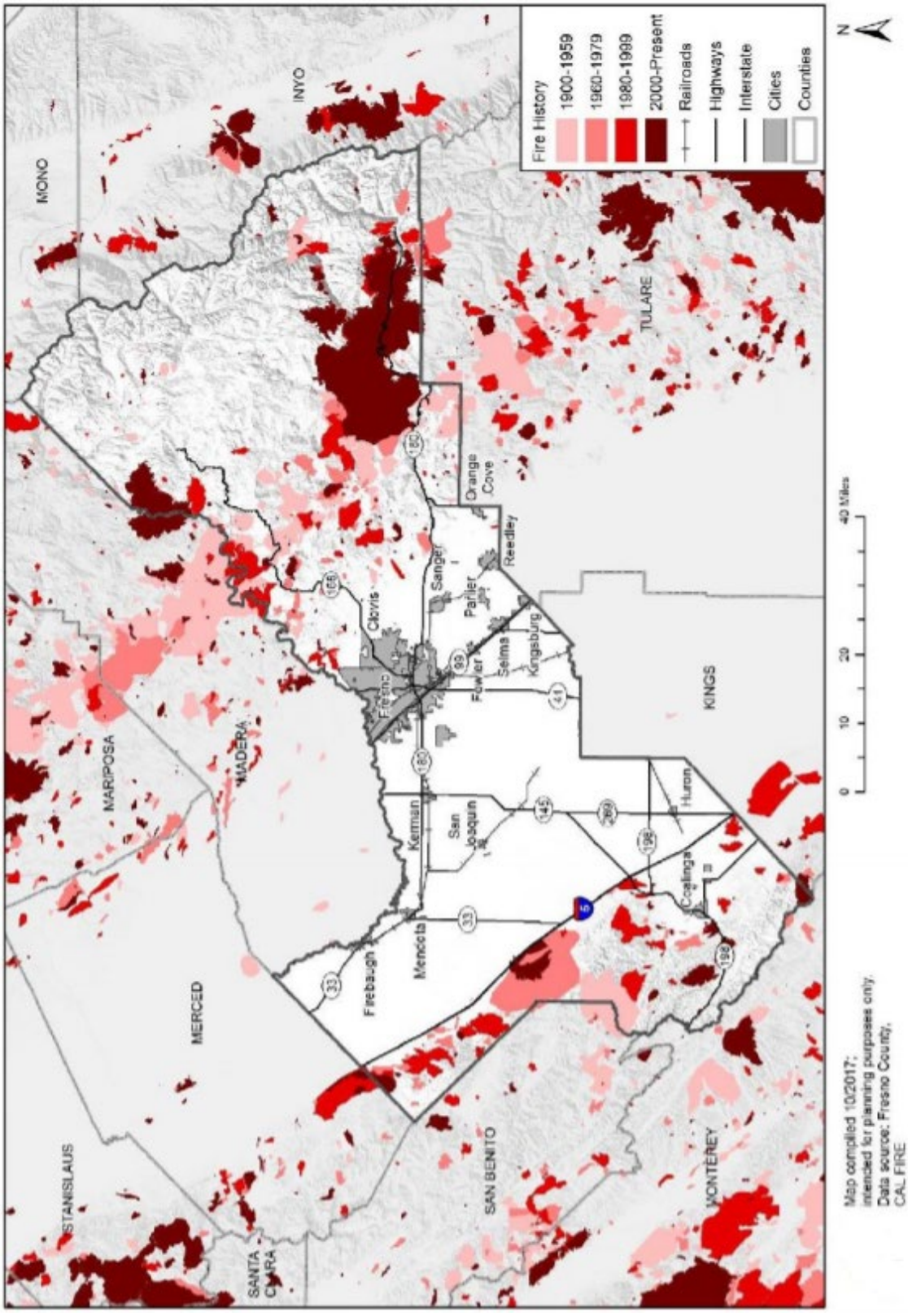
CDF/Fresno County Protection District fire prevention efforts have concentrated on loss-reduction programs and high-intensity public education campaigns. Combined with aggressive civil and criminal action programs, ignitions have been held to a moderate level; however, fire prevention staffing levels preclude many additional programs or projects.

WILDLAND FIRE PAST OCCURRENCES

There are many causes of wildfire, from naturally caused lightning fires to human-caused fires linked to activities such as smoking, campfires, debris burning, equipment use, and arson. Recent studies conclude that the greater the population density in an area, the greater the chance of an ignition. With population continuing to grow throughout California and the Fresno County planning area, the risk posed by wildfire also continues to grow.

According to the 2018 Fresno County Multi-Jurisdictional Hazard Mitigation Plan (HMP), the four primary ignition sources in the County are arson, equipment use, burning debris, and undetermined. Other ignition sources include lightning, campfires, smoking, vehicles, and electrical power. On average, the County experiences approximately 120 to 200 fires a year on land owned by the State and 1,400 to 1,600 fires on land owned by the County. Figure 8-12 details the extent of the previous fire incidents in Fresno County occurring between 1900 and 2017.

FIGURE 8-13 FRESNO COUNTY FIRE HISTORY



WILDLAND URBAN INTERFACE BUILDING STANDARDS

In September 2005, emergency regulations amending the California Code of Regulations (CCR), Title 24, Part 2, known as the 2007 California Building Code (CBC), were adopted to bring increased protection to buildings located in Wildland-Urban Interface (WUI) areas and reinforce implementation of PRC §4291. The broad objective of the Wildland-Urban Interface Fire Area Building Standards is to establish minimum standards for materials and material assemblies and provide a reasonable level of exterior wildfire exposure protection for buildings in WUI Fire Areas. Protecting a building from wildfire takes a two-pronged approach: removing flammable materials from around the building and constructing the building of fire-resistant material. The amended emergency building standards in WUI areas went into effect in all SRA areas as of January 2008.

REGULATORY SETTING

FEDERAL

Healthy Forests Restoration Act (HFRA). Legislation passed in 2003 that gives incentives for communities to engage in comprehensive forest planning and prioritization. It includes statutory incentives for the U.S. Forest Service (USFS) and the Bureau of Land Management (BLM) to give consideration to the priorities of local communities as they develop and implement forest management and hazardous fuel reduction projects. The Act emphasizes the need for federal agencies to work collaboratively with communities in developing hazardous fuel reduction projects.

STATE

Section 700-716, Public Resources Code. Establishes, generally, the authority of the California Department of Forestry and Fire Protection.

Section 4125-4136, Public Resources Code. Establishes State Responsibility Areas (SRAs), requires the development of fire plans to protect them, and places them under the jurisdiction of the California Department of Forestry and Fire Protection.

Section 4290, Public Resources Code. Establishes minimum fire safety standards for development in State Areas of Responsibility (SRA). This includes: (1) Road standards for fire equipment access; (2) Standards for signs identifying streets, roads, and buildings; (3) Minimum private water supply reserves for emergency fire use; (4) Fuel breaks and greenbelts.

Section 4291, Public Resources Code. Requires a minimum of 100 feet of clearance for fire safety surrounding all structures on State responsibility lands in California. The State requirements do not supersede more stringent local regulations.

AB 1241. Requires cities and counties to address risk of fire in very high fire hazard severity zones and state responsibility areas, with the specified considerations, in their general plans. Cities and counties are required to include these provisions or reference these provisions as appropriate upon the next update of their general plan.

2013 California Building Code, Chapter 7A, Wildland-Urban Interface Fire Area Building Standards. On December 2, 2014, the Building Standards Commission approved the Office of the State Fire Marshal's emergency regulations amending the California Code of Regulations (CCR), Title 24, Part 9, known as the 2013 California Fire Code.

KEY TERMS

Assets at Risk. Assets at risk due to wildfires in California include life and safety; timber; range; recreation; water and watershed; plants; air quality; cultural and historical resources; unique scenic areas; buildings; and wildlife, and ecosystem health.

At-risk Community. An interface community within the vicinity of Federal lands that is at high risk from wildfire, or a group of homes and other structures with basic infrastructure and services within or adjacent to Federal land where conditions are conducive to large-scale wildland fire disturbance, or where a significant threat to human life or property exists as a result of a wildlife fire disturbance event.

California Department of Forestry and Fire Protection (CAL FIRE). The State department charged with protecting the residents of California from fires, responding to emergencies, and protecting and enhancing forest, range, and watershed values providing social, economic, and environmental benefits to rural and urban citizens.

Defensible Space. The area within the perimeter of a parcel where basic wildfire protection practices are implemented, providing the key point of defense from an approaching wildfire or escaping structure fire. The establishment and maintenance of emergency vehicle access, emergency water reserves, street names and building identification, and fuel modification measures such as tree trimming and the removal of brush adjacent to residences characterize defensible space.

Fire Hazard. A measure of the likelihood of an area burning and how it burns (example: intensity, speed, embers produced), without considering modifications such as fuel reduction efforts. Fire Hazard is a way to measure the physical fire behavior so that people can predict the damage a fire is likely to cause.

Fire Hazard Severity Zones (FHSZ). California Public Resources Code (PRC 4201-4204) and California Government Code 51175-89 direct CAL FIRE to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. These zones, referred to as Fire Hazard Severity Zones (FHSZ), then define the range of various mitigation strategies that could be applied to reduce risk associated with wildland fires.

Fire Risk. A measure of the potential for damage a fire can do to the area under existing conditions, including any modifications such as defensible space, irrigation and sprinklers, and ignition resistant building construction. These modifications reduce fire risk.

Fire Threat. Fire Threat is a combination of two factors: (1) fire frequency, or the likelihood of a given area burning, and (2) potential fire behavior (hazard). These two factors are combined to create four threat classes ranging from moderate to extreme.

Fire and Resource Assessment Program (FRAP). Fire and Resource Assessment Program, a branch of the California Department of Forestry and Fire Protection.

Fuel. Vegetative material, live or dead, which is combustible during normal summer weather.

Fuel Break. Fuel breaks are wide strips of land on which trees and vegetation has been permanently reduced or removed. These areas can slow, and even stop, the spread of a wildland fire because they provide fewer fuels to carry the flames. They also provide firefighters with safe zones to take a stand against a wildfire, or retreat from flames if the need arises.

Greenbelts. Areas where vegetation is removed around structures and/or replaced with more fire-resistant vegetation.

Insurance Services Office Ratings. Public protection classifications are designated by the State Insurance Services Office (ISO). The ISO bases its classifications on a number of factors, including fire department location, equipment, staffing, water supply, and communications abilities. Ratings range from 1 to 10, with 1 being the best possible fire protection, and 10 being the worst.

Level of Service (LOS). The Level of Service (LOS) rating is a ratio of successful fire suppression efforts to the total fire starts. It divides the annual number of small fires extinguished by initial attack by the total number of fires. Success is defined as those fires that are controlled before unacceptable damage and cost are incurred. This is a relative system, attempting to measure the relative impact of fire on the various assets at risk. The level of service rating (the score of successes in initial attacks) can be used to compare one area of the state with another, recognizing that the assets at risk may be quite different.

State Responsibility Areas (SRA). Areas classified by the State Board of Forestry and Fire Protection as being the primary financial responsibility of the State for preventing and suppressing fires. These lands include: lands covered wholly or in part by timber, brush, undergrowth or grass, whether of commercial value or not; lands that protect the soil from erosion, retard run-off of water, or accelerated percolation; lands used principally for range or forage purposes; lands not owned by the Federal Government; and lands not incorporated. Lands are removed from SRA when housing densities average more than three units per acre over an area of 250 acres.

Wildland Urban Interface. The wildland–urban interface (WUI) is commonly described as the zone where structures and other human development meet and intermingle with undeveloped wildland or vegetative fuels.

W.A.F.L. Score. A tool that calculates the combination of four fire plan assessment criteria (weather, assets at risk, fuel, and level of service) into an aggregate score, which can be used to help target areas with high fire hazard and prioritize projects for ground fuel reduction. Theoretically, those areas with the highest W.A.F.L. score would have the first priority for funding of any given project or pre-fire program.

SECTION 8.4 AVIATION HAZARDS

INTRODUCTION

Compared to other issues associated with airports such as noise, safety is in many respects a more difficult concern to address in airport land use compatibility policies. A major reason for this difference is that safety policies address uncertain events which may occur with occasional aircraft operations, whereas noise policies deal with known, predictable events which do occur with every aircraft operation. Because aircraft accidents happen infrequently and the time, place, and consequences of their occurrence cannot be predicted, the concept of risk is central to the assessment of safety compatibility. This section will discuss the various policies that have been adopted at the Federal, State, and local level to address the safety implications of airport usage in Fresno County.

EXISTING CONDITIONS

Airport safety issues are primarily hazards posed to flight and hazards posed to those on the ground. Flight hazards can be physical (e.g., tall structures that would obstruct airspace), visual (such as glare caused by lights or reflective surfaces), or electronic (interference with aircraft instruments or communication systems). As urban areas grow, there is an increased need for airport operations. Such increased activity generates an increased risk of aircraft crash hazards.

With proper land use planning, aircraft safety risks can be reduced, primarily by avoiding incompatible land uses. The formation of airport land use commissions (ALUCs) was mandated in 1968 for all counties containing at least one public use airport (*Public Utilities Code* Section 21670 *et seq*.). The commissioners represent the county, its cities, and the public. Legislation passed in 1982 established a direct link between ALUCs comprehensive plans and land use plans and regulations prepared by cities and counties (*Public Utilities Code* Section 21676). In accordance with this legislation, ALUCs must review general and specific plans of local jurisdictions for consistency with the county's airport comprehensive land use plan (CLUP). Primary and Secondary Review Areas must be identified for each facility. Projects proposed within the geographic boundaries of the Primary Review Area are referred to the ALUC for review and evaluation. Within the Secondary Review Area, only those projects involving a structure or other object with a height that would exceed that permitted under adopted land use zoning would be referred to the ALUC for review.

Air safety zones, which are established at the end of each runway, are intended to restrict the type and intensity of activities that occur in each zone. The State Airport Land Use Planning Handbook allows jurisdictions flexibility in determining air safety zones. Restrictions correspond to the probability of an accident in each zone, based on data generated by the Federal Aviation Administration (FAA). Each zone has certain acceptable and unacceptable land uses, which are determined by safety, noise, and airspace issues relative to runways, departure patterns, and overflight (common aircraft traffic). For example, residential, commercial, industrial, institutional, and parks are considered incompatible land uses within clear zones; however, golf courses and agricultural land uses, provided there are no structures, would be considered compatible. Certain types of residential, commercial, and institutional land uses are not allowed within the approach safety zone.

There are nine public and private airports within Fresno County. These airports handle a total of approximately 400,700 operations (take-offs and landings) per year. Specific land use policy plans have been developed for five airports in Fresno County: Fresno Air Terminal, Coalinga Airport, Harris Ranch

Airport, Sierra Sky Park Airport, and Fresno Chandler Downtown Airport. In addition, a single land use policy plan has been prepared for four public use general aviation airports located in Firebaugh, Mendota, Reedley, and Selma. Land use and safety considerations pertaining to each of these facilities is summarized below.

FRESNO AIR TERMINAL

The Fresno Air Terminal (FAT) airport is the largest and busiest airport in the San Joaquin Valley, serving a six-county region. The airport is owned and operated by the City of Fresno and occupies approximately 2,300 acres of land located approximately five miles northeast of downtown Fresno. The principal runway (11L-29R) is 9,222 feet long and 150 feet wide. A parallel general aviation runway (11R-29L) is 7,200 feet long and 100 feet wide. Highly urbanized and mixed land uses surround the facility.

The FAT is used by air carriers, commuter passenger airlines, air cargo operators, and for general aviation purposes. The military is also a major user of the airport. The California Air National Guard facility occupies a 58-acre area adjacent to McKinley Avenue in the southeast portion of the airport. A helicopter repair and maintenance unit of the Army National Guard, a unit of the U.S. Marine Corps Reserve, and the Fresno Air Attack Base (aerial firefighting units of the U.S. Forest Service and California Department of Forestry and Fire Protection) are also present. A number of corporate aviation businesses occupy facilities north of the runways. Approximately 250 general aviation aircraft are based at the FAT. Four fixed-base operators offer services including fueling, aircraft maintenance, repair and storage, charter services, flight instruction, aircraft mechanic school, advertising, surveying, air taxi, patrol, and rentals and sales. In 1990, there were approximately 210,000 operations. Estimated annual operations for the year 2010 range from 379,000 to 400,000.

The *Fresno Air Terminal and Environs Plan*, adopted in 1992, was derived from the former *FAT Specific Plan* which was originally adopted in 1980 and substantially revised in 1987. The 1987 *Specific Plan* was based on the *FAT Land Use Policy Plan* and incorporated most of the form and substance of the *Land Use Policy Plan*. It also established new noise contours and reconciled the land uses shown on the *FAT Specific Plan* map with the *1984 City of Fresno General Plan.* In addition to consolidating the previous documents, the purpose of the *FAT and Environs Plan* is to guide the orderly development of airport property and facilities and to ensure compatibility of land uses to prevent potential problems related to aircraft noise and safety. The *FAT Redevelopment Plan*, adopted in 1988, is a separate plan covering a 102-acre area located west of Clovis Avenue and south of Shields Avenue. The purpose of the redevelopment plan is the eventual conversion of the project area into a high-quality aviation-related business park.

The FAT has incorporated four Approach Protection Zones (APZs) into its land use plan. APZ I is defined as that area at ground level that begins at the end of each primary surface and terminates directly below each approach surface slope. APZ II is 2,500 feet wide by 5,000 feet long to the northwest and southeast of the thresholds of the runways. APZ III extends 5,000 feet beyond APZ II, and APZ IV extends 4,000 feet beyond APZ III. The *Environs Plan* identifies specific land use compatibility criteria for each zone.

NEW COALINGA AIRPORT

The New Coalinga Airport, which has replaced the old municipal airport, is a general aviation airport with one 5,000-foot-long runway in an undeveloped area at the northwest corner of Phelps Avenue and Calaveras Avenue within the city of Coalinga Sphere of Influence. *The Coalinga Airport Land Use Plan (ALUP)*, prepared in 1994, contains goals and policies pertaining to noise, air safety zones, land use compatibility, general nuisance/aviation easements, and airspace protection.

The *Airport Master Plan* for the New Coalinga Airport was adopted by the Coalinga City Council in 1990. Existing and planned land uses are agriculture and wildlife conservation. Such uses prohibit any urban development that could conflict with airport operations. The City of Coalinga is in the approval process for its Habitat Conservation Plan (HCP) for the Sphere of Influence of the City of Coalinga. A habitat conservation bank of 490 acres has been established by the City and will be used to mitigate all development impacts of the City including those of the airport.

There are approximately 10 aircraft based at the airport with approximately 2,800 aircraft operations (takeoffs and landings) annually. By the year 2010, 50 based aircraft are expected to result in approximately 25,000 annual operations. At buildout (50 years), 100 based aircraft and 50,000 annual operations are anticipated.

Consistent with Federal Aviation Regulations (FAR) Part 77, the New Coalinga Airport has established an *Approach and Clear Zone Plan (ACZP)*. Clear zones are trapezoidal areas at each runway end, where safety concerns are greatest due to the potential for crashes on takeoffs and landings. The Part 77 approach surface is an imaginary surface that extends beyond the clear zone, sloping upward from the runway at an angle determined by the mix of aircraft and airport weather capability. The approach surface is defined to give aircraft an unobstructed flight path to the runway. Although less hazardous than clear zones, approach safety zones still contain potential for accidents. The city of Coalinga owns the clear zones and approach safety zones, except for the portion of the ultimate clear zone extending into an agricultural field. For that portion of land, an aviation easement eventually will be required from the property owner. Initial airport development assumed visual clear zones, but the 20-year buildout under the *Airport Master Plan*, including the ACZP, allows for a precision-instrument approach and the appropriate clear zone.

HARRIS RANCH AIRPORT

The Harris Ranch Airport is located in the southeast quadrant of the intersection of Interstate 5 and State Route 198 (Dorris Avenue) interchange, approximately 10 miles northeast of the city of Coalinga. The airport is a Basic Utility Stage 1 facility (accommodating aircraft less than 12,500 pounds) with a single runway 2,820 feet long and 30 feet wide. It is a visual approach facility and is not lighted. The principal use is from itinerant traffic supporting the commercial development located in the quadrant. There are no based aircraft. *The Harris Ranch Airport Land Use Policy Plan* was prepared in 1995; it includes FAR Part 77 approach surface and clear zones. A formal Master Plan has not been developed for the airport; Fresno County has, however, approved a series of conditional use permits for both commercial development within the quadrant and for existing and planned airport facilities. In addition, Caltrans Aeronautics Program approved a long-term airport layout plan in 1980.

SIERRA SKY PARK

The Sierra Sky Park public-use airport is located approximately ten miles northwest of downtown Fresno northwest of the intersection of West Herndon Avenue and North Blythe Avenue. The San Joaquin Country Club and Riverside Golf Course are nearby. The facility is privately owned and funded, and was established in conjunction with a surrounding residential and commercial development as a "fly-in" subdivision – the first in the United States. It is classified as a Basic Utility Stage I airport. The runway is paved and has lights for night operations. There are approximately 60 based aircraft within the surrounding residences. Each one of the lots of the Sierra Sky Park subdivision has easements to park two aircraft each. The airport has no fixed base operation services. Operations in 1980 were reported to be approximately 100,000. Current data is not available, but operations are estimated to be somewhat less due to the decline of general aviation activity and the absence of a fixed base operator.

The Sierra Sky Park Land Use Policy Plan was prepared in 1983 and revised in 1990 and 1995. The operation of Sierra Sky Park was the subject of litigation between the airport owners and surrounding property owners regarding easement rights. The issue was resolved with an agreement that provides for continued day and night use of the airport by the public.

FRESNO-CHANDLER DOWNTOWN AIRPORT

The Fresno-Chandler Downtown Airport is owned and operated by the City of Fresno. Acting as a reliever airport for the FAT, Fresno-Chandler serves small- and medium-size private and corporate aircraft. The facility occupies an area of 200 acres approximately one and one-half miles west of downtown Fresno and is within the Edison Community Plan Area. Major land uses in the vicinity of the airport are agriculture, residential, and public and industrial.

Fresno-Chandler is classified as a Basic Utility State II Airport and is capable of accommodating 95 percent of propeller-driven aircraft weighing less than 12,500 pounds. There are two runways: 12L-30R is 3,475 feet long and 75 feet wide, and 12R-30L is 3,441 feet long and 75 feet wide. It is configured to handle approximately 200 based aircraft, and there are two fixed base operators.

An *Environs Specific Plan* was adopted in 1982. Preparation of a master plan is currently (1997) underway to identify future physical and operational improvements. The Plan will also evaluate land use compatibility, economic impacts, potential noise exposure, and airspace usage.

FRESNO COUNTY AIRPORTS

FIREBAUGH MUNICIPAL AIRPORT

The Firebaugh Municipal Airport, which is owned and operated by the City of Firebaugh, is located on the north side of Nees Avenue, west of the Main Canal. Surrounding unincorporated land is designated for agricultural, industrial, and open space reserve uses. The Firebaugh Airport consists of one runway 3,100 feet long and 60 feet wide. There are about 1,200 annual operations. Crop dusters comprise a little over half the operations.

MENDOTA MUNICIPAL AIRPORT

The Mendota Municipal Airport is located east of SR 33, between the end of 9th Street and the San Joaquin River. Developed land uses are present to the west. Areas north, east, and south are primarily undeveloped. The Mendota Municipal Airport has one 2,500-foot runway.

REEDLEY MUNICIPAL AIRPORT

The Reedley Municipal Airport is located on a 138-acre site approximately five miles north of Reedley, on the west side of Frankwood Avenue between American and Central Avenues. The airport is a Basic Utility Stage 1 visual approach facility with a single runway 3,300 feet long and 50 feet wide and has medium-intensity runway lights. In 1991, there were 59 based aircraft and 10,000 operations. For the year 2000, 105 based aircraft with approximately 16,000 annual operations are anticipated. Aircraft types are predominantly single-engine with some light jets and twin-engine aircraft.

Agriculture, primarily orchards and vineyards, comprises most of the land use in the airport environs. The surrounding area is primarily zoned by Fresno County for exclusive agricultural uses with 20-acre minimum parcel size. Numerous residences are scattered throughout the areas. During the public hearings on the proposed airport acquisition and development in 1972, the airport's proximity to an elementary school was a major land use compatibility concern due to safety reasons. However, runway alignment approximately 2,400 feet from the school and establishment of a flight pattern away from the school provided adequate mitigation.

The Reedley Municipal Airport Master Plan is a component of the city of Reedley General Plan 2012. FAR Part 77 approach and clear zones are defined in the Master Plan as well as in the *Fresno County Airports Land Use Policy Plan*. Criteria for airport/land use compatibility is provided in the *Airports Land Use Policy Plan*.

The city of Reedley is currently proceeding with plans for future development of Reedley Municipal Airport. Installation of Visual Approach Slope Indicator (VASI) and runway extensions to bring the airport to Basic Utility Stage II standards are among the planned projects. No commercial air carrier service is anticipated.

SELMA AERODROME

The Selma Aerodrome is located west of State Route 99 between Huntsman and Floral Avenues and is within the proposed Sphere of Influence for the city of Selma. Existing and proposed land use designations in the vicinity of the airport include open space, commercial, light industrial, and business park uses. Airport land use/safety compatibility criteria has been specified in the *Land Use Element of the City of Selma General Plan Update* (1997), as well as in the *Fresno County Airports Land Use Policy Plan*.

LEMOORE NAVAL AIR STATION

Portions of Lemoore Naval Air Station occupy approximately 19 square miles in south-central Fresno County, approximately 20 miles northeast of Coalinga. Most of the facility is located in Kings County. The main runways are oriented northwest-southeast across the county line; one runway extends approximately 2,500 feet into Fresno County, the other approximately 4,000 feet. The facility is formally

considered to be located in Kings County. The following information is provided to generally describe general land use and safety considerations that may be relevant for Fresno County planning purposes.

According to Kings County land use mapping, the facility is surrounded by land designated for agricultural uses to ensure the preservation of large and sparsely developed parcels in the area for safety purposes. Lemoore Naval Air Station discourages, and Kings County severely limits, development of any sort within three miles of the air station, in part to limit the effect of jet aircraft noise on nearby land uses and for airspace/safety purposes. Kings County implements this limitation by zoning the area for exclusive agricultural use at a minimum parcel size of 40 acres.

Lemoore Naval Air Station has identified Air Installation Compatible Use Zones, which are recognized in the 2018 *Fresno County Airport Land Use Compatibility Plan and the* 1994 *Kings County Airport Land Use Compatibility Plan*.

REGULATORY SETTING

This section summarizes regulations regarding air operations and air safety that Federal, State, and county agencies have developed.

Part 77, Federal Aviation Regulation (FAR). Part 77 of the Federal Aviation Regulations (FAR), Objects Affecting Navigable Airspace, establishes standards for determining obstructions to navigable airspace and the effects of such obstructions on the safe and efficient use of that airspace. The regulations require that the FAA be notified of proposed construction or alteration of objects—whether permanent, temporary, or of natural growth—if those objects would be of a height which exceeds the FAR Part 77 criteria. The height limits are defined in terms of imaginary surfaces in the airspace extending about two to three miles around airport runways and approximately 9.5 miles from the ends of runways having a precision instrument approach.

Part 139, 14 Code of Federal Regulations (CFR). Part 139 includes requirements and recommendations dealing with wildlife hazards on and around airports; airfield signing, marking, and lighting; aircraft rescue and firefighting; fueling; snow and ice control; and pedestrian and ground vehicle control. Federal Aviation Administration (FAA) regulations codified in Title 14 of the CFR are administered at the State level by the Caltrans Division of Aeronautics.

Section 44718(d), 49 United States Government Code. This Federal statute prohibits new "municipal solid waste landfills" within six miles of airports that (1) receive FAA grants and (2) primarily serve general aviation aircraft and scheduled air carrier operations using aircraft with less than 60 passenger seats. A landfill can only be built within six miles of this class of airports if the FAA concludes that it would have no adverse effect on aviation safety.

Section 3560, Article 5, Chapter 2, Division 2.5, Title 21, California Code of Regulations. Provides additional regulation of airports and heliports in conjunction with the State Aeronautics Act and CFR Title 14.

Section 17215, State Education Code. Requires that, before acquiring title to property for a new school site situated within two miles of an airport runway, a school district must notify the Department of Education. The Department of Education then notifies the Department of Transportation, which is required to investigate the site and prepare a written report. If the Department of Transportation report

does not favor acquisition of the site for a school, no state or local funds can be used for site acquisition or building construction on that site.

Section 81033, State Education Code. Establishes the same requirements for the acquisition of community college sites.

Section 21001 et seq., State Public Utilities Code, State Aeronautics Act. The State Aeronautics Act provides for the right of flight over private property, unless conducted in a dangerous manner or at altitudes below those prescribed by federal authority (Section 21403(a)). The act also gives the State Department of Transportation and local governments the authority to protect the airspace defined by FAR Part 77 criteria. It prohibits any uses in the airspace above a property, which would interfere with the right of flight, including established approaches to a runway (Section 21402). The act also prohibits any person from constructing any structure or permitting any natural growth of a height which would constitute a hazard to air navigation as defined in FAR Part 77 unless the department issues a permit (Public Utilities Code, Section 21659). The permit is not required if the FAA has determined that the structure or growth does not constitute a hazard to air navigation or would not create an unsafe condition for air navigation.

Section 21670 State Public Utilities Code, State Aeronautics Act. Requires the creation of a county level Airport Land Use Commission (ALUC) whose purpose is to provide for the orderly development of public-use airports and to ensure compatible land uses in the vicinity of airports.

Section 21674.7, State Public Utilities Code, State Aeronautics Act. This section requires that the Airport Land Use Planning Handbook, published by the California Department of Transportation Division of Aeronautics, be used as guidance in the development of all ALUC policies and planning documents.

FEDERAL AIRPORT SAFETY

The Federal Aviation Administration's (FAA) Airport Safety Program ensures that airports are operated in a safe and efficient manner. It comprises general aviation airport safety, runway safety, and the certification of air carrier airports under 14 Code of Federal Regulations Part 139. Part 139 includes requirements and recommendations dealing with wildlife hazards on and around airports; airfield signing, marking, and lighting; aircraft rescue and firefighting; fueling; snow and ice control; and pedestrian and ground vehicle control. Information on airports is made available to the public through the Airport Safety Data Program.

The Airport Safety and Operations Division of the FAA includes the Safety and Certification and Airport Safety Data Programs. The division holds primary responsibility for the following:

- Safety and certification of airports;
- Airport operations and safety practices, including aircraft rescue and firefighting and the mitigation of wildlife hazards;
- Updates to airport master records;
- Promotion of emergency operations, emergency management planning, and damage control at civil airports;
- Federal activities at airports and their restoration after attack or a natural disaster.

STATE AIRPORT SAFETY

The California Department of Transportation (Department) has several aviation regulatory and safety functions. State laws and regulations require a permit from the Department to be issued before operating certain classes of airports or heliports. In addition, the Division of Aeronautics (Division) regularly conducts permit compliance safety inspections at public-use and special-use airports and heliports to ensure operating areas, traffic patterns, and approach zones meet State safety standards. The Department may suspend or revoke a permit if it determines that conditions create an unsafe situation for aircraft occupants and/or the public near the facility.

Division staff also evaluates and makes recommendations on proposed development projects near airports using mapping tools and other resources. State laws require that the Division make safety and compatible land use recommendations regarding proposed schools and State building facilities within two miles of any airport runway. In the case of school sites, if the Division recommends against a site, no State funds can be used to purchase the land or build the facility at that site.

Traditionally, the State has had a very limited role in aviation security. However, because of the events on September 11, 2001, the State's role has changed. The State's new roles may take several forms: The State may work with the Transportation Security Administration (TSA) in developing security guidelines or administering security audits at general aviation airports. Also, the State may work with general aviation airports and other aviation partners to ensure that the intended security enhancements are realistic and do not unreasonably burden the aviation system.

STATE MANDATED AIRPORT LAND USE COMMISSIONS (ALUC)

A key ingredient in aviation safety is compatible land use planning around airports. California Public Utilities Code Section 21670 requires the creation of a county level Airport Land Use Commission (ALUC) whose purpose is to provide for the orderly development of public-use airports and to ensure compatible land uses in the vicinity of airports. To ensure this compatibility, an ALUC must develop an Airport Land Use Compatibility Plan (ALUCP) (formerly Comprehensive Land Use Plan, or CLUP) for each airport. An ALUC must take into account the specific circumstances of the airports and communities for which it is making policy recommendations.

Through compatibility plans, local regulations can be developed and implemented to promote land uses that will not conflict with airport activities. All city and county general and specific plans, zoning ordinances, and building regulations are required to be consistent with the adopted compatibility plans. When the compatibility plan is adopted into the general plan, ALUCs are required to review any amendments and changes to a general plan to ensure continued consistency. If a city council or county board of supervisors does not agree with specific provisions of the compatibility plan, it may overrule the provision. Some counties elect to have an alternative process instead of an ALUC. However, even if a county has no ALUC, local governments have basic duties to promote compatibility among all land uses, including airports.

FRESNO COUNTY AIRPORT LAND USE COMMISSION

The Fresno County Airport Land Use Commission (ALUC) is composed of seven members: two members from the County Board of Supervisors, two members representing the cities within Fresno County, two members with expertise in aviation, and one member representing the general public. The ALUC has the authority to establish policies, evaluate proposed policy actions, and review individual

development projects, as they are relevant to airport operations; the ALUC ensures compatibility with airport operations, the Airport Land Use Compatibility Plan, noise and safety standards according to state laws, and the area of influence where the airport is located. The ALUC reviews projects that may impact the operations of an airport and makes recommendations to avoid potential impacts.

KEY TERMS

Airport. An area of land or water that is used or intended to be used for the landing and taking off of aircraft, and includes its buildings and facilities, if any. (FAR 1)

Aircraft Accident. An occurrence incident to flight in which, as a result of the operation of an aircraft, a person (occupant or nonoccupant) receives fatal or serious injury or an aircraft receives substantial damage. Except as provided below, *substantial damage* means damage or structural failure which adversely affects the structural strength, performance, or flight characteristics of the aircraft, and which would normally require major repair or replacement of the affected component. Engine failure, damage limited to an engine, bent fairings or cowling, dented skin, small puncture holes in the skin or fabric, ground damage to rotor or propeller blades, damage to landing gear, wheels, tires, flaps, engine accessories, brakes, or wingtips are not considered substantial damage.

Aircraft Incident. A mishap associated with the operation of an aircraft in which neither fatal or serious injuries nor substantial damage to the aircraft occur.

Airport Influence Area. The area in which current or future airport-related noise, overflight, safety, and/or airspace protection factors may significantly affect land uses or necessitate restrictions on those uses. In most circumstances, the airport influence area is designated by the ALUC as its *planning area boundary* for the airport and the two terms can be considered synonymous.

Airport Land Use Commission (ALUC). A commission authorized under the provisions of California Public Utilities Code, Sections 21670 et seq. and established (in any county within which a public-use airport is located) for the purpose of promoting compatibility between airports and the land uses surrounding them.

Aircraft Mishap. The collective term for an aircraft accident or an incident.

Aircraft Operation: The airborne movement of an aircraft to or from an airport. There are two types of operations: local and itinerant. An operation is counted for each landing and each departure, such that a touch-and-go flight is counted as two operations. (FAA Stats)

Community Airports. Airports that provide access to other regions and states; located near small communities or in remote locations, serve, but are not limited to, recreational flying, training, and local emergencies; accommodate predominately single engine aircraft under 12,500 pounds, provide basic or limited services for pilots or aircraft.

Compatibility Plan. As used herein, a plan, usually adopted by an Airport Land Use Commission, which sets forth policies for promoting compatibility between airports and the land uses which surround them. Often referred to as a *Comprehensive Land Use Plan (CLUP).*

Federal Aviation Administration (FAA). The U.S. government agency that is responsible for ensuring the safe and efficient use of the nation's airports and airspace.

Federal Aviation Regulations (FAR). Regulations formally issued by the FAA to regulate air commerce.

General Aviation. Airports with no commercial service and located at least 20 miles from the nearest airport where 10 aircraft are based, providing sufficient commercial service for the region.

Limited Use Airport. Airports that provide limited access are usually located in non-urban areas, may be used for a single purpose, have few or no based aircraft, and provide no services.

Obstruction. Any object of natural growth, terrain, or permanent or temporary construction or alteration, including equipment or materials used therein, the height of which exceeds the standards established in Subpart C of Federal Aviation Regulations Part 77, *Objects Affecting Navigable Airspace*.

Regional Airports. Airports that provide the same access as community airports, may provide international access; located in an area with a larger population base than community airports with a higher concentration of business and corporate flying; accommodate most business, multi-engine, and jet aircraft, provide most services for pilots and aircraft including aviation fuel; has a published instrument approach, may have a control tower.

Safety Zone. For the purpose of airport land use planning, an area near an airport in which land use restrictions are established to protect the safety of the public from potential aircraft accidents.

SECTION 8.5 HAZARDOUS MATERIALS

INTRODUCTION

This section describes issues related to hazardous materials in Fresno County. It includes an overview of potential hazardous waste sites and activities that may threaten human or environmental health and safety. Please note that toxic air contaminants (TAC) are discussed in detail in Section 7.2, Air Quality.

FINDINGS

- The Fresno County Environmental Health Department is the designated Certified Unified Program Agency (CUPA) in Fresno County. This department implements the Hazardous Waste Generator Program and the Hazardous Waste Treatment/Tiered Permit Program to ensure that all hazardous waste generated in Fresno County is properly handled, recycled, treated, stored, and disposed.
- As of June 2020, there are 45 active Leaking Underground Storage Tanks (LUST) sites and seven Superfund sites, including five National Priorities List (NPL) listed sites, in Fresno County.
- There are 839 small quantity hazardous waste generators and 143 large quantity hazardous waste generators in Fresno County.
- There are three hazardous waste disposal facilities in Fresno County: A collection facility and a recycling facility, both operated by Safety Kleen Corporation, and a Regional Permanent Household Hazardous Waste Facility operated by Fresno County to accommodate the disposal of hazardous household waste. The Safety Kleen recycling facility handles immersion cleaners and mineral spirits.
- Agriculture operations in proximity to urbanized areas, particularly near residential uses, present some risks associated with agricultural chemicals (pesticides and fertilizers). As more residential development is built close to existing agricultural uses, risks associated with agricultural chemicals may increase.

EXISTING CONDITIONS

Hazardous materials include all toxic, ignitable, corrosive, reactive, and radioactive substances with the potential to bring harm to the public or the environment. An important subcategory of hazardous materials is hazardous waste. The use, manufacture, production, transportation, storage, treatment, disposal, and clean-up of hazardous materials and hazardous wastes present a potential threat to the health and safety of those who are using the materials and those who could be affected by improper or accidental release or disposal (such as nearby residents or businesses).

HAZARDOUS MATERIALS PRODUCTION AND DISPOSAL

The Fresno County Environmental Health Division implements the Hazardous Waste Generator Program and the Hazardous Waste Treatment/Tiered Permit Program to ensure all hazardous waste generated by Fresno County businesses is handled, recycled, treated, stored, and disposed properly. Hazardous waste

generators in Fresno County include industries, businesses, public and private institutions, and households. The Fresno County Multi-Hazard Mitigation Plan discusses fixed facility and transportation incidents as potential sources of impact from hazardous materials release (Fresno County 2018). The County uses the CalARP program to track facilities that store hazardous materials as part of their daily operations and maps those locations (Fresno County 2018: pg. 4.253). In addition to these sites, the following potential hazardous waste sites in Fresno County:

- 45 active LUST sites with the following status (GEOTRACKER 2020):
  - Open, inactive 1 site
  - Open, eligible for closure 8 sites
  - Open, under remediation 9 sites
  - Open, under assessment 25 sites
  - Open, under verification monitoring 2 sites
- Seven Superfund sites (USEPA 2020a)
  - Including five National Priorities List sites
- 1,678 small-quantity hazardous waste generators and 150 large-quantity hazardous waste generators (Fresno County 2018)
- Three hazardous waste disposal facilities (Fresno County 2018)
  - Collection and recycling, operated by Safety Kleen Corporation (including immersion cleaners and mineral spirits at two sites
  - Regional Permanent Household Hazardous Waste Facility, operated by the County
- Agricultural operations adjacent to urbanized areas (Fresno County 2018)

The NPL site is an active clean-up site with ongoing action required. Table 8-5 describes the five final NPL sites in the county. The USEPA has also identified 839 small quantity hazardous waste generators (between 100 and 1,000 kilograms of hazardous waste per month) and 143 large quantity hazardous waste generators (greater than 1,000 kilograms of hazardous waste per month) in Fresno County (RCRA 2016). While these sites are spread throughout the county, the majority are in urban centers, such as the Fresno/Clovis area.

TABLE 8-5
FRESNO COUNTY FINAL NPL SITES

Site Name	Status	Description
Atlas Asbestos Mine	Monitoring remediation actions	Uncontrolled hot spots of asbestos and nickel contamination across a 107 acres site in Coalinga
Fresno Municipal Sanitary Landfill	Monitoring remediation actions	Containment of methane gas migration and volatile organic compound contamination of

TABLE 8-5 FRESNO COUNTY FINAL NPL SITES		
Site Name	**Status**	**Description**
		groundwater from unlined landfill in Fresno was completed and in 2001 a sports complex was built on part of the site. The USEPA continues to monitor groundwater status.
Industrial Waste Processing	Monitoring remediation actions	A 0.5-acre site located at 7140 N. Harrison Street in Fresno where contamination was caused by poor housekeeping, spills, leaking drums and improper storage of hazardous waste. Primary contaminants were lead and trichloroethylene. Initial removal was conducted in 1988 and removal of contaminants from soil took place in 1998. The USEPA continues to monitor the site.
Purity Oil Sales	Monitoring remediation actions.	Seven-acre site located at 3281 Maple Avenue approximately 0.5 mile south of Fresno. Waste oils were disposed of in seven large sludge pits in on the site between 1934 and 1975. Groundwater and soils on the site were contaminated and buried waste contained numerous contaminants. Waste and contaminants were removed between 1985 and 1987 and remediation action was taken in 1990. Clean up is close to complete, with an estimated closure date of September to November 2021.
Selma Treating Co.	Monitoring remediation actions.	A 40-acre site adjacent to Selma was used for pressure treating wood with chemical preservatives between 1942 and 1994. Until 1971, pressure treatment waste was disposed of through drainage and percolation pits, drainage into dry wells, spillage onto ground, or placement into an onsite unlined pond and sludge pit. Remedial action was first taken in 1988 and further remedial action was taken in 2003 based on the results of a focused feasibility study. In-place groundwater treatment is in its final stages and groundwater system optimization is ongoing.

Source: USEPA 2020a

Hazardous waste disposal in the county is handled in three locations: Safety Kleen Corporation operates two facilities in the county, one treatment facility located in Reedley and one collection facility located in the Fresno. The Reedley recycling facility handles cleaning solvents such as mineral spirits and immersion cleaners. Fresno County owns and operates the third facility, the Regional Permanent Household Hazardous Waste Facility, located in Kerman, to accommodate the disposal of household hazardous waste.

HAZARDOUS MATERIALS TRANSPORTATION

Hazardous materials are transported through Fresno County by two methods: truck and rail. The two major north-south roadways through the county are Highway 99 and Interstate 5. Highway 99 runs north and south through the central part of the county, passing through the city of Fresno and Interstate 5 runs north and south through the western part of the county along the base of the Coast Range foothills. Major rail lines are in the vicinity of Highway 99. These include Union Pacific and the Burlington Northern Santa Fe Railroads. Additionally, local service to urban and rural areas of the county are offered via State Routes 33, 41, 43, 63, 145, 168, 180, and 198.

The United States Department of Transportation has established nine hazardous materials classifications: explosive, compressed gases, flammable/combustible liquids, flammable solids, oxidizers, poisons, corrosive, radioactive, and miscellaneous. Transporters of such materials must adhere to routing requirements that are enforced by the California Highway Patrol. Transportation must take the most direct route, utilizing State or interstate highways whenever possible, and only roadways with sufficient width and load bearing capacity. All nine classes of hazardous materials, including hazardous waste, may be transported on Interstate 5. Materials that are poisonous by inhalation, explosives or high level radioactive may be transported on certain roadways, including State Routes 33, 41, 63, 99, 180, and 198, but are subject to restrictions.

AGRICULTURAL CHEMICALS

As the county continues to support agricultural production, risks associated with agricultural chemicals such as pesticides and inorganic fertilizers may occur. Sensitive receptors such as residential or school uses in the proximity of agricultural uses that use pesticides increase the chance of health risks. Agricultural operations are located throughout Fresno County as discussed in Section 7.5, Agriculture. Pesticide and herbicide application permits are renewed on an annual basis by the County Agricultural Commissioner. Regulated commercial applications of pesticides are documented only on a monthly basis in an annual report submitted to the County. Disturbance of soils with residual quantities of agricultural chemicals due to historic agricultural use can also pose health threats.

REGULATORY SETTING

FEDERAL

U.S. Environmental Protection Agency. The U.S. Environmental Protection Agency (USEPA) is the agency primarily responsible for enforcement and implementation of Federal laws and regulations pertaining to hazardous materials. Applicable Federal regulations pertaining to hazardous materials are contained in the Code of Federal Regulations (CFR) Titles 29, 40, and 49. Hazardous materials, as defined in the CFR, are listed in 49 CFR 172.101. The management of hazardous materials is governed by the following laws:

- Resource Conservation and Recovery Act of 1976 (RCRA) (42 U.S. Code [USC] 6901 et seq.)
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, also called the Superfund Act) (42 USC 9601 et seq.)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (7 USC 136 et. Seq.)
- Superfund Amendments and Reauthorization Act (SARA) of 1986 (Public Law 99 499)

These laws and associated regulations include specific requirements for facilities that generate, use, store, treat, and/or dispose of hazardous materials. USEPA provides oversight and supervision for Federal Superfund investigation/remediation projects, evaluates remediation technologies, and develops hazardous materials disposal restrictions and treatment standards.

Hazardous Substances. Hazardous substances are a subclass of hazardous materials. They are regulated under CERCLA and SARA. Under CERCLA, USEPA has authority to seek the parties responsible for releases of hazardous substances and ensure their cooperation in site remediation. CERCLA also provides Federal funding (the "Superfund") for remediation.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLA, commonly known as Superfund, established prohibitions and requirements concerning closed and abandoned hazardous waste sites; provided for liability of persons responsible for releases of hazardous waste at these sites; and established a trust fund to provide for cleanup when no responsible party could be identified. Under CERCLA, USEPA has the authority to hold parties responsible for releases of hazardous substances and require their cooperation in site remediation.

SARA Title III, the Emergency Planning and Community Right to Know Act. SARA requires companies to declare potential toxic hazards to ensure that local communities can plan for chemical emergencies. USEPA maintains a National Priority List of uncontrolled or abandoned hazardous waste sites identified for priority remediation under the Superfund program. USEPA also maintains the CERCLIS database, which contains information on hazardous waste sites, potentially hazardous waste sites, and remedial activities across the nation.

Hazardous Waste. Hazardous wastes, although included in the definition of hazardous materials and hazardous substances, are regulated separately under the Resource Conservation and Recovery Act (RCRA). A waste is legally considered hazardous if it is classified as ignitable, corrosive, reactive, or toxic. Title 22, Section 66261.24 of the California Code of Regulations (CCR) (i.e., 22 CCR 66261.24) defines characteristics of toxicity.

Resource Conservation and Recovery Act (RCRA). Under RCRA, USEPA regulates hazardous waste from the time that the waste is generated until its final disposal. RCRA also gives USEPA or an authorized State the authority to conduct inspections to ensure that individual facilities comply with regulations, and to pursue enforcement action if a violation is discovered. USEPA can delegate its responsibility to a state if the state's regulations are at least as stringent as the Federal regulations. RCRA was updated in 1984 by the passage of the Federal Hazardous and Solid Waste Amendments, which required phasing out land disposal of hazardous waste. Title 22, Section 66261.24 of the CCR defines characteristics of toxicity, which is used to help guide the Federal program.

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). FIFRA (7 USC 136 et seq.) provides Federal control of pesticide distribution, sale, and use. USEPA was given authority under FIFRA not only to study the consequences of pesticide usage, but also to require users (farmers, utility companies, and others) to register when purchasing pesticides. Later amendments to the law required users to take exams for certification as applicators of pesticides. All pesticides used in the United States must be registered (licensed) by USEPA. Registration assures that pesticides will be properly labeled and that, if used in accordance with specifications, they will not cause unreasonable harm to the environment.

Occupational Health and Safety Administration (OSHA). The Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor is responsible for enforcement and implementation of Federal laws and regulations pertaining to worker health and safety. Workers at hazardous waste sites must receive specialized training and medical supervision according to the Hazardous Waste Operations and Emergency Response (HAZWOPER) regulations (29 CFR 1910.120).

Hazardous Waste Operations and Emergency Response (HAZWOPER). HAZWOPER requirements include Federal regulations that involve procedures for clean-up operations required by a governmental body, whether Federal, State, local, or other, involving hazardous substances that are conducted at uncontrolled hazardous waste sites. This includes the USEPA's NPL, State priority site lists, sites recommended for the USEPA NPL, and other initial investigations of government-identified sites, which are conducted before the presence or absence of hazardous substances has been ascertained. A person who is engaged in work with any potential for exposure to hazardous substances must comply with HAZWOPER regulations.

STATE

The Department of Toxic Substances Control (DTSC). DTSC is a division of California Environmental Protection Agency (CalEPA) and has primary regulatory responsibility over hazardous materials in California, working in conjunction with the USEPA to enforce and implement hazardous materials laws and regulations. DTSC can delegate enforcement responsibilities to local jurisdictions.

The Hazardous Waste Control Act. The hazardous waste management program enforced by DTSC was created by the Hazardous Waste Control Act (California Health and Safety Code Section 25100 et seq.), which is implemented by regulations described in CCR Title 26. The State program is similar to, but more stringent than, the Federal program under RCRA. The regulations list materials that may be hazardous, and establish criteria for their identification, packaging, and disposal. Environmental health standards for management of hazardous waste are contained in California Code of Regulations (CCR) Title 22, Division 4.5. In addition, as required by California Government Code Section 65962.5, DTSC maintains a Hazardous Waste and Substances Site List for the State called the Cortese List.

Unified Program. CalEPA has established a unified hazardous waste and hazardous materials management regulatory program (Unified Program) as required by Senate Bill 1082 (1993). The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities for the following environmental programs under CalEPA, the State Water Resources Control Board, including the Regional Water Quality Control Boards (RWQCB) in each region of the state, State Office of Emergency Services, and the State Fire Marshal:

- Underground Storage Tank program
- Hazardous materials release response plans and inventories

- California Accidental Release Prevention Program (CalARPP)
- Above ground Petroleum Storage Act requirements for spill prevention, control, and countermeasure plans
- California Uniform Fire Code (UFC) hazardous material management plans and inventories

The five environmental programs in the Unified Program are implemented at the local level by local agencies, known for this purpose as Certified Unified Program Agencies (CUPA). CUPAs carry out the responsibilities previously handled by approximately 1,300 State and local agencies, providing a central permitting and regulatory agency for permits, reporting, and compliance enforcement.

Regional Water Quality Control Board (RWQCB). The RWQCB is authorized by the Porter Cologne Water Quality Control Act of 1969 to protect the waters of the State. The RWQCB provides oversight for sites where the quality of groundwater or surface waters is threatened. Extraction and disposal of contaminated groundwater due to investigation/remediation activities or due to dewatering during construction would require a permit from the RWQCB if the water were discharged to storm drains, surface water, or land.

California Department of Pesticide Regulations, Department of Food and Agriculture, and the Department of Public Health. The California Department of Pesticide Regulations (DPR), a division of CalEPA, in coordination with the California Department of Food and Agriculture (CDFA), a division of Measurement Standards and the California Department of Public Health (CDPH) have the primary responsibility to regulate pesticide use, vector control, food, and drinking water safety. CCR Title 3 requires the coordinated response between the County Agricultural Commissioner and SBDEH to address the use of pesticides used in vector control for animal and human health on a local level. DPR registers pesticides, and pesticide use is tracked by the County. Title 22 is used also to regulate both small (less than 200 connections regulation by the SBC Water District) and large CDPH water systems.

California Department of Industrial Relations, Division of Occupational Health Administration. The California Department of Industrial Relations, Division of Occupational Safety and Health Administration (Cal/OSHA), assumes primary responsibility for developing and enforcing workplace safety regulations in the State. Cal/OSHA standards are more stringent than Federal OSHA regulations and are presented in CCR Title 8. Standards for workers dealing with hazardous materials include practices for all industries (General Industry Safety Orders); specific practices are described for construction, hazardous waste operations, and emergency response. Cal/OSHA conducts on site evaluations and issues notices of violation to enforce necessary improvements to health and safety practices.

LOCAL

Fresno County General Plan. The 2000 Fresno County General Plan contains goals, policies, and implementation programs aimed to minimize the risks associated with hazardous materials in Fresno County. Goal HS-F in the Health and Safety Element intends to minimize the risks resulting from the use, transport, treatment and disposal of hazardous materials and hazardous waste. Policies to achieve the goal include building and operation standards as well as requiring permitting for facilities handling hazardous materials, formalizing emergency response, and conducting site investigations before development of sites suggested to be impaired, establishing demolition requirements, ensuring compliance with state and federal laws and promotion of household hazardous waste collection programs. Implementation programs

include County review of discretionary permits which involve hazardous waste or materials, development and operation of a household hazardous waste facility and County review of plans to mitigate groundwater and soil contamination prior to development.

2018 Fresno County Multi-Hazard Mitigation Plan. The Multi-Hazard Mitigation Plan (HMP) was developed to better guide hazard mitigation planning in the county. The Plan discusses risks associated with human-caused hazards such as hazardous waste. Facilities that involve hazardous material or hazardous waste are identified, counted and located. Additionally, the Plan identifies sites of previous hazardous material release and previous transportation incidents involving hazardous waste and past hazardous materials incidents. The Plan goes on to establish goals and policies aimed to mitigate potential hazards throughout Fresno County similar to those established in the County's General Plan. Policies include requiring permitting and specialized building design and regulation for handling hazardous materials, cooperation with state and federal agencies with expertise in hazardous materials, assessment and remediation of any contamination, disaster and emergency preparedness and public information. Finally, the Plan established hazardous material safeguards for the County. The Plan was adopted by the Fresno County Board of Supervisors in May 2018. The HMP is updated periodically.

Fresno County Agricultural Commissioner. The regulation of pesticide storage, application, and waste disposal is under the jurisdiction of the County Agricultural Commissioner; the Commissioner implements the California Environmental Protection Agency, Department of Pesticide Regulation (DPR) program. Regulatory functions are mandated by state and federal laws and regulations and by local measures and ordinances by the Fresno County Board of Supervisors.

KEY TERMS

SECTION 8.5

CERCLIS. Comprehensive Environmental Response, Compensation, and Liability Information System is a database maintained by the USEPA to store and access Superfund site data.

CUPA. Certified Unified Program Agencies. Certified local government agencies who implement the hazardous waste and materials standards set by the State of California.

Envirostor and **Geotracker**. State of California databases used to track hazardous waste sites and contaminated properties in California.

Hazardous Materials or **Hazardous Waste**. A substance that poses a threat to human health and the environment because of the physical or chemical nature, quantity, or concentration of the substance. Medical and bio-hazardous waste is excluded from this definition.

LUST. Leaking Underground Storage Tank. An underground storage tank that has been discovered to be leaking and which constitutes a significant threat to contaminating groundwater.

NPL. National Priorities List. Contains the most serious uncontrolled or abandoned hazardous waste sites throughout the United States. The NPL lists sites after completing Hazard Ranking System screening and soliciting and responding to public comments about the proposed site.

RCRA. Resources Conservation and Recovery Act is the public law that creates the framework for the proper management of hazardous and non-hazardous solid waste.

Superfund. Otherwise known as the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, is a federal law designed to clean up sites contaminated with hazardous substances and pollutants.

UST. Underground Storage Tank. Any one or combination of tanks, including pipes connected thereto, that is used for the storage of hazardous substances and that is substantially or totally underground.

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CHAPTER 9: CLIMATE CHANGE

INTRODUCTION

This chapter summarizes greenhouse gas and climate change planning issues for Fresno County and is organized into the following sections:

- Greenhouse Gas Emissions, Inventory, Forecasts, and Reductions (Section 9.1)
- Climate Change Effects and Impacts (Section 9.2)

SECTION 9.1 GREENHOUSE GAS EMISSIONS, INVENTORY, FORECASTS, AND REDUCTIONS

INTRODUCTION

This section describes the types of greenhouse gas emissions (GHG); the effect of GHGs related to climate change; the current inventory of GHGs worldwide, in the United States, in California, and in Fresno County; forecasts and reductions of GHGs in California and Fresno County; and regional and local climate action plans and programs.

MAJOR FINDINGS

- California produced 424.1 million metric tons (MT) of carbon dioxide equivalent (CO_2E) in 2017, down from 429.1 MTCO2e in 2015. Transportation is the major source of greenhouse gases in California, contributing 40 percent of the state's total GHG emissions. Other major sources of GHG emissions include industrial (24 percent), electricity generation (15 percent), and agricultural production and processing (7 percent). The remaining 13 percent comes from residential and commercial users (10 percent) and high global warming potential refrigerants (3 percent).
- No GHG inventory has been conducted for unincorporated Fresno County. In 2012, the County released a Government Operations Greenhouse Gas Emissions Inventory that concluded the highest percentage GHG emissions generated by County government operations came from solid waste facilities.
- Without GHG reduction actions, statewide unregulated greenhouse emissions for the year 2020 would have been 507 million MT of CO_2E, approximately 17 percent higher than that reported in 2017. This exceeds the original 2020 objectives to reduce GHG emissions regionally by 8 percent. The conditional target under SB 32 is a 13 percent reduction of regional GHG emissions by 2035.
- No GHG forecasts or reduction strategies are identified specifically for Fresno County, but the Fresno COG Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) reflects the goal to reduce GHGs from transportation sources by 11 percent in 2035.
- The San Joaquin Valley Air Pollution Control District adopted a Climate Change Action Plan and uses best performance standards to determine the significance of project-specific GHG emissions.
- Fresno County does not have a climate action plan, but local programs are in place that assist in addressing effects related to climate change.

EXISTING CONDITIONS

GREENHOUSE GASES AND CLIMATE CHANGE

Climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and storms) over an extended period. The term "climate change" is often used interchangeably with the term "global warming," but climate change is preferred because it conveys that other changes are happening in addition to rising temperatures. The baseline against which these changes are measured originates in historical records that identify temperature changes that occurred in the past, such as during previous ice ages. The global climate is changing continuously, as evidenced in the geologic record which indicates repeated episodes of substantial warming and cooling. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. However, scientists have observed acceleration in the rate of warming over the past 150 years. The United Nations Intergovernmental Panel on Climate Change (IPCC) expressed a high degree of confidence (95 percent or greater chance) that the global average net effect of human activities has been the dominant cause of warming since the mid-twentieth century (IPCC 2014).

Gases that absorb and re-emit infrared radiation in the atmosphere are called GHGs. The gases widely seen as the principal contributors to human-induced climate change include carbon dioxide (CO_2), methane (CH_4), nitrous oxides (N_2O), fluorinated gases such as hydrofluorocarbons (HFC) and perfluorocarbons (PFC), and sulfur hexafluoride (SF_6). Water vapor is excluded from the list of GHGs because it is short-lived in the atmosphere, and natural processes, such as oceanic evaporation, largely determine its atmospheric concentrations.

GHGs are emitted by natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are usually by-products of fossil fuel combustion, and CH4 results from off-gassing associated with agricultural practices and landfills. Human-made GHGs, many of which have greater heat-absorption potential than CO_2, include fluorinated gases and SF6 (United States Environmental Protection Agency [USEPA] 2019). Different types of GHGs have varying global warming potentials (GWP). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emitted, referred to as "carbon dioxide equivalent" (CO_2e), and is the amount of GHG emitted multiplied by its GWP. Carbon dioxide has a 100-year GWP of one. By contrast, methane has a GWP of 28, meaning its global warming effect is 28 times greater than carbon dioxide on a molecule per molecule basis (IPCC 2015).[1]

The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without the natural heat-trapping effect of GHGs, the earth's surface would be about 33° Celsius (°C) cooler (World Meteorological Organization 2020). However, emissions from human activities, particularly the consumption of fossil fuels for electricity production and transportation, are believed to have elevated the concentration of these gases in the atmosphere beyond the level of concentrations that occur naturally.

[1] The IPCC's (2015) *Fifth Assessment Report* determined that methane has a GWP of 28. However, modeling of GHG emissions was completed using the California Emissions Estimator Model version 2016.3.2, which uses a GWP of 25 for methane, consistent with the IPCC's (2007) *Fourth Assessment Report*.

The principal GHGs that enter the atmosphere as a result of human activities are discussed below.

- CO_2 is released into the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees, and wood products, and because of other chemical reactions (e.g., cement production) and deforestation. Carbon dioxide is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
- CH_4 is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from agricultural practices, such as the raising of livestock, and from the decomposition of organic waste in landfills.
- N_2O is emitted during agricultural and industrial activities, as well as during the burning of fossil fuels and solid waste.
- Fluorinated gases (i.e., hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) are synthetic GHGs that are emitted from a variety of industrial processes (e.g., aluminum production) and used in commercial, industrial, and consumer products (e.g., automobile air conditioners and refrigerants). These gases are typically emitted in smaller quantities, but because they are potent GHGs, they are sometimes referred to as "high global warming potential" gases.

Each GHG has a different potential for trapping heat in the atmosphere, called global warming potential. For example, one pound of methane has 25 times more heat capturing potential than one pound of carbon dioxide. To simplify reporting and analysis of GHGs, GHG emissions are typically reported in MT of carbon dioxide equivalent (MT CO_2E) units. When dealing with an array of emissions, the gases are converted to their carbon dioxide equivalents for comparison purposes. The global warming potentials for common GHGs are shown in Table 9-1.

TABLE 9-1
GLOBAL WARMING POTENTIAL OF GHGs

Greenhouse Gas	Global Warming Potential[1]
Carbon Dioxide (CO_2)	1
Methane (CH_4)	25
Nitrous Oxide (N_20)	298
Hydrofluorocarbons (HFC)	14,800
Perfluorocarbons (PFCs)	7,500-17,340
Sulfur Hexafluoride (SF_6)	22,800

[1] Values over 100-year horizon
Source: USEPA 2018

GREENHOUSE GAS EMISSIONS INVENTORY AND SOURCES

Worldwide human-generated emissions of GHGs were approximately 40,000 million metric tons (MMT) CO_2E in 2004, including ongoing emissions from industrial and agricultural sources, but excluding emissions from land use changes (i.e., deforestation, biomass decay) (IPCC 2007). CO_2 emissions from fossil fuel use accounts for 56.6 percent of the total emissions of 49,000 MMT CO_2E (includes land use changes), and CO_2 emissions from all sources account for 76.7 percent of the total CO_2E emitted. Methane emissions account for 14.3 percent of GHGs and N_2O emissions account for 7.9 percent.

FEDERAL EMISSIONS INVENTORY

Total U.S. GHG emissions were 6,456.7 MMT of CO_2e in 2017. Since 1990, total U.S. emissions have increased by an average annual rate of 0.04 percent for a total increase of 1.3 percent since 1990. However, emissions decreased by 0.5 percent from 2016 to 2017. The decrease from 2016 to 2017 was a result of multiple factors, including (1) a continued shift from coal to natural gas and other non-fossil fuel energy sources in the electric power sector and (2) milder weather in 2017 resulting in overall decreased electricity usage. In 2017, the industrial and transportation end-use sectors accounted for 30 percent and 29 percent, respectively, of GHG emissions while, the residential and commercial end-use sectors accounted for 15 percent and 16 percent of GHG emissions, respectively, with electricity emissions distributed among the various sectors (USEPA 2019).

CALIFORNIA EMISSIONS INVENTORY

Based on the California Air Resource Board's (CARB) California Greenhouse Gas Inventory for 2000-2017, California produced 424.1 MMT of CO_2e in 2017. The major source of GHG emissions in California is transportation, contributing 41 percent of the state's total GHG emissions. The industrial sector is the second largest source, contributing 24 percent of the state's GHG emissions, and electric power accounts for approximately 15 percent (CARB 2019). California emissions are due in part to its large size and large population compared to other states. However, a factor that reduces California's per capita fuel use and GHG emissions, as compared to other states, is its relatively mild climate. In 2016, the State of California achieved its 2020 GHG emission reduction targets as emissions fell below 431 MMT of CO2e. The annual 2030 statewide target emissions level is 260 MMT of CO2e (CARB 2017).

FRESNO COUNTY EMISSIONS INVENTORY

Although no GHG inventory has been conducted for Fresno County specifically, the County of Fresno participated in a Government Operations Greenhouse Gas Emissions Inventory in December 2012 (Fresno County 2012) in coordination with the County's Economic Development Corporation and through grant funding provided by Pacific Gas and Electric. The inventory solely evaluated County facilities, and presented findings for local government operations, which revealed that the most GHG emissions came from solid waste facilities at 45.4 percent. Other significant GHG emissions came from buildings and facilities (22.2 percent), vehicle fleet (18.2 percent), and employee commute (13.4 percent).

REGIONAL AND LOCAL CLIMATE ACTION PLANS AND PROGRAMS

A climate action plan is a comprehensive and focused plan that includes strategies to guide efforts for reducing GHG emissions. While Fresno County does not have its own Climate Action Plan, described below are regional and local plans relating to climate change that apply to Fresno County.

San Joaquin Valley Air Pollution Control Board Climate Change Action Plan. The SJVAPCD adopted the Climate Change Action Plan in August 2008, which required the District Air Pollution Control Officer to develop guidance for assessing and reducing project-specific GHG emissions. In December 2009, the SJVAPCD adopted the Guidance for Valley Land-use Agencies in Addressing GHG Emissions Impacts for New Projects Under CEQA. The SJVAPCD also adopted a new district policy, Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency. Both the guidance and policy rely on Best Performance Standards (BPS), which assess the significance of project-specific GHG emissions. While the County is not bound to these standards, a

project's impacts is considered less than cumulatively significant if it demonstrates a 29 percent reduction in GHG emissions from business-as-usual.

San Joaquin Valley Blueprint. Eight regional transportation planning agencies representing eight counties in San Joaquin Valley initiated a collaborative planning process in 2005 to develop a regional vision of land use and transportation to guide growth over the next 50 years. The San Joaquin Valley Blueprint was adopted on April 1, 2009 and serves as a guide to implementation in each of the eight counties, including Fresno County. The Blueprint includes smart growth principles and scenarios such as the creation of walkable and bikeable neighborhoods, mixed land uses, preservation of open spaces and environmental areas, and provision of a variety of transportation choices (SJVAPCD 2009).

Fresno COG RTP/SCS. Fresno COG's 2018 RTP/SCS charts the 25-year course of transportation to 2042, addressing GHG emissions reductions and other air emissions to plan sustainably for increased population, development, and transportation in the region. The plan sets emissions standards and target reduction rates, with estimates for 2035 falling in the 11 percent range.

REGULATORY SETTING

FEDERAL

The U.S. Supreme Court determined in *Massachusetts et al. v. Environmental Protection Agency et al.* ([2007] 549 U.S. 05-1120) that the USEPA has the authority to regulate motor-vehicle GHG emissions under the federal Clean Air Act. The USEPA issued a Final Rule for mandatory reporting of GHG emissions in October 2009. This Final Rule applies to fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufacturers of heavy-duty and off-road vehicles and vehicle engines and requires annual reporting of emissions. In 2012, the USEPA issued a Final Rule that established the GHG permitting thresholds that determine when Clean Air Act permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities.

In *Utility Air Regulatory Group v. Environmental Protection Agency* (134 S. Ct. 2427 [2014]), the U.S. Supreme Court held the USEPA may not treat GHGs as an air pollutant for purposes of determining whether a source can be considered a major source required to obtain a PSD or Title V permit. The Court also held that PSD permits otherwise required based on emissions of other pollutants, may continue to require limitations on GHG emissions based on the application of Best Available Control Technology.

STATE

CARB is responsible for the coordination and oversight of state and local air pollution control programs in California. There are numerous regulations aimed at reducing the state's GHG emissions. These initiatives are summarized below.

CALIFORNIA ADVANCED CLEAN CARS PROGRAM

Assembly Bill (AB) 1493 (2002), California's Advanced Clean Cars program (referred to as "Pavley"), requires CARB to develop and adopt regulations to achieve "the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles." On June 30, 2009, USEPA granted the waiver of Clean Air Act preemption to California for its GHG emission standards for motor vehicles, beginning

with the 2009 model year, which allows California to implement more stringent vehicle emission standards than those promulgated by the USEPA. Pavley I regulates model years from 2009 to 2016 and Pavley II, now referred to as "LEV (Low Emission Vehicle) III GHG," regulates model years from 2017 to 2025. The Advanced Clean Cars program coordinates the goals of the LEV, Zero Emissions Vehicles (ZEV), and Clean Fuels Outlet programs, and would provide major reductions in GHG emissions. By 2025, the rules will be fully implemented, and new automobiles will emit 34 percent fewer GHGs and 75 percent fewer smog-forming emissions from their model year 2016 levels (CARB 2011).

CALIFORNIA GLOBAL WARMING SOLUTIONS ACT OF 2006 (ASSEMBLY BILL 32 AND SENATE BILL 32)

The "California Global Warming Solutions Act of 2006," Assembly Bill [AB] 32, outlines California's major legislative initiative for reducing GHG emissions. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 and requires CARB to prepare a Scoping Plan that outlines the main State strategies for reducing GHGs to meet the 2020 deadline. In addition, AB 32 requires CARB to adopt regulations to require reporting and verification of statewide GHG emissions. Based on this guidance, CARB approved a 1990 statewide GHG level and 2020 target of 431 MMT of CO_2e. CARB approved the Scoping Plan on December 11, 2008 and the Plan included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among others (CARB 2008). Many of the GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards, and Cap-and-Trade) have been adopted since the Plan's approval.

The CARB approved the 2013 Scoping Plan update in May 2014. The update defined the CARB's climate change priorities for the next five years and set the groundwork to reach post-2020 statewide goals. The update highlighted California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluated how to align the State's longer term GHG reduction strategies with other State policy priorities, including those for water, waste, natural resources, clean energy, transportation, and land use (CARB 2014).

On September 8, 2016, the governor signed Senate Bill (SB) 32 into law, extending the California Global Warming Solutions Act of 2006 by requiring the State to further reduce GHGs to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). On December 14, 2017, the CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 target. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, and implementation of recently adopted policies and legislation, such as SB 1383 (see below). The 2017 Scoping Plan also puts an increased emphasis on innovation, adoption of existing technology, and strategic investment to support its strategies. As with the 2013 Scoping Plan Update, the 2017 Scoping Plan does not provide project-level thresholds for land use development. Instead, it recommends that local governments adopt policies and locally appropriate quantitative thresholds consistent with statewide per capita goals of six MT of CO_2e by 2030 and two MT of CO_2e by 2050 (CARB 2017). As stated in the 2017 Scoping Plan, these goals may be appropriate for plan-level analyses (city, county, sub-regional, or regional level), but not for specific individual projects because they include all emissions sectors in the state (CARB 2017).

SENATE BILL 97

SB 97, signed in August 2007, acknowledges that climate change is an environmental issue that requires analysis in California Environmental Quality Act (CEQA) documents. In March 2010, the California Natural Resources Agency (Resources Agency) adopted amendments to the State CEQA Guidelines for

the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHG and climate change impacts.

SENATE BILL 375

SB 375, signed in August 2008, enhances the State's ability to reach AB 32 goals by directing the CARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles by 2020 and 2035. SB 375 aligns regional transportation planning efforts, regional GHG reduction targets, and affordable housing allocations. Metropolitan Planning Organizations (MPOs) are required to adopt a Sustainable Communities Strategy (SCS), which allocates land uses in the MPO's Regional Transportation Plan (RTP). Qualified projects consistent with an approved SCS or Alternative Planning Strategy (categorized as "transit priority projects") would receive incentives to streamline CEQA processing.

On March 22, 2018, CARB adopted updated regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035. The Fresno COG notes that implementation of the RTP/SCS would reduce GHGs from transportation sources by 5 percent in 2020 and by 11 percent in 2035 (Fresno COG 2017). The Fresno COG 2018 Regional Transportation Plan and Sustainable Communities Strategy demonstrated that the Fresno County region would achieve its regional emissions reduction targets for the 2035 and 2042 target years (Fresno COG 2018).

SENATE BILL 1383

Adopted in September 2016, SB 1383 requires the CARB to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants. SB 1383 requires the strategy to achieve the following reduction targets by 2030:

- Methane – 40 percent below 2013 levels
- Hydrofluorocarbons – 40 percent below 2013 levels
- Anthropogenic black carbon – 50 percent below 2013 levels

SB 1383 also requires the California Department of Resources Recycling and Recovery (CalRecycle), in consultation with the CARB, to adopt regulations that achieve specified targets for reducing organic waste in landfills.

SENATE BILL 100

Adopted on September 10, 2018, SB 100 supports the reduction of GHG emissions from the electricity sector by accelerating the State's Renewables Portfolio Standard Program, which was last updated by SB 350 in 2015. SB 100 requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045.

EXECUTIVE ORDER B-55-18

On September 10, 2018, the former Governor Brown issued Executive Order (EO) B-55-18, which established a new statewide goal of achieving carbon neutrality by 2045 and maintaining net negative emissions thereafter. This goal is in addition to the existing statewide GHG reduction targets established by SB 375, SB 32, SB 1383, and SB 100.

CALIFORNIA BUILDING STANDARDS CODE

California Code of Regulations, Title 24 – California Building Code

The California Code of Regulations (CCR) Title 24 is referred to as the California Building Code, or CBC. It consists of a compilation of several distinct standards and codes related to building construction including plumbing, electrical, interior acoustics, energy efficiency, and handicap accessibility for persons with physical and sensory disabilities. The CBC's energy-efficiency and green building standards are outlined below.

Part 6 – Building Energy Efficiency Standards/Energy Code

CCR Title 24, Part 6 is the Building Energy Efficiency Standards or California Energy Code. This code, originally enacted in 1978, establishes energy-efficiency standards for residential and non-residential buildings to reduce California's energy demand. The Energy Code is updated periodically to incorporate and consider new energy-efficiency technologies and methodologies as they become available. New construction and major renovations must demonstrate their compliance with the current Energy Code through submittal and approval of a Title 24 Compliance Report to the local building permit review authority and the California Energy Commission (CEC).

The 2019 Title 24 standards are the applicable building energy efficiency standards for the project because they became effective on January 1, 2020. In general, under the 2019 Standards, nonresidential buildings will be 30 percent more energy-efficient compared to the 2016 Standards (CEC 2018). In addition, per Section 110.10, non-residential buildings must incorporate a solar zone area with a minimum area of 15 percent of the total roof area excluding any skylight area for nonresidential buildings with three habitable stories or fewer (other than healthcare facilities) (see the 2019 Standards for exceptions). Solar zones must be comprised of areas that have no dimension less than five feet and are no less than 80 square feet each for buildings with roof areas less than or equal to 10,000 square feet or no less than 160 square feet each for buildings with roof areas greater than 10,000 square feet. See the 2019 Standards for additional requirements regarding the azimuth, shading, interconnection pathways, and electrical service panels of solar zones.

PART 11 – CALIFORNIA GREEN BUILDING STANDARDS

The California Green Building Standards Code, referred to as CALGreen, was added to Title 24 as Part 11, first in 2009 as a voluntary code, which then became mandatory effective January 1, 2011 (as part of the 2010 CBC). The 2016 CALGreen institutes mandatory minimum environmental performance standards for all ground-up new construction of non-residential and residential structures. It also includes voluntary tiers (I and II) with stricter environmental performance standards for these same categories of residential and non-residential buildings. Local jurisdictions must enforce the minimum mandatory CALGreen standards and may adopt additional amendments for stricter requirements. The mandatory standards require:

- 20 percent reduction in indoor water use relative to specified baseline levels
- 50 percent construction/demolition waste diverted from landfills
- Inspections of energy systems to ensure optimal working efficiency
- Use of low pollutant-emitting exterior and interior finish materials such as paints, carpets, vinyl flooring, and particleboards
- Dedicated circuitry to facilitate installation of electric vehicle charging stations in newly constructed attached garages for single-family and duplex dwellings
- Installation of electric vehicle charging stations at least three percent of the parking spaces for all new multi-family developments with 17 or more units

The voluntary standards require:

- **Tier I:** 15 percent improvement in energy requirements, stricter water conservation requirements for specific fixtures, 65 percent reduction in construction waste, 10 percent recycled content for building materials, 20 percent permeable paving, 20 percent cement reduction, and cool/solar reflective roof; and
- **Tier II:** 30 percent improvement in energy requirements, stricter water conservation requirements for specific fixtures, 75 percent reduction in construction waste, 15 percent recycled content for building materials, 30 percent permeable paving, 30 percent cement reduction, and cool/solar reflective roof.

Similar to the compliance reporting procedure for demonstrating Energy Code compliance in new buildings and major renovations, compliance with the CALGreen water-reduction requirements must be demonstrated through completion of water use reporting forms for new non-residential buildings. Buildings must demonstrate a 20 percent reduction in indoor water use by either showing a 20 percent reduction in the overall baseline water use as identified in CALGreen or a reduced per-plumbing-fixture water use rate.

CALIFORNIA INTEGRATED WASTE MANAGEMENT ACT (ASSEMBLY BILL 341)

The California Integrated Waste Management Act of 1989, as modified by AB 341 in 2011, requires each jurisdiction's source reduction and recycling element to include an implementation schedule that shows: (1) diversion of 25 percent of all solid waste by January 1, 1995, through source reduction, recycling, and composting activities and (2) diversion of 50 percent of all solid waste on and after January 1, 2000. CalRecycle is required to develop strategies, including source reduction.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

Pursuant to the requirements of SB 97, the Resources Agency has adopted amendments to the CEQA Guidelines for determining the effects and feasible mitigation of GHG emissions. The adopted CEQA Guidelines provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, while giving lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts. To date, a variety of air districts have adopted quantitative significance thresholds for GHGs. It should be noted that the San Joaquin Valley Air Pollution Control District has not adopted such thresholds at this time.

For more information on the Senate and Assembly bills, executive orders, and reports discussed above, and to view reports and research referenced above, please refer to the following websites: www.climatechange.ca.gov and www.arb.ca.gov/cc/cc.htm.

RELEVANT CASE LAW

Center for Biological Diversity v. California Department of Fish and Wildlife (Case No. 217763)

The California Supreme Court's decision in the *Center for Biological Diversity v. California Department of Fish and Wildlife* was published on November 30, 2015. This decision evaluated the methodology used to analyze GHG emissions in an Environmental Impact Report prepared for the Newhall Ranch development project that included approximately 20,885 dwelling units with 58,000 residents on 12,000 acres of undeveloped land in Los Angeles County. The Environmental Impact Report used a business-as-usual (BAU) approach to evaluate whether the project would be consistent with the AB 32 Scoping Plan. The Court found there was insufficient evidence in the record of that project to explain how a project that reduces its GHG emissions by the same percentage as the BAU reduction identified for the State to meet its statewide targets supported a conclusion that the project impacts were below a level of significance.

The California Supreme Court suggested regulatory consistency as a pathway to compliance, by stating that a lead agency might assess consistency with the State's GHG reduction goals by evaluating for compliance with regulations designed to reduce GHG emissions. This approach is consistent with CEQA Guidelines Section 15064.4(b), which provides that a determination of an impact is not cumulatively considerable to the extent to which the project complies with regulations or requirements implementing a statewide, regional, or local plan to reduce or mitigate GHG emissions. The Court also found that a lead agency may rely on numerical and efficiency-based thresholds of significance for GHG emissions, if supported by substantial evidence.

Golden Door Properties, LLC v. County of San Diego/Sierra Club, LLC v. County of San Diego (Case No. 072406)

The Fourth District Court of Appeal decision in the *Golden Door Properties, LLC v. County of San Diego* case (published on September 28, 2018) evaluated the County of San Diego's 2016 Guidance Document's GHG efficiency metric, which establishes a generally applicable threshold of significance for proposed projects. The Court held that the County of San Diego is barred from using its 2016 Guidance Document's threshold of significance for GHG analysis of 4.9 MT of CO_2e per service person per year. The Court stated that the document violated CEQA because it was not adopted formally by ordinance, rule, resolution, or regulation through a public review process per CEQA Guidelines Section 15064.4(b)(3). The Court also found that the threshold was not supported by substantial evidence that adequately explained how a service population threshold derived from statewide data could constitute an appropriate GHG metric to be used for all projects in unincorporated San Diego County. Nevertheless, lead agencies may make project-specific GHG threshold determinations.

LOCAL

FRESNO COG 2014 RTP/SCS.

The 2014 RTP/SCS develops a regional transportation network that is environmentally sensitive and reduces GHG emissions. The plan was updated in 2018 and is currently undergoing further updates. New transportation facilities must continue to avoid or fully mitigate all significant impacts on environmentally sensitive areas and natural resources such as minimizing loss of farmland. Increased transportation and facility design are encouraged, along with infill development near existing public transportation, which is intended to reduce vehicle miles traveled and the associated GHGs from those mobile emissions (Fresno COG 2018).

SECTION 9.2 CLIMATE CHANGE EFFECTS AND IMPACTS

INTRODUCTION

This section provides a discussion of climate change science and existing global climate conditions in California and Fresno County.

MAJOR FINDINGS

- According to Cal-Adapt, temperatures in Fresno County are projected to rise between 4.3°F and 7.4°F by 2090, with an estimated 65 to 80 extreme heat days per year by 2100.
- More variable precipitation is expected to occur, with more frequent and extreme storm events that may lead to flooding over the next century.
- Climate change in Fresno County is likely to affect agriculture, water resources, health, safety, and the economy.

EXISTING CONDITIONS

According to the IPCC, climate change is expected to affect humans worldwide, threatening to harm the health and safety of people, damage property, and impact industries. In particular, climate change will affect physical and mental health, economic stability, and overall quality of life. It will affect access to and the quality of basic goods and services such as water, shelter, and food, as well as other key priorities for well-being such as education, employment, and crime rates. According to the U.S. Global Change Research Program, climate change is already reshaping the United States, and global warming could have serious consequences for how Americans live and work.

The California Environmental Health Tracking Program examined climate change vulnerability and determined high vulnerability in urbanized areas. This tool was piloted for Fresno and Los Angeles Counties as communities likely to experience substantial climate change impacts. It maps population risk to climate change at the census track level, calculating metrics for air conditioning ownership, land cover characteristics, access to transportation, social vulnerabilities, flood risk, wildfire risk, and sea level risk. In Fresno County, the tool found that high vulnerability to climate change threats exists due to low air conditioner and car ownership.

CAUSES OF CLIMATE CHANGE

According to the USEPA, the greenhouse effect naturally regulates the earth's temperature. However, human activity has increased the intensity of the greenhouse effect by releasing increasing amounts of GHGs into the atmosphere. GHGs can remain in the atmosphere for decades. Climatic changes are happening now and are projected to increase in frequency and severity before the benefits of GHG emission reductions will be realized. Increased concentrations of GHGs in the atmosphere result in increased air, surface, and ocean temperatures. Many of the effects and impacts of climate change stem from resulting changes in temperature and meteorological responses to those changes.

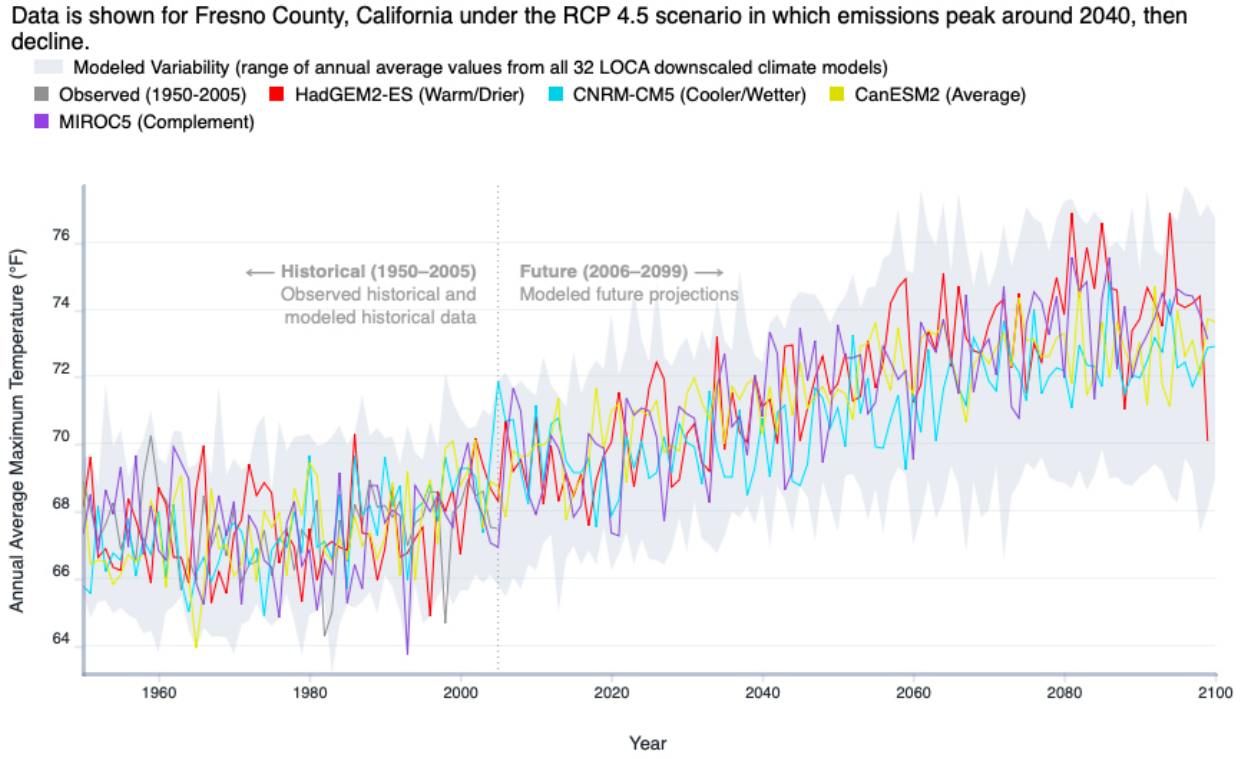
The IPCC includes more than 1,300 scientists from the United States and other countries; this organization estimated that over the last century, global temperatures have increased by about 1.3°F. The IPCC forecasts indicate that global temperatures can be expected to continue to rise between 2.5°F and 10°F over the next century. According to the California Climate Adaptation Strategy, average state temperatures are predicted to increase 1.8°F to 5.4°F by 2050 and 3.6°F to 9°F by 2100. Some regional models show average temperatures in California increasing as much as 10.8°F.

Temperature increase predictions are based on ranges of global GHG emissions expected within the next century. The IPCC temperature ranges mentioned above reflect a variety of low, medium, and high scenarios for emissions. Global GHG emissions are being monitored annually and they continue to increase. As a result, experiencing the low emission scenarios has become unlikely, while the probability of reaching the medium and high scenarios is believed to be more likely. This discussion focuses on the effects of the medium- or high-range emissions scenario, although information about low ranges is also presented where relevant or available.

RISING TEMPERATURES IN FRESNO COUNTY

Fresno County has already experienced a rise in average temperatures. According to the U.S. Global Change Research Program, winters are now shorter and warmer than they were 30 years ago. Temperatures in California have already risen 1°F on average. According to Cal-Adapt, a climate change projection modeling tool developed by California Energy Commission, temperatures in Fresno County have historically averaged about 54.2°F. As shown in Figure 10-9, temperatures in Fresno County are projected to rise between 4.3°F and 7.4°F by 2090, based on average low- and high-emissions scenarios. Fresno County has historically experienced an average of four extreme heat days per year (with a 105°F threshold during the 1961-1990 baseline period). This number is projected to increase to up to 65 extreme heat days per year by 2100 under a low-emissions scenario and up to 80 extreme heat days per year by 2100 under a high-emission scenario (Cal-Adapt 2020a, 2020b).

FIGURE 9-1 ANNUAL AVERAGE MAXIMUM TEMPERATURE (OBSERVED AND PROJECTED)



- Source: Cal-Adapt. Data: LOCA Downscaled Climate Projections (Scripps Institution of Oceanography), Gridded Historical Observed Meteorological Data (University of Colorado, Boulder).
- Four models have been selected by California's Climate Action Team Research Working Group as priority models for research contributing to California's Fourth Climate Change Assessment. Projected future climate from these four models can be described as producing:
  - A *warm/dry* simulation (HadGEM2-ES)
  - A *cooler/wetter* simulation (CNRM-CM5)
  - An *average* simulation (CanESM2)
  - The model simulation that is most unlike the first three for the best coverage of different possibilities (MIROC5)

Source: Cal-Adapt 2020a

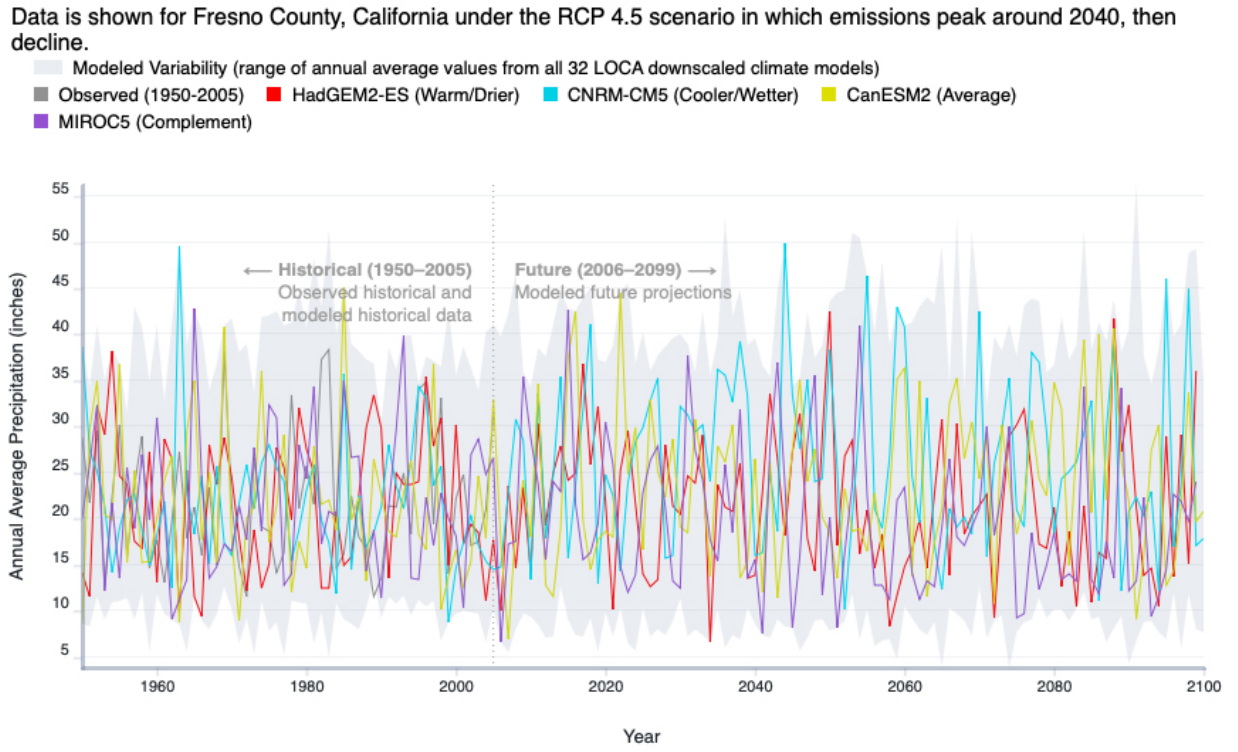
ANTICIPATED CLIMATE CHANGE EFFECTS IN FRESNO COUNTY

VARIABLE PRECIPITATION PATTERNS

Precipitation levels are difficult to predict compared to other indicators of climate change. Annual rain and snowfall patterns vary widely from year to year, especially in California. Generally, higher temperatures increase evaporation and decrease snowfall, resulting in a drier climate. Most scientific models show that northern California precipitation is expected to decrease after 2030 and may decrease as much as 12 to 35 percent by 2050. Furthermore, precipitation is expected to fall as rain rather than snow.

According to Cal-Adapt, Fresno County is expected to generally experience a decrease in annual precipitation by 2100 in a high-emissions scenario. As shown in Figure 9.3-2, while precipitation is projected to fluctuate each decade and varies depending on the emissions scenario, annual precipitation in Fresno County could decrease from an annual average of 12 inches in 2010 to 9 inches in 2100 under the high-emissions scenario.

FIGURE 9- 2
FRESNO COUNTY PRECIPITATION DECADAL AVERAGES OBSERVED AND PREDICTED 1960-2100



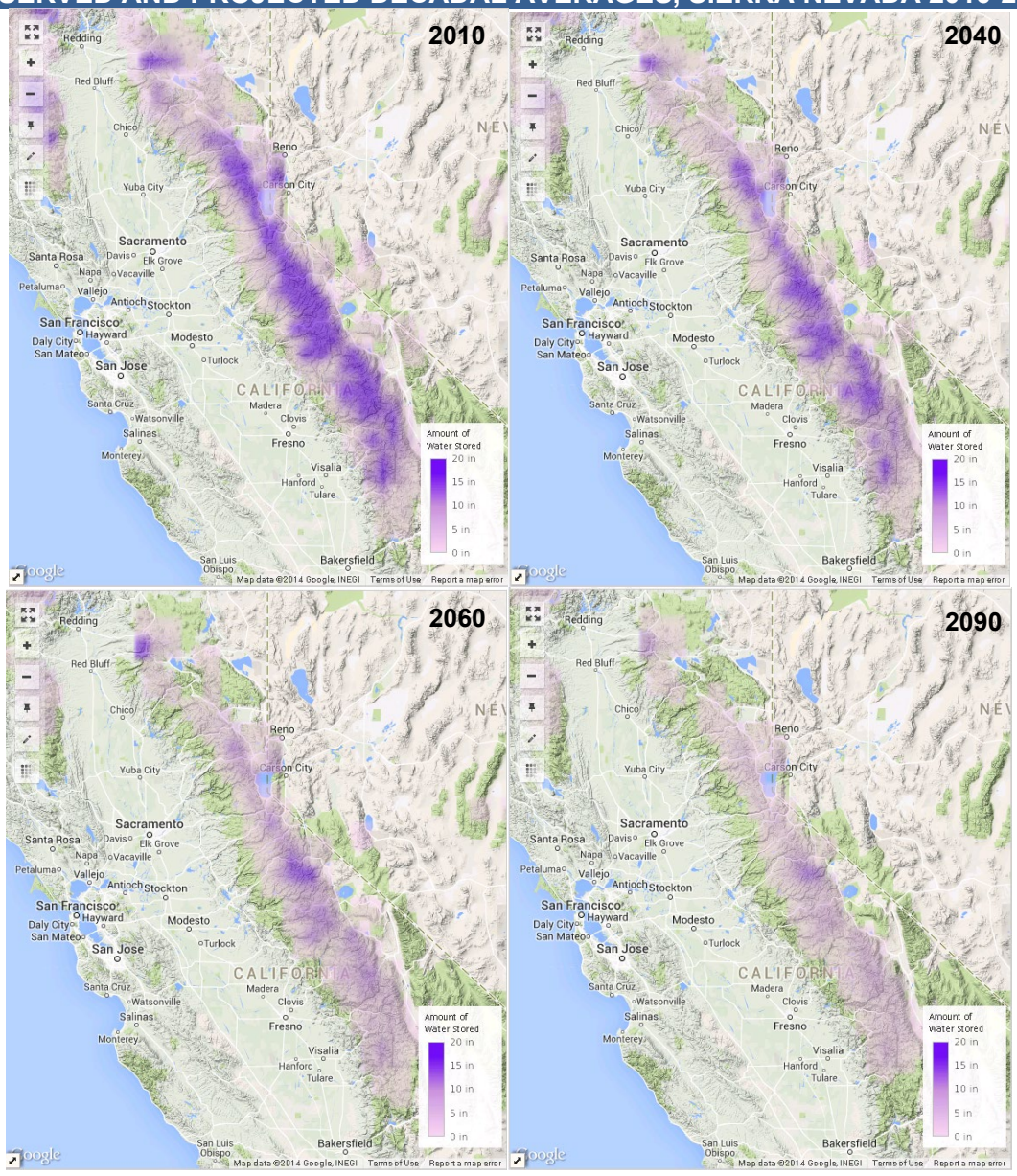
Source: Cal-Adapt 2020b

REDUCED SNOWPACK AND SNOWLINE AT HIGHER ELEVATIONS

The Sierra Nevada snowpack acts as a large natural reservoir that stores water during the winter and releases it into Hetch Hetchy Reservoir in the spring and summer. It is expected that there will be less snowfall in the Sierra Nevada and that the elevations at which snowfalls will rise. Coincidentally, there will be less snowpack water storage to supply runoff water in the warmer months. It has already been documented that California's snow line is rising. According to Cal-Adapt, more precipitation is expected to fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snowpack (Figure 9.3-3). The Sierra Nevada snowpack provides approximately 80 percent of California's annual water supply. Most of the water supplied in Fresno County is from groundwater. The decrease in snowpack, and consequently spring melt, poses a threat to groundwater resources along with surface water resources, such as the Kings and San Joaquin rivers.

The spring snowpack in the Sierra Nevada decreased by 10 percent in the last century and may decrease up to 80 percent by 2100. DWR also estimates that for each 1.8°F increase in earth's average temperature, the Sierra snowpack will retreat 500 feet in elevation. According to DWR, the Sierra Nevada can expect to experience a decrease in snowpack at lower elevations and an overall reduction of 25 to 40 percent reduction in snowpack by 2050.

FIGURE 9- 3
OBSERVED AND PROJECTED DECADAL AVERAGES, SIERRA NEVADA 2010-2090



Source: Cal-Adapt 2014

MORE FREQUENT AND EXTREME STORM EVENTS

Extreme weather is expected to become more common throughout California. More extreme storm events are expected to increase water runoff to streams and rivers during the winter months, heightening flood risks. Warmer ocean surface temperatures have caused warmer and wetter conditions in the Sierra Nevada, increasing flood risk. Strong winter storms may produce atmospheric rivers that transport large amounts of water vapor from the Pacific Ocean to the California coast. They often last for days and drop heavy rain or snow for days. As the strength of these storms increase and transport increased amounts of precipitation, the risk of flooding is increased.

DIMINISHED AIR QUALITY

Climate change is expected to worsen air quality problems by increasing the frequency, duration, and intensity of conditions conducive to air pollution formation. Higher temperatures and increased ultraviolet radiation from climate change are expected to facilitate the chemical formation of more secondary air pollutants from ground-level sources. Conversely, decreased precipitation is expected to reduce the amount of particulates cleansed from the air.

Californians experience the worst quality air in the nation. More than 90 percent of California's population lives in an area that has ozone or particulate matter levels above the State air quality standard. Incidents of wildfires in nearby foothills and mountain regions are expected to increase and further contribute to air quality problems. More information about the air quality in Fresno County can be found in Section 7.2, Air Quality.

WATER SUPPLY AND QUALITY

Climate change is expected to increase pressure on and competition for water resources, worsening already stretched water supplies. Decreasing snowpack and spring stream flows and increasing demand for water from a growing population and hotter climate could lead to increasing water shortages. Fresno County and the whole Central Valley are expected to experience hotter and drier conditions and reduced Sierra snowpack that could cause reduced reservoir supplies and river flows. The region may experience more intense rainfall events that could increase demand for reservoir capacity to provide for water capture and storage. As a result, water supply is expected to decrease and water yields from reservoirs are expected to become more unreliable. As the earth's temperature rises, water demands are expected to increase and could result in a longer season of peak treated water demands. Competition for water is expected to increase among municipal users, agricultural users, and the environment.

Changes to air and land temperatures will have an impact on the timing, amount, type, and location of precipitation and runoff. This will affect the quantity of water supplies, the management of those quantities, the quality of the source water, and the demand for treated drinking water. DWR has identified anticipated changes to the source water conditions in the watershed that will likely affect the quality of the source waters, including more intense storm events, longer drought periods, reduced snowpack at lower elevations, and earlier spring runoff.

Changes in source water quantity and quality may affect the treatment necessary to produce potable drinking water. These changes could result in additional treatment processes required and increased costs for treated drinking water to avoid potential for human health risk via drinking water consumption.

HEALTH AND SAFETY

Respiratory Illness. As temperatures rise from global warming, the frequency and severity of heat waves will grow and increase the potential for bad air days, which can lead to increases in illness and death due to dehydration, heart attack, stroke, and respiratory disease. According to the Environment News Service, poor air quality results in approximately 21,000 deaths per year across California. Additionally, dry conditions can lead to a greater number of wildfires producing smoke that puts people with asthma and respiratory conditions at risk of illness or death.

Heat-related Illness. Higher temperatures and the increased frequency of heat waves associated with climate change are expected to significantly increase heat-related illnesses, such as heat exhaustion and heat stroke, while also worsening conditions associated with cardiovascular and respiratory diseases, diabetes, nervous system disorders, emphysema, and epilepsy. In California, heat waves have killed more people than all other disaster events in the last 15 years, usually affecting vulnerable populations such as infants, the sick, the elderly, or those with low incomes who lack access to air conditioning or who work outdoors. An increase of every 10°F in average daily temperature is associated with a 2.3 percent increase in mortality. During heat waves, mortality rates can increase to about 9 percent. To prepare for heat-related illness, Fresno County has developed a Master Services Plan that includes a Heat Emergency Contingency Plan. Hot weather begins around May and June of each year and persists throughout the summer months. The first phase of the plan is seasonal readiness, which involves heat awareness campaigns throughout the county to educate the public on heat and how to mitigate its effects. The second phase of the plan is an operational area response to a heat emergency, including provision of cooling centers and transportation to these centers (Fresno County 2017).

Vector-borne Diseases. As climate change affects temperature, humidity, and rainfall levels across California, some areas could become more suitable habitats for insects (especially mosquitoes), ticks, and mites that may carry diseases. Wetter regions are typically more susceptible to vector-borne diseases, especially human hantavirus cardiopulmonary syndrome, Lyme disease, and West Nile virus. The amount and pattern of precipitation, as well as warmer winter weather, affects the abundance of vector habitat and food supply. Fresno County is projected to have warmer winters that may attract vector populations (e.g., mosquito inhabited still-water pools may become more prolific). Floods can also increase the food supply available to rodents that may transmit Lyme disease, plague, tularemia, and rickettsia infections. In each of these cases, the increase in vector-borne disease occurrences is expected to affect public health and increase demand on health care systems.

Flood Risk. Increased flood frequency and elevated flood risk are expected in California as a result of sea level rise, more intense storm events, and shifts in the seasonal timing of rainfall and snowpack runoff. Fresno County is protected by a system of levees, but many are privately owned and do not meet the current standards for flood protection. Flooding has caused significant human hardship and economic losses. For example, flooding due to strong storms in 1995 led to an estimated $5 million in public facilities and $9 million in economic and other damages (Fresno County 2010). For more information on flood risk in Fresno County, see Section 8.2, Flood Hazards.

Fire Risk. Recent practice of wildfire suppression has resulted in large fuel loads accumulating in many grassland ecosystems, leading to a dramatic increase in large-scale wildfires in the western United States. Fire season has also become longer in duration due to warmer, earlier springs that dry out vegetation, and more serious as drought and temperature increases intensify the drying effect of the season. Fresno County is affected by drought and severe wildfires. For more information on fire risk in Fresno County, see Section 8.3, Fire Hazards.

ECONOMIC GROWTH AND STABILITY

Economic impacts due to climate change will likely affect all sectors of the economy with negative consequences. A recent study on climate change, urban growth, and agricultural productivity found that over a long period, temperature impacted economy through its effects on agricultural productivity, mortality, and migration (Waldinger 2019). The study cited historical periods of drought and compared the effects during those eras to the potential negative economic effects for the twenty-first century. Consequently, the economic well-being of communities declines with higher risk and greater uncertainty about the future. Residents, businesses, and public agencies will likely see everyday costs for food and services increase. Costs will increase to cover energy, water, food, and health-related issues, leaving less money for discretionary household spending, business investment and profits, and government services.

According to the California Climate Change Center, overall energy demand could increase 6 percent by 2020 and residential electricity demand could increase by up to 55 percent by 2100 (California Climate Change Center 2006). Energy costs are expected to rise as demand increases to cool buildings due to higher temperatures and extreme heat waves. Energy prices may also be affected due to more variable local energy supplies and from increased competition for electricity, natural gas, and oil.

Water is crucial for the economy, as virtually every industry relies on it to grow and sustain business. Water costs will likely rise due to increased demands for potable, landscaping, and irrigation water use (e.g., metered water cost increases) and scarcity of and competition for water supplies. Some businesses claim water availability is a bigger challenge than energy security and that we may run out of water before we run out of fuel. Water shortages and reduced water quality may result in regulatory caps for water use and conflicts between local businesses and communities.

Food prices are expected to increase as the agricultural sector experiences lower yields or crop patterns shift due to higher temperatures and droughts, crops damaged from extreme weather events, and/or operation costs increase (e.g., irrigation water costs). The amount of irrigated land may increase by as much as 40 percent by 2080.

Workforce productivity may be more frequently disrupted by climate change-induced health impacts to residents and employees due to vector- and water-borne disease, heat-related illness, and increased demand for and costs of health care. Outdoor labor and industries (e.g., construction) may be at even higher risk as more frequent, unhealthy working conditions become more common (e.g., higher temperatures, poorer air quality, heat waves, extreme weather events). Workers may be harmed when climate-related events, such as floods, cause them to lose their jobs and incomes. The indirect effects of climate change also may lead to similar outcomes, as businesses move away from areas affected by climate change impacts to less affected areas.

Finally, climate change impacts will likely result in property damage due to hotter temperatures, more extreme weather events, and flooding. Damage to development in the western United States due to extreme weather and storm events has already exceeded $1 billion in 6 of the past 25 years. Preparation for and adaptation to new and changing conditions will likely generate new costs that were not necessary to address similar concerns in the past. Residents, businesses, and the County can expect increased costs for maintenance and upgrades to address these issues, or to make repairs in the event of damage. As climate change generates conditions not experienced in the past, preparation and adaptation will be more costly in terms of requiring new information, institutions, infrastructure, and behaviors.

REGULATORY SETTING

FEDERAL

Executive Order 13653. Executive Order (EO) 13653, signed by President Obama on November 1, 2013, builds upon a previous EO signed in October 2009 (EO 13514) to prepare the U.S. for the impacts of climate change. The EO created a Council on Climate Preparedness and Resilience composed of representatives from across the Federal government. The Council integrates climate resiliency into Federal programs; provides information, data, and tools for the public on climate change preparedness; and updates the agency adaptation plans annually. In addition, the Executive Order creates a State, local, and Tribal Leaders Task Force on Climate Preparedness and Resilience to inform Federal efforts (USEPA 2014).

Federal Emergency Management Agency. In March 2003, the Federal Emergency Management Agency (FEMA) became part of the U.S. Department of Homeland Security. FEMA's continuing mission is to lead the effort to prepare the nation for all hazards and effectively manage Federal response and recovery efforts following any national incident. FEMA also initiates proactive mitigation activities, trains first responders, and manages the National Flood Insurance Program and the U.S. Fire Administration.

U.S. Environmental Protection Agency. USEPA is responsible for developing and enforcing regulations that implement environmental laws enacted by Congress. USEPA is responsible for researching and setting national standards for a variety of environmental programs, and delegates to states and tribes the responsibility for issuing permits, monitoring, and enforcing compliance. USEPA provides technical information related to adaptation planning and supports numerous adaption efforts throughout the country (Goodrich and Schade 2000).

STATE

Executive Order S-13-08. Executive Order S-13-08, signed by former Governor Arnold Schwarzenegger in 2008, requires development of a Climate Adaptation Strategy that directs statewide management of climate impacts from sea level rise, increased temperatures, shifting precipitation, and extreme weather events. The California Natural Resources Agency (CNRA) adopted the California Climate Change Adaptation Strategy in 2010. The Strategy is grouped into seven subject areas: public health, ocean and coastal resources, water supply and flood protection, agriculture, forestry, biodiversity and habitat, and transportation and energy infrastructure. CNRA also adopted updated CEQA guidelines that provide direction on addressing GHG emissions in environmental review documents.

Senate Bill 7x7 Statewide Water Conservation. In November 2009, the California State legislature passed and the Governor signed a comprehensive package of water legislation, including Senate Bill (SB) 7x7 addressing water conservation. In general SB 7x7 requires a 20 percent reduction in per capita urban water use by 2020, with an interim 10 percent target in 2015. The legislation requires urban water users to develop consistent water use targets and to use those targets in their UWMPs. SB 7x7 also requires certain agricultural water supplies to implement a variety of water conservation and management practices and to submit Agricultural Water Management Plans in 2012.

LOCAL

Fresno County Water Conservation Ordinance. Water conservation is a form of climate adaptation planning. The Water Conservation Ordinance was adopted in October 2014 and is designed to conserve and properly utilize the limited available water supplies by preventing the waste and unreasonable use of water. The Ordinance applies to County-maintained Service Areas and Waterworks Districts. In addition to regulating the use of water services and facilities, the Water Conservation Ordinance also promotes the health, welfare, and safety of residents, given limitations on the availability of water and the ability of the County to supply water for human consumption, sanitation, and fire protection.

KEY TERMS

The following key terms used in this chapter are defined as follows:

Carbon Dioxide (CO_2). A naturally occurring gas, and a by-product of burning fossil fuels and biomass, as well as land-use changes and other industrial processes. It is the principal human-generated GHG that affects the earth's radiative balance. It is the reference gas against which other GHGs are measured and therefore has a Global Warming Potential of 1.

Carbon Dioxide Equivalent (CO_2E). A metric used to compare the emissions from various greenhouse gases based upon their global warming potential, or potency. Carbon dioxide equivalents are commonly expressed as "metric tons of carbon dioxide equivalents" (MT CO_2E). The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated global warming potential. For example, the global warming potential for methane is 21. This means that one metric ton of methane is equivalent to 21 metric tons of carbon dioxide.

Carbon Sequestration. The process through which agricultural and forestry practices remove carbon dioxide from the atmosphere. The term "carbon sinks" is also used to describe agricultural and forestry lands that absorb carbon dioxide.

Chlorofluorocarbons (CFCs). A family of inert, nontoxic, and easily liquefied chemicals used in refrigeration, air conditioning, packaging, insulation, or as solvents and aerosol propellants. Because CFCs are not destroyed in the lower atmosphere, they drift into the upper atmosphere, where their chlorine components destroy ozone.

Climate. Climate in a narrow sense is usually defined as the "average weather," or more rigorously, as the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands of years. The classical period is three decades, as defined by the World Meteorological Organization. These quantities are most often surface variables such as temperature, precipitation, and wind. Climate in a wider sense is the state, including a statistical description, of the climate system.

Climate Action Plan. A description of the measures and actions that a local government will take to reduce GHG emissions and achieve an emissions reduction target. Most plans include a description of existing and future year emissions; a reduction target; a set of measures, including performance standards, that will collectively achieve the target; and a mechanism to monitor the plan and require amendment if it is not achieving specified levels. Interchangeable with GHG Reduction Plan.

Climate Change. Climate change refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from: natural factors, such as changes in the sun's intensity or slow changes in the earth's orbit around the sun; natural processes within the climate system (e.g. changes in ocean circulation); human activities that change the atmosphere's composition (e.g. through burning fossil fuels) and the land surface (e.g. deforestation, reforestation, urbanization, desertification, etc.).

Fossil Fuel. A general term for combustible geologic deposits of carbon, including coal, oil, natural gas, oil shale, and tar sands. These fuels emit carbon dioxide into the atmosphere when burned, thus significantly contributing to the enhanced greenhouse effect.

Global Warming. Global warming is an average increase in the temperature of the atmosphere near the earth's surface and in the troposphere, which can contribute to changes in global climate patterns. Global warming can occur from a variety of causes, both natural and human induced. In common usage, "global warming" often refers to the warming that can occur because of increased emissions of GHGs.

Global Warming Potential. One type of simplified index based upon radiative properties that can be used to estimate the potential future impacts of emissions of different gases upon the climate system in a relative sense. The reference gas in this case is CO_2.

Greenhouse Effect. The earth's natural warming process. Certain atmospheric gases that trap heat in the atmosphere, causing the greenhouse effect, are referred to as greenhouse gases.

Greenhouse Gas. Any gas that absorbs infrared radiation in the atmosphere. GHGs contribute to the greenhouse effect. Some GHGs such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and human activities. Other GHGs (e.g., fluorinated gases) are created and emitted solely through human activities. The principal GHGs that enter the atmosphere because of human activities include water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), Chlorofluorocarbons (CFC), and fluorinated gases (HFC), PFCs, and sulfur hexafluoride (SF_6)].

Greenhouse Gas Inventory. A GHG inventory is an accounting of the amount of GHGs emitted to or removed from the atmosphere over a specific period (e.g., one year) for a specified area. Inventories may be global or local. A GHG inventory also provides information on the activities that cause emissions and removals, as well as background on the methods used to make the calculations. Policy makers use GHG inventories to track emission trends, develop strategies and policies, and assess progress in controlling GHG emissions.

HFCs. Man-made compounds containing hydrogen, fluorine, and carbon, many of which have been developed as alternatives to ozone-depleting substances for industrial, commercial, and consumer products, that have a range of global warming potentials. HFCs do not have the potential to destroy stratospheric ozone, but they are still powerful GHGs.

Intergovernmental Panel on Climate Change. IPCC was established jointly by the United Nations Environment Program and the World Meteorological Organization in 1988. The purpose of the IPCC is to assess information in the scientific and technical literature related to all significant components of the issue of climate change. The IPCC draws upon hundreds of the world's expert scientists as authors and thousands as expert reviewers. Leading experts on climate change and environmental, social, and economic sciences from some 60 nations have helped the IPCC to prepare periodic assessments of the scientific underpinnings for understanding global climate change and its consequences.

Methane (CH_4). A hydrocarbon that is a GHG with a global warming potential estimated at 21 times that of carbon dioxide. Methane is produced through anaerobic (without oxygen) decomposition of waste in landfills, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.

Metric Ton. Also known as a "tonne." Common international measurement for the quantity of GHG emissions. A metric ton is equal to 2,205 pounds or 1.1 short tons.

PFC. Potent GHGs that accumulate in the atmosphere and remain there for thousands of years. Aluminum production and semiconductor manufacture are the largest known man-made sources of perfluorocarbons.

Water vapor. Water vapor (H_2O) is the most abundant, important, and variable GHG in the atmosphere. Water vapor is not considered a pollutant; in the atmosphere it maintains a climate necessary for life.

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CHAPTER 10: NOISE

INTRODUCTION

This chapter describes the existing noise conditions, major noise sources (including ground transportation, aircraft, and non-transportation), and regulatory framework related to noise levels in the County of Fresno.

FINDINGS

- Roadway traffic is the most significant source of noise affecting residents in Fresno County. Interstate 5 and State Routes 99, 33, 41, 43, 63, 145, 245, 168, 180, 198, and 201 are the main sources of traffic noise.
- Fresno County has a total of nine (9) public use airports with the Fresno Yosemite International (FYI) being the primary passenger airport in the region. The aircraft operations that originate and terminate at these airports, as well as overflights of the area by aircraft not utilizing these airports, contribute in some degree to the overall ambient noise environment in the County.
- Freight and passenger trains run on railroad tracks that pass through Fresno County. High levels of noise can be expected within approximately 100 feet of the main line railroad tracks, moderate levels of noise within 100 to 700 feet, and low levels of noise at distances greater than about 700 feet. Railroad operations are a substantial source of noise for residences or other noise-sensitive land uses adjacent to the railroad tracks.
- There is a wide variety of industrial and other non-transportation noise sources in the county. Noise generated by these sources varies significantly, but can provide a greater contribution to the local ambient noise environment than traffic, depending on the nature of the noise source and proximity of the noise source to sensitive receptors.

EXISTING CONDITIONS

BACKGROUND

Noise. Noise level (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels to be consistent with that of human hearing response, which is most sensitive to frequencies around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz).

Sound pressure level is measured on a logarithmic scale with the 0 dB level based on the lowest detectable sound pressure level that people can perceive (an audible sound that is not zero sound pressure level). Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dBA, and a sound that is 10 dBA less than the ambient sound level has no effect on ambient noise. Because of the nature of the human ear, a sound must be about 10 dBA greater than the reference sound to be judged as twice as loud. In general, a 3 dBA change in community noise levels is noticeable, while 1 to 2 dBA changes generally are not perceived. Quiet suburban areas typically have noise levels in the range of 40 to50 dBA, while arterial streets are in the 50 to 60+ dBA range. Normal conversational levels are in the 60 to 65 dBA range, and ambient noise levels greater than 65 dBA can interrupt conversations.

Noise levels typically drop off at a rate of 6 dBA per doubling of distance from point sources (such as industrial machinery). Noise from lightly traveled roads typically attenuates at a rate of about 4.5 dB per doubling of distance. Noise from heavily traveled roads typically attenuates at about 3 dB per doubling of distance. Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. Standard new residential construction typically provides a reduction of exterior-to-interior noise levels of 25 dBA or more with windows closed (Federal Transit Administration, May 2006).

In addition to the actual instantaneous measurement of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. One of the most frequently used noise metrics that considers both duration and sound power level is the equivalent noise level (Leq). The Leq is defined as the single steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time (essentially, the average noise level).

The time period in which noise occurs is also important since noise that occurs at night tends to be more disturbing than noise that occurs during the day. Community noise is usually measured using Day-Night Average Level (Ldn), which is the 24-hour average noise level with a 10-dBA penalty for noise occurring during nighttime (10 p.m. to 7 a.m.) hours, or Community Noise Equivalent Level (CNEL), which is the 24-hour average noise level with a 5 dBA penalty for noise occurring from 7 p.m. to 10 p.m. and a 10 dBA penalty for noise occurring from 10 p.m. to 7 a.m. Noise levels described by Ldn and CNEL usually do not differ by more than 1 dB.

Vibration. Vibration is a unique form of noise because its energy is carried through buildings, structures, and the ground, whereas noise is simply carried through the air. Thus, vibration is generally felt rather than heard. The ground motion caused by vibration is measured as particle velocity in inches per second and is referenced as vibration decibels (VdB) in the United States.

The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people (Federal Transit Administration, 2006). A vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. In terms of ground-borne vibration impacts on structures, the FTA states that ground-borne vibration levels in excess of 100 VdB would damage fragile buildings and levels in excess of 95 VdB would damage extremely fragile historic buildings. Typically, vibrations in Fresno County would be related to construction operations or passing of trains near homes and buildings built near the railroad tracks. Ambient vibration levels in residential areas are typically 50 Vdb, which is well below human perception (Fresno COG 2014 Regional Transportation Plan Environmental Impact Report, 2014).

NOISE CONDITIONS IN FRESNO COUNTY

Roadway traffic from highways is the most pervasive source of noise throughout the County. Other expressways and arterials within the unincorporated County also have substantial local influences on noise levels. The most intense traffic noise sources tend to be those with heavy truck traffic and/or high proportions of nighttime traffic. Besides roadway noise, railroads, airports, and fixed sources of noise also affect localities throughout the County.

GROUND TRANSPORTATION

Traffic is the main source of transportation noise in the County of Fresno. Traffic noise exposure is mainly a function of the number of vehicles on a given roadway per day, the speed of those vehicles, the percentage of medium and heavy trucks in the traffic volume, and the receiver's proximity to the roadway. Noise levels would be typically highest along Fresno County's Regionally Significant Roads System. Noise levels between 150 to 175 feet from such roadways in Fresno County typically average around 75 dBA (Fresno COG 2014 Regional Transportation Plan Environmental Impact Report, 2014). Fresno County's Regionally Significant Roads System is served by 1 Interstate and 12 State Routes. Interstate 5 and State Route 99 are major routes that generally run in a north-south direction. State Routes 33, 41, 43, 63, 145, and 245 also provide north-south access, while Routes 168, 180, 198, and 201 generally run in an east-west direction. In addition, many city and County roads are used for commute, agricultural, recreational, and scenic purposes (Fresno COG 2014 Regional Transportation Plan Environmental Impact Report, 2014).

RAILWAY

The San Joaquin Amtrak route provides passenger rail service to Oakland, Sacramento, and Bakersfield several times daily. The Amtrak rail line is two miles east of Highway 99 but runs generally parallel to the highway and bisects Fresno County. Amtrak also provides bus service from various rail stations along the San Joaquin route to cities that are not accessible by rail, such as Los Angeles and San Diego. The largest ridership along the San Joaquin route is from Fresno.

Four railroad companies own or operate the 280 miles of rail lines in Fresno County. The Union Pacific Railroad (UPRR) operates two mainlines and two branch lines. The Burlington Northern and Santa Fe (BNSF) Company operates one mainline and two branch lines. The San Joaquin Valley Railroad and the Tulare Valley Railroad each operate two branch lines. Both the Burlington Northern/Santa Fe and the Union Pacific (formerly Southern Pacific) railway companies operate north-south mainlines through the county. These rail lines are used to service industrial and agricultural areas in Fresno County. Plans are currently being made for the future implementation of high-speed rail service in California. The California High-Speed Rail Authority is responsible for planning, designing, building, and operation of the first high-speed rail system in the nation. California high-speed rail will pass through Fresno County and will connect the major cities of the state. By 2029, plans call for a system that will run from San Francisco to the Los Angeles basin in under three hours at speeds of over 200 miles per hour. The system is planned to eventually extend to Sacramento and San Diego, totaling 800 miles with up to 24 stations. In addition, the Authority is working with regional partners to implement a statewide rail modernization plan that will invest billions of dollars in local and regional rail lines to meet the state's 21st century transportation needs.

The region experiences noise from existing freight and passenger railroad operations. While these operations generate significant noise levels in the immediate vicinity of the railroad tracks during train passages, these operations are intermittent and the tracks are widely dispersed throughout the county. For these reasons, the contribution of railroad noise to the overall ambient noise environment in the county is relatively small. The two main line rail operations in Fresno County are UPRR and BNSF. Numerous freight train operations per day occur on UPRR and BNSF lines that extend from their respective yards in Fresno County to points north and south of the county. Seven northbound and seven southbound passenger rail operations occur each day on the BNSF lines.

High noise level can be expected within approximately 100 feet of the main line railroad tracks, moderate noise levels from 100 to 700 feet, and low noise levels at distances greater than about 700 feet. These sound levels may be lesser or greater depending on site-specific factors such as sound walls, grade crossings, and topographic shielding. Insignificant noise levels can be expected adjacent to the several branch lines in Fresno County (Fresno COG 2014 Regional Transportation Plan Environmental Impact Report, 2014).

AVIATION

Fresno County has nine public use airports with the Fresno Yosemite International Airport (FYI) being the primary passenger airport facility in the region. In addition to FYI, the airports in the county are Fresno Chandler Downtown Airport, Coalinga Airport, Firebaugh Municipal Airport, Mendota Municipal Airport, Reedley Municipal Airport, Harris Ranch Airport, Selma Aerodrome, and Sierra Sky Park Airport. FYI is the largest and busiest airport in the San Joaquin Valley. In 2013, 1.4 million passengers flew in and out of FYI. The number of passengers and the amount of cargo has also increased in recent years. The upward trend in the amount of enplaned cargo is expected to continue over the next 25 years, while the number of enplaned passengers is expected to meet and exceed current projections. Total operations at FYI were approximately 135,000 flights per year for the period ending February 12, 2012, the most recent period for which data is available. This includes air carrier/commuter/charter flights, general aviation, and military operations, but does not include airfreight operations, which are estimated to be over 1,000 operations per year (Fresno COG 2014 Regional Transportation Plan Environmental Impact Report, 2014).

Fresno County is also home to twenty-six (26) private and military airports. In addition to the numerous daily aircraft operations that originate and terminate at these airports daily, overflights of the area by aircraft not utilizing the regional airports frequently occur. All of these operations contribute in some degree to the overall ambient noise environment in the county. The intensity of aircraft noise exposure depends on one's proximity to the aircraft flight path, the type, speed, and altitude of aircraft, as well as atmospheric conditions. The farther away the noise source is, the more the sound propagation from source to receiver is affected by weather. Airport noise contours have been established for all public airport facilities in the county and are consistent with the Federal Aviation Administration (FAA) Integrated Noise Model. The Airport noise contour maps show noise levels generated by airport traffic at varying distances to nearby land uses. Noise contours for existing and future conditions at each of the airports are contained in various plans or studies, including: Airport Master Plans, Airport Land Use Compatibility Plan, Comprehensive Airport Land Use Plans, Airspace Plans, and Airport Layout Plans. Each of these plans or studies includes implementation goals, objectives, and policies and/or recommendations to lessen noise impacts.

NON-TRANSPORTATION SOURCES

There is a wide variety of industrial and other non-transportation noise sources in the county, including heavy industrial or manufacturing operations, power plants, food packaging and processing facilities, lumber mills, aggregate mining and processing plants, race tracks, shooting ranges, amphitheaters, and car washes. Noise generated by these sources varies significantly, but can provide a greater contribution to the local ambient noise environment than traffic, depending on the nature of the noise source. Although non-transportation noise sources can define the ambient noise environment within a given distance to the noise source, the regional ambient noise environment is, nonetheless, defined primarily by traffic (Fresno COG 2014 Regional Transportation Plan Environmental Impact Report, 2014).

REGULATORY SETTING

STATE

CALIFORNIA CODE OF REGULATIONS (TITLE 24)

Known as the California Building Code, the California Code of Regulations contains standards for allowable interior noise levels associated with exterior noise sources. The standards state that "Interior noise levels attributable to exterior sources shall not exceed 45 dB in any habitable room." The standards apply to new hotels, motels, dormitories, apartment houses, and dwellings other than detached single-family residences (i.e., apartments). The code goes on to indicate that: "Residential structures to be located where the annual Ldn or CNEL exceeds 60 dB shall require an acoustical analysis showing that the proposed design will achieve the prescribed allowable interior level. For public use airports or heliports, the Ldn or CNEL shall be determined from the airport land use plan prepared by the County in which the airport is located. For all other airports or heliports, or public use airports or heliports for which a land use plan has not been developed, the Ldn or CNEL shall be determined from the noise element of the general plan of the local jurisdiction."

CALIFORNIA CODE OF REGULATIONS (TITLE 21)

The State Division of Aeronautics has adopted standards for airport-related noise. The standards establish an acceptable noise level of 65 dB for uses near airports. This standard applies to persons residing in urban residential areas where houses are of typical California construction and may have windows partially open.

CALIFORNIA DEPARTMENT OF TRANSPORTATION CONSTRUCTION VIBRATION

The California Department of Transportation (Caltrans) has adopted guidance for construction vibrations. Caltrans uses a vibration limit of 12.7 mm/sec (0.5 inches/sec) Peak Particle Velocity (PPV) for buildings that are structurally sound and designed to modern engineering standards. A conservative vibration limit of five mm/sec (0.2 inches/sec) PPV has been used for buildings that are found to be structurally sound, but where structural damage is a major concern. For historic buildings or buildings that are documented to be structurally weakened, a conservative limit of two mm/sec (0.08 inches/sec) PPV is often used to provide the highest level of protection. All of these limits have been used successfully and compliance with these limits has not been known to result in appreciable structural damage. All vibration limits referred to in this chapter apply on the ground level and take into account the response of structural elements (i.e., walls and floors) to ground-borne excitation.

CALIFORNIA GOVERNMENT CODE SECTION 65302(F)

California Government Code Section 65302(f) requires all General Plans to include a Noise Element that addresses noise-related impacts in the community. The State Office of Planning and Research (OPR) has prepared guidelines for the content of the noise element, which includes the development of current and future noise level contour maps. These maps must include contours for the following sources:

- Highways and freeways
- Primary arterials and major local streets

- Passenger and freight on-line railroad operations and ground rapid transit systems
- Commercial, general aviation, heliport, and military airport operations, aircraft flyovers, jet engine tests stands, and all other ground facilities and maintenance functions related to airport operation
- Local industrial plants, including, but not limited to, railroad classification yards
- Other stationary ground noise sources identified by local agencies as contributing to the community noise environment

FEDERAL

FEDERAL HIGHWAY ADMINISTRATION

The Federal Highway Administration (FHWA) has established noise abatement criteria that must be considered for the design of federal or federally funded highway projects. Federal regulations also set noise limits for medium and heavy trucks (over 4.5 gross tons). The federal standard for truck pass by noise at 15 meters (50 feet) is 80 dB. These standards are implemented through federal regulatory controls on truck manufacturers. Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772) provides procedures for conducting highway project noise studies and implementing noise abatement measures to help protect the public health and welfare, supply Noise Abatement Criteria (NAC), and establish requirements for information to be given to local officials for use in planning and designing highways. Under this regulation, noise abatement must be considered for a Type I project if the project is predicted to result in a traffic noise impact. A traffic noise impact is considered to occur when the project results in a substantial noise increase or when the predicted noise levels approach or exceed the NAC specified in the regulation. Title 23, Part 772 of the Code of Federal Regulations does not specifically define what constitutes a substantial increase or the term approach; rather, it leaves interpretation of these terms to the states.

FEDERAL TRANSPORTATION ADMINISTRATION AND FEDERAL RAILROAD ADMINISTRATION VIBRATION IMPACT CRITERIA

The Federal Railway Administration (FRA) and the Federal Transit Administration (FTA) have published guidance relative to vibration impacts. The FRA establishes noise standards for federally funded transit projects and the FTA establishes noise standards for federally funded rail projects. According to the FRA, fragile buildings can be exposed to groundborne vibration levels of 0.5 PPV without experiencing structural damage. The FTA has identified the human annoyance response to vibration levels as 80 VdB.

FEDERAL AVIATION ADMINISTRATION

Pursuant to the federal Airport Noise and Capacity Act of 1990, the FAA established a schedule for complete transition to Part 36 "Stage 3" standards by year 2000. This transition schedule applies to jet aircraft with a maximum takeoff weight in excess of 75,000 pounds, and thus applies to passenger and cargo airlines, but not to operators of business jets or other general aviation aircraft. Advisory in nature, FAR Part 150 prescribes a system for measuring airport noise impacts and presents guidelines for identifying incompatible land uses. Completion of an FAR Part 150 plan by the airport proprietor is a prerequisite for obtaining Federal Aviation Administration funding for noise abatement projects.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

The Department of Housing and Urban Development (HUD) seeks to create quality affordable housing for all Americans and uses their platform to improve the quality of life. To achieve their goals and fulfill their mission, HUD has established its own exterior noise criteria for evaluating projects located in high noise areas (e.g., near an airport, road, or railroad). HUD's exterior noise criterion states that 65 dBA DNL noise levels or less are satisfactory for residential land uses. HUD's criterion does not include standards for interior noise levels.

LOCAL

COUNTY OF FRESNO GENERAL PLAN NOISE ELEMENT

The Noise Element recommends development of a noise ordinance based upon noise standards presented in Table 10-9 of the Noise Element (shown as Table 10-1 below), establishes areas subject to Ldns above 60 dBA as "noise impact zones," requires County review of noise impacts on proposed projects within these zones, and calls for incorporation of measures to protect all new (noise-sensitive) development from existing noise sources. It specifies that stationary source should not have an "adverse effect" on adjoining property in "non-intensive development" areas and that all proposed developments should minimize such effects on surrounding land uses. Further, the Noise Element calls for consideration of noise impacts in land use and transportation planning and recommends that proposed transportation facilities incorporate measures to mitigate increased noise levels that would result from their implementation. The Noise Element presents a series of additional recommendations for controlling transportation-noise source, including designating truck routes and limiting vehicle speeds where appropriate, discouraging commercial aircraft flights between the hours of 11:00 p.m. and 6:30 a.m., and developing a program to reduce railroad noise in residential and other noise sensitive areas.

The Noise Element recommends development of noise contours for major roads classified in the Fresno County General Plan's Circulation Element and stationary facilities in unincorporated areas that emit noise levels greater than 60 dBA Ldn. The noise contours developed for the General Plan were based upon the L10 statistic (for transportation-source noise and upon Ldn for rail noise and apparently for aircraft noise as well.

TABLE 10-1
EXISTING NOISE ELEMENT: MAXIMUM ACCEPTABLE NOISE LEVELS

Land Use	L50		Ldn	
	Daytime	Nighttime	Exterior	Interior
Rural Residential	50	45	55	45
Urban Residential & Schools, Parks, Hospitals and Rest homes	55	50	60	45
Urban Commercial	65	60		
Urban Industrial	70	70		

Source: Fresno County General Plan Update January 2000

COUNTY OF FRESNO NOISE ORDINANCE

The standards of the Fresno County Noise Ordinance incorporate a structure similar to that presented in the California Office of Noise Control's (ONC) Model Noise Ordinance and include baseline exterior noise standards that are consistent with the General Plan's L50 guidelines for rural residential areas. County standards apply specifically to noise exposure at residences, schools, hospitals, churches, and libraries; these standards are shown in Tables 10-10 and 10-10b of the Fresno County General Plan Update Background Report (shown below as Table 10-2 and Table 10-3 respectively).

TABLE 10-2
NOISE CONTROL ORDINANCE: EXTERIOR NOISE STANDARDS
FRESNO COUNTY

Category	Cumulative Number of Minutes in any One-Hour Time Period	Noise Level Standards (dBA)	
		Daytime (7 a.m. – 10 p.m.)	Nighttime (10 p.m.- 7 a.m.)
1	30	50	45
2	15	55	50
3	5	60	55
4	1	65	60
5	0	70	65

Source: Fresno County General Plan Update 2000

TABLE 10-3
NOISE CONTROL ORDINANCE: INTERIOR NOISE STANDARDS, FRESNO COUNTY

Category	Cumulative Number of Minutes in any One-Hour Time Period	Noise Level Standards (dBA)	
		Daytime (7 a.m. – 10 p.m.)	Nighttime (10 p.m.- 7 a.m.)
1	5	45	35
2	1	50	40
3	0	55	45

Source: Fresno County General Plan Update 2000

KEY TERMS

The following key terms used in this chapter are defined as follows:

Community Noise Equivalent Levels (CNEL). A noise measurement system introduced in the early 1970s by the State of California. The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 p.m. to 10:00 p.m. and after addition of 10 decibels to sound levels measured in the night between 10:00 p.m. and 7:00 a.m.

Day/Night Noise Level, Ldn or DNL. The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 p.m. and 7:00 a.m.

Decibel (dB). A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.

Frequency (Hz). The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sounds are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.

L01, L10, L50, and L90. The A-weighted noise levels that are exceeded 1, 10, 50, and 90 percent of the time during the measurement period.

Sound Pressure Level. The sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where one Pascal is the pressure resulting from a force of one Newton exerted over an area of one square meter. Sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.

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Appendix A

Fresno County 2000 General Plan
Policy Document

Disadvantaged Unincorporated Communities SB 244

County of Fresno

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Senate Bill 244 (SB244) requires counties to identify and describe the disadvantaged unincorporated communities (DUCs) within the county except for unincorporated areas within cities' spheres of influence (SOI), on or before the due date for each subsequent revision of its housing element. The descriptions must include an analysis of water, wastewater, storm drainage and structural fire protection needs or deficiencies for each of the DUCs and identify potential funding mechanisms that could resolve those deficiencies (Alex, 2013).

SB 244 defines a DUC as a place that meets the following criteria:

- Contains 10 or more dwelling units in close proximity to one another; and
- Is a legacy community in which the median household income is 80 percent or less than the statewide median household income.

Legacy communities are geographically isolated communities that are inhabited and have existed for more than 50 years (Alex, 2013).

DUC IDENTIFICATION METHODOLOGY

SB 244 describes the general characteristics of DUCs but does not provide specific guidance on how to identify them. To assist local governments in addressing the requirements of SB 244, the Governor's Office of Planning and Research (OPR) published a technical advisory memo in February 2013. The memo recommends data sources for identifying the income status of communities and mapping sources for identifying "communities" as defined by SB 244. It also referenced methodological guidance prepared by PolicyLink in collaboration with California Rural Legal Assistance. Based on the guidance provided by OPR and PolicyLink, the County identified DUCs in the Fresno County area by focusing on a combination of income status and parcel density (Alex, 2013).

LOW INCOME STATUS

The County identified unincorporated communities that were 80 percent below the statewide median household income (MHI). The County used Disadvantaged Communities shapefiles from the California Environmental Protection Agency (SB 535), Census Block Groups, and Census Designated Places (CDP). The shapefile income data was based on the American Community Survey (ACS) 5-Year: 2013 - 2017 Census. During 2013 - 2017, the statewide median household income was $71,805 (United States Census Bureau, 2019a).

PARCEL DENSITY

- The County selected parcels that were outside of the spheres of influence of the fifteen County of Fresno cities for the study.

- The County focused on groupings of parcels that approximate the density of suburban and urban communities, with parcels that are small and close together defining what constitutes suburban or urban development.

- To estimate density, the County calculated the number of parcels per square mile to identify development clusters similar in density to existing Census Designated Places (CDPs).

- The County calculated parcel densities using the centroid (or middle point) of each parcel. The County extracted the XY coordinates from the Fresno Parcel geodatabase layer and created a new point layer from them.

- The County then calculated parcel density using the ArcGIS spatial analyst kernel density tool. As a benchmark, the County relied on a density calculation methodology from the Community Equity Initiative (CEI) (Flegal, Rice, Mann, & Tran, 2013) to establish a minimum threshold value for community density. This calculation was based on the developed portion(s) of CDPs, which often have large undeveloped areas. Based on this methodology, the County selected unincorporated areas that were at least as dense as current Fresno County CDPs (approximately 250 parcels per square mile), which is consistent with CEI findings.

- Some very small rural communities (e.g. Camden Avenue Community, East Adams Avenue Community) were not identified based purely on the GIS-based methodology, so the County used Google Earth and the centroid density layer to identify other areas that had 10 or more dwelling units in close proximity (per the Government Code definition of DUCs).

COMBINING THE DATA

- After identifying areas that met the density threshold, the County added the low-income data layer to these areas. The County then selected the areas that met both the density and low-income thresholds and created a new shapefile identifying the DUCs.

- Figures 1 and 2 show the results of this methodology. If a DUC did not have a known name, the County assigned the DUCs a name based on associated CDPs. For communities outside of CDPs, the County used nearby roadway names or numbered County Service Areas as identifiers.

- The results of the initial analysis were verified by using the Density-based Clustering tool in ArcGIS for both parcel density and address point density, and heat map visualization. With these tools, density was reanalyzed using 50 units per half-mile and 25 units per quarter-mile, to prevent anomalies in the analysis resulting from very large parcels in the western side of the County and resulted in the identification of six additional DUCs beyond the 30 previously identified with the methodology.

COMMUNITIES IDENTIFIED

All the DUCs that the County identified are Legacy Communities, as defined by SB 244. Many of the communities fall within CDP boundaries and are identified accordingly. Table 1 lists the DUCs in the Fresno County area by size (in acres) and the number of parcels in each community. Figure 1 shows the County-wide distribution of DUCs and Figures 1a through 1d show DUCs in the northwest, southwest, central, and southcentral areas of the County respectively.

The analysis utilized to determine communities was undertaken in part to capture areas that may have not been designated by an historic place name. There are several areas and identified places in Fresno County that, although may have historic significance, do not meet all the criteria to be considered a DUC legacy community.

Some examples include the communities of Friant, Centerville, Auberry, Tollhouse and Meadow Lakes. These communities did not meet the lower income thresholds and/or fall within the PolicyLink methodology. Other identified places such as Bretz Mill, Dora Belle, Ockenden and Wildflower are now portions of the larger Shaver Lake community and exceed income level thresholds for DUC identification. Other communities, such as Helm, contain multiple residences on a single parcel as part of housing for farm labor operations, and thus did not achieve the density or parcellation to be identified as a DUC. Communities such as Rolinda didn't possess the density and generally had higher income levels. The communities of Calwa and Tarpey Village are located within the city spheres of influence of Fresno and Clovis respectively and were thus not part of the County's SB 244 analysis.

DUC SERVICE PROFILES

For each of the identified DUCs, County staff conferred with Fresno Local Agency Formation Commission (LAFCo), Community Services Districts (CSDs), County Service Area (CSA) administrator, CAL Fire and North Central Fire District to determine how water, wastewater, drainage, and fire protection services are provided. The Fresno LAFCo information was drawn primarily from Municipal Service Reviews (MSR) and SOI update reports. In addition, the County drew upon the findings of the 2013 Kings Basin Disadvantaged Communities Pilot Project Study (KBDAC) (California Department of Water Resources, 2013) to supplement Fresno LAFCo's findings. The KBDAC Study was a collaboration between the Kings Basin Water Authority (KBWA) and the California Department of Water Resources (DWR) that included extensive community outreach and partnering with key stakeholder groups, including California Rural Legal Assistance (CRLA) (California Department of Water Resources, 2013).

Regarding drainage in the identified DUCs that do not have drainage infrastructure in place, County staff conducted site visits during the spring of 2019 for any sign of standing water as well as examining the log book of the Road Maintenance and Operations of the Department of Public Works and Planning for any report of flooding received from community residence from residents during the winter of 2018-2019 or the spring of 2019 where Fresno County experienced average rainfall.

The following pages provide summaries of how each area is being served.

1. ASHLAN AVENUE COMMUNITY

The Ashlan Avenue Community is located at the northwest corner of Ashlan Avenue and Chateau Fresno Avenue, and includes 18 parcels totaling approximately 57 acres (Fresno County Department of Public Works and Planning, 2019c).

The area is in Census Tract 41.

The Ashlan Avenue Community is not located within a census tract/block group unit that meets the MHI DUC threshold, but when applying the US Census ACS data, Ashlan Avenue Community meets the MHI DUC threshold. The US Census ACS five-year estimate reports indicate that Census Tract 41.00- Block Group 1 had an MHI of $37,268 between 2006 and 2010 (United States Census Bureau, 2019).

Water – There is no community water system in place for this community. Private wells provide water to the residents of this area. During the past ten years, there has been one private well permit issued and one well reconnection (Fresno County Department of Public Health, 2019).

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents for wastewater disposal. There was one septic permit issued in relation to a replacement of a fire damaged single-family residence during the past ten years (Fresno County Department of Public Works and Planning, 2019a).

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads. No incident of flooding was reported during the winter of 2018 – 2019 or during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019).

County staff conducted a community site visit on May 8, 2019. On Chateau Fresno, the presence of undeveloped drainage swales was noted, but other drainage infrastructure (curb and gutters, ponding basins, and sidewalks) were absent in the community. Staff noted there were no noticeable areas of erosion or potential for standing water. On Ashlan, no drainage swales were present nor were other drainage infrastructure (curb and gutters, ponding basins, and sidewalks) were absent in the community. Staff noted there were no noticeable areas of erosion or potential for standing water.

Fire – Fire protection is provided to this community by the North Central Fire Protection District. There are no fire service deficiencies in this community. The North Central Fire Protection District provides a full range of emergency services including fire prevention, fire suppression, emergency medical care, hazardous materials response, search and rescue response, emergency preparedness planning, and public education. The North Central Fire Protection District's current model of service is an enhanced level of service provided through the staffing of four fire stations with a total of 15 on-duty firefighters/Emergency Medical Technicians (EMTs). One fire station is located 1.8 miles from the Ashlan Avenue community, allowing a three-minute response time, and is equipped with one front line fire engine with pump capacity of 1,250 gallons per minute (gpm) and an 800-

gallon water tank, one reserve fire engine with pump capacity of 1,250 gpm and a 750-gallon water tank, and one water tender that augments onsite water deficiencies (i.e. lack of fire hydrants) with a pump capacity of 1,250 gpm and a 3,000-gallon water tank (Fey, Flemming, Uc, & Lara. 2016a).

Service Deficits – The Ashlan Avenue Community has no identified service deficits. Well and septic replacement activity does not indicate high rates of failure. No incidents of severe flooding or drainage issues have been observed by County staff and there is no evidence that fire protection resources are deficient for this community. As the area is not designated or zoned for future intensive growth opportunities, there is no anticipation that the community will observe additional strain on its existing, albeit limited infrastructure.

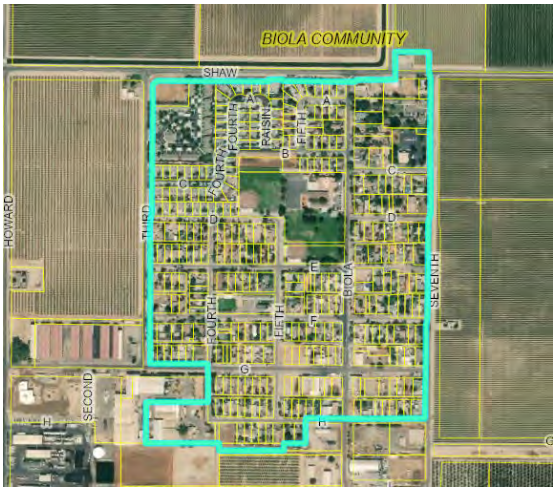
Chateau Fresno Avenue looking North

Chateau Fresno Avenue looking South

Ashlan Avenue looking West

Ashlan Avenue looking West

2. BIOLA COMMUNITY



The Biola Community is located near the northwest corner of Shaw Avenue and Howard Avenue and includes 335 parcels in its residential/commercial core and the entire Community Services District boundary contains about 242 acres including industrial properties. The District has approximately 1,100 people except during harvest season (August through September), when the population rises to approximately 1,600 people (Fey, Flemming, & Hendricks, 2013).

The area is in Census Tract 41.

Water – Water is provided to this community by the Biola Community Service District through two groundwater wells with a hydro-pneumatic tank, electrical panel boxes, chlorine stations, and generators and pumps. The District contracts with California Water Services to maintain the water system (Fey, Flemming, & Hendricks, 2013). According to the February 2018 Biola Community Service District Project Update (Biola Water System Upgrade), the District has received approximately $11.4 million in grants to fund water system upgrades. The project consists of new water lines, a new 500,000-gallon tank, upgrades to Well 4, meter replacement, wastewater treatment plant conversion (secondary treatment, solar system, and three monitoring wells), and a recharge basin (Yamabe & Horn Engineering Inc., 2017). According to the KBDAC Study, there are no water quality issues in Biola (California Department of Water Resources, 2013).

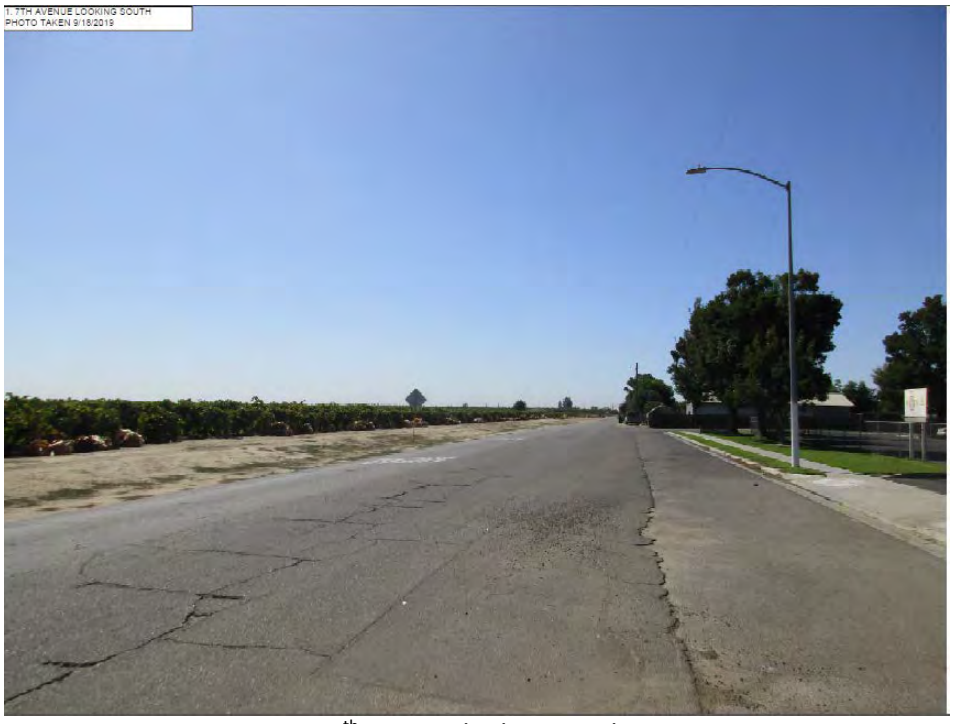
Wastewater – Wastewater services are provided to this community by the Biola Community Services District through a wastewater treatment plant. District infrastructure includes a seven-acre wastewater treatment plant, a generator, and five aeration ponds each with an aeration pump. The treatment plant is permitted by the State of California for a flow of 200,000 gallons per day. Average wet weather flows are between 160,000 – 170,000 gallons per day, and dry weather flows average 80,000 to 90,000 gallons per day. There are 358 wastewater connections in the District providing service to residential and industrial customers. The District contracts with California Water Services to maintain wastewater systems. According to the 2013 Biola Community Service District MSR and SOI Update, these facilities are sufficient for current and future populations (Fey, Flemming, & Hendricks, 2013). The KBDAC Study, however, found that there is some risk for violation of wastewater treatment standards (California Department of Water Resources, 2013). Currently the district is evaluating wastewater treatment plant upgrades. According to the 2018 Biola Improvements Projects at Wastewater Treatment Plant Preliminary Engineering Report, the District is evaluating the feasibility of reusing treated wastewater from the Wastewater Treatment Plant to produce higher quality effluent that can be reused to offset the District potable water demand. A large portion of District water is used for landscaping and miscellaneous industrial uses (AM Consulting Engineers, Inc, 2018).

Drainage – Drainage services are provided to this community by the Biola Community Services District through two stormwater retention basins. County Service Area 35 Zone CG also provides storm drainage services. According to the Biola Community Service District MSR and SOI Update, these facilities are sufficient for current and projected population. There are no reported changes since the 2013 MSR (Fey, Flemming, & Hendricks, 2013).

The Community Service District has a website with useful information for residents: https://www.biolacsd.org/

Fire – Fire protection is provided to this community by the North Central Fire Protection District. There are no fire service deficiencies in this community, which has access to fire hydrants. The North Central Fire Protection District provides a full range of emergency services including fire prevention, fire suppression, emergency medical care, hazardous materials response, search and rescue response, emergency preparedness planning, and public education. The North Central Fire Protection District's current model of service is an enhanced level of service provided through the staffing of four fire stations with a total of 15 on-duty firefighters/Emergency Medical Technicians (EMTs). One fire station is located within the Biola community and is equipped with one front line fire engine with pump capacity of 1,500 gallons per minute (gpm) and a 750-gallon water tank, and one water tender with a pump capacity of 1,250 gpm and a 3,000-gallon water tank (Fey, Flemming, Uc, & Lara, 2016a).

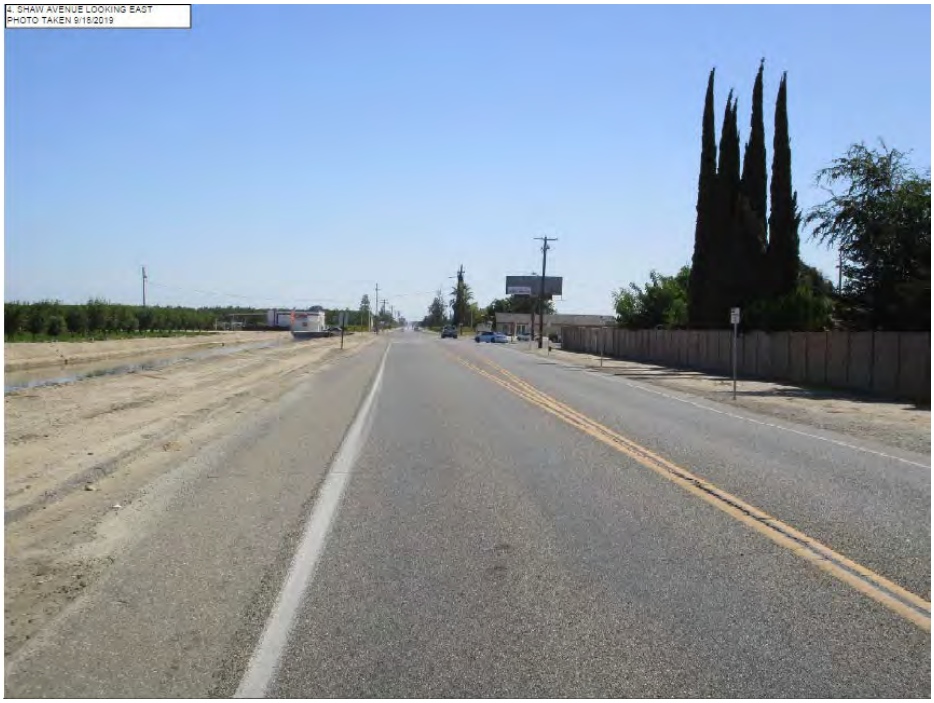
Service Deficits – The Biola Avenue Community has no identified service deficits for potable water service, drainage or fire protection. As stated above, there is some risk for violation of wastewater treatment standards and the Biola CSD is currently evaluating wastewater treatment plant upgrades.



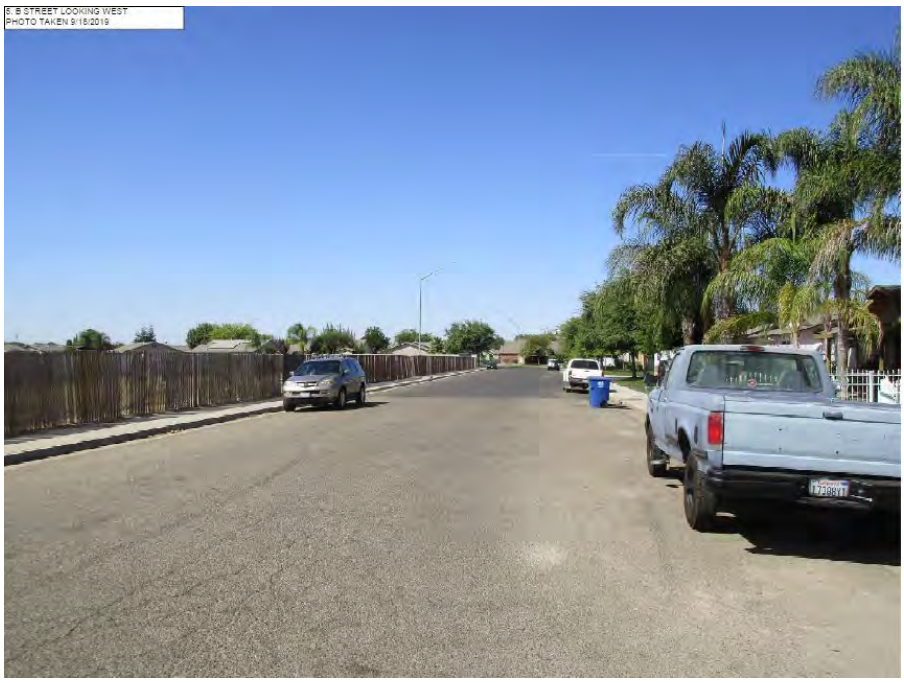
7th Avenue looking South

7th Avenue looking South

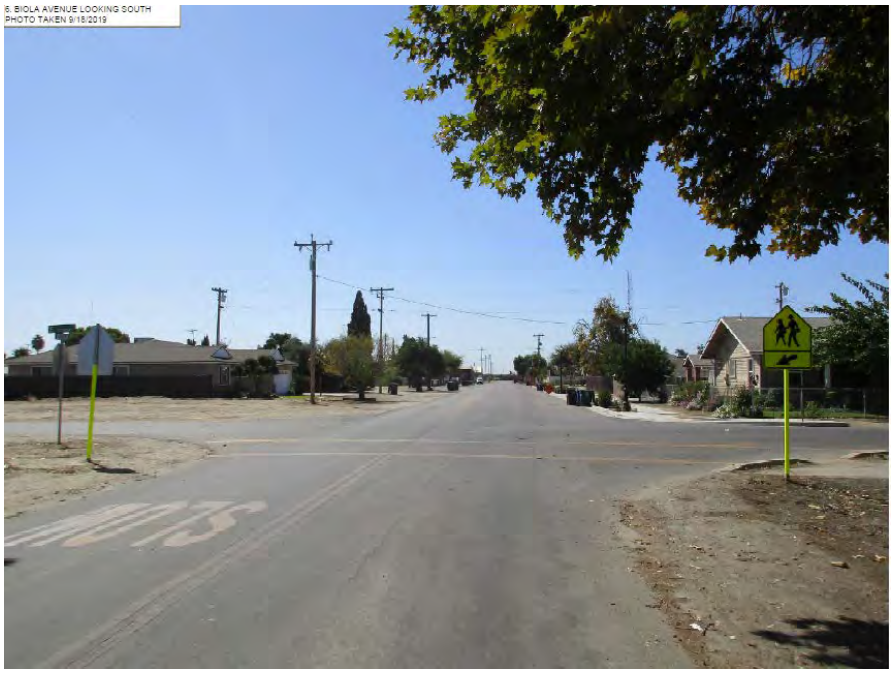
Shaw Avenue looking West



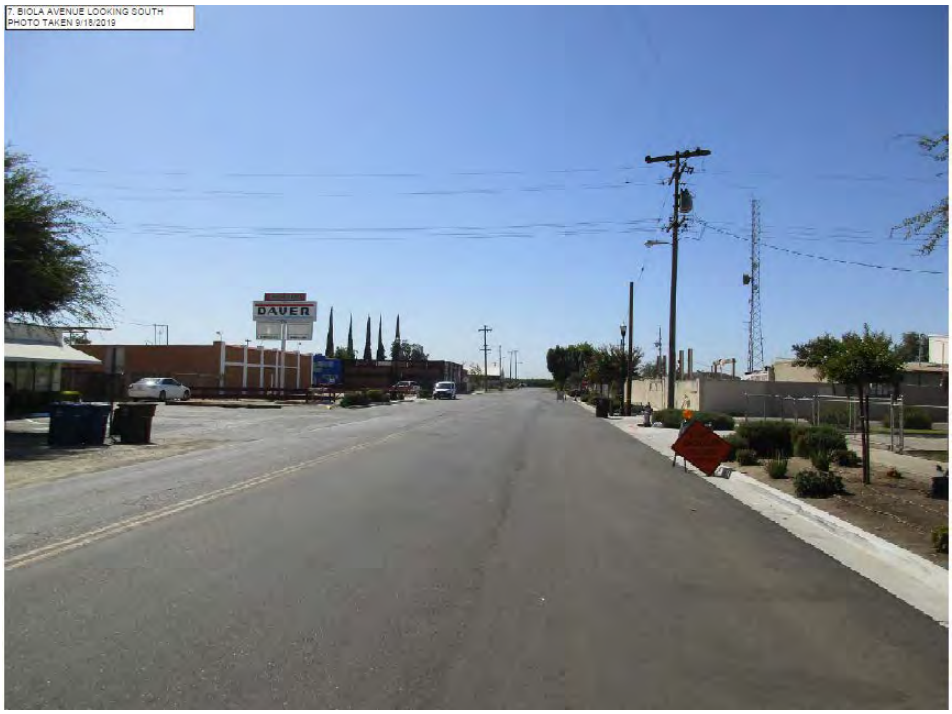
Shaw Avenue looking East



B Street looking West



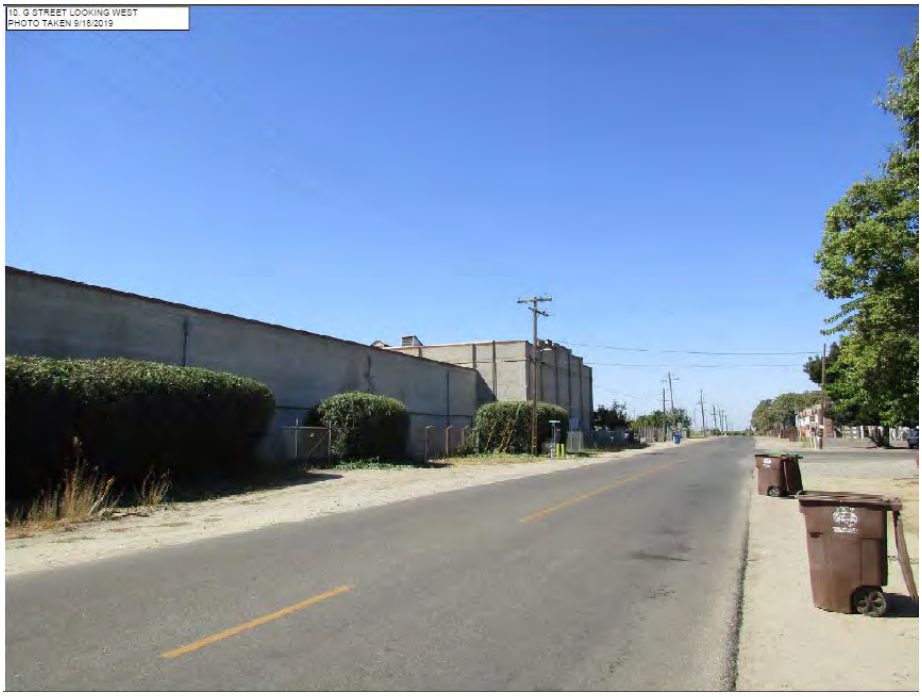
Biola Avenue looking South



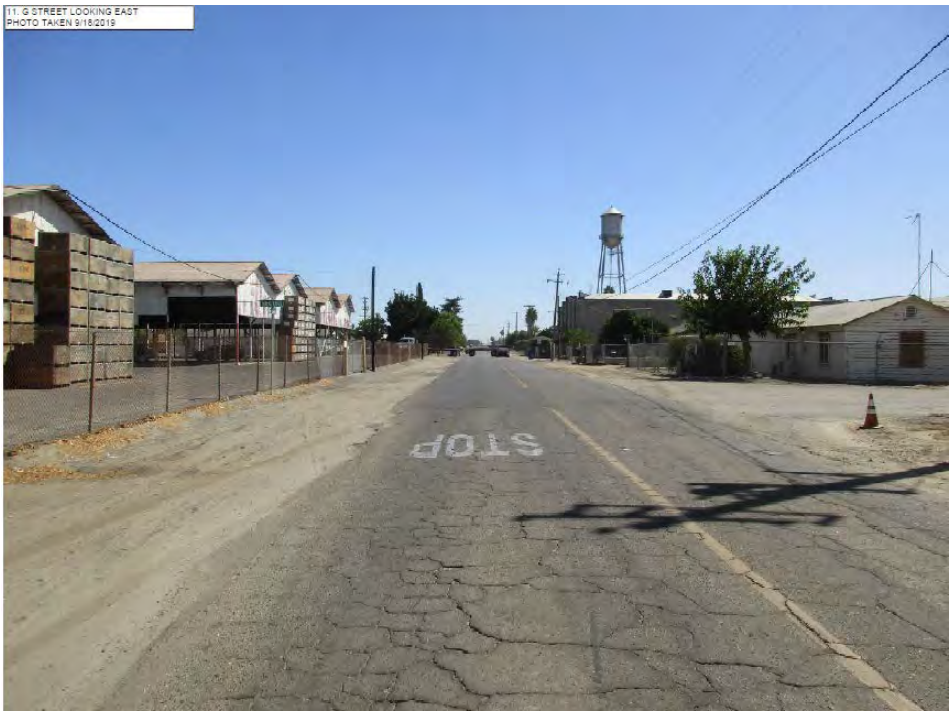
Biola Avenue looking South

G Street looking East

G Street looking West



G Street looking West



G Street looking East

3. BRITTEN AVENUE/CHERRY AVENUE COMMUNITY

The Britten Avenue/Cherry Avenues Community includes 26 parcels totaling approximately 20 acres (Fresno County Department of Public Works and Planning, 2019c).

The area is in Census Tract 18.

Water – Private wells provide water to the residents of this community. During the past ten years, there have been seven well permits issued and three well destruction permits issued. The three well destruction permits correspond with three of the seven properties on which well permits were issued, representing replacement wells (Fresno County Department of Public Health, 2019).

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents for wastewater disposal. Two septic permits were issued, one as a repair associated with a patio permit for a single-family residence and one septic system to remain following the demolition of a single-family residence (Fresno County Department of Public Works and Planning, 2019a).

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads. No incident of flooding was reported during the winter of 2018 – 2019 or during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019).

County staff conducted a community site visit on April 25, 2019 and again on March 23, 2020 (after a rain event). Staff noted no improvements on Britten Avenue and there was an absence of undeveloped drainage swales. A small portion of the approach off Cherry Avenue is paved, but the remainder is unimproved. Unimproved drainage swales were noted on Cherry Avenue with a minor swale to the east. The March 23, 2020 site visit showed a large volume of puddling occurring on Britten and the unimproved alley/unimproved access to the south of the subdivision. Road conditions appeared muddy with water pooling in depressions and potholes. Puddling along Cherry generally remained in the shoulder areas and was not as severe.

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no fire service deficiencies in this community. One fire station is located within two miles of the Britten Avenue/Cherry Avenue community. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008). Britten/Cherry is in proximity to the Easton station, which is a staffed facility. Although roads are unpaved, the District's apparatus are designed to function in off-road conditions. The District has responded to calls in this community and weather has not been a factor to access (CalFire/FCFPD, 2020).

Service Deficits – The Britten Avenue/Cherry Avenue Community has no significant identified service deficits regarding well, septic, drainage or fire protection services. Staff acknowledges; however, the interior roads are unpaved and subject to muddy conditions during prolonged rain events.

Britten Avenue looking East

Britten Avenue looking East – March 23, 2020

Britten Avenue looking East – March 23, 2020

Britten Avenue looking West

Cherry Avenue looking North

Cherry Avenue looking South

Southerly Dirt Road looking East

Southerly Dirt Road looking East – March 23, 2020

Easterly Dirt Road looking North

4. BURREL COMMUNITY

The Burrel Community is located near the intersection of South Jameson Avenue and West Elkhorn Avenue and includes 26 parcels totaling approximately 12 acres (Fresno County Department of Public Works and Planning, 2019c).

The area is in Census Tract 76.

Water – Private wells provide water to the residents of this community. During the past ten years, there has been one well permit issued (Fresno County Department of Public Health, 2019).

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents for wastewater disposal. There has been no record of septic permits being issued during the past ten years (Fresno County Department of Public Works and Planning, 2019a).

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads. No incident of flooding was reported during the winter of 2018 – 2019 or during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019), but the Department's Road Maintenance and Operations staff have noted past flooding issues on Jones Street between Ellen Street and Hyde Street (Fresno County Department of Public Works and Planning, 2020).

County staff conducted a community site visit on April 30, 2019. Staff noted no improvements on Jones Street or Burrel Avenue and there was an absence of unimproved drainage swales.

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no fire service deficiencies in this community. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – The Burrel Avenue Community has no identified service deficits other than some prior flooding on Jones Street. Well and septic replacement activity does not indicate high rates of failure. No incidents of severe flooding or drainage issues have been observed by County staff and there is no evidence that fire protection resources are deficient for this community. As the area is not designated or zoned for future intensive growth opportunities, there is no anticipation that the community will observe additional strain on its existing, albeit limited infrastructure.

Elkhorn Avenue looking West

Elkhorn Avenue looking East

Ellena Street looking North

Ellena Street looking South

Jones Street looking West

Jones Street looking East

Hyde Street looking South

5. CAMDEN AVENUE COMMUNITY

The Camden Avenue Community is a 28-unit mobile home park located near the intersection of East Mount Whitney Avenue and State Route 41. The community includes one parcel totaling approximately four acres (Fresno County Department of Public Works and Planning, 2019c).

The area is in Census Tract 76.

Water – The 28-unit mobile home park is served by a public water system regulated by the State Water Board – Division of Drinking Water. The system is identified by public water system ID No. 1000238. The area is served by a single well that has been identified with elevated arsenic levels. The system has installed point-of-use treatment devices in each unit to remove arsenic from the water that comes from the kitchen faucet, so each home has a potable water source for drinking water (Chauhan, NKGSA, 2020). The KBDAC Study noted Camden Mobile Home Community drinking water exceeded acceptable standards for arsenic (California Department of Water Resources, 2013).

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents of this community for wastewater disposal. No septic permits have been issued during the past ten years (Fresno County Department of Public Works and Planning, 2019a).

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads. No incident of flooding was reported during the winter of 2018 – 2019 or during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019).

County staff conducted a community site visit on April 30, 2019. Staff noted unimproved drainage swales on both Elm and Mount Whitney avenues, with no other improvements present. Staff also noted most portions of access road for mobile home community was paved with speed bumps, but the remainder areas are gravel/unimproved roads.

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no fire service deficiencies in this community. One fire station is located within two miles of the Camden Avenue community. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – The Camden Avenue Community has no identified service regarding septic or drainage deficits. No incidents of severe flooding or drainage issues have been observed by County staff and there is no evidence that fire protection resources are deficient for this community. As the area is not designated or zoned for future

intensive growth opportunities, there is no anticipation that the community will observe additional strain on its existing, albeit limited infrastructure. As stated above, noted arsenic levels for drinking water exceeded acceptable standards (California Department of Water Resources, 2013; Chauhan, NKGSA, 2020).

Elm Avenue looking South

Elm Avenue looking South

Mount Whitney Avenue looking West

Mount Whitney Avenue looking West

Southerly Road - looking West on Elm

Northerly Road - looking West on Elm

Southerly Road looking West

Access Road/Approach off Mount Whitney

Middle Alley Gravel Road

Northerly Road looking East

6. CARILLO AVENUE COMMUNITY

The Carillo Avenue Community is located at the corner of Springfield Avenue and Cherry Avenue and includes 28 parcels totaling approximately 20 acres (Fresno County Department of Public Works and Planning, 2019c).

The area is in Census Tract 76.

Water – Private wells provide water to the residents of this community. During the past ten years, there have been three well permits issued and one well destruction permit issued. The well destruction permit corresponds with one of the three properties issued well permits, representing a replacement (Fresno County Department of Public Works and Planning, 2019a).

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents of this community for wastewater disposal. One septic permit was issued for a single-family residence addition in the past ten years (Fresno County Department of Public Health, 2019).

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads. No incident of flooding was reported during the winter of 2018 – 2019 or during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019).

County staff conducted a community site visit on May 1, 2019. Staff noted no improvements on Orchard, Carillo, Angus, Springfield or Cherry Avenues. Staff did note several concrete drive approaches and fences at the right-of-way.

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no fire service deficiencies in this community. One fire station is located within four miles of the Carillo Avenue community. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – The Carillo Avenue Community has no identified service deficits. Well and septic replacement activity does not indicate high rates of failure. No incidents of severe flooding or drainage issues have been observed by County staff and there is no evidence that fire protection resources are deficient for this community. As the area is not designated or zoned for future intensive growth opportunities, there is no anticipation that the community will observe additional strain on its existing, albeit limited infrastructure.

Looking West down Carillo from Angus

Looking South down Angus from Springfield

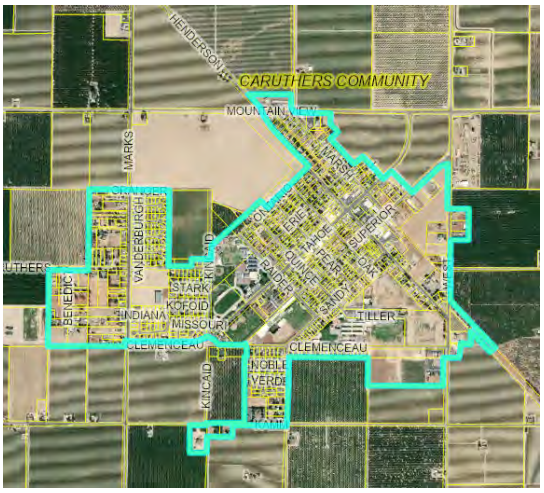
Looking West down Springfield from Angus

Looking South down Orchard from Springfield

Looking West down Springfield from Orchard

Looking South down Cherry from Springfield

7. CARUTHERS COMMUNITY



The Caruthers Community is located southeast of the intersection of West Mountain View Avenue and South Brawley Avenue in the central portion of Fresno County, approximately 16 miles south of the City of Fresno. It includes 787 parcels totaling approximately 453 acres and consists of 644 service connections serving about 2,576 persons (Witte, Fleming, & Hendricks, 2011).

The area is in Census Tract 75.

Water – Water services are provided to this community by the Caruthers Community Service District. The District provides water service via four wells, well pumps, and a water distribution system. The estimated future population in the District is 4,829. According to the 2011 Caruthers Community Service District MSR and SOI Update, the water facilities are sufficient for current populations. However, high levels of arsenic have been found in the water supply since the 2011 MSR. Further limitations for future growth include undersized water mains for adequate water flow and dead-end water mains (Witte, Fleming, & Hendricks, 2011).

The District's current water supply can support 2,736 people or 747 connections. New development within the District would necessitate new water supplies. The District's water distribution system includes several dead-end runs and a few locations of four-inch and smaller water lines. The smaller water lines were constructed of steel in the early 1960s. According to the District Municipal Service Review, the smaller water lines have exceeded their anticipated useful life. The water system lacks looping and extensions to adequately serve existing development. Long dead-end runs diminish available water pressure and water delivery capacity. The District has completed several projects to increase water line size and looping to improve the current water system (Witte, Fleming, & Hendricks, 2011).

The District has obtained financial assistance through Proposition 84 to construct a test hole and complete the design of a new production well, distribution facilities, and blending tank. The District may receive funding to construct the improvements through Proposition 84 or the Safe Drinking Water State Revolving fund (Witte, Fleming, & Hendricks, 2011).

Wastewater – Wastewater services are provided to this community by the Caruthers Community Service District through a wastewater treatment plant. District infrastructure includes the wastewater collection system, two sewage lift stations, and a wastewater treatment facility. The wastewater treatment process consists of an aerated lagoon treatment system. The District wastewater system has a capacity of 0.24 mgd. Existing demands and commitments are 0.214 mgd. The District has submitted to the Regional Water Quality Control Board (RWQCB) a Report of Waste Discharge for an expansion of the treatment and disposal facilities to 0.28 MGD. Additional expansion of the facilities is needed to serve any proposed developments. The RWQCB has expressed the intent to require nitrogen reduction at the wastewater treatment facility. This requirement will result in substantial capital improvement needs. The District has obtained financial assistance from the USDA to construct the improvements (Witte, Fleming, & Hendricks, 2011).

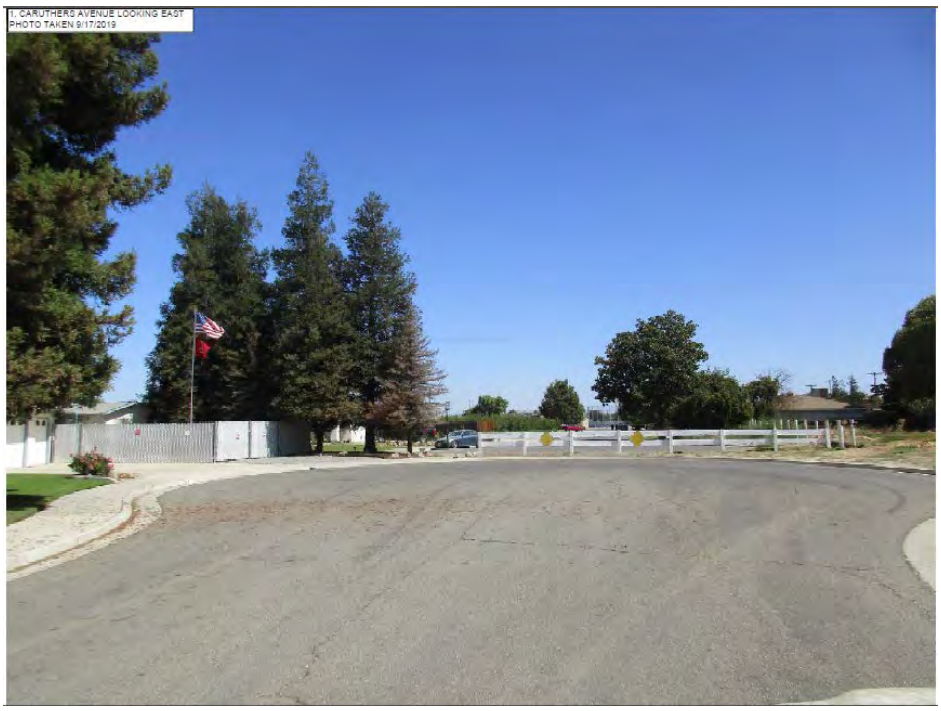
According to the 2011 Carruthers Community Service District MSR and SOI Update, the sewer facilities are sufficient for current and future populations (Witte, Fleming, & Hendricks, 2011). The KBDAC Study concluded that there are no wastewater-related problems in Caruthers (California Department of Water Resources, 2013).

Drainage – Drainage services are provided to this community by the Caruthers Community Service District. According to the 2011 Carruthers Community Service District MSR and SOI Update, the drainage facilities are sufficient for current and future populations (Witte, Fleming, & Hendricks, 2011). One complaint of flooding was reported in this community during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019). According to Road Maintenance and Operations staff there have been some flooding issues at Quince and Tahoe, Quince southeast of Sandy, and Henderson and Superior. Staff also noted that for Quince southeast of Sandy the school installed new curbs and drains in the right-of-way, and a private ponding basin was added near Henderson and Superior (Fresno County Department of Public Works and Planning, 2020).

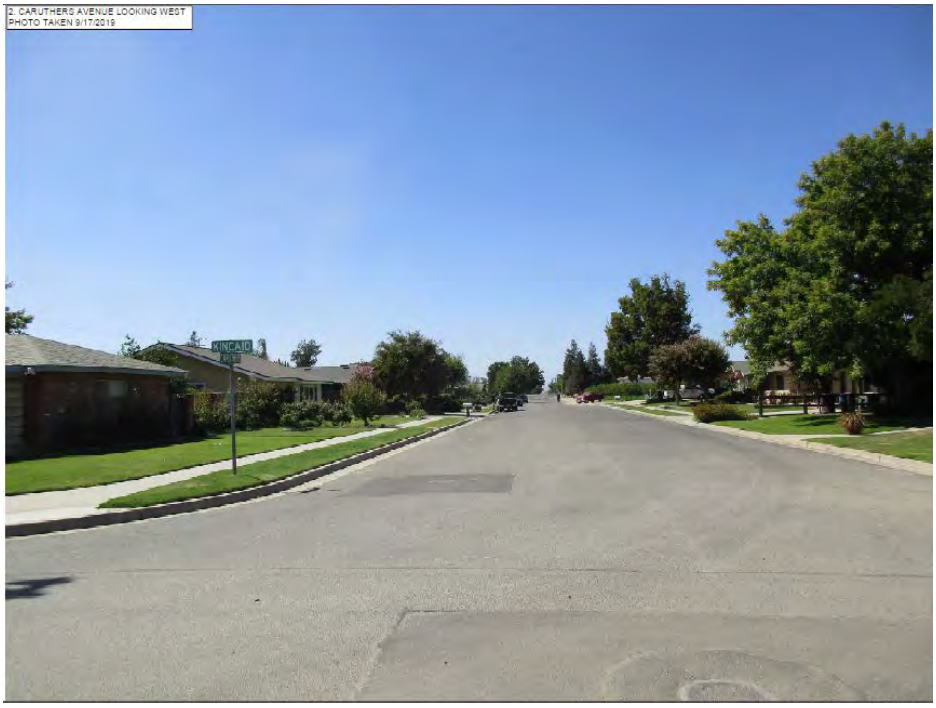
The Caruthers Community Service District has a very limited website which can be accessed at: http://carutherscsd.com/

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no fire service deficiencies in this community, which has access to fire hydrants. One fire station is located within the Caruthers community. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

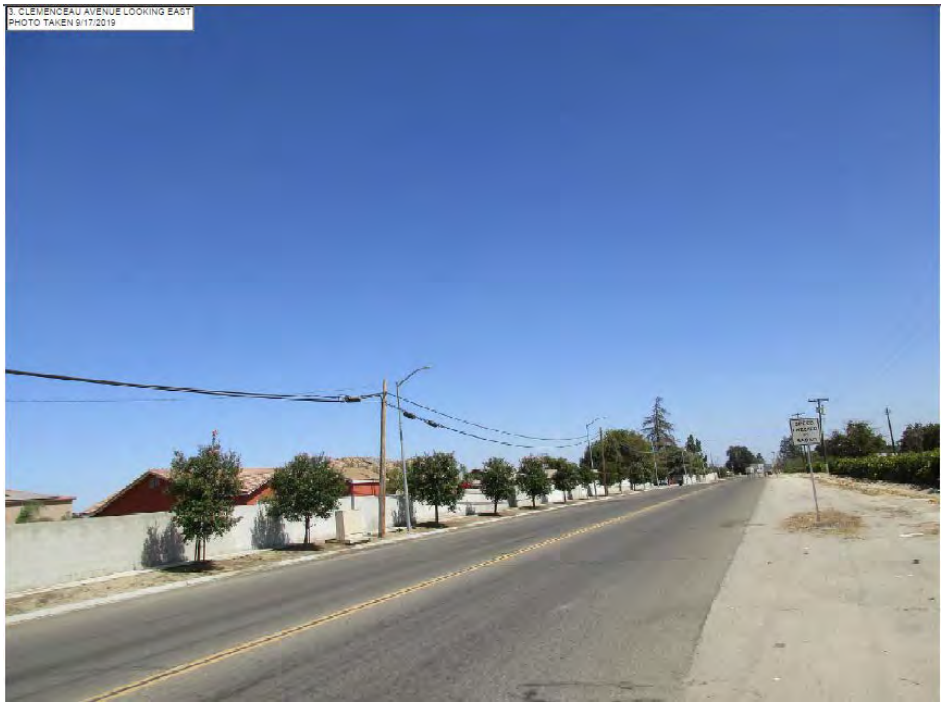
Service Deficits – The Caruthers Community has no identified service deficits regarding sewer services, significant drainage issues or fire protection. As indicated, a flooding complaint was received in 2019 and there have been some flooding issues at certain intersections. High arsenic levels have been found in the water supply, and as stated in the District's MSR, the District has obtained financial assistance through Proposition 84 (test hole construction) and complete design of a new production well, distribution facilities, and blending tank. The District may also receive funding to construct the improvements through Proposition 84 or the Safe Drinking Water State Revolving fund.



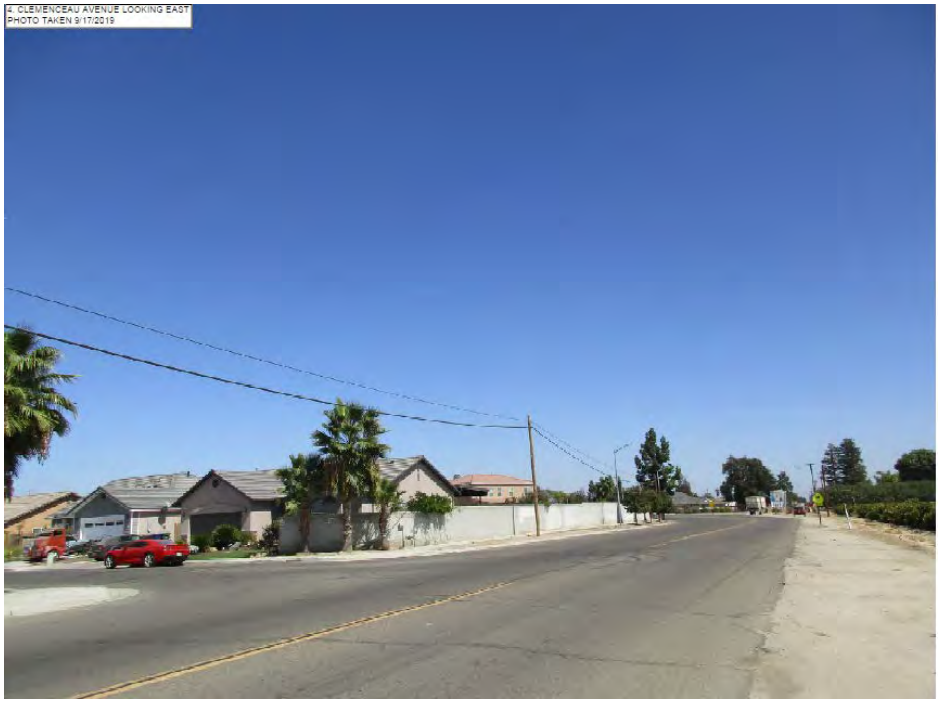
Caruthers Avenue looking East



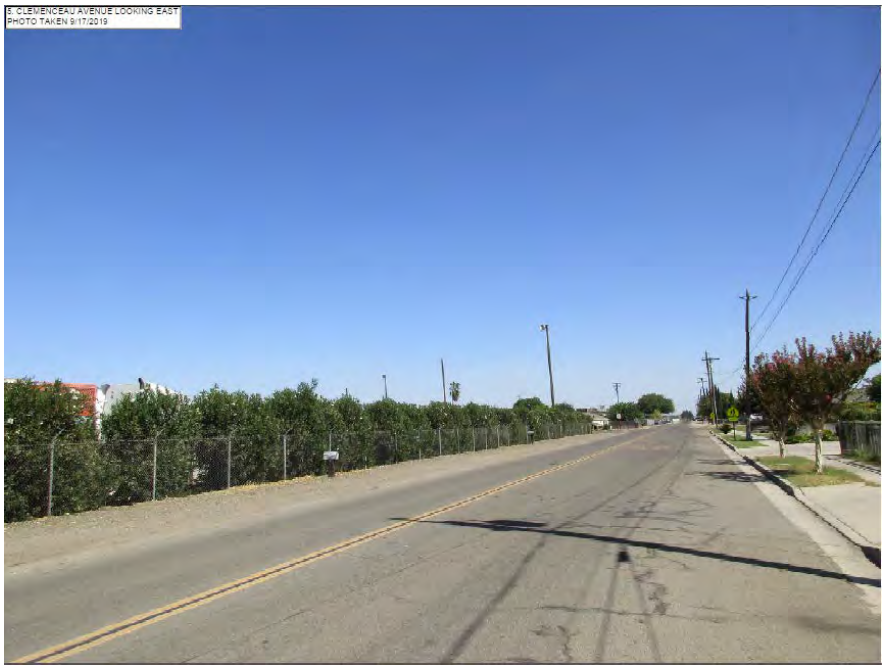
Caruthers Avenue looking West



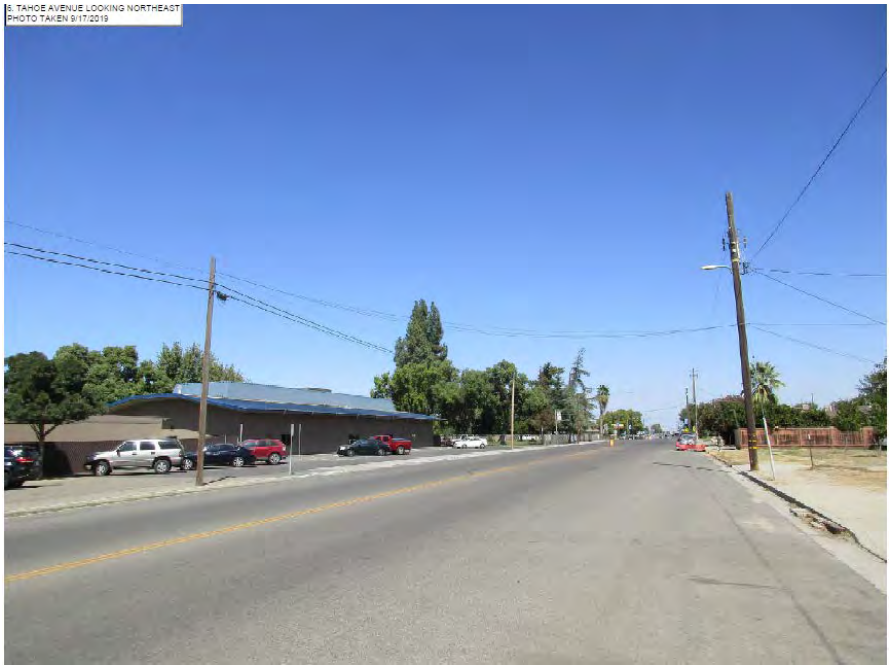
Clemenceau Avenue looking East



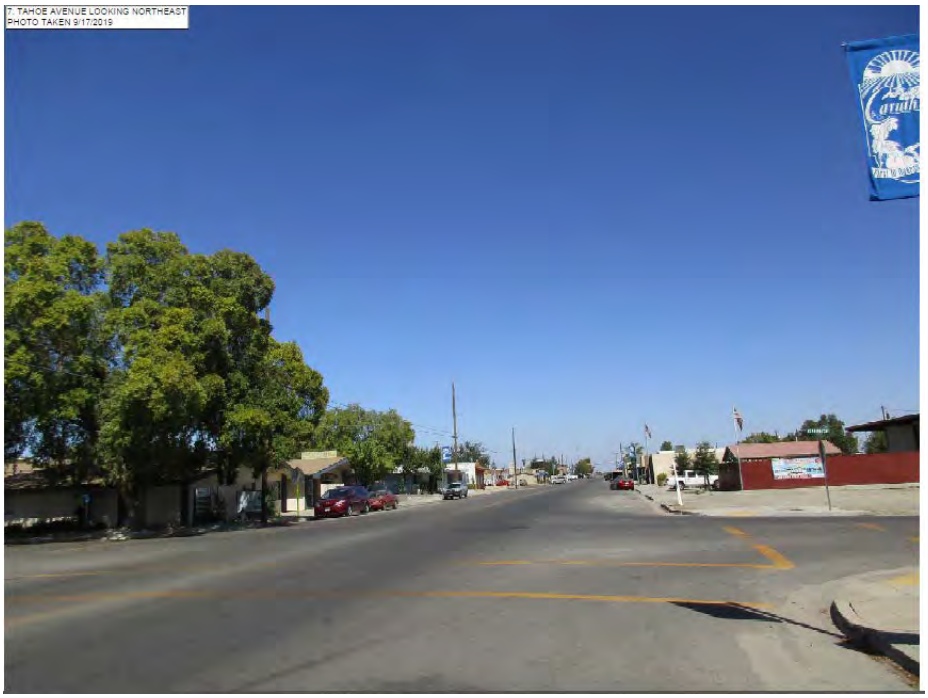
Clemenceau Avenue looking East



Clemenceau Avenue looking East

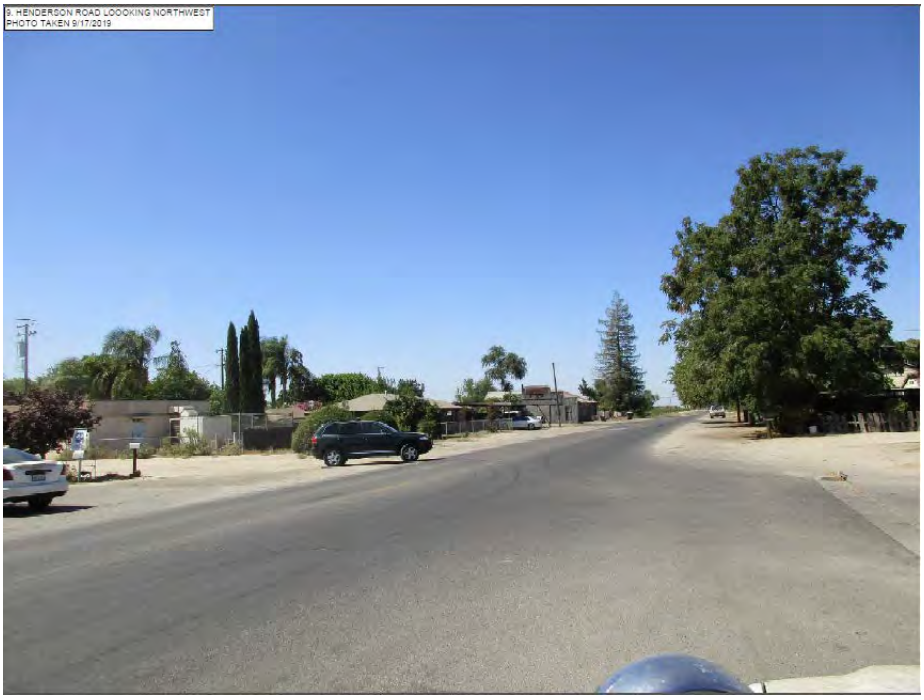


Tahoe Avenue looking Northeast

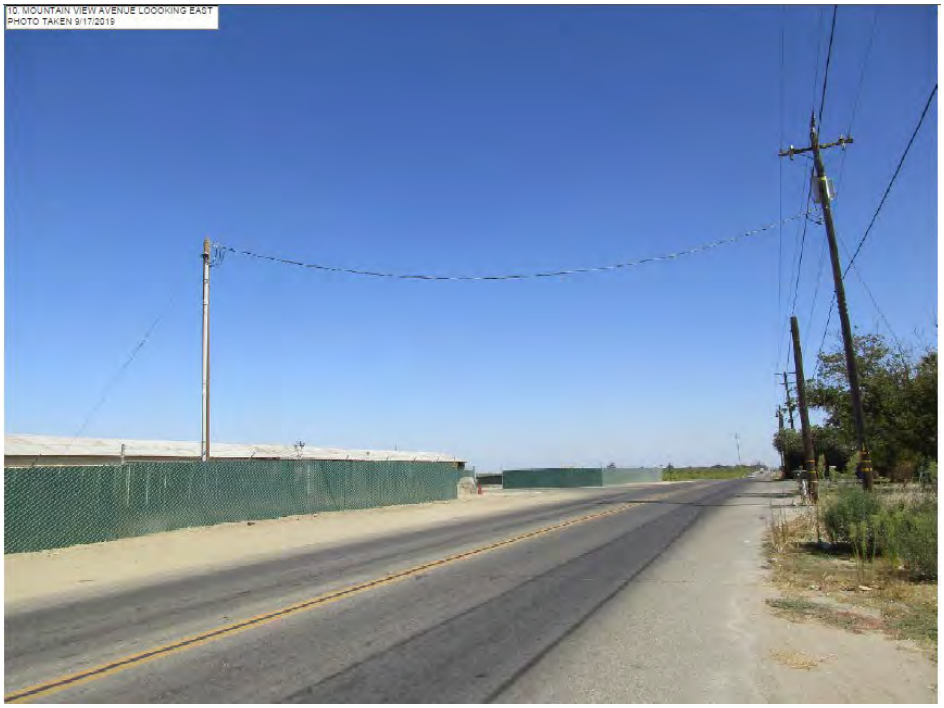


Tahoe Avenue looking Northeast

Henderson Road looking Northwest



Henderson Road looking Northwest



Mountain View Avenue looking East

8. CHESTNUT AVENUE COMMUNITY – SHADY LAKES

The Chestnut Avenue Community is 62-unit mobile home park located between East Lincoln Avenue and East Jefferson Avenue and five detached single-family residences that front Chestnut Avenue. The community is of made up of two parcels totaling approximately twenty-six acres (Fresno County Department of Public Works and Planning, 2019c; 2020).

The area is in Census Tract 17.

Water – The 62-unit mobile home park is served by a public water system regulated by the State Water Board – Division of Drinking Water (DDW). The water system is identified as ID No. 1000244. The water system is served by a single well with a chlorination station providing disinfected water to the mobile home units (Chauhan, NKGSA, 2020). Between 2009 and 2018, the State of California Office of Drinking Water has found the water system to be in violation of the law on eight occasions. Many of the violations relate either to monitoring or reporting. (California Department of Water Resources, 2020).

Wastewater – The mobile home community is served by a privately-owned community wastewater system permitted by the Central Valley Water Board under Waste Discharge requirements from 1975 (Order 75-079). According to the state, these requirements are in the process of being updated. The wastewater treatment system is an extended aeration package sewage treatment plant with a design capacity of 0.017 MGD. Effluent is disposed of by percolation and evaporation into a single, fenced aerated pond. The facility has received multiple odor complaints according to the Central Valley Water Board. (Fresno County Department of Public Works and Planning, 2020).

Drainage – This community is served by a system of gutters that drain stormwater into an on-site ponding basin. No incident of flooding was reported during the winter of 2018 – 2019 or during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019).

County staff conducted a community site visit on April 25, 2019. Staff noted developed drainage swales and curb/gutter and the presence of ponding basins. Sidewalks were absent. Privately paved roads for the mobile home community were established with AC swales on northerly east/west road and north/south roads. These swales drain to the southerly road into a valley gutter, then to the west into a private ponding basin. The parcel is approximately 0.4 miles south of FMFCD basin service area CE. Staff did note several concrete drive approaches and fences at the right-of-way.

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no fire service deficiencies in this community. Three fire stations are located within five miles of the Chestnut Avenue (Shady Lakes) community. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least

four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – The Chestnut Avenue Community has ~~no~~ identified service deficits related to wastewater, as it relates to odor. Well and septic replacement activity does not indicate high rates of failure, but there have been identified monitoring violations as it relates to the community water system. No incidents of severe flooding or drainage issues have been observed by County staff and there is no evidence that fire protection resources are deficient for this community. As the area is not designated or zoned for future intensive growth opportunities, there is no anticipation that the community will observe additional strain on its existing, albeit limited infrastructure.

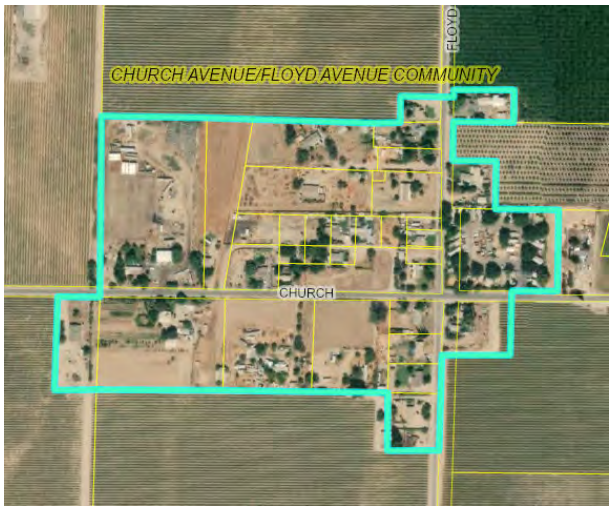
Typical North/South Road looking North

Southerly Road looking West

Private Ponding Basin looking West

Typical North/South Road looking North

9. CHURCH AVENUE/FLOYD AVENUE COMMUNITY



The Church Avenue/Floyd Avenue Community is located at the intersection of Church Avenue and Floyd Avenue and includes 44 parcels totaling approximately 36 acres and includes the Double L Mobile Ranch Park (mobile home park serving approximately 35 units) (Fresno County Department of Public Works and Planning, 2019c; California Department of Water Resources, 2020b).

The area is in Census Tract 39.

Water – Private wells provide water to the residents of this community with the exception of residents of the Double L Mobile Home Ranch Park. During the past ten years, there have been two new well permits issued and one permit to reconnect electrical to an existing well (Fresno County Department of Public Health, 2019). The Double L Mobile Ranch Park is served by a small groundwater-supplied community system. The water system is comprised of 37 residential connections, and services a population of approximately 80 people. Reports of groundwater contaminants, including high levels of uranium have initiated seeking funding to provide potable water lines to serve the park from the City of Kerman (Knickmeyer and Smith, 2015). In 2011 the water system was issued Compliance Order No. 03-23-11O-004 for non-compliance with the Uranium maximum contaminant level (MCL) at Well 02, which was the system's sole source of supply, followed by In Compliance Order No. 03_23_18R_005 was issued for non-compliance with the 1,2,3-Trichloropropane (1,2,3-TCP) MCL in early July. In 2016 the City of Kerman was awarded $3,230,000 in funding for a construction project though the Proposition 1–Water Quality, Supply and Infrastructure Improvement Act of 2014 and the Drinking Water State Revolving Fund. The project could consolidate Double L Mobile Ranch Park water system into the City's system. As part of the construction project, the City would be able to drill and develop a new well (Well 18), install a transmission main to connect the Water System to the City's distribution system, install a master meter, and install a chlorination station (California Department of Water Resources, 2020b). On February 6, 2019, the Kerman City Council adopted a resolution (Res. 19-10) accepting a public utility easement for the Double L Mobile Ranch Park Water Service Project from the property owners, which would allow for potable water to be brought to Double L from the City. The City would be responsible for the cost of water line maintenance (City of Kerman Planning and Development Report, 2019).

At the end of January 2020, the water system was connected to the City's distribution system and began receiving City water. Also, as part of the project, the Water System's two wells (Well 01-Inactive and Well 02-Active) are to be destroyed (California Department of Water Resources, 2020b).

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents for wastewater disposal. During the past ten years, one septic permit was issued for a single-family residence addition (Fresno County Department of Public Works and Planning, 2019a).

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads. No incident of flooding was reported during

the winter of 2018 – 2019 or during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019).

County staff conducted a community site visit on April 30, 2019. Staff noted no improvements on Floyd Avenue and driveway access for lots along west and east side of road and agricultural land to the south-east of Church/Floyd at a higher grade than road.

Fire – Fire protection is provided to this community by the North Central Fire Protection District. There are no fire service deficiencies identified in this community. The North Central Fire Protection District provides a full range of emergency services including fire prevention, fire suppression, emergency medical care, hazardous materials response, search and rescue response, emergency preparedness planning, and public education. The North Central Fire Protection District's current model of service is an enhanced level of service provided through the staffing of four fire stations with a total of 15 on-duty firefighters/Emergency Medical Technicians (EMTs). One fire station is located 6.8 miles from the Church Avenue/Floyd Avenue community, allowing a 12-minute response time, and is equipped with one fire engine with pump capacity of 1,500 gallons per minute (gpm) and a 750-gallon water tank. Another fire station is located 6.7 miles from the Church Avenue/Floyd Avenue community, allowing an 11-minute response time, and is equipped with one front line fire engine with pump capacity of 1,500 gpm and a 750-gallon water tank, one reserve fire engine with pump capacity of 1,250 gpm and a 750-gallon water tank, one ladder truck (105-foot ladder) with pump capacity of 1,500 gpm and a 300-gallon water tank, and one water tender that augments onsite water deficiencies (i.e. lack of fire hydrants) with a pump capacity of 1,250 gpm and a 3,000 gallon water tank (Fey, Flemming, Uc, & Lara, 2016a).

Service Deficits – The Church Avenue/Floyd Avenue Community had identified service deficits related to groundwater quality for the Double L Mobile Home Park. The mobile home park has since been connected to the City of Kerman's water supply. The community as a whole lacks fire hydrants. Well and septic replacement activity for the other individual residential parcels do not indicate high rates of failure. No incidents of severe flooding or drainage issues have been observed by County staff and there is no evidence that fire protection resources are deficient for this community. As the area is not designated or zoned for future intensive growth opportunities, there is no anticipation that the community will observe additional strain on its existing, albeit limited infrastructure.

Floyd Avenue looking North (South of Church)

Floyd Avenue looking North (North of Church)

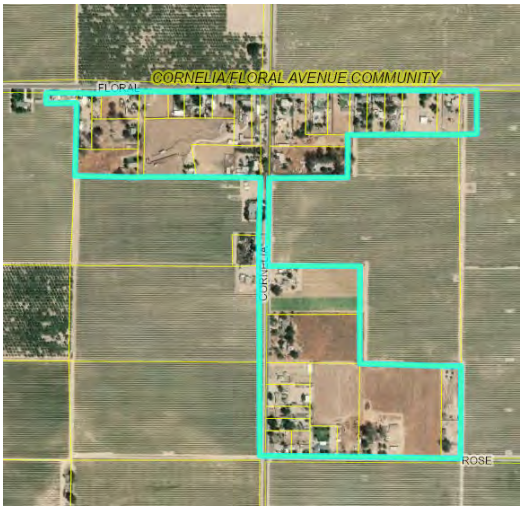
Church Avenue looking West

Church Avenue looking West

Church Avenue looking East

Church Avenue looking North (MH Approach/Entrance)

10. CORNELIA AVENUE/FLORAL AVENUE COMMUNITY



The Cornelia Avenue/Floral Avenue Community is located at the intersection of Cornelia Avenue and Floral Avenue and includes 38 parcels totaling approximately 60 acres (Fresno County Department of Public Works and Planning, 2019c).

The area is in Census Tracts 75.00/76.00.

Water – Private wells provide water to the residents of this community. During the past ten years, there have been six new well permits issued for the community and on well destruction and replacement (Fresno County Department of Public Health, 2019).

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents for wastewater disposal. No septic permit activity of note occurred during the past ten years (Fresno County Department of Public Works and Planning, 2019a).

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads.

County staff conducted a community site visit on October 8, 2019. There are no drainage improvements on Floral and Cornelia avenues. Driveway access exists for lots along the south side of Floral and east side of Cornelia. Agricultural land surrounds the community.

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no fire service deficiencies in this community, which has access to fire hydrants. Fresno County Fire Station No. 90 is located in the Community of Caruthers, approximately four miles to the southeast. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – The Cornelia Avenue/Floral Avenue Community has no identified service deficits. Well and septic replacement activity does not indicate high rates of failure. No incidents of severe flooding or drainage issues have been observed by County staff and there is no evidence that fire protection resources are deficient for this community. As the area is not designated or zoned for future intensive growth opportunities, there is no anticipation that the community will observe additional strain on its existing, albeit limited infrastructure.

Intersection of Floral and Cornelia looking Southeast

Floral Avenue looking West from Cornelia

Floral Avenue looking West

Floral Avenue looking East, East of Cornelia Avenue

Cornelia Avenue looking South

Northeast Corner of Intersection of Rose and Cornelia

West Rose Avenue looking East

11. CSA 30 COMMUNITY – EL PORVENIR

CSA 30 Community (El Porvenir) is located at the corner of Clarkson Avenue and Derrick Avenue and includes 61 parcels totaling approximately 29 acres. The area within the district is subdivided and largely built out (Witte, Fleming, & Hendricks, 2011).

The area is in Census Tract 83.02.

Water – CSA 30 currently purchases raw surface water from Westlands Water District, treats the water at its surface water treatment facility and then provides the water to its residents and three out-of-agency customers.

District facilities include two water treatment plants, distribution lines, a storage facility, and a backup well. The Fresno County Department of Public Works assumed direct operational responsibilities of the community water system in April 2010. California Water Services out of Coalinga had previously been under contract with the County to operate and maintain the water system. The two existing surface water treatment plants serve the community, one has been in existence for several years and one is new (Fresno County Department of Public Works & Planning, 2019d). They do not provide optimal Total Organic Carbon (TOC) reduction to help control Total Trihalomethanes (TTHM), which are a byproduct of the Contact Time (CT) of disinfectant chemicals with the raw surface water. The system was issued a Compliance Order from the California Department of Public Health (CDPH) due to TTHM violations on November 3, 2008. The County has instituted rate restructuring to generate funds to address deficiencies and received a planning and design grant from the State of California for a ground water supply system. Recent well testing for a new community well detected higher Manganese levels which will require treatment. The final developed well had tested Manganese levels of 0.309 mg/L, compared to a Maximum Contaminant Level of 0.050 (Provost and Pritchard, 2020). As of 2017, the County was awaiting a construction grant award from the State to construct a well water supply system (Witte, Fleming, & Hendricks, 2011; Provost & Prichard Consulting Group, 2017).

According to the 2017 Fresno County Westside Groundwater Project Technical Memorandum, CSA 30's water quality for both trihalomethanes (TTHM) and for Haloacetic Acids (HAA5) exceeds the state MCL standards. CSA 30 received compliance orders from the State Water Resources Control Board in 2014. The Fresno County Westside Groundwater Project is under way. Upcoming project related improvements include construction of a potable groundwater well, well site improvements, and water meter and valve replacements (Fresno County Department of Public Works & Planning, 2019d; Provost & Prichard Consulting Group, 2017).

Wastewater – County Service Area No. 30 provides Wastewater Services to this community. The District collects, treats and disposes of wastewater using an on-site package treatment plant. Its facilities include a wastewater collection system, treatment plant, and disposal ponds. The Fresno County Department of Public Works assumed direct operational responsibilities of the community water and sewer systems in April 2010. California Water Services out of Coalinga had previously been under contract with the County to operate and maintain the water and sewer systems. According to the 2011 County Service Area No. 30, MSR and SOI Update, the sewer infrastructure is sufficient to serve the current population. There are no reported changes

since the 2011 MSR (Witte, Fleming, & Hendricks, 2011; Fresno County Department of Public Works & Planning, 2019d).

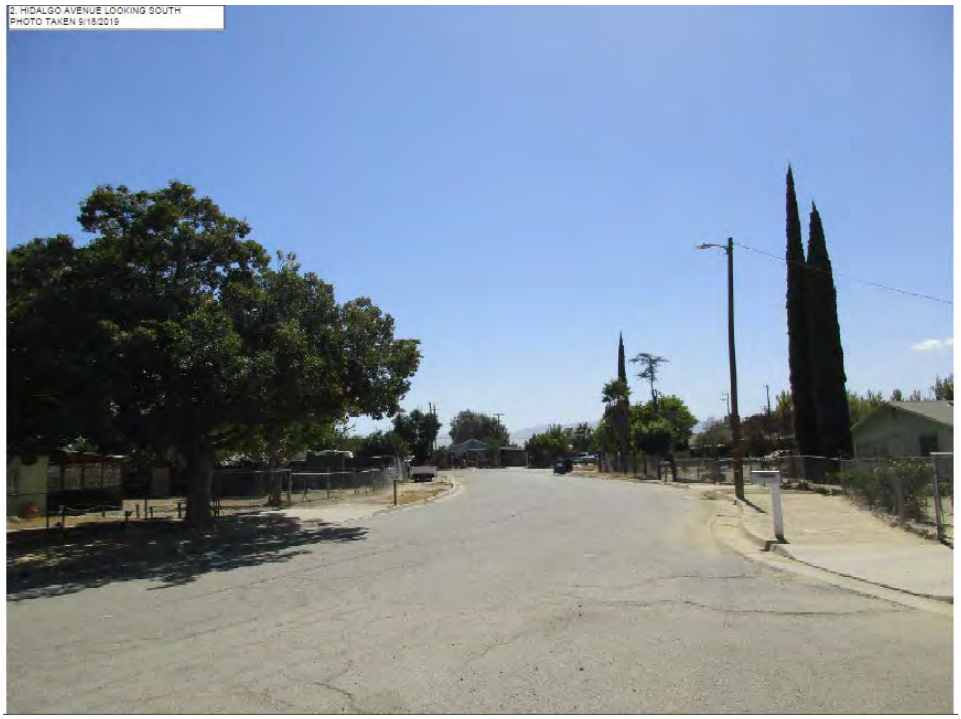
Water and wastewater service are maintained through the County of Fresno's Department of Public Works and Planning as part of the County Service Area through oversight by the Department's Resources Division. The Department's website can be accessed here: https://www.co.fresno.ca.us/departments/public-works-planning/

Drainage – The El Porvenir subdivision (Tract No. 2057, 58 lots) is served by a community storm drain system comprised of curbs and gutters that discharge to Outlot A (0.44-acre parcel) of Tract No. 2057 (Witte, Fleming, & Hendricks, 2011). County staff from the Department of Public Works and Planning, Road Maintenance and Operations Division noted historical instances of flooding in some areas and has caused property owners to pump water from their driveways to avoid water reaching their residences (Fresno County Department of Public Works and Planning, 2020).

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no identified fire service deficiencies in this community, which has access to fire hydrants. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – The Community of El Porvenir has no identified service deficits regarding wastewater or fire protection. Drainage problems have been noted in the area. Water quality issues associated with TTHM and HAA5 have been identified and Compliance Orders were received from the state in 2014. Additionally, high Manganese levels with the completion of a new production well have been detected. As stated above, a Westside Groundwater Project is in process which could provide improvements to the area. The area is not designated or zoned for future intensive growth opportunities, there is no anticipation that the community will observe additional strain on its existing infrastructure.

El Progresso Avenue looking West



Hidalgo Avenue looking South

Hidalgo Avenue looking East

Derrick Avenue looking North

El Progresso Avenue – March 26, 2020

El Progresso Avenue – March 26, 2020

Hildalgo Avenue – March 26, 2020

El Progresso near intersection with Hildalgo Avenue – March 26, 2020

12. CSA 32 COMMUNITY – CANTUA CREEK

CSA 32 Community, which is located within Cantua Creek at the intersection of South San Mateo Avenue and West Clarkson Avenue, includes 79 parcels totaling approximately 80 acres and includes 43 single-family residences and 30 mobile home sites. The area within the district is subdivided and largely built out. The District also provides "out of District" water service (Witte, Fleming, & Hendricks, 2011d).

The area is in Census Tract 82.

Water – CSA 32 currently purchases raw surface water from Westlands Water District, treats the water at its surface water treatment facility and then provides the water to its residents and out-of-agency customers. District facilities include a surface water treatment plant, distribution lines, a storage facility, and a backup well. The Fresno County Department of Public Works assumed operational responsibilities of the community water system in April 2010. California Water Services out of Coalinga had previously been under contract with the County to operate and maintain the water and sewer systems (Witte, Fleming, & Hendricks, 2011d; Fresno County Department of Public Works & Planning, 2019).

According to the 2017 Fresno County Westside Groundwater Project Technical Memorandum, CSA 32's water quality for both trihalomethanes (TTHM) and for Haloacetic Acids (HAA5) exceeds the state Maximum Contamination Levels (MCL) standards. Cantua Creek Vineyards IV has seen increasing arsenic concentrations, with 2014 and 2015 arsenic levels exceeding the MCL. Currently bottled water is being supplied to both CSA 32 and Cantua Creek Vineyards IV residents. Both CSA 32 and Cantua Creek Vineyard IV have received compliance orders from the State Water Resources Control Board, Division of Drinking Water and high levels of 1,2,3 Trichloropropane and Manganese have also been reported. Manganese levels at the 710 to 730-foot testing levels were 0.082 mg/L, and at the 940 to 960-foot testing levels were 0.056 mg/L (0.050 mg/L is the MCL). 1,2,3 Trichloropropane were detected to be 0.007 ug/L at the 940 to 960-foot levels (0.005 ug/L is the MCL). The Fresno County Westside Groundwater Project is underway. Upcoming project related improvements include construction of potable groundwater well, well site improvements, and water meter and valve replacements in CSA 32. In addition, consolidation of CSA 32 and Cantua Creek Vineyards IV is anticipated (Provost & Prichard Consulting Group, 2017; Provost & Prichard Consulting Group, 2020; Fresno County Department of Public Works & Planning, 2019).

Wastewater – Wastewater Services are provided to this area by County Service Area No. 32.
The District collects, treats and disposes of wastewater using an on-site package treatment plant. District facilities include a wastewater collection system, treatment plant, and disposal ponds. The Fresno County Department of Public Works assumed operational responsibilities of the community sewer systems in April 2010. California Water Services out of Coalinga had previously been under contract with the County to operate and maintain the sewer systems. According to the 2011 County Service Area No. 32 MSR, there are no deficiencies in this area (Witte, Fleming, & Hendricks, 2011d).

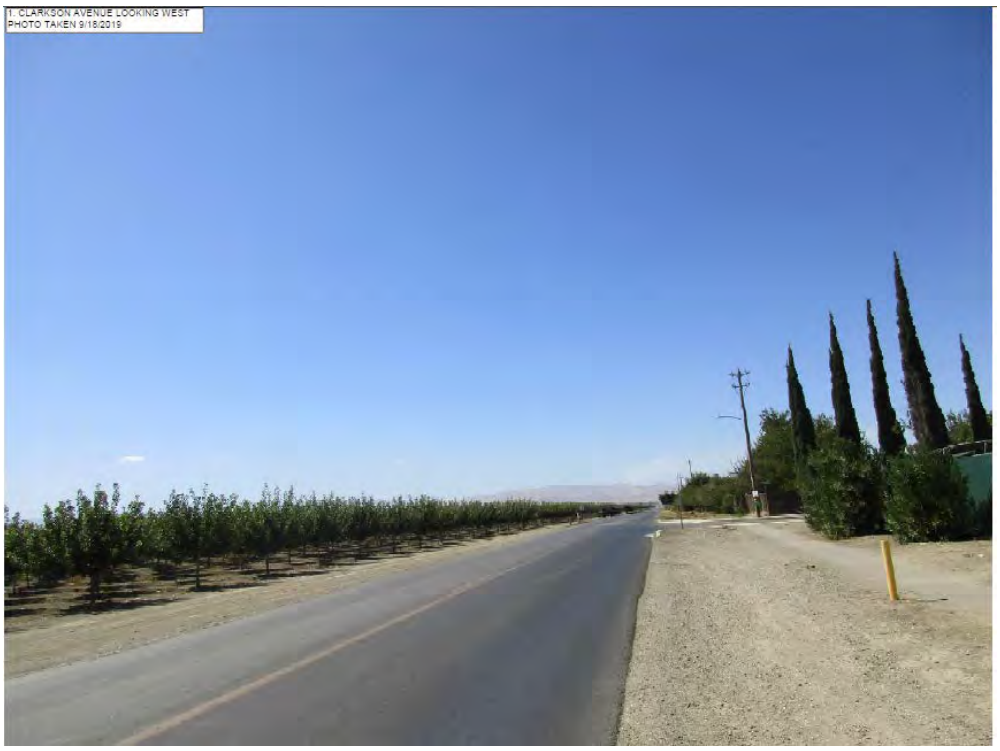
Water and wastewater service are maintained through the County of Fresno's Department of Public Works and Planning as part of the County Service Area through oversight by the Department's Resources Division. The

Department's website can be accessed here: https://www.co.fresno.ca.us/departments/public-works-planning/

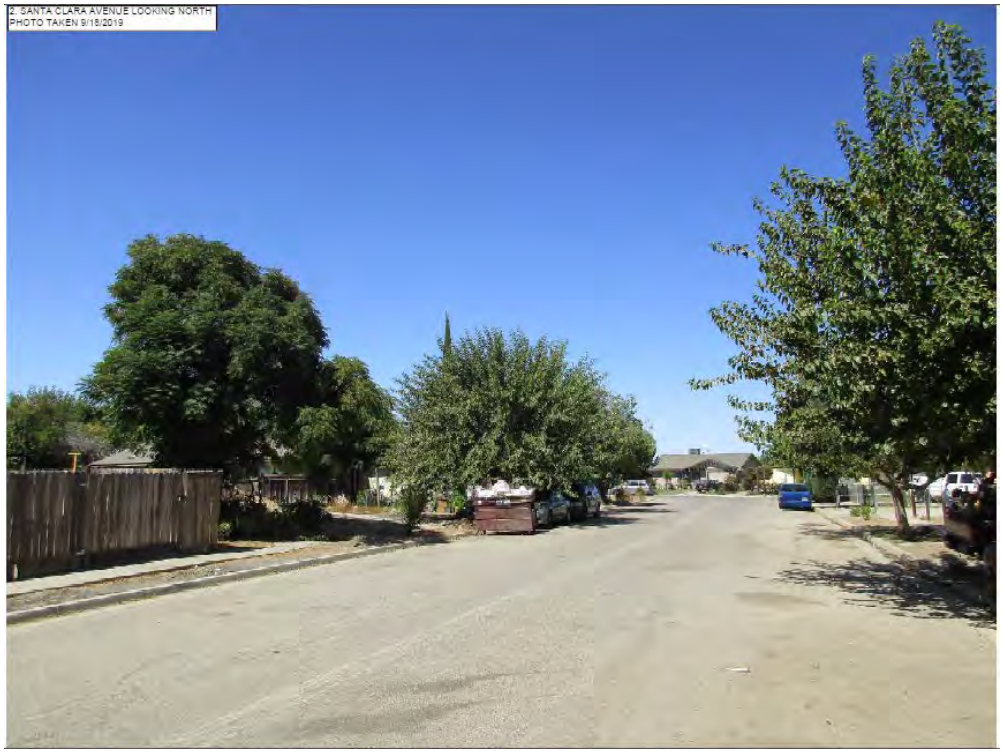
Drainage – CSA 32 has the latent power to provide storm drainage services within its boundaries. No incident of flooding was reported during the winter of 2018 – 2019 or during the spring of 2019, which experienced average rainfall in the Fresno area (Witte, Fleming, & Hendricks, 2011d). County staff from the Department of Public Works and Planning, Road Maintenance and Operations have noted instances of flooding in some areas which has caused property owners to pump water from their driveways to avoid water reaching their residences (Fresno County Department of Public Works and Planning, 2020).

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no fire service deficiencies in this community, which has access to fire hydrants. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008). Cantua Creek had a volunteer fire station until the mid-1990s when it was decommissioned due to a lack of available volunteers (CalFire/FCFPD, 2020).

Service Deficits – The Cantua Creek Community has no identified service deficits regarding wastewater. Fire protection response times have likely increased with the decommissioning of the volunteer fire station. Water quality issues associated with TTHM and HAA5 have been identified and Compliance Orders were received from the state, and recent water quality testing for a new groundwater well project has determined high levels of 1,2,3 Trichloropropane and Manganese. Further, arsenic levels have exceeded MCL levels for Cantua Creeks Vineyards IV. As stated above, a Westside Groundwater Project is in process which could provide improvements to the area. The area is not designated or zoned for future intensive growth opportunities, there is no anticipation that the community will observe additional strain on its existing infrastructure. Drainage problems have been noted in the area.

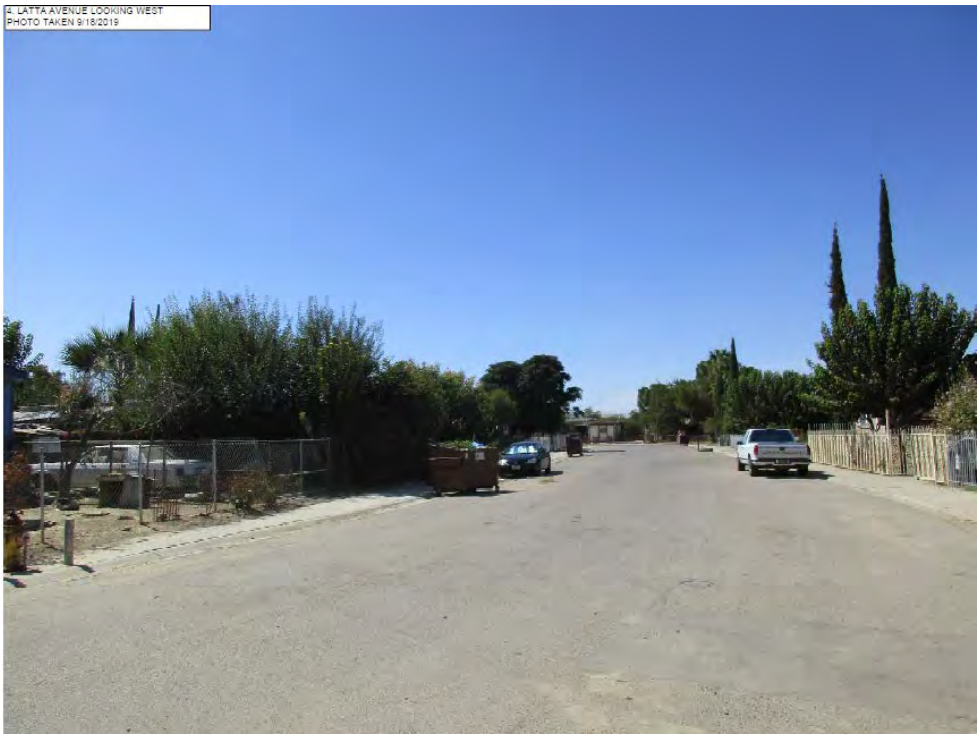


Clarkson Avenue looking West



Santa Clara Avenue looking North

Latta Avenue looking West



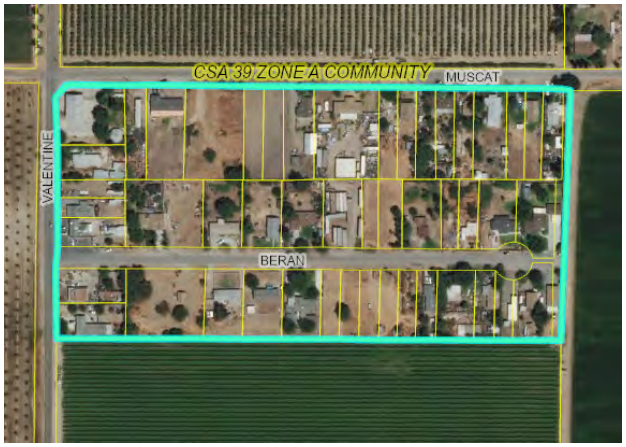
Latta Avenue looking West

Terrado Avenue looking South

Corner of Santa Clara and Clarkson – March 26, 2020

S. Santa Clara Avenue – March 26, 2020

13. CSA 39 ZONE A COMMUNITY



The CSA 39 Zone A community consists of 52 parcels totaling approximately 19 acres and is served by County Service Area 39 Zone A for water (Fresno County Department of Public Works and Planning, 2019c).

The area is in Census Tract 19.

Water – CSA 39AB provides water services to this area by purchasing potable water from the City of Fresno. CSA No. 39 Zone A was formed in 1990 to provide potable water to two residential subdivision west of the City of Fresno (Fresno County Department of Public Works and Planning, 2019f). According to the 2011 County Service Area No. 39 MSR and SOI, the water infrastructure is sufficient to serve the current population (Witte, Fleming, & Hendricks, 2011e). There have been no reported changes since the 2011 MSR. Water infrastructure and meter service are maintained through the County of Fresno's Department of Public Works and Planning as part of the County Service Area through oversight by the Department's Resources Division (Fresno County Department of Public Works and Planning, 2019d). The Department's website can be accessed here: https://www.co.fresno.ca.us/departments/public-works-planning/

In March of 2016, the Board of Supervisors authorized the Department of Public Works and Planning to work with Self-Help Enterprises to apply to the United States Department of Agriculture (USDA) for an Emergency Community Water Assistance Grant on behalf of CSA 39AB. The grant was not awarded though as the USDA determined the application had insufficient justification for an emergency water situation (Fresno County Department of Public Works and Planning, 2019f).

On September 10, 2019 the Board of Supervisors approved resolution 19-343, which authorized the Department of Public Works and Planning to approve, execute and submit a Financial Assistance Application to the California State Water Resources Control Board for planning improvements consisting of additional connections to the water system. The grant, if approved, would provide $500,000 in funding for planning and system design (Fresno County Department of Public Works and Planning, 2019f).

Advocacy groups have noted the existence households outside the CSA boundary which are served by private wells. According to these groups, homeowners on private wells have experienced high levels of nitrates and dropping groundwater levels. The County has acknowledged these areas are located outside the service area boundary of CSA 39 and that these residences do not receive potable water and are dependent on private wells. California Rural Legal Assistance (CRLA) has been active in representing community residents and has raised issues regarding a lack of access to potable water for unserved properties. CRLA has cited at least 10 homes that are not included in the CSA boundary and rely on private wells which either have contamination issues (nitrate or uranium) or depletion issues (Thompson, 2020). The County's grant application cited 20 residential connections and one institutional connection (church) as a potential expanded area to be served (Fresno County Department of Public Works and Planning, 2019f).

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents for wastewater disposal. Since 1996, there were four septic installations (Fresno County Department of Public Works and Planning, 2019a). In February of 2019, Public Works and Planning Staff met with community representatives and representatives from California Rural Legal Assistance to discuss options and opportunities for establishing a community wastewater treatment system to serve the community (Fresno County Department of Public Works and Planning, 2019g). Residents, with the assistance of California Rural Legal Assistance and Self-Help, have been seeking connection to the City of Fresno's wastewater treatment system (Thompson, 2020).

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads. No incident of flooding was reported during the winter of 2018 – 2019 or during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019).

County staff conducted a community site visit on April 26, 2019. Staff noted no improvements on Muscat Avenue, Beran Way or Valentine Avenue. A follow-up site visit occurred on March 11, 2020 after a rain event. Photos provided by staff do show water pooling in various areas of the community, although most puddling is occurring off the paved roadway in the dirt shoulders, as would be expected for a rural roadway without curb, gutter and drainage basin infrastructure. County staff acknowledges that members have the community have expressed flooding concerns. Concerns expressed include barriers to pedestrian traffic and impacts to children waiting for school buses in flooded or puddling shoulders. Residents have stated that they must walk in the roadway to avoid flooded conditions, have expressed concerns regarding standing water and mosquitos, and the difficulty of avoiding flooded shoulders at night when walking in absence of street lighting (Thompson, 2020). It should be noted that several of these issues (street lighting as an example) go beyond the scope of analysis for SB 244.

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. Although the area has access to fire hydrants, a report by Provost and Pritchard determined there is insufficient fire-flow in the water distribution system for existing connections (Provost & Prichard Consulting Group, 2019). The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – The CSA 39 Zone A has service deficits related to fire flow with water service provided by the City of Fresno. Septic replacement activity does not indicate high rates of failure, but community members and representatives have expressed concerns about the continued reliance and septic systems and have sought to pursue a community wastewater treatment system. County staff acknowledges the presence of standing water on the shoulder and into some intersections after recent rain events. There is no evidence that fire protection resources are deficient for this community. A recent study examined the possibility of adding additional parcels to the CSA (Provost & Prichard Consulting Group, 2017; Fresno County Department of Public Works and Planning, 2019f), the area is not designated or zoned for future intensive growth opportunities, there is no anticipation that the community will observe additional strain on its existing infrastructure.

Muscat Avenue looking East – March 11, 2020

Muscat Avenue looking West

Beran Way looking East

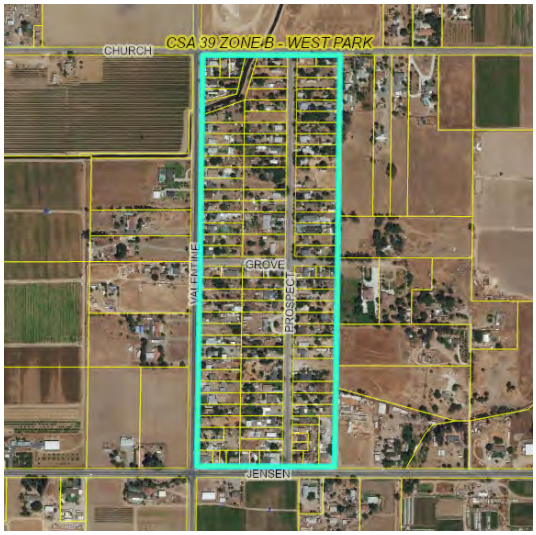
Beran Way looking East

Valentine Avenue looking North

Valentine Avenue looking North - March 11, 2020

Valentine Avenue looking South – March 11, 2020

14. West Park (CSA 39 Zone B)



West Park is located on the southeast corner of the intersection of W. Church and South Valentine Avenues and is largely served by County Service Area 39 Zone B for water. This community consists of 111 parcels totaling approximately 51 acres.

The area is in Census Tract 19.

Water – CSA 39 Zone B provides water services to much of the area by purchasing potable water from the City of Fresno. CSA No. 39 Zone B was formed in 1990 to provide potable water to two residential subdivisions west of the City of Fresno (Fresno County Department of Public Works and Planning, 2019f).

According to the 2011 County Service Area No. 39 MSR and SOI Update, the water infrastructure is sufficient to serve the current population (Witte, Fleming, & Hendricks, 2011e). There are no reported changes since the 2011 MSR (Fresno County Department of Public Works and Planning, 2019d).

Water infrastructure and meter service are maintained through the County of Fresno's Department of Public Works and Planning as part of the County Service Area through oversight by the Department's Resources Division. The Department's website can be accessed here: https://www.co.fresno.ca.us/departments/public-works-planning/

In March of 2016, the Board of Supervisors authorized the Department of Public Works and Planning to work with Self-Help Enterprises to apply to the United States Department of Agriculture (USDA) for an Emergency Community Water Assistance Grant on behalf of CSA 39AB. The grant was not awarded though as the USDA determined the application had insufficient justification for an emergency water situation (Fresno County Department of Public Works and Planning, 2019f).

On September 10, 2019 the Board of Supervisors approved resolution 19-343 with authorized the Department of Public Works and Planning to approve, execute and submit a Financial Assistance Application to the California State Water Resources Control Board for planning improvements consisting of additional connections to the water system. The grant, if approved, would provide $500,000 in funding for planning and system design (Fresno County Department of Public Works and Planning, 2019f).

Advocacy groups have noted the existence households outside the CSA boundary which are served by private wells. According to these groups, homeowners on private wells have experienced high levels of nitrates and dropping groundwater levels. The County has acknowledged these areas are located outside the service area boundary of CSA 39 Zone B and that these residences do not receive potable water and are dependent on private wells. California Rural Legal Assistance (CRLA) has been active in representing community residents and has raised issues regarding a lack of access to potable water for unserved properties. CRLA has cited at least 10 homes that are not included in the CSA boundary and rely on private wells which either have contamination issues (nitrate or uranium) or depletion issues (Thompson, 2020). The County's grant application cited 20 residential connections and one institutional connection (church) as a potential expanded area to be served (Fresno County Department of Public

Works and Planning, 2019f).

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents for wastewater disposal. Since 1996 there were three septic repairs, three septic installations and one septic replacement (Fresno County Department of Public Works and Planning, 2019a). In February of 2019, Public Works and Planning Staff met with community representatives and representatives from California Rural Legal Assistance to discuss options and opportunities for establishing a community wastewater treatment system to serve the community (Fresno County Department of Public Works and Planning, 2019g). Residents, with the assistance of California Rural Legal Assistance and Self-Help, have been seeking connection to the City of Fresno's wastewater treatment system (Thompson, 2020).

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads. No incident of flooding was reported during the winter of 2018 – 2019 or during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019).

County staff conducted a community site visit on April 26, 2019. Staff noted no improvements on Valentine or Prospect avenues and no noticeable areas of potential for standing water. A follow-up site visit occurred on March 11, 2020 after a rain event. Photos provided by staff do show water pooling in various areas of the community, although most puddling is occurring off the paved roadway in the dirt shoulders, as would be expected for a rural roadway without curb, gutter and drainage basin infrastructure. County staff acknowledges that members have the community have expressed flooding concerns. Concerns expressed include barriers to pedestrian traffic and impacts to children waiting for school buses in flooded or puddling shoulders. Residents have stated that they must walk in the roadway to avoid flooded conditions, have expressed concerns regarding standing water and mosquitos, and the difficulty of avoiding flooded shoulders at night when walking in absence of street lighting (Thompson, 2020). It should be noted that several of these issues (street lighting as an example) go beyond the scope of analysis for SB 244.

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. Although access to fire hydrants exists, a report by Provost and Pritchard determined there is insufficient fire-flow in the water distribution system for existing connections (Provost & Prichard Consulting Group, 2019). The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – The CSA 39 Zone B West Park Community has service deficits related to fire flow with water service provided by the City of Fresno. Septic replacement activity does not indicate high rates of failure, but community members and representatives have expressed concerns about the continued reliance and septic systems and have sought to pursue a community wastewater treatment system. County staff acknowledges the presence of standing water on the shoulder and into some intersections after recent rain events. There is no evidence that fire protection resources are deficient for this community. A recent study examined the possibility of adding additional parcels to the CSA (Provost & Prichard Consulting Group, 2017; Fresno County Department of Public Works and Planning, 2019f), the area is not designated or zoned for future intensive growth

opportunities, there is no anticipation that the community will observe additional strain on its existing infrastructure.

Church Avenue looking West

Church Avenue looking West – March 11, 2020

Church Avenue looking East

Church Avenue looking East – March 11, 2020

Grove Avenue looking East

Grove Avenue looking East

Prospect Avenue looking North – March 11, 2020

Jensen Avenue looking West

Jensen Avenue looking East

Jensen Avenue looking East – March 11, 2020

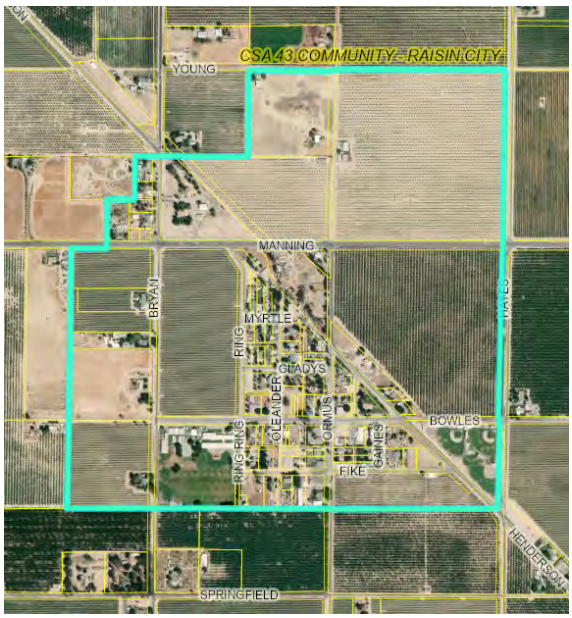
Valentine Avenue looking North

Valentine Avenue looking South

Prospect Avenue looking South

Prospect Avenue looking North - March 11, 2020

15. CSA 43 COMMUNITY – RAISIN CITY



CSA 43 in Raisin City is located south of West Manning Avenue, and along South Henderson Road and includes 75 parcels with 67 water connections, including a school, a park, and the Caruthers Easton Little League. The area is subdivided and largely built-out (Witte, Fleming, & Hendricks, 2011f).

The area is in Census Tract 76.

Water – Water is provided to this community by CSA 43.

The Fresno County Local Agency Formation Commission (LAFCo) authorized community water services in 2001 and a domestic water system was designed and completed. Beginning in 2006, the District started providing water from a community well that complies with State drinking water quality standards. This replaced water previously provided by 33 private wells, some of which contained contaminants exceeding drinking water quality standards. The Fresno County Department of Public Works maintains the community water system. According to the 2011 County Service Area No. 43 MSR and SOI, the water infrastructure is sufficient to serve the current population. There are no reported changes since the 2011 MSR (Witte, Fleming, & Hendricks, 2011f).

Water infrastructure and meter service are maintained through the County of Fresno's Department of Public Works and Planning as part of the County Service Area through oversight by the Department's Resources Division. The Department's website can be accessed here: https://www.co.fresno.ca.us/departments/public-works-planning/

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents for wastewater disposal. Since 1996, County records indicate there have been two septic repairs and three septic installations.

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads. No incident of flooding was reported during the winter of 2018 – 2019 or during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019).

County staff conducted a community site visit on April 26, 2019. Staff did note the presence of sidewalks with portions of AC sidewalk and rolled curbs along the north side of Bowles Avenue, leading to school crosswalk. Remainder of community roads are very similar with no notable features or facilities as they relate to drainage and no other improvements were noted.

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no fire service deficiencies in this community. One fire station is located within five miles of the CSA 43 (Raisin City) community. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The

Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – The Raisin City Community has no identified service deficits. Septic replacement activity does not indicate high rates of failure and the existing water system was sized to serve connected residences. No incidents of severe flooding or drainage issues have been observed by County staff and there is no evidence that fire protection resources are deficient for this community. As the area is not designated or zoned for future intensive growth opportunities, there is no anticipation that the community will observe additional strain on its existing infrastructure.

Bowles Avenue looking West

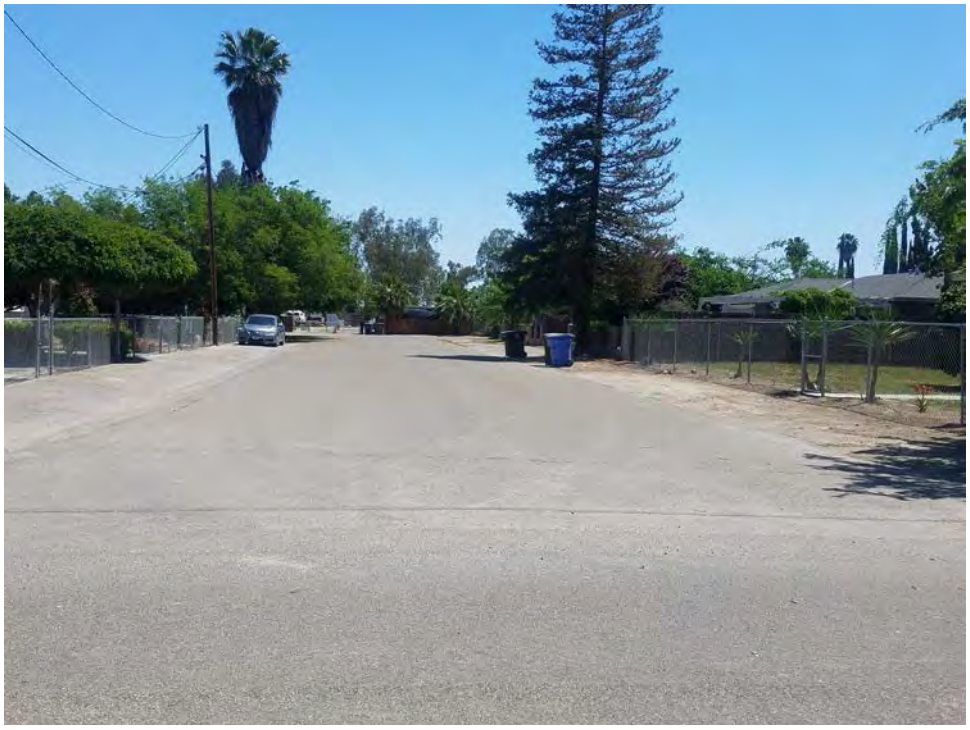
Bowles Avenue looking East

Bowles Avenue looking West

Bowles Avenue looking West

Bryan Avenue looking South

Ring Avenue looking South



Myrtle Avenue looking East

Gladys Avenue looking East

Oleander Avenue looking North

Gains Avenue looking South

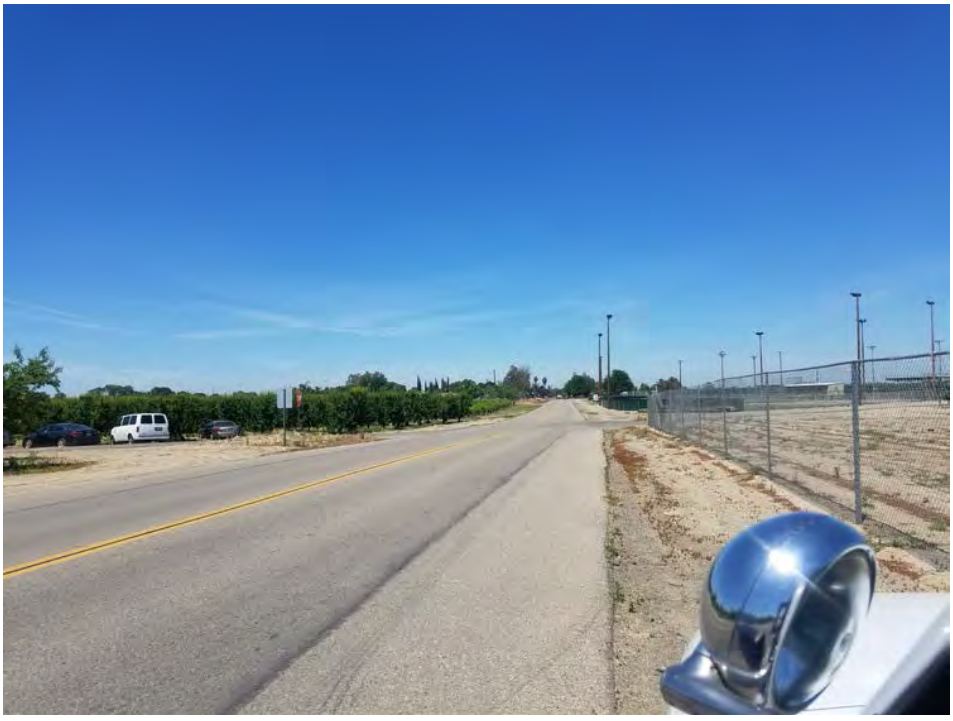
Ormus Avenue looking North

Ormus Avenue looking North at Henderson Transition

Fike Avenue looking West

Fike Avenue looking East

Hendrickson looking Southeast



Hendrickson looking Northwest

16. CSA 49 COMMUNITY – O'NEILL FARMS/WESTSIDE

CSA 49 is located along Fresno-Coalinga Road (State Route 145) from its intersection of W. Excelsior Avenue to the north to its intersection with W. Paige Avenue to the south. CSA 49 is distributed across five noncontiguous areas totaling 15 parcels with the District's service area comprising 42 residential units, four commercial operations, a day care center and the Westside Elementary School on approximately 93 acres. The area within the District is a farming community and built-out. No new growth is anticipated (Fey, Flemming, Uc, & Lara, 2016b).

The area is in Census Tract 78.02.

Water – Water is provided to this community by CSA 49. The District distributes water obtained from the Westlands Water District to customers within the District. Funds for the installation of the surface water treatment facility and distribution system were obtained by an 80 percent grant/20 percent loan from the State Revolving Fund and Community Development Block Grant (CDBG) funds. District water infrastructure includes a surface water treatment facility and distribution system (Fey, Flemming, Uc, & Lara, 2016b).

According to the 2016 County Service Area No. 49 MSR and SOI, the water infrastructure is sufficient to serve the current population. The District disinfects raw surface water at a water treatment facility through injection of chlorine solution into the filtered water in accordance with State regulations for the disinfection of surface water intended for human consumption (Fey, Flemming, Uc, & Lara, 2016b).

Treated surface water regularly exceeds Maximum Contaminant Levels (MCL) for disinfection byproducts (DBP) in violation of the U.S. Environmental Protection Agency's Stage 1 Disinfectants/Disinfection By-Products Rule and the California Safe Drinking Water Act, and may subject CSA No. 49 to fines from SWRCB, if not addressed. During the preparation of this MSR, in April 2016, the Fresno County Board of Supervisors approved an agreement authorizing the Director of Public Works and Planning to pursue a planning grant up to $500,000 from the State Water Resources Control Board, Drinking Water State Revolving Fund. The planning grant is intended to address various improvements to the District's surface water treatment facility needed to reduce the presence of DBP (Fey, Flemming, Uc, & Lara, 2016b).

Water infrastructure and meter service are maintained through the County of Fresno's Department of Public Works and Planning as part of the County Service Area through oversight by the Department's Resources Division. The Department's website can be accessed here: https://www.co.fresno.ca.us/departments/public-works-planning/

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents for wastewater disposal. There were two septic permits issued within the boundaries of the CSA. One permit was for a new septic system to replace an existing unit, and another permit was to replace a septic system

for an existing market.

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads.

County staff conducted a community site visit on October 8, 2019. Staff noted no improvements on State Route 145 or W. Excelsior Avenue. On-site curb and gutter improvements do exist for the school, but drainage appears to be directed to surrounding agricultural parcels or unimproved road shoulder. Some roads and private drives lack paving.

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no known fire service deficiencies in this community. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – The O'Neill Farms/Westside Community has no identified service deficits regarding septic replacement activity with no high failure rates. No incidents of severe flooding or drainage issues have been observed by County staff. There is no evidence that fire protection resources are deficient for this community. As stated above, treated surface water regularly exceeds MCL's for DBP, and the County has approved pursing a state revolving grant fund to address water quality issues. The area is not designated or zoned for future intensive growth opportunities.

Northbound SR 145 – School Bus Facility to West

West Excelsior Avenue looking West

West Excelsior

West Excelsior Avenue looking South

West Excelsior Avenue looking West

Elementary School on West Excelsior Avenue

Looking North at Private Drive off West Excelsior Avenue

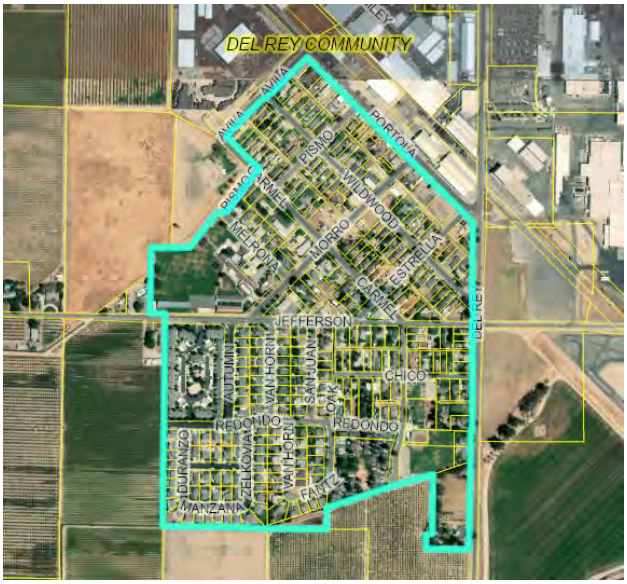
Private Drive off West Excelsior Avenue

West Excelsior Avenue East of State Route 145

West Excelsior Avenue East of State Route 145

Looking South State Route 145 from West Excelsior Avenue

17. DEL REY COMMUNITY



The Del Rey Community is located between East American Avenue to the north and East and Lincoln Avenue to the south and the community is located south of Sanger. Del Rey consists of 316 parcels totaling approximately 108 acres and is served by the Del Rey Community Services District (PMC, 2007a).

The area is in Census Tract 69.

Water – Water is provided to this area by the Del Rey Community Service District. It provides water services to a population of approximately 1,200 residents as well as commercial and industrial development. District infrastructure includes three pump houses that also store equipment, as well as water lines (PMC, 2007a).

According to the 2018 Engineer's Report the District has prepared a scope and budget for wellhead treatment for TCP removal. The project includes all active wells (4, 6, and 7) and standby wells (3, 5). The State Water Resources Control Board, Division of Drinking Water has issued a Compliance Order due to TCP contamination at all the District wells. The District has also submitted a grant application to install water meters in the community (AECOM, 2018).

Wastewater – Wastewater services are provided to this community by the Del Rey Community Service District through a wastewater treatment plant.

District infrastructure includes a wastewater treatment plant, an equipment building, and related wastewater infrastructure. In 2007 an industrial wastewater treatment plant was constructed adjacent to the domestic wastewater treatment plant to treat wastewater from a raisin plant. The domestic plant would need to be upgraded if subdivision development occurred in the community. Future development will be required to finance any additional infrastructure necessary to provide it with required services (Fresno County Department of Public Works and Planning, 2019a). The District is in the process of acquiring land for the purpose of establishing a wastewater discharge area. The proposed wastewater discharge area is adjacent to an existing District wastewater treatment plant. The District plans to grow alfalfa or other row crops on the subject parcel, which would be irrigated with treated wastewater effluent, well water, and/or water from the Consolidated Irrigation District Canal. It proposes to exchange properties with POM Wonderful LLC. POM Wonderful wishes to expand east of their existing facility and is willing to trade their property located east of the wastewater treatment facilities for the two parcels owned by Del Rey Community Services District located south of the wastewater treatment facilities (Fresno County Department of Public Works and Planning, 2013).

According to the 2007 Del Rey Community Service District MSR, the sewer infrastructure is sufficient for the current population. The KBDAC Study, however, found that there is considerable risk of violation of wastewater treatment standards based on recent records. There are no reported changes since the 2007 MSR (Fresno County Department of Public Works and Planning, 2019a; California Department of Water Resources, 2013).

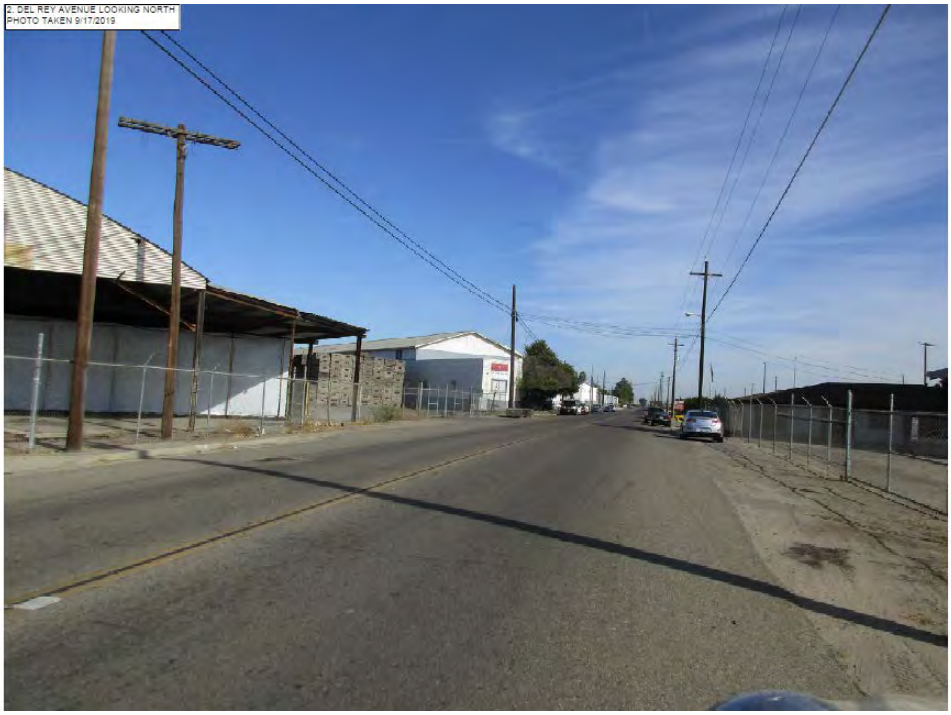
Drainage – Drainage services are provided to this area by the Del Rey Community Service District. According to the 2007 Del Rey Community Service District MSR, the stormwater infrastructure is sufficient for the current population. There are no reported changes since the 2007 MSR (PMC, 2007a).

The Del Rey Community Services District does not have a website. The District's contact information is listed as: 10649 E Morro Avenue, Del Rey, CA 93616/Phone: (559) 888-2272

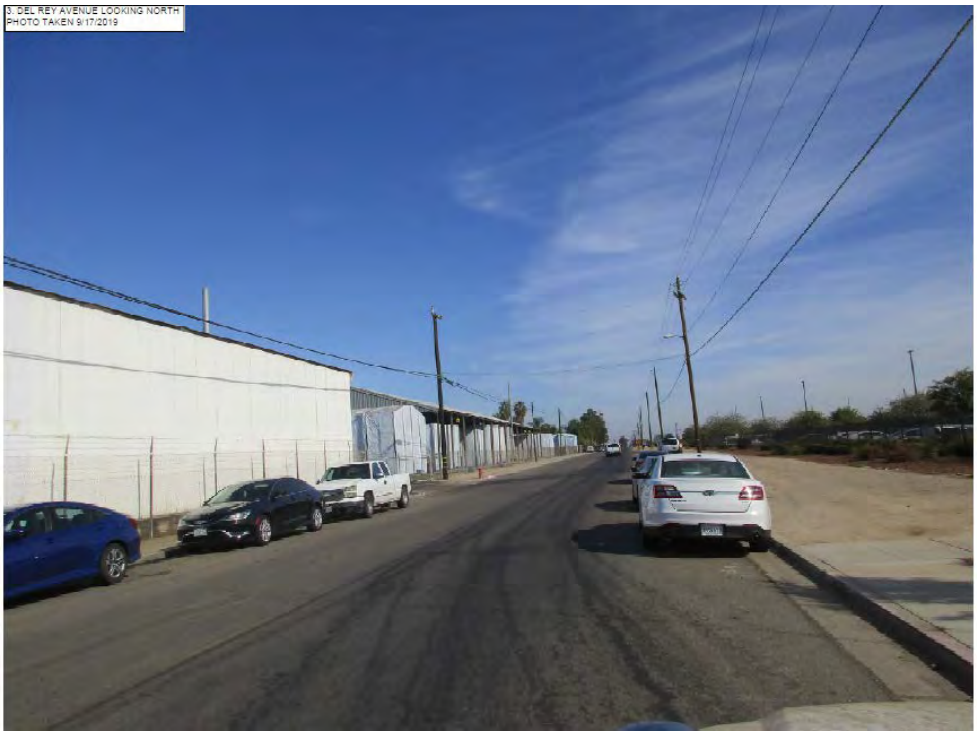
Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no fire service deficiencies in this community, which has access to fire hydrants. One fire station is located within one mile of the Del Rey community. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – The Del Rey Community has no identified service deficits regarding drainage or fire protection. TCP contamination has been identified in specific community system wells, resulting in a compliance order from the state. The District engineer has prepared a report to study TCP removal. Well and septic replacement activity does not indicate high rates of failure. Prior MSR data indicated wastewater services were sufficient to serve the community, but more recent data released as part of the KBDAC Study stated risk of violation of wastewater treatment standards.

Portola Avenue looking Southeast

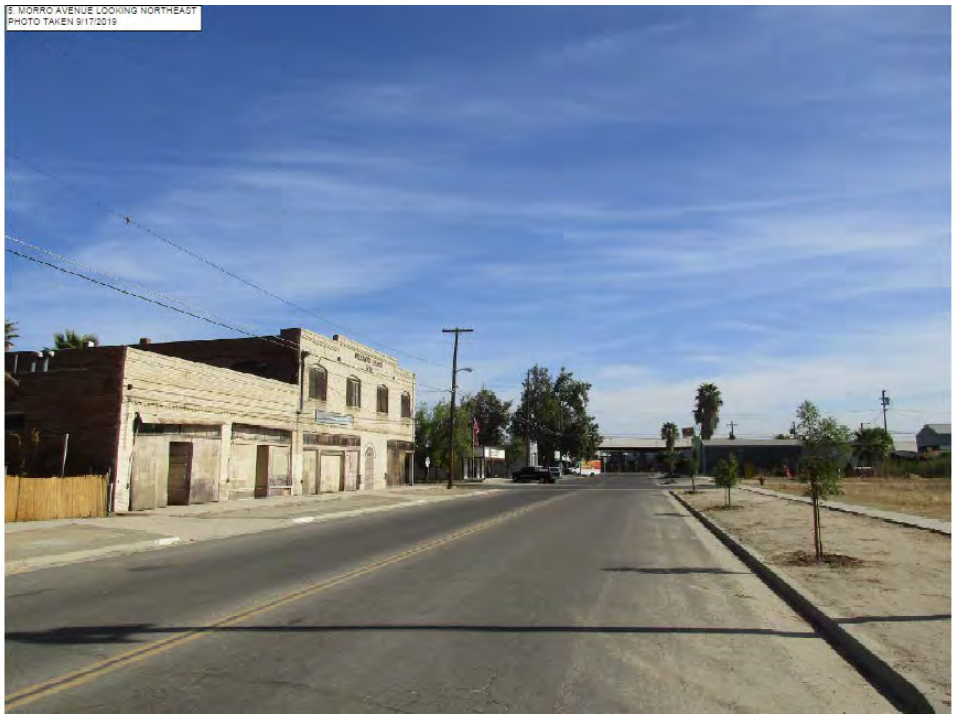


Del Rey Avenue looking North

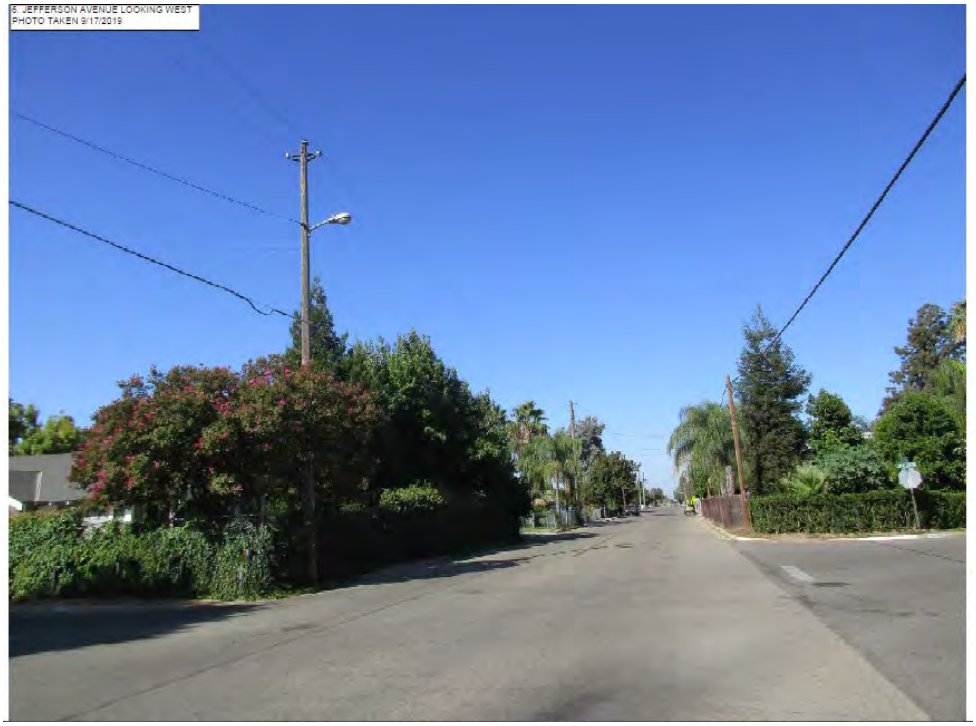


Del Rey Avenue looking North

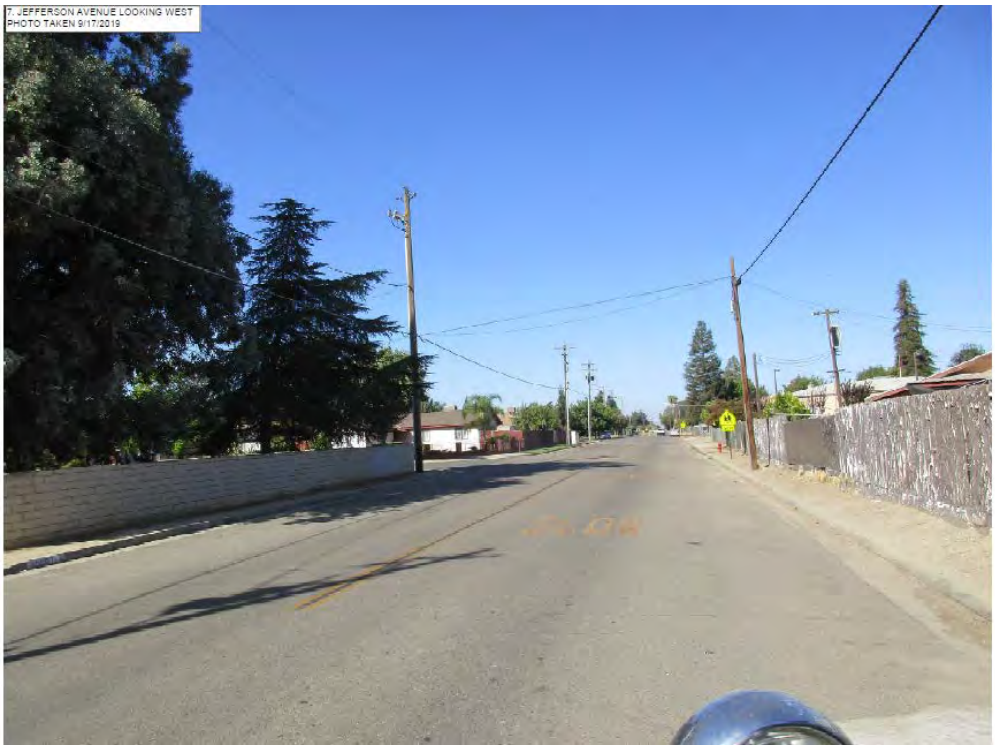
Morro Avenue looking Northeast



Morro Avenue looking Northeast

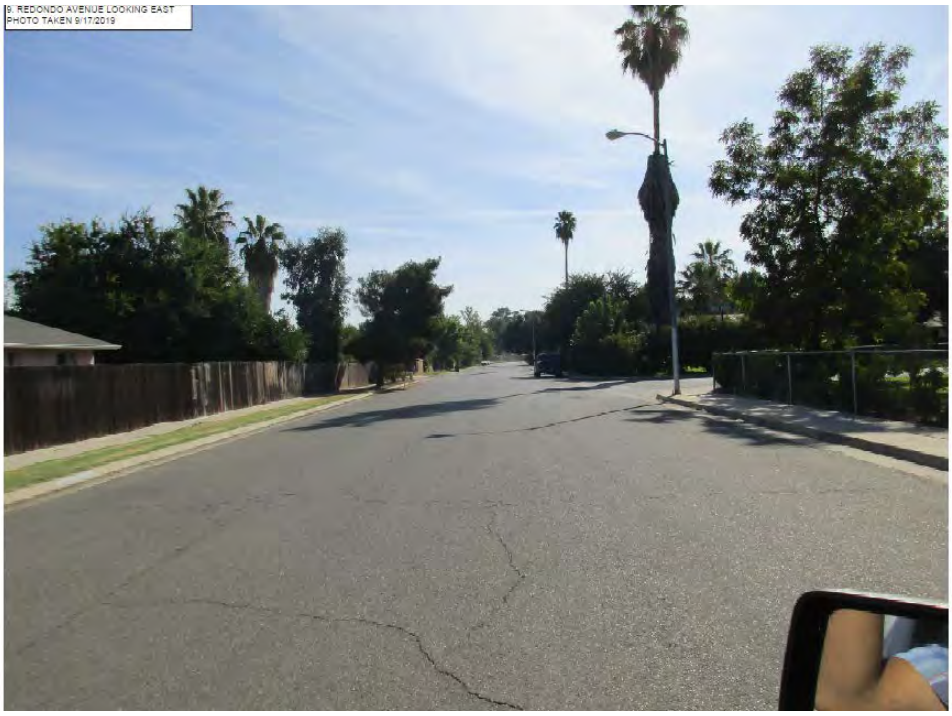


Jefferson Avenue looking West

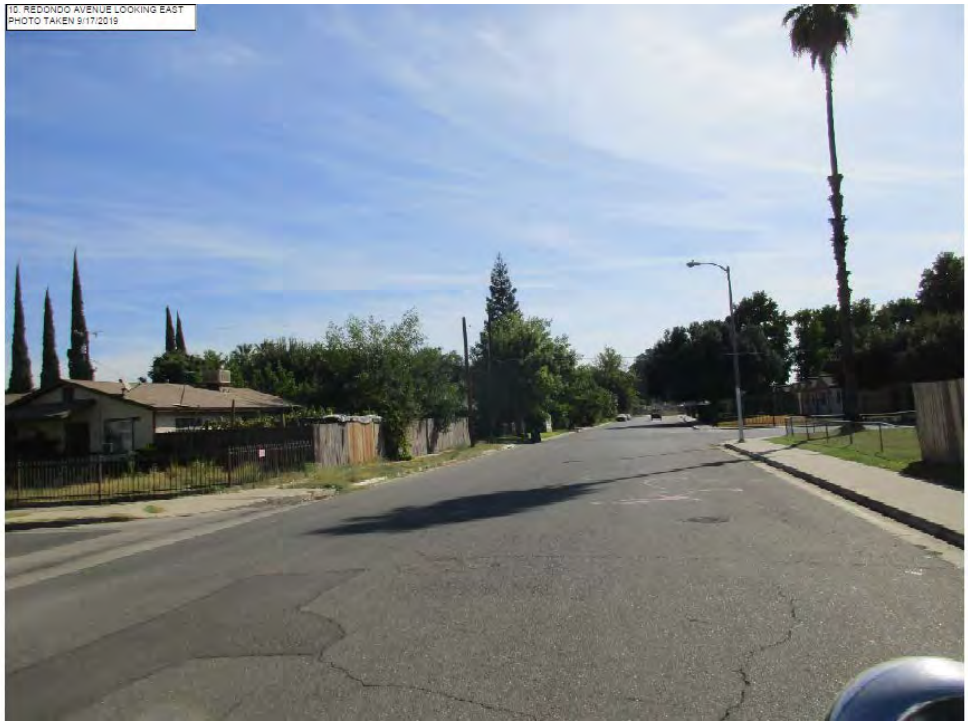


Jefferson Avenue looking West

Autumn Avenue looking South



Redondo Avenue looking East



Redondo Avenue looking East

18. EAST ADAMS AVENUE COMMUNITY

The East Adams Avenue Community is located at the corner of East Adams and Navelencia Avenues and includes 18 parcels totaling approximately nine acres (Fresno County Department of Public Works and Planning, 2019c).

East Adams Avenue Community is not located within a census tract/block group unit that meets the MHI DUC threshold, but when applying the US Census ACS data Avenue, the community does meet the MHI DUC threshold. The US Census ACS five-year estimate reports indicate that Census Tract 63.00 - Block Group 4 had an MHI of $47,639 between 2006 and 2010.

The area is in Census Tract 63.

Water – Private wells provide water to the residents of this community (Fresno County Department of Public Health, 2019).

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents for wastewater disposal. Since 1996 County records indicate there was one new septic installation and two septic repairs (Fresno County Department of Public Works and Planning, 2019a).

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads. No incident of flooding was reported during the winter of 2018 – 2019 or during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019).

County staff conducted a community site visit on April 26, 2019. Staff noted no improvements along either Navelencia or East Adams avenues. No areas of potential standing water were noted.

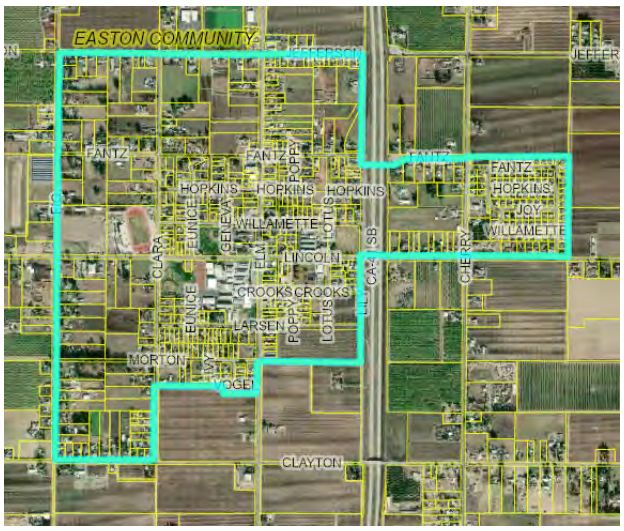
Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no fire service deficiencies in this community. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – The East Adams Avenue Community has no identified service deficits. Well and septic replacement activity does not indicate high rates of failure, and no incidents of severe flooding or drainage issues have been observed by County staff. There is no evidence that fire protection resources are deficient for this community, and as the area is not designated or zoned for future intensive growth opportunities, there is no anticipation that the community will observe additional strain on its existing, limited infrastructure.

Looking West down Adams Avenue from the Most Easterly Lot

Looking North up Navelencia Avenue

19. EASTON COMMUNITY



The Easton Community is located south of West American Avenue and East of South Walnut Avenue and includes 522 parcels totaling approximately 701 acres. The Easton Community Service District, which maintains a storm drainage basin within the Easton Village subdivision serves a population of 1,966. Maintenance includes clearing the basin of debris and maintaining the landscape to retain the basin's capacity for storm runoff (Witte, Fleming, & Hendricks, 2011g).

The Easton Community is not located within a census tract/block group unit that meets the MHI DUC threshold, but when applying the US Census ACS data, the community meets the MHI DUC threshold. The US Census ACS five-year estimate reports indicate that Census Tract 18.00-Block Group 1 had an MHI of $43,646 between 2006 and 2010.

The area is in Census Tract 18.

Water – Private wells provide water to the residents of this area except for a small privately-maintained community water system which serves an existing subdivision east of Cherry Avenue. The Easton Estates Water Company, established in 1979, serves 107 connections for an existing subdivision located adjacent to Cherry Avenue between Lincoln and Fantz (California Department of Water Resources, 2020). The high school and Washington Colony School are also connected by a small community water system (California Department of Water Resources, 2020b). For the remainder if the Easton Community, which is provided water from individual wells. According to the KBDAC Study, there are considerable drinking water concerns in Easton, namely coliform, dibromochloropropane (DBCP), and nitrate contamination (California Department of Water Resources, 2013). During the past ten years, there have been 75 permits for new wells, 10 well demolition permits, and two public/industrial well permits. There were also six monitoring well permits issued for a single parcel (Fresno County Department of Public Health, 2019).

The State of California Water Resources Control Board issued Washington Union High School (WUHS) Compliance Order No. 03_23_09O_005 in 2009 for non-compliance with the dibromochloropropane (DBCP) maximum contaminant level (MCL) in Well 03. The Water Resources Board issued Compliance Order No. 03_23_13R_014 in 2013 for non-compliance with the Gross Alpha MCL in Well 01. WUHS installed Point of Entry Reverse Osmosis treatment in 2015 as a temporary measure to mitigate the violation until a permanent long-term solution was identified. The state issued Citation No. 03_23_18C_061 in 2018 for non-compliance with 1,2,3-Trichloropropane (1,2,3-TCP) MCL in Well 01 and Well 02.

In 2012 Washington Union School District (WUSD) received a grant for a Proposition 84 planning project to investigate drilling a new well, installing treatment, blending of water sources, and consolidation. WUSD evaluated costs and long-term feasibility. WUSD decided to consolidate with Washington Colony School (WCS), which is located approximately 600 feet east of Washington Union High School (WUHS). In 2000, WCS

constructed a well that produced reliable, potable water meeting all primary drinking water standards.

In 2016, WUSD executed a Proposition 1 construction funding agreement for $3,015,600. The construction project consisted of drilling a new well at WUHS, installing a pipeline connecting the two schools, and creating a joint-powers agreement (JPA) having the authority and responsibility to manage the ongoing operations and maintenance of the newly formed non-transient non-community water system. The new well would serve as the primary water source and the existing well at WCS would be a secondary source. The JPA board is comprised of members from each school district as well as one community member. In June of 2019 WUHS and WUSD returned to compliance when Well 01, Well 02, and Well 03 were physically disconnected from the drinking water system. Well 02 will still be in use solely for irrigation purposes. The JPA may eventually extend service to nearby private homes and businesses located along the alignment of the distribution main installed to connect both schools. This could occur after one year of production data has been collected (California Department of Water Resources, 2020b).

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents for wastewater disposal. A search of historical septic permit records for the area indicated two new septic system permits, three permits for replacements, ten permits for repairs, six permits for inspections and two septic demolition permits (Fresno County Department of Public Works and Planning, 2019a).

Drainage – The Easton Community Service District maintains storm drain inlets along the community's Elm Avenue commercial center and along Lincoln Avenue in proximity to churches and schools. Additionally, the Easton Village subdivision (Tract No. 1826, 53 lots) and the Easton Village No. 2 subdivision (Tract No. 2284, 44 lots) are served by a community storm drain system comprised of curbs, gutters and storm drain basin maintained by the Easton Community Service District. According to the 2011 Easton Community Service District MSR and SOI Update, the stormwater facility is sufficient for the current population. There have not been any reported changes since the 2011 MSR (Witte, Fleming, & Hendricks, 2011g). One complaint of flooding was reported in this community during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019).

County staff conducted a site visit on May 8, 2019. Staff noted noticeable areas of erosion and standing water east of State Route 41, and the presence of two curb inlets on the north and south side of Fantz Avenue, just east of Cherry Avenue. Tract 1826 has concrete curb, gutters, valley gutters and 4-foot sidewalks serviced by a storm basin maintained by Easton Community Service District on northerly end of the subdivision. West of State Route 41 there were also areas of erosion and standing water observed. Staff noted storm drain facilities fronting schools, churches and commercially developed lots along Lincoln and Elm avenues.

The Easton Community Service District does not have a website. The District's contact information is listed as 5783 S. Elm Avenue, Fresno, CA 93706 /Phone: (559) 443-1754.

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no fire service deficiencies in this community, some of which has access to fire hydrants. One fire station is located within the Easton community. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at

least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – As identified in the KBDAC Study Easton continues to have drinking water concerns associated with DBCP and nitrate contamination, also as stated above, there have been 75 permits for new wells and six monitoring well permits issued during the past 10 years. There is the possibility that improvements could benefit nearby residences if connection to the water line serving the schools occurs, although the larger community will still be dependent on individual wells. There is no community wastewater system for this community, but septic permit activity has been relatively minimal for an area of this size. Residents acknowledged at a community meeting on March 10, 2020 that a lack of sewer and community water system will severely limit the community's ability to grow and accommodate additional housing. The Easton CSD maintains storm drain inlets for certain areas of the community, and the 2011 Easton CSD MSR did not indicate any drainage or flooding service concerns. There was only one complaint of flooding was reported in the community during the spring of 2019. There are no reports of fire service concerns for the community.

Typical Residential Road looking North

Typical Valley Gutter looking South

One of two Curb Inlets looking West

Stormwater Basin for Tract 1826 looking West

Primary Basin looking Southwest

Primary Basin looking Northwest

Lincoln Avenue looking East

Lincoln Avenue looking West

Elm Avenue looking North

Elm Avenue looking South

Typical Un-serviced Road looking North

Typical Un-serviced road looking West

20. FIVE POINTS COMMUNITY

The Five Points community is located at the intersection of West Mount Whitney Avenue and Lassen Avenue (SR 269) and includes three parcels totaling approximately 16 acres (Fresno County Department of Public Works and Planning, 2019c).

The area is in Census Tracts 82.00/78.02.

Water – The Britz/Five Points System (CA1009179) serves 23 connections including 13 residential connections in the area. The system serves a population of 76 and treats raw water from the California Aqueduct. Between 2010 and 2016 the State of California Water Resources Control Board issued nine violation notices to the Britz/Five Points system for monitoring violations including MCL. All violations have been resolved with state compliance achieved (California Department of Water Resources, 2020). Private wells provide water other areas of this community. During the past ten years, there were permits for the demolition of one apartment building that included two wells and septic systems (Fresno County Department of Public Health, 2019).

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents for wastewater disposal. See above regarding septic permitting activity (Fresno County Department of Public Works and Planning, 2019a).

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads. No incident of flooding was reported during the winter of 2018 – 2019 or during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019).

County staff conducted a site visit to the area on April 30, 2019. On Lassen Avenue, undeveloped drainage swales were noted. Minor/small portions of swales in front of developed lots with portions of concrete valley gutters to the east to direct runoff south away from several buildings. Dirt/gravel approach to the east to enter residential community. Along Mount Whitney Avenue there were no drainage swales noted.

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no fire service deficiencies in this community, which has access to fire hydrants. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – The Five Points Community has no identified service deficits. The Five Point System has no recent reported violations, well and septic replacement activity does not indicate high rates of failure, and no

incidents of severe flooding or drainage issues have been observed by County staff. There is no evidence that fire protection resources are deficient for this community, and as the area is not designated or zoned for future intensive growth opportunities, there is no anticipation that the community will observe additional strain on its existing, limited infrastructure.

Lassen Avenue looking North

Lassen Avenue looking North

Lassen Avenue looking South

Lassen Avenue looking North

Mount Whitney Avenue looking East

Mount Whitney Avenue looking West

Northerly Road looking East

Southwesterly Road looking Southeast

Easterly Road looking South

Southwesterly Road looking Northwest

21. FLAMINGO MOBILE HOME COMMUNITY

The Flamingo Mobile Home Community is located on East Central Avenue between South Maple Avenue and Highway 99 and includes one parcel totaling approximately nine acres.

The area is in Census Tract 15.

Water – Water service is provided by Malaga County Water District (MCWD) via three groundwater wells. MCWD delivers approximately 1500 acre-feet of water per year. Water usage is about 20% residential and 80% commercial/industrial (PMC, 2007d). According to a letter from MCWD dated March 13, 2018, the District has improved its water treatment facility and delivers very high-quality drinking water without harmful levels of contaminants (I.e. arsenic and nitrates) often found in central valley water supplies (Malaga County Water District, 2018).

MCWD's website is http://www.malagacwd.org/

New residential water meters are being installed in 2018 for all residential and commercial/industrial customers. This water meter system (AMR- Automated Meter Reading) operates by cellular signal and allows MCWD to effectively monitor system and individual accounts for leaks and usage in real time. MCWD owns and operates 80 fire hydrants for community fire protection. The District has plans for a fire hydrant upgrade project in FY 2019-2020 (PMC, 2007d).

Wastewater – Sewer services are provided to this community by the Malaga County Water District through a wastewater treatment plant. According to the 2007 Malaga Community Service District MSR and SOI Update, the wastewater infrastructure is sufficient to serve the current population (PMC, 2007d; Central Valley Regional Water Quality Control Board, 2014).

Drainage – There is no community storm drain system in place for this community. However, this community is located within Fresno Metropolitan Flood Control District (FMFCD) Drainage Zone AY. No incident of flooding was reported during the winter of 2018 – 2019 or during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019).

County staff conducted a site visit to the area on May 1, 2019. This mobile home park consists of all AC and concrete. Staff noted no street (row) names or numbers, but some rows have a small concrete path that could be considered sidewalk. No visible drainage system appeared present.

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no fire service deficiencies in this community, which has access to fire hydrants. One fire station is located within three miles of the Flamingo Mobile Home community. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water

tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – The Flamingo Mobile Home Community has no identified service deficits. The Community receives water and sewer services from the MCWD. There is no evidence that fire protection resources are deficient for this community and no flooding or drainage issues are noted.

#1 Looking South from Central

#2 looking East

#3 looking North

#4 looking North

#5 looking North

#6 looking North

#7 looking West

Looking West – March 26, 2020

22. HAYES ROAD COMMUNITY/PERRIN COLONY

The Hayes Road Community is located at the corner of Hayes Road and Parlier Avenue and includes 42 parcels totaling approximately 54 acres (Fresno County Department of Public Works and Planning, 2019c).

The area is in Census Tract 76.

Water – Private wells provide water to the residents of this area. During the past ten years, there have been five well permits issued and electrical permits issued for wells on two additional properties (Fresno County Department of Public Health, 2019).

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents of this community for wastewater disposal.

Regarding septic systems, there were three installations, one connection to an existing septic system, two septic inspections and one demolition of an existing single-family residence in which the septic system was permitted to remain during the past ten years (Fresno County Department of Public Works and Planning, 2019a).

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads. No incident of flooding was reported during the winter of 2018 – 2019 or during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019).

County staff conducted a site visit to the area on April 26, 2019. No developed or undeveloped drainage features were noted by staff. On Hayes Avenue, staff observed agricultural land to the west and driveway/dirt road access to the East. On Parlier Avenue there was property access to the north, agricultural land to the south. The unnamed dirt/gravel roads were observed to be in poor condition (very rough and uneven). Many potholes/low areas filled with gravel. There were several speed bumps intact on the easterly road.

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no fire service deficiencies in this community. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – The Hayes Road Community has no identified service deficits related to well and septic systems. Well and septic replacement activity does not indicate high rates of failure, and no incidents of severe flooding or drainage issues have been observed by County staff. Poor paving conditions of the private roads

were identified. There is no evidence that fire protection resources are deficient for this community, and as the area is not designated or zoned for future intensive growth opportunities, there is no anticipation that the community will observe additional strain on its existing, limited infrastructure.

Hayes Avenue looking South

Hayes Avenue/Northerly Road looking North

Parlier Avenue looking East

Parlier Avenue looking East

Northerly Road looking East

Northerly Road looking East

Easterly Road Speed Bump looking North

Easterly Road looking South

Middle Road looking West

23. HUGHES AVENUE/MAGNOLIA AVENUE COMMUNITY

The Hughes Avenue/Magnolia Avenue Community is located south of the intersection of S. Hughes Road and W. Magnolia Avenue. This community consists of 30 parcels totaling approximately 40 acres (Fresno County Department of Public Works and Planning, 2019c).

The area is in Census Tract 75.

Water – Private wells provide water to the residents of this community. During the past ten years, there has been only one well permit for a new well. That permit is noted as pending (Fresno County Department of Public Health, 2019).

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents for wastewater disposal. No septic permitting was noted during the past ten years (Fresno County Department of Public Works and Planning, 2019a).

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads. No incident of flooding was reported during the winter of 2018 – 2019 or during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019).

County staff conducted a site visit to the area on April 30, 2019. No developed or undeveloped drainage features were noted by staff on Hughes or Magnolia avenues with lower field area for crops to the west of road, driveway access for lots on east and west side of road for Hughes and lower field area for crops to the north of road, driveway access for lots on north and south side of road for Magnolia.

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no fire service deficiencies in this community. One fire station is located within three miles of the Hughes Avenue/Magnolia Avenue community. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – The Hughes Avenue/Magnolia Avenue Community has no identified service deficits. Well and septic replacement activity does not indicate high rates of failure. No incidents of severe flooding or drainage issues have been observed by County staff and there is no evidence that fire protection resources are deficient for this community. As the area is not designated or zoned for future intensive growth opportunities, there is no anticipation that the community will observe additional strain on its exiting, albeit limited infrastructure.

Hughes Avenue looking South

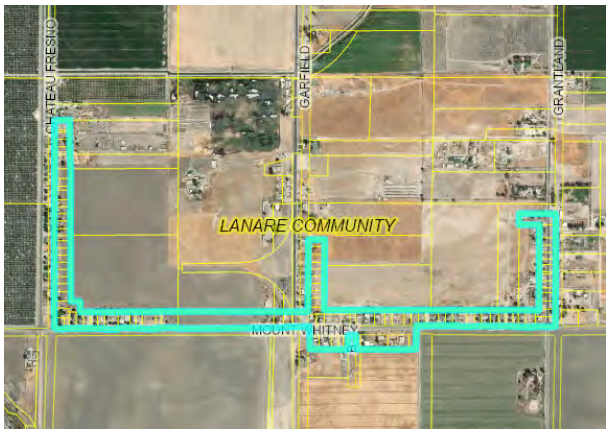
Hughes Avenue looking South

Magnolia Avenue looking East

Magnolia Avenue looking East

24. LANARE COMMUNITY

The Lanare Community is located near the intersection of South Grantland Avenue and Mount Whitney Avenue located a few miles west of Riverdale and approximately 25 miles southwest of the city of Fresno. It is served by the Lanare Community Service District (CSD) which provides water service in the community of Lanare. The community encompasses approximately 346 acres (PMC, 2007c).



The area is in Census Tract 77.

Water – The Lanare Community Service District (Lanare CSD) provides water to this area through two wells, water filtrations system, and distribution system (PMC, 2007c).

The District has approximately 149 water service connections including residential and commercial. Water service is provided to a few connections outside of the District's boundary. The District's current water supply facilities include two wells, a water filtration system, and a distribution system. The District estimates its average daily water production is 156,000 gallons, which equates to up to 56,940,000 gallons annually. Maximum daily demand is estimated to be 312,000 gallons per day. The District estimates the water system can produce approximately 300 gallons per minute. The existing system's production capacity is satisfactory for the District's current water supply needs (PMC, 2007c).

The District's newest well is connected to a water filtration system that was installed at the beginning of 2007. The primary purpose of the filtration system is to ensure the District can meet federal arsenic standards of less than 10 parts per billion (ppb). When operating, this filtration system allows the District to comply with this standard, among others. The filtration system is not being used at this time because the limited number of water users, at the current service rates, cannot support the filtration system's significant operational costs. Without filtration arsenic levels are above 10 ppb but are below the previous federal standard of 50 ppb (PMC, 2007c). The Community Services District received several state violation notifications since 2007, particularly regarding exceeding MCLs for arsenic, although the District also received coliform monitoring violations as late as 2011 (California Department of Water Resources, 2020). Six months after being placed on-line, the water treatment plant was idled due to the District's inability to fund operating costs. The community continues to have unfiltered drinking water (Romero and Klein, 2017).

The District is currently supplying water through use of its oldest well, which the District states is not adequate to supply the community 24 hours a day, seven days a week, for an indefinite period. According to the District's 2007 Municipal Services Review, the District was in the process of installing a bypass system so that its newest well can supply water for the community without first being filtered (PMC, 2007c). As of 2017, Lanare CSD's public water treatment system was in court-ordered receivership because of concerns for the technical, managerial, and financial (TMF) capacity of the CSD. In addition, the 2013 Kings Basin Water Authority Disadvantaged Community (KBDAC) Study noted that the arsenic levels in Lanare's drinking water exceeded acceptable standards (California Department of Water Resources, 2013).

According to CA Bond Accountability Reports, Lanare CSD received grant funding in 2014 for a feasibility study to

evaluate an alternative to consolidate with Riverdale Public Utility District. In 2015, Tito Balling in conjunction with the Lanare CSD received a Prop. 84, Small Community Infrastructure Improvements Program Grant of $3.42 million for arsenic remediation of the existing treatment plant. The grant-funded project is for the installation of two new water wells and to reactivate the existing arsenic treatment plant. As part of the reactivation of the plant, additional onsite supplies and equipment will need to be replaced, including pumps hoses, injectors, filters, and tanks. To achieve a sustainable plant once operational, a separate USDA grant was awarded for the installation of water meters and the establishment of a tiered rate system to guarantee sufficient income to run the plant (California Natural Resource Agency, 2017).

The Lanare Community Service District does not have a website. The District's contact information for the Community Center is listed as 20620 S Grantland Ave, Riverdale, CA 93656/Phone: (559) 867-3469. Water Services are provided by California Water Services with contact information listed as 700 W Elm Ave, Coalinga, CA 93210/ Phone: (559) 935-2300.

Wastewater – Lanare does not have a community wastewater collection and treatment system Septic systems are used by residents for wastewater disposal. The 2015 LAFCo report documented wastewater problems in Lanare. These findings corroborated the 2013 KBDAC Study, which concluded that the lack of a wastewater collection and treatment system was the community's highest priority. Both reports cited connection with the Riverdale Public Utility District system as a potential solution (California Department of Water Resources, 2013). According to County records, since 1996 there were four septic installations, two replacements and one septic repair.

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads. No incident of flooding was reported during the winter of 2018 – 2019 or during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019).

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no fire service deficiencies in this community, which has access to fire hydrants. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008). The Fire District has an automatic aid agreement with Riverdale's fire department and with Kings County, which benefits Lanare. The community also had pressurized water system hydrant improvements installed in the past 10 years (CalFire/FCFPD, 2020).

Service Deficits – As identified above, the Lanare CSD water treatment system was in court-ordered receivership because of District TMF concerns and its water filtration system has been off-line due to operating costs that exceed the District's budget. Further, the 2013 KBDAC Study noted high drinking water arsenic levels. The CSD has pursued grant funding both from the state and USDA to address some of the District's drinking water issues. Wastewater treatment issues have also been identified in the community. The area is currently only served by individual septic systems. Connection to the Riverdale PUD has been one possible approach to address this problem. The community does not have storm drainage infrastructure, and a lack of such infrastructure has been identified as a problem for the community by organizations active in the community. As stated above, the

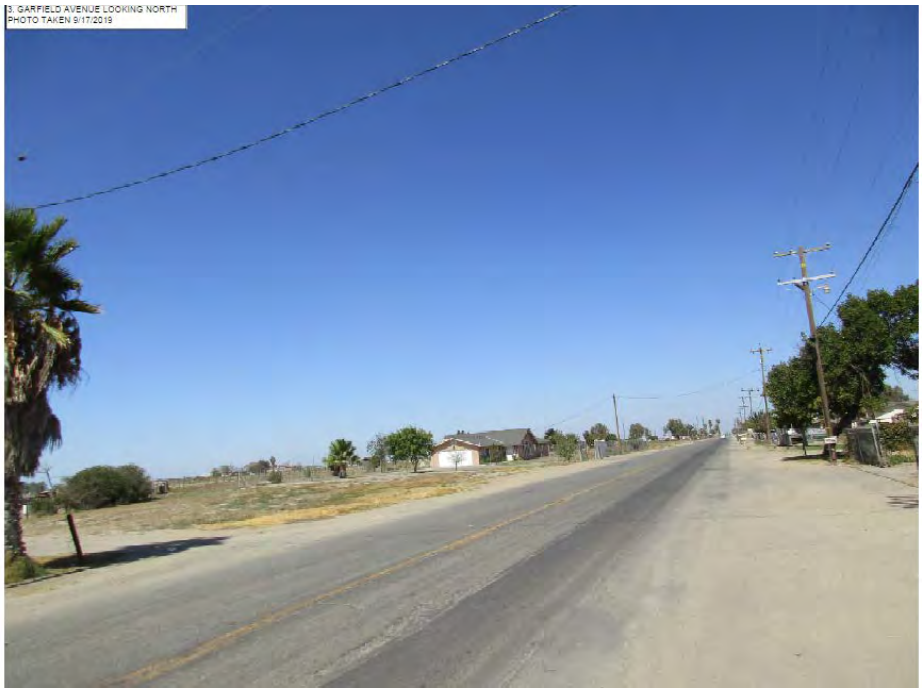
Department of Public Works and planning received no reports of flooding at or near the time of the alleged flooding during 2018-19. However, the Leadership Counsel for Justice and Accountability has reported continued flooding problems occurring in the community, in a letter dated March 13, 2020 (Martinez, 2020).

Mount Whitney from Garfield looking East – March 26, 2020

Grantland Avenue looking North

Grantland Avenue looking North – March 26, 2020

Mount Whitney Avenue looking West

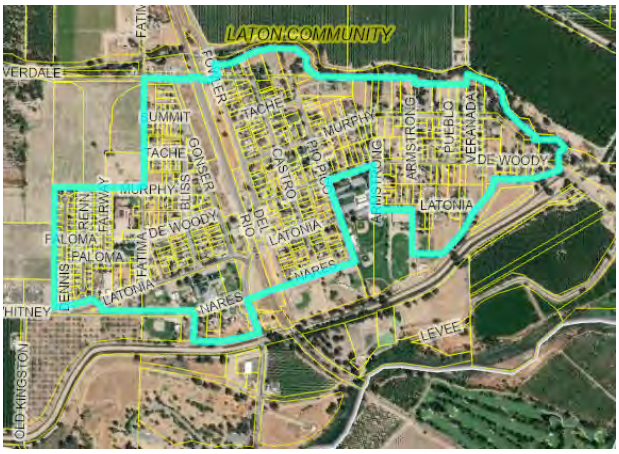


Garfield Avenue looking North

Garfield Avenue looking North – March 26, 2020

Chateau-Fresno Avenue looking North

25. LATON COMMUNITY



The Laton Community is located near the intersection of South Fowler Avenue and Murphy Avenue in the south-central portion of Fresno County adjacent to the Kings River. The District's boundaries contain about 500 acres with an approximate population of 1,230. During harvest season (August through September), the District's population increases to 1,600 (Witte, Fleming, & Hendricks, 2011b).

The area is in Census Tract 74.

Water – Water is provided to this community by the Laton Community Service District (Laton CSD) through two groundwater wells and a water distribution system. According to the 2011 Laton CSD Municipal Service Review (MSR) and Sphere of Influence (SOI) Update, the water infrastructure is sufficient for current populations. According to the KBDAC Study, there are no water quality issues in Laton. There are no reported changes since the 2011 MSR. The District currently has 461 connections for water and wastewater service, with 410 of the connections being for single family residential uses. Additional groundwater wells needed for future development will be constructed on sites located within the new developments. The well sites will be determined as development occurs 600 (Witte, Fleming, & Hendricks, 2011b).

Wastewater – Wastewater system services are provided to this community by the Laton CSD through a wastewater collection and treatment system. The District currently owns and operates the wastewater collection and treatment system, which consists of sewer mains, pumps, and a treatment plant. The treatment plant is operating at approximately two-thirds of its design capacity and is expected to be able to serve anticipated growth. The current permitted treatment capacity is 200,000 gallons per day (gpd). There are 461 connections for wastewater service, of which 410 are for single family residential uses. According to the 2011 Laton CSD MSR and SOI Update, the sewer infrastructure is sufficient for current populations 600 (Witte, Fleming, & Hendricks, 2011b). The KBDAC Study, however, noted that there are some concerns related to infiltration in Laton (California Department of Water Resources, 2013). There are no reported changes since the 2011 MSR.

Drainage – The Adams Manor subdivision (Tract No. 3608, 48 lots) and the Adams Manor No. 2 subdivision (Tract No. 4025, 42 lots) are served by a community storm drain system comprised of curbs and gutters. Otherwise, unpaved road shoulders absorb runoff from paved roads (California Department of Water Resources, 2013). No incident of flooding was reported during the winter of 2018 – 2019 or during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019).

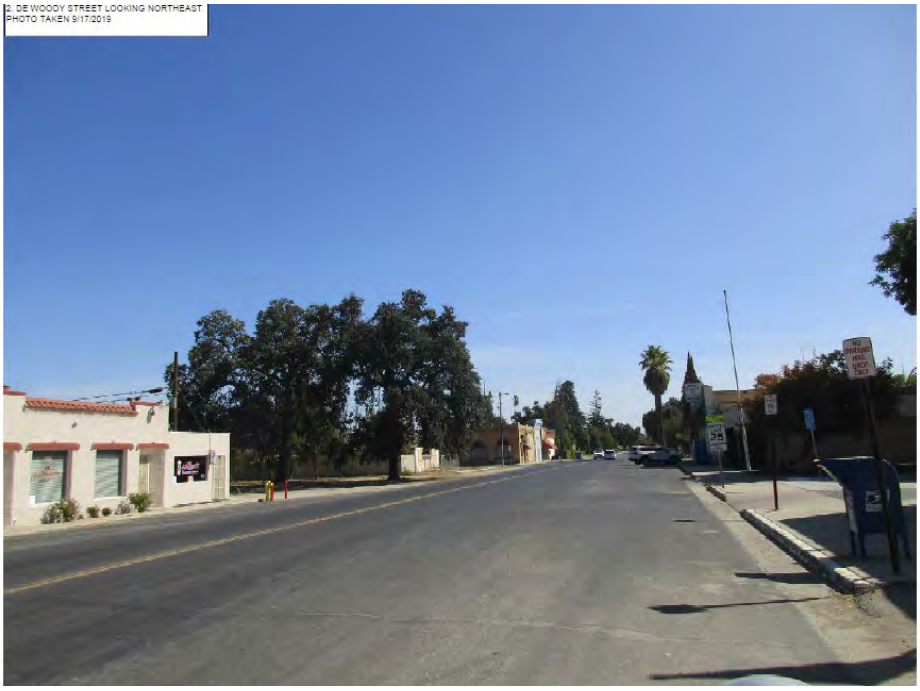
Fire – Fire protection services are provided to this community by the Laton CSD. There are no fire service deficiencies in this community. The Laton Volunteer Fire Department provides basic fire protection services to the community. In support of the volunteer firefighters, the Laton CSD maintains a fire station, fire engines and related equipment. The CSD's volunteer fire department has Mutual Aid Agreements with Kings County Fire Department and the Fresno County Fire Protection District to provide additional fire protection services 600

(Witte, Fleming, & Hendricks, 2011b).

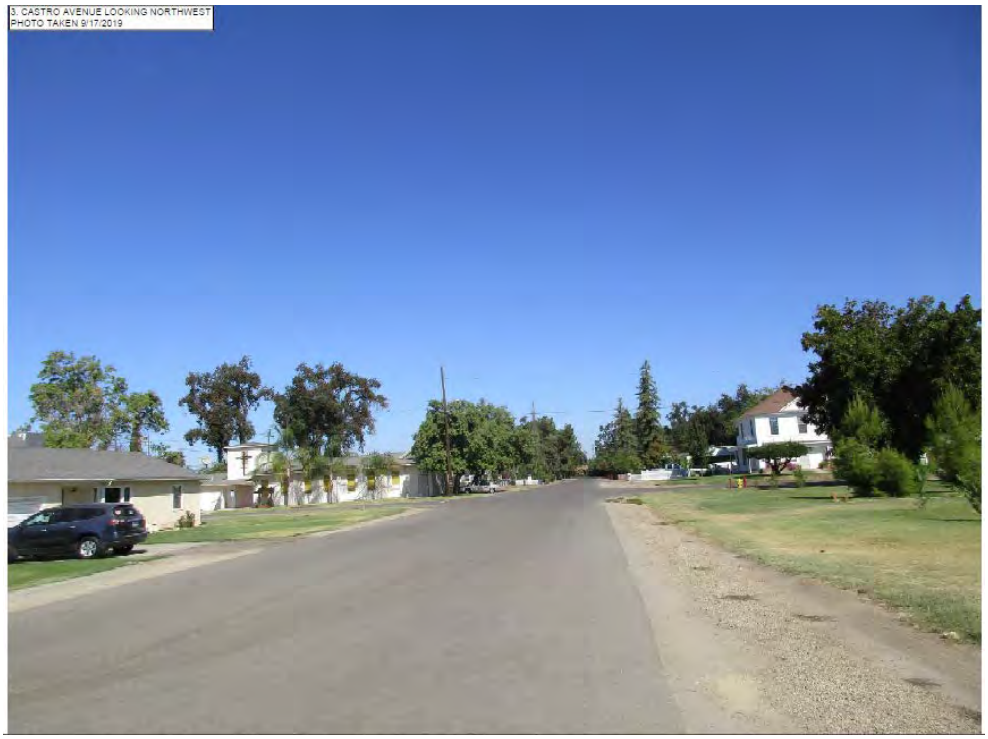
The Laton Community Service District does not have a website. The District's contact information is listed as 6501 E. Latonia Street, Laton, CA 93242/Phone: (559) 923-4802.

Service Deficits – The Laton Community has no identified service deficits related to potable water provided through the CSD. As stated above, the KBDAC Study noted some concerns concerning infiltration as it relates to wastewater. No service deficits related to stormwater drainage, flooding or fire protection were noted.

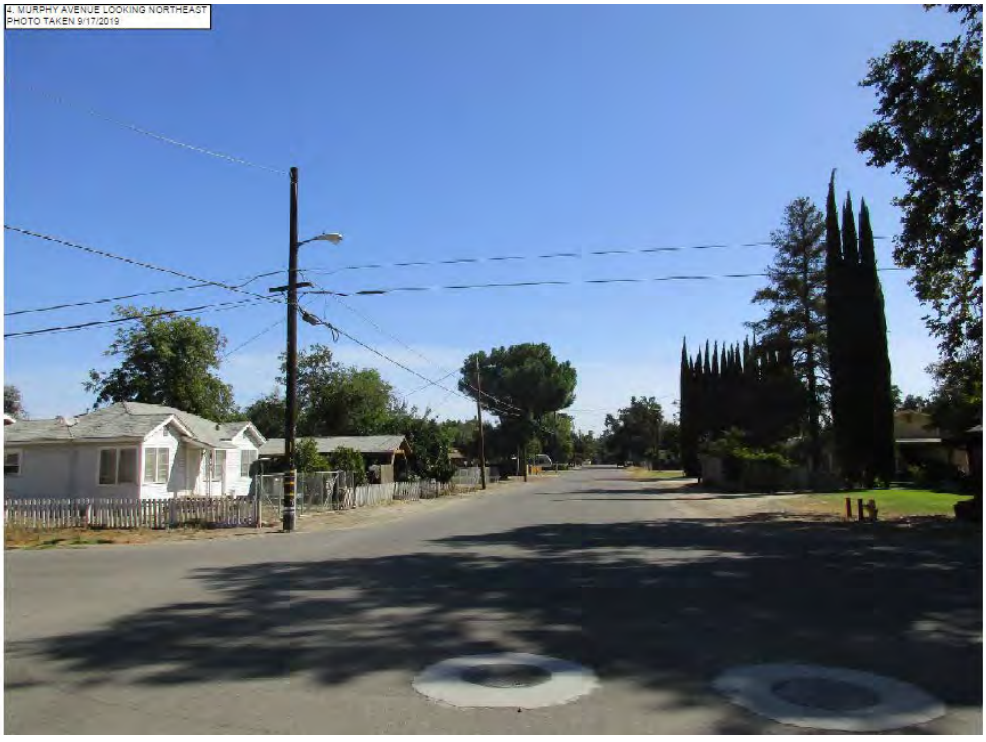
Fowler Avenue looking Southeast



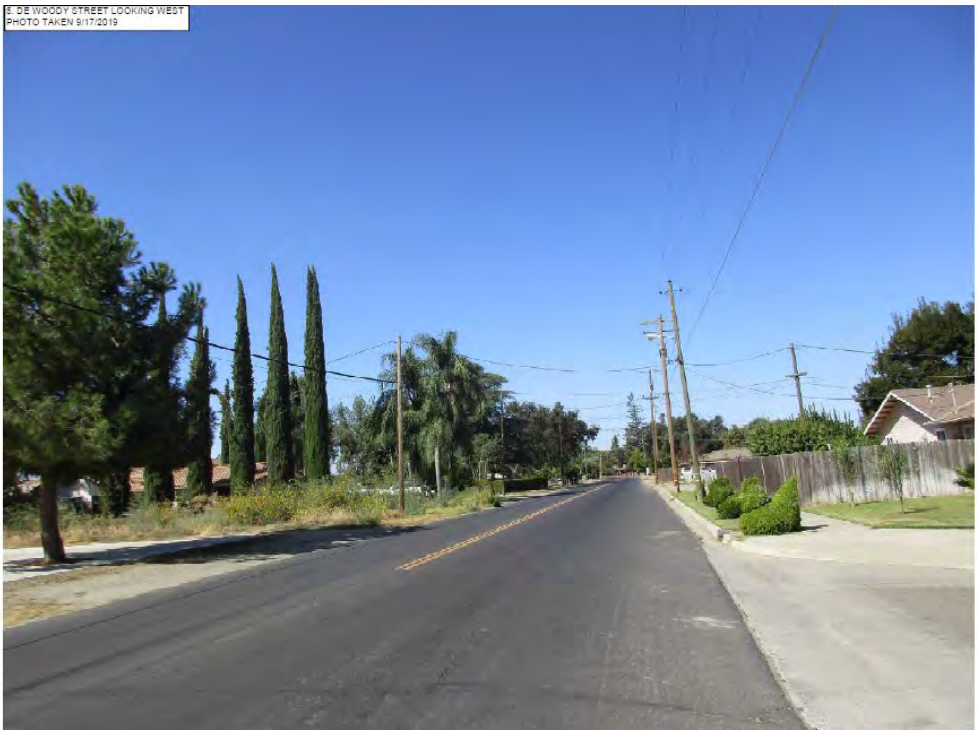
De Woody Street looking Northeast



Castro Avenue looking Northwest

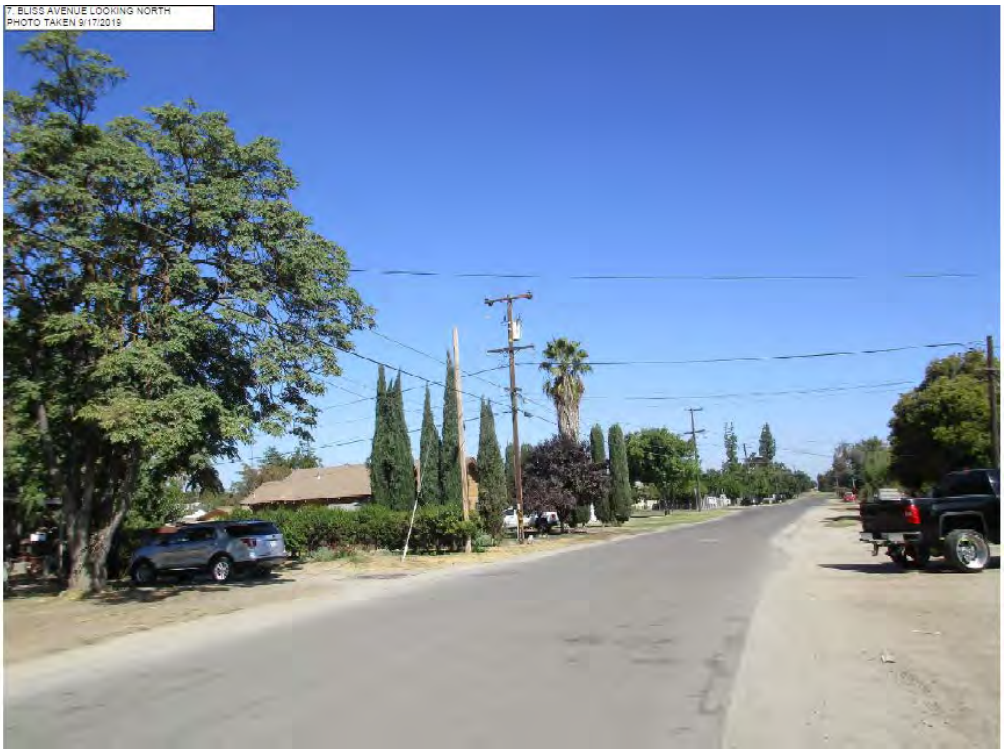


Murphy Avenue looking Northeast



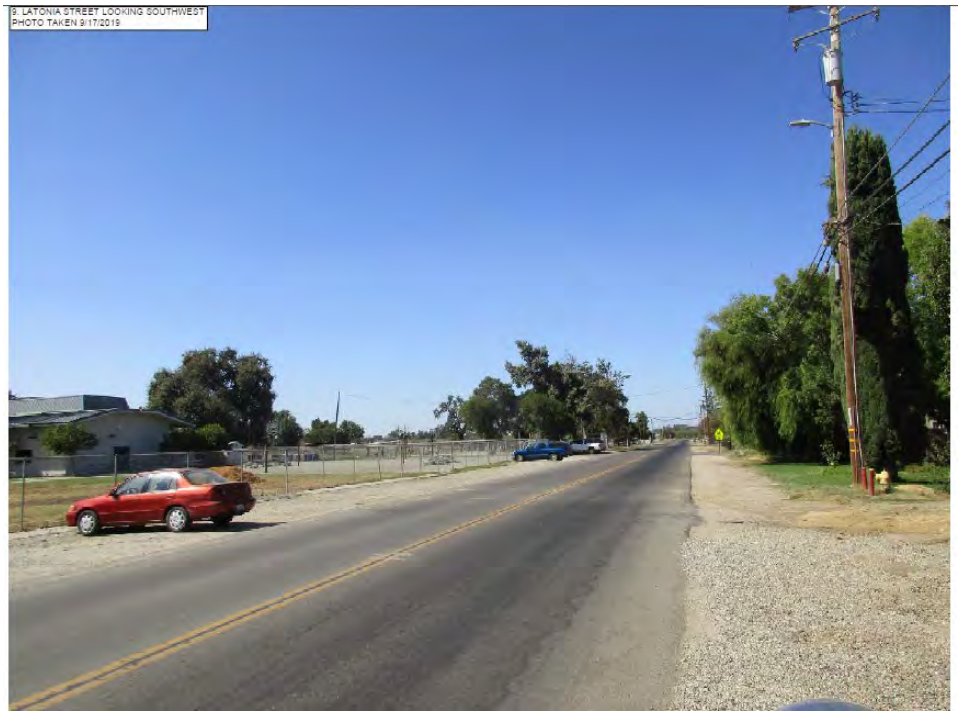
De Woody Street looking West

Armstrong Avenue looking South

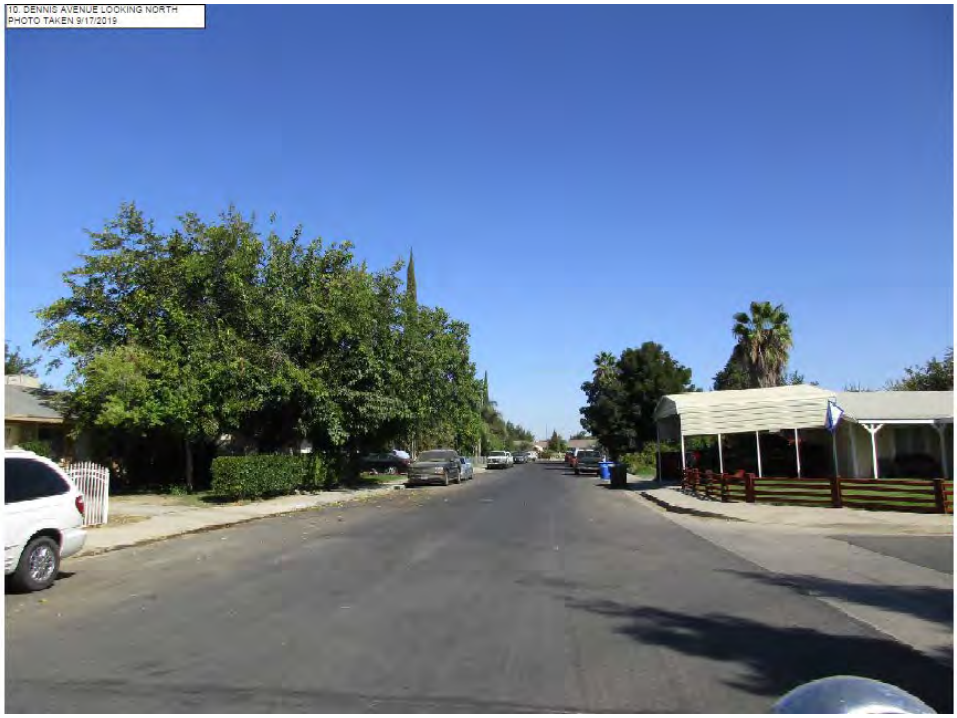


Bliss Avenue looking North

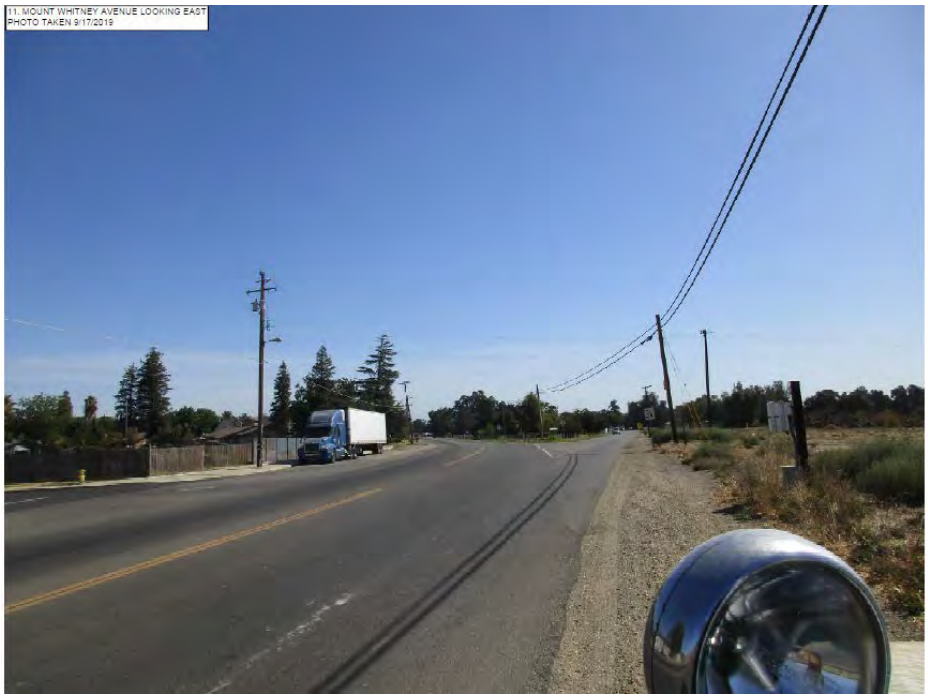
Gonser Street looking Southeast



Latonia Street looking Southwest



Dennis Avenue looking North



Mount Whitney Avenue looking East

26. LOST HILLS COMMUNITY

The Lost Hills Community is located at along State Route 33 (Lost Hills Road) approximately 12 miles southeast of the City of Coalinga and approximately one-mile northwest of the Kings County Line. The community includes 172 parcels totaling approximately 162 acres (Fresno County Department of Public Works and Planning, 2019c).

The area is in Census Tract 78.01.

Water – Private wells provide water to the residents of this community. During the past ten years, there have been one well permit and well yield test for a property preparing to install a mobile home (Fresno County Department of Public Health, 2019).

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents for wastewater disposal. During the past ten years one permit for a test hole and new septic system were issued for a single parcel (Fresno County Department of Public Works and Planning, 2019a).

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads. County staff conducted a community site visit on October 8, 2019. Staff noted no improvements on in the community and all private drives unpaved or gravel. The sole improved access to the community is from State Route 33 (Lost Hills Road).

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no known fire service deficiencies in this community. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – The Lost Hills Community has no identified service deficits for its very limited infrastructure. The community's private roads are unpaved but there is no evidence of severe flooding or recent flooding incident reports. Well and septic replacement activity does not indicate high rates of failure. There is also no evidence that fire protection resources are deficient for this community. As the area is not designated or zoned for future intensive growth opportunities, there is no anticipation that the community will observe additional strain on its limited and exiting infrastructure. Lost Hills benefits from being in proximity to a Cal Fire station at 25600 W. Jayne Avenue approximately nine miles to the northwest. There is also an automatic aid agreement with Pleasant Valley State Prison which has a fire truck (CalFire/FCFPD, 2020).

Looking Northwest at State Route 33 from private drive

Typical private drive looking East

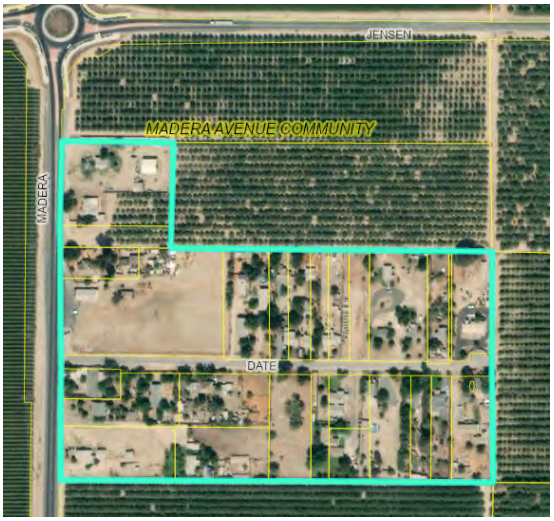
Typical Private Drive and Residences looking East

Private Drive and Residence

Private Drive and Residences

Private Drive and Residences

27. MADERA AVENUE COMMUNITY



The Madera Avenue Community is located on Madera Avenue between North and Jensen Avenues. The community consists of 27 parcels totaling approximately 22 acres (Fresno County Department of Public Works and Planning, 2019c). The area is in Census Tract 39.

Water – Water is provided to this community by the City of Kerman although, according to the City of Kerman's Public Works Department, several parcels have chosen not to connect and are served by private wells (K. Moore, 2019).

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents of this community for wastewater disposal (Fresno County Department of Public Works and Planning, 2019a).

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads. No incident of flooding was reported during the winter of 2018 – 2019 or during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019).

County staff conducted a site visit on April 30, 2019. Developed drainage swales were noted on Madera Avenue. Agricultural land is located to the west, and a minor AC swale/trenched utility area along market parking lot to the east. Date Avenue contained no developed or undeveloped drainage swales or other infrastructure and lot access to the north and south.

Fire – Fire protection services are provided to this community by the North Central Fire Protection District with no identified fire service deficiencies. The community has access to fire hydrants. The North Central Fire Protection District provides a full range of emergency (fire prevention, fire suppression, emergency medical care, hazardous materials response, search and rescue response, emergency preparedness planning, and public education). The District's current model of service is an enhanced level of service provided through staffing four fire stations with a total of 15 on-duty firefighters/EMTs. A station is located 2.7 miles from this community, allowing a six-minute response time, and is equipped with one front line fire engine with pump capacity of 1,500 gallons per minute (gpm) and a 750-gallon water tank, one reserve fire engine with pump capacity of 1,250 gpm and a 750-gallon water tank, one ladder truck (105-foot ladder) with pump capacity of 1,500 gpm and a 300 gallon water tank, and one water tender with a pump capacity of 1,250 gpm and a 3,000-gallon water tank (Fey, Flemming, Uc, & Lara, 2016a; North Central Fire Protection District, 2019; United States Census Bureau, 2019).

Service Deficits – The Madera Avenue Community has no identified service deficits. However, staff acknowledges that several properties have chosen not to connect to the City of Kerman water system (K. Moore, 2019) (Chauhan, NKGSA, 2020). There are no records of high incidents of septic failure in the community, no incidents of severe flooding or drainage issues have been observed by County staff. There is no evidence that fire protection resources are deficient for this community. The area is not designated for future intensive

growth opportunities and there is no anticipation that the community will observe additional strain on its existing infrastructure.

Madera Avenue looking South

Madera Avenue looking North

Date Avenue looking West

Date Avenue looking East

Date Avenue looking East

28. MALAGA COMMUNITY

The Malaga Community is located at the southeast corner of Muscat Avenue and Chestnut Avenue and includes 232 parcels totaling approximately 72 acres. The Malaga County Water District (MCWD) provides water and wastewater services to the residents of the unincorporated Community. Fresno Metropolitan Flood Control District provides drainage services to the Community. MCWD serves an area adjacent to and overlapping with the southern edge of the City of Fresno's boundaries. The District's northern boundary is roughly along East North Avenue; the western boundary is roughly along the railroad running from north to south between the Maple and Cedar Avenue alignments; the eastern boundary runs along South Minnewawa Avenue; and the southern boundary runs along East American Avenue (Fresno County Department of Public Works and Planning, 2019c; PMC, 2007d).

The area is in Census Tract 15.

Water – Water service is provided by MCWD via three groundwater wells. MCWD delivers approximately 1,500 acre-feet of water per year. Water usage is about 20% residential and 80% commercial/industrial. MCWD owns its water distribution system and provides water services to both residential and business customers. The District has two active wells, two inactive wells, and two wells designated as "standby". The District is presently constructing water system upgrades that would enable standby power at Well 7. The District recently completed construction of a water main in North Avenue between Chestnut and Willow Avenues. The District is also planning for a new well west of State Route 99 (SR 99). District staff has stated that its infrastructure is currently acceptable to provide said services, however, future demands are unknown and may require infrastructure improvements or upgrades beyond those already planned (PMC, 2007d).

According to a letter from MCWD dated March 13, 2018, the District has improved its water treatment facility and delivers very high-quality drinking water without harmful levels of contaminants (i.e. arsenic and nitrates) often found in central valley water supplies. New residential water meters are being installed in 2018 for all residential and commercial/industrial customers. This water meter system (AMR- Automated Meter Reading) operates by cellular signal and allows MCWD to effectively monitor system and individual accounts for leaks and usage in real time. MCWD owns and operates 80 fire hydrants for community fire protection. The District has plans for a fire hydrant upgrade project in FY 2019-2020 (Malaga County Water District, 2018).

Wastewater – Wastewater service is provided to the Malaga community by a wastewater treatment facility (WWTF) owned and operated by MCWD. Daily flow to the WWTF averages 600,000 gallons per day. The WWTF also includes three lift stations, sewer lines, disposal ponds, and two buildings. The reported design treatment and disposal capacity of the wastewater treatment facility (WWTF) is 1.2 million gallons per day. The District is authorized to discharge up to 0.45 million gallons per day of disinfected tertiary-treated wastewater to Central Canal, which is connected to Fresno Slough and flows into the San Joaquin River. Secondary-treated wastewater is discharged to onside disposal ponds. Due largely to deferred maintenance, the actual treatment and disposal

capacity of the WWTF is considerably less than authorized by permit (2008; PMC, 2007d; Central Valley Regional Water Quality Control Board, 2014; Fresno County, 2008).

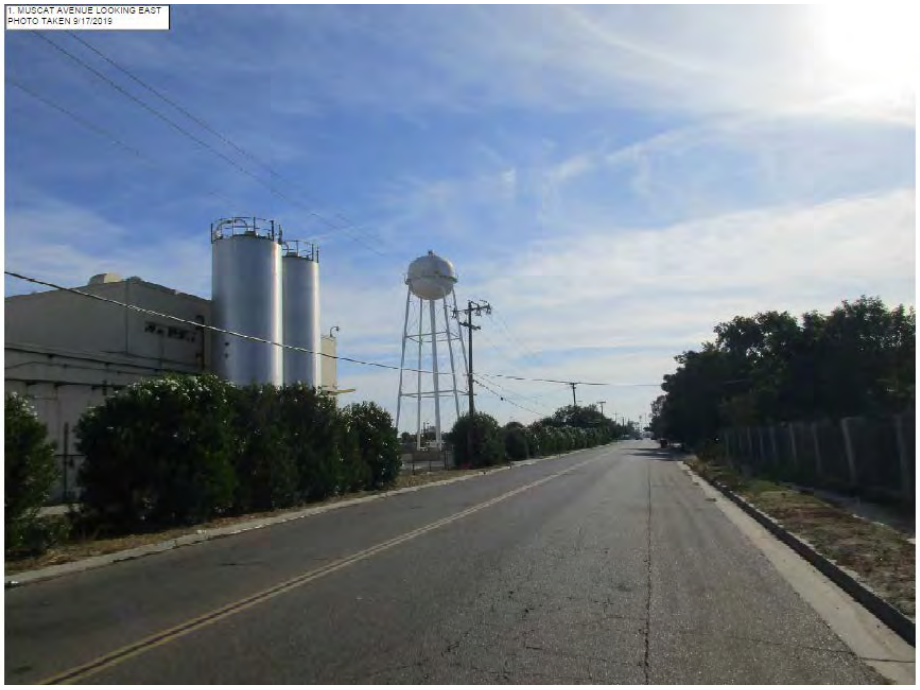
The WWTF performs primary and secondary treatment that allows plant effluent to be used for groundwater recharge through eight percolation ponds on site at the WWTF. The Malaga WWTF produces a very high-quality effluent by its treatment processes. MCWD has no history of violating its treated wastewater discharge permit requirements. MCWD is currently investigating the feasibility to further modernize its WWTF to become a regional facility for fats, oil, and grease (FOG) collection to produce hydrogen gas as a sustainable, renewable energy source. The sewer collection system that delivers sewage to the WWTF is well maintained and inspected regularly. There is no evidence of infiltration/inflow (I&I) into the collection system due to storm events or flooding (PMC, 2007d; Fresno County, 2008).

The Malaga County Water District website, which includes resident information, community center activities and contact information is http://www.malagacwd.org/

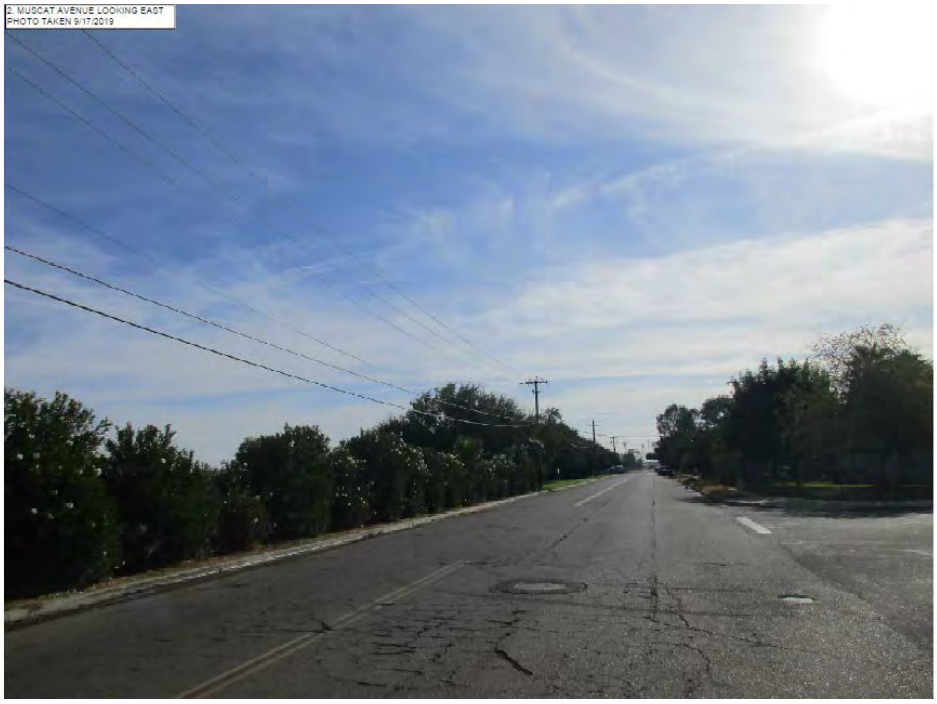
Drainage – Drainage services are provided to this community by the Fresno Metropolitan Flood Control District. The District manages stormwater through storm drains, detention basins, and pump stations.

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no fire service deficiencies in this community, which has access to fire hydrants. One fire station is located within two miles of the Malaga community. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

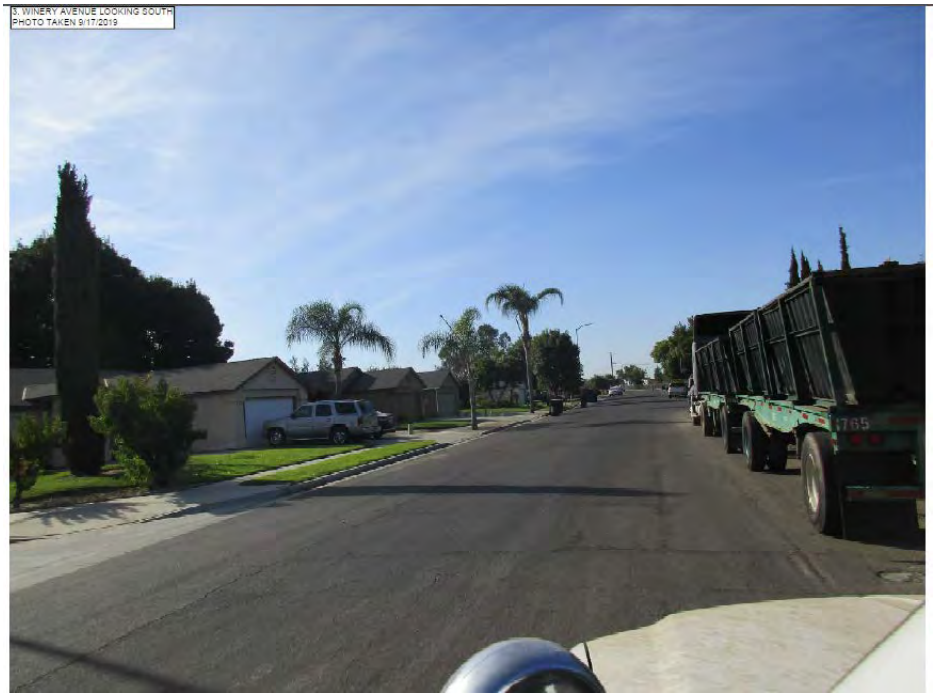
Service Deficits – The Malaga Community has no identified service deficits related to potable water, wastewater or fire protection services. FMFCD provides drainage services to the area and there are no indications of specific drainage or flooding deficiencies.



Muscat Avenue looking East



Muscat Avenue looking East



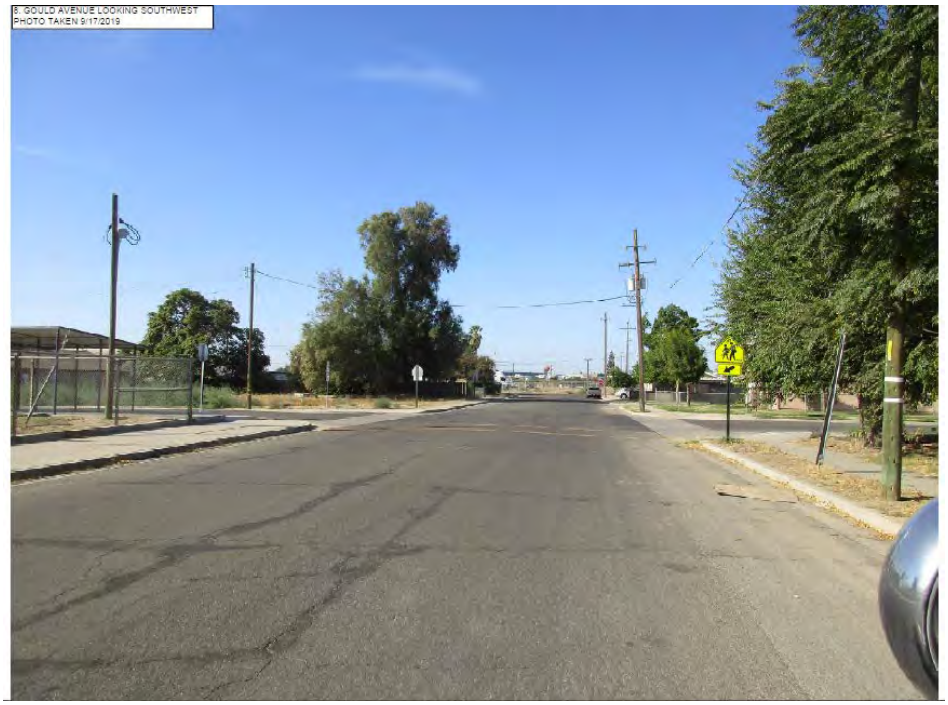
Winery Avenue looking South

Harding Avenue looking Southeast

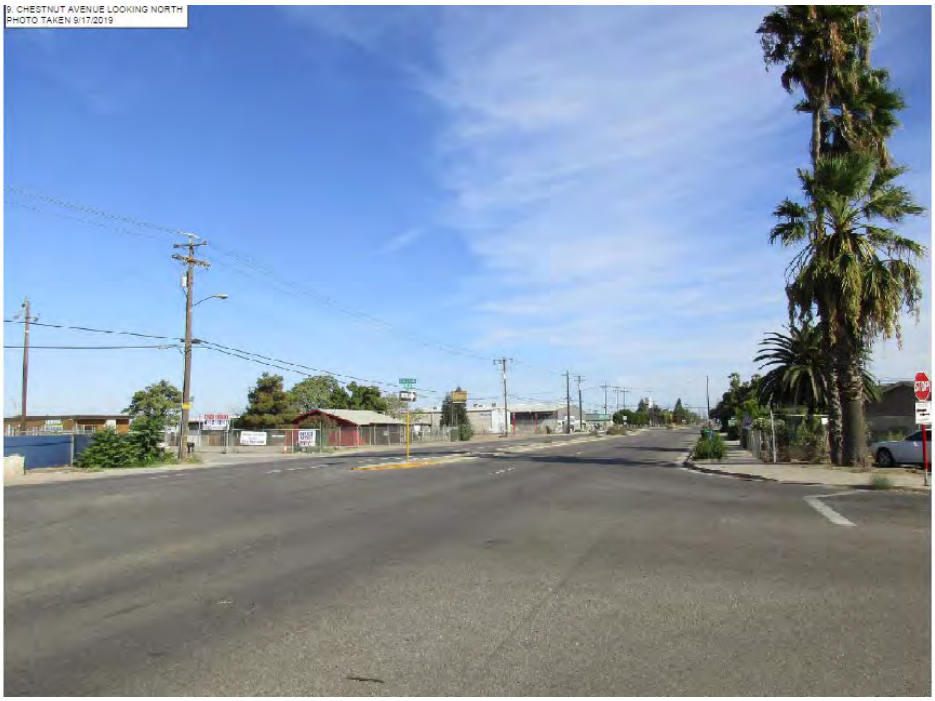
Harding Avenue looking Southeast

Olney Avenue looking Southwest

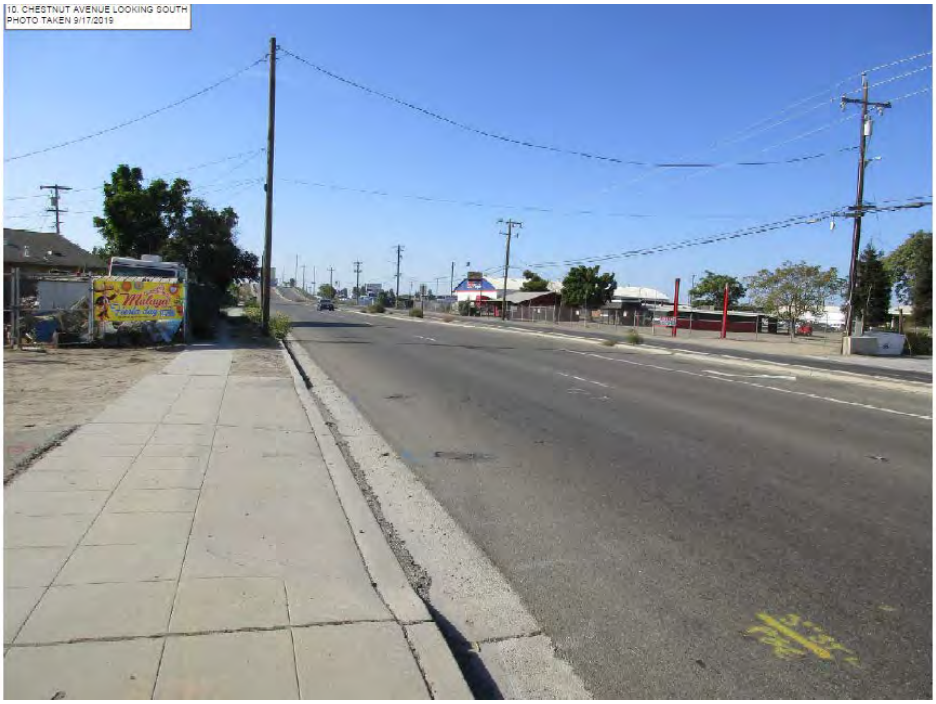
Olney Avenue looking Southwest



Gould Avenue looking Southwest



Chestnut Avenue looking North



Chestnut Avenue looking South

29. MONMOUTH COMMUNITY

The Monmouth Community is located at the northeast corner of South Chestnut Avenue and East Nebraska Avenue and includes 36 parcels totaling approximately 15 acres (Fresno County Department of Public Works and Planning, 2019c).

The area is in Census Tract 73.

Water – Private wells provide water to the residents of this community. During the past ten years, there have been eleven new well permits issued and two well destruction and replacement permits issued (Fresno County Department of Public Health, 2019).

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents for wastewater disposal. During the past ten years there was one septic demolition and replacement permit issued (Fresno County Department of Public Works and Planning, 2019a).

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads. No incident of flooding from this community was reported during the winter of 2018 – 2019 or during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019).

County staff conducted a site visit on May 1, 2019. Staff noted no developed or undeveloped drainage infrastructure, and no noticeable areas of erosion or potential for standing water on Overholser, Topeka, Xenia, or Avenell Avenues. On Chestnut Avenue, staff did note the presence of AC cross-gutters at Overholser and Avenell Avenue intersections.

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no fire service deficiencies in this community. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – The Monmouth Community has no identified service regarding wastewater (septic), flooding/drainage or fire protection services. New well activity has been higher than as seen for other rural communities of a similar size, but there has been no identification of abnormally high well failures or contamination.

Looking East down Overholser from Topeka

Looking East down Avenell from Topeka

Looking North down Xenia from Avenell

Looking West down Avenell from Chestnut

Looking West down Overhosler from Chestnut

Looking South down Chestnut from Overholser

Looking South down Xenia from Overholser

Looking North down Topeka from Avenell

Looking North down Topeka from Overholser

Looking North down Chestnut from South of Avenell

30. PARLIER AVENUE /ELM AVENUE COMMUNITY

The Parlier Avenue/ Elm Avenue Community is located on the northwest corner of Parlier and Elm Avenues. This community consists of 30 parcels totaling approximately 36 acres (Fresno County Department of Public Works and Planning, 2019c).

The area is in Census Tract 76.

Water – Private wells provide water to the residents of this community. During the past ten years, there have been four well permits issued and electrical permits issued for wells on two additional properties (one for domestic reconnection and for separate electrical for a domestic well) (Fresno County Department of Public Health, 2019).

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents for wastewater disposal. For septic, during the past ten years there was one demolition of an existing single-family residence in which the septic system was permitted to remain (Fresno County Department of Public Works and Planning, 2019a).

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads. No incident of flooding was reported during the winter of 2018 – 2019 or during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019).

County staff conducted a site visit on April 26, 2019. Staff noted no developed or undeveloped drainage infrastructure, and no noticeable areas of erosion or potential for standing water on Parlier or Elm avenues. Staff noted agriculture land to the south and lot access/driveways to the north on Parlier and agriculture land to the east with lot access/driveways to the west on Elm.

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no known fire service deficiencies in this community. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – The Parlier Avenue/Elm Avenue Community has no identified service deficits. Well and septic replacement activity does not indicate high rates of failure. No incidents of severe flooding or drainage issues have been observed by County staff or reported to the County, and there is no evidence that fire protection resources are deficient for this community. As the area is not designated or zoned for future intensive growth opportunities, there is no anticipation that the community will observe additional strain on its limited infrastructure.

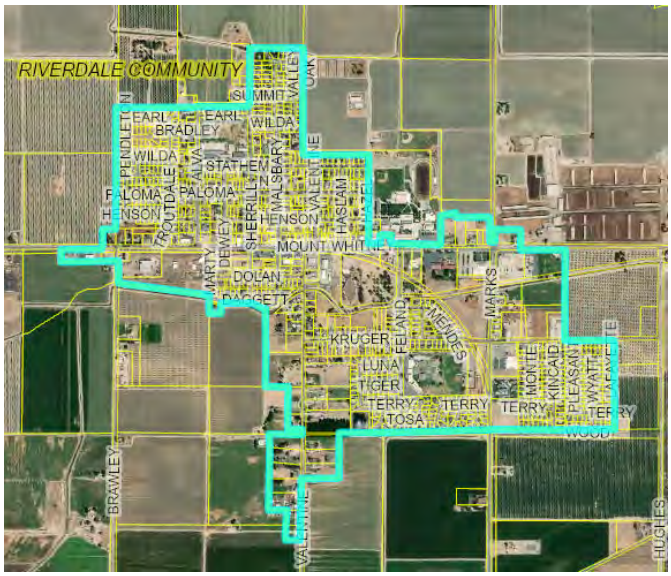
Parlier Avenue looking West

Parlier Avenue looking West

Elm Avenue looking North

Elm Avenue looking North

31. RIVERDALE COMMUNITY



The Riverdale Community is in Central Fresno County near the Fresno/Kings County boundary near the intersection of South Marks and Mount Whitney Avenues. It includes 1,024 parcels totaling approximately 501 acres. Land uses within the consist of a mixture of residential, commercial, and agriculture. Riverdale has an estimated population of 2,416 people (US Census 2000 data). The Riverdale Public Utility District provides water, wastewater, storm drainage and fire services to the community (Fresno County Department of Public Works and Planning, 2019c; Fey, Flemming, Uc, & Lara, 2018a).

The area is in Census Tract 77.

Water – Water is provided to this community by the Riverdale Public Utilities District through two water wells and a water distribution system. The District owns seven wells. Two of the seven wells are active; two wells are on standby, and three wells are inactive. Wells 04-07 are on standby due to arsenic levels about the maximum contaminant level (MCL) of 10ppd. The District has approximately 950 water connections. A water supply distribution system composed of 6 and 8-inch pipes distributes water from these wells. Demand for water is approximately 50% of the District's two primary wells' capacity. Each well has a capacity of approximately 1,250 gallons per minute and is estimated to be able to serve 630 units. Annual average water usage for the District is approximately 0.6 million gallons per day (mgd), corresponding to 735 gallons per day (gpd) per water customer (Fey, Flemming, Uc, & Lara, 2018a).

The District primary water supply is from well 06. According to the 2018 Riverdale Public Utilities District MSR and SOI Update, the District has an on-going improvement plan that addresses the agency's infrastructure maintenance program. The District informed LAFCo that they regularly seek grants that could fund necessary infrastructure improvement (Fey, Flemming, Uc, & Lara, 2018a).

Wastewater – Wastewater services are provided to this community by Riverdale Public Utilities District. According to the 2018 Riverdale Public Utilities District MSR and SOI Update, the District wastewater treatment facility is currently operating at 88 percent capacity. The District serves approximately 923 sewer treatment connections, including 864 residential services, 47 commercial businesses, nine churches, a library, and three schools. There are no significant industrial land uses served by the District (Fey, Flemming, Uc, & Lara, 2018a).

The District's wastewater treatment plant is an aerated lagoon system designed to remove biochemical oxygen demand (BOD) and suspend solids from the community's wastewater. The District's wastewater collection system is tied to three lift stations that convey wastewater from the source to the District's wastewater treatment plant. The lift station is equipped with two 420 gallons per minute submersible pumps, with room for a future third pump. Each pump is designed and sized to handle the existing peak hour flow. The District's treatment facility consists of a comminutor, an aeration pond, and six stabilization ponds operated in series. Sewage is collected from throughout the community in a network of gravity sewers which come together at a lift

station located at the corner of Valentine and Stahem Avenues. All sewage from the community passes through the lift station through a 10-inch sewer force main. The existing force main was installed in 1958. Its condition is unknown. Treated wastewater is disposed of on 33 acres of pasture west of the wastewater treatment Plant. The District sewage disposal process is regulated by the California Environmental Protection Agency, Central Valley Regional Water Quality Control Board, Wastewater Reclamation Order No. 85-252.

The WWTF's design capacity is 0.25 mgd. The Central Valley Regional Water Quality Control Board (RWQCB) requires planning for capacity expansion when a system reaches 80 percent of design capacity.

According to the RWQCB, the District is running near capacity (0.25 mgd) and historically has had numerous violations for standing water in the land application area (disposal) and for submittal of late and/or incomplete monitoring reports to the RWQCB. In response, the District's requested permit update proposed a two-phased enlargement of the wastewater treatment facility to meet the estimated growth of the community of Riverdale. To accommodate projected growth and development, the District plans an expansion of its wastewater treatment plant to an average daily flow rate of 0.325 mgd. According to the District's January 24, 2017 Preliminary Engineering Report Wastewater Treatment Plant Improvement Project, the District projected a total of 1,243 to 1,372 sewer service connections by 2035, an increase of 320 to 449 new connections. Based on the District's estimates, the wastewater treatment plant would have capacity to add approximately 383 new home connections within a 20-year planning horizon (Fey, Flemming, Uc, & Lara, 2018a).

The District has an on-going improvement plan that addresses the agencies wastewater treatment infrastructure needs and maintenance program (Fey, Flemming, Uc, & Lara, 2018a).

Drainage – The Riverdale Public Utilities District maintains the storm drainage system within the community. The District storm water collection system relies on natural topographic drainage to connect to piping located under existing developed areas. The District expands storm drainage with each new approved development (Fey, Flemming, Uc, & Lara, 2018a). Flooding issues have been noted in Riverdale, especially in front of the high school on Mount Whitney. As an example, 3160 Mount Whitney is in proximity to a drywell/drains that were repaired approximately four years ago, but just east of this location is a spot where water collects from the school on to Mount Whitney. Staff also noted that Mendez between Feland and Krueger has flooding issues due to paved driveways and frontages (Fresno County Department of Public Works and Planning, 2020).

The Riverdale Public Utilities District maintains a website which includes contact numbers, community information and watering information for residents. The Districts website is http://www.riverdalepublicutilitydistrict.com/

Fire – Fire protection services are provided to this community by the Riverdale Public Utilities District. This is a volunteer fire department, which provides basic fire protection services to the community. The Riverdale Public Utilities District contracts with Fresno County FPD for fire protection services. Its infrastructure includes one station within the District at 10068 Malsbury in Riverdale, two fire trucks, and an administrative building. The Station is staffed by 18 volunteer firefighters. Response time within a three-mile radius is approximately five minutes. The Riverdale station had an ISO rating of 6 according to the Riverdale Public Utilities District MSR (Fey, Flemming, Uc, & Lara, 2018a).

There are no fire service deficiencies in this community, which has access to fire hydrants.

Service Deficits – As stated above, the Riverdale Community has experienced arsenic issues with the potable water system maintained by RPUD. The District has an ongoing improvement plan that addresses the agency's infrastructure and maintenance and has deactivated the affected wells. The wastewater system maintained by the RPUD is operating at 88 percent capacity and is also being monitored though the District's ongoing improvement program. Studies have been conducted to examine capacity and RWQCB issues. There are no issues noted related fire protection services for the community. There have been flooding issues noted in certain areas of the community, as described more fully above.

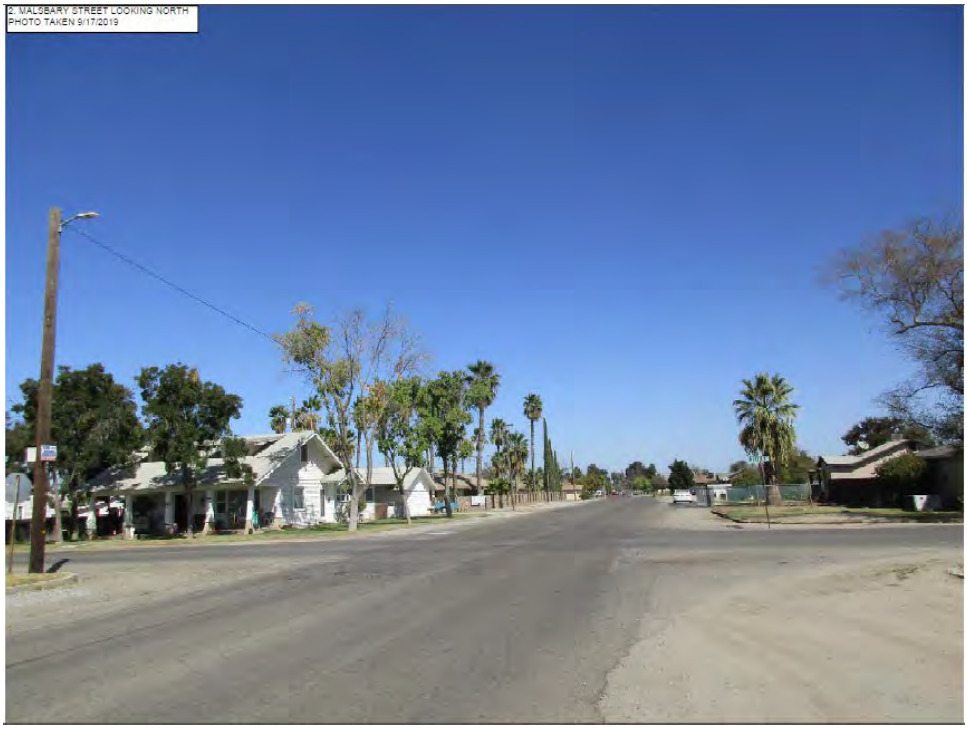
Sherrill and Earl Streets – March 23, 2020

Mount Whitney in front of high school – March 23, 2020

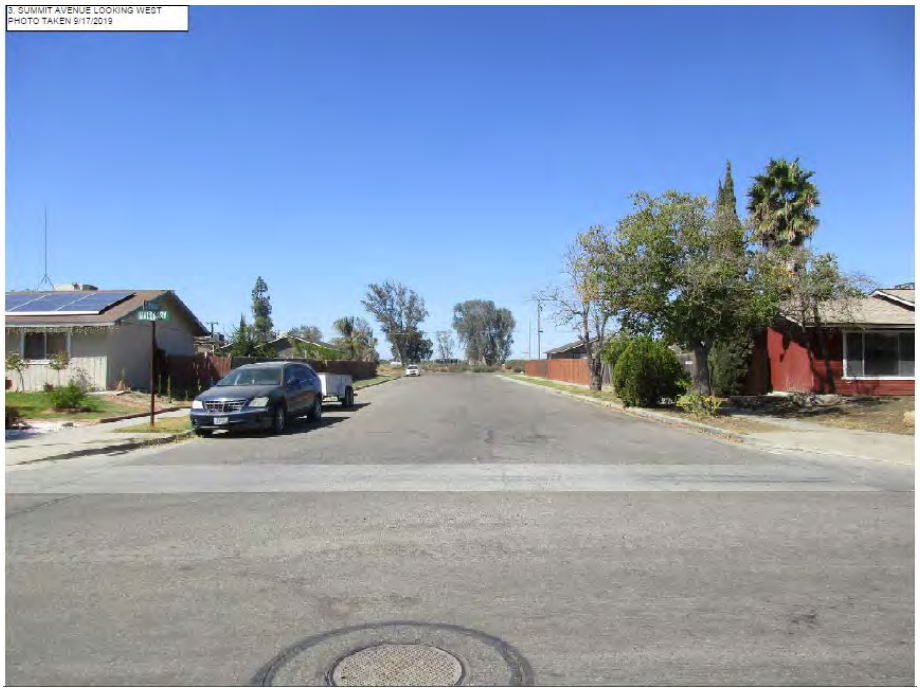
Mount Whitney – March 23, 2020

Mendes and Benedict streets – March 23, 2020

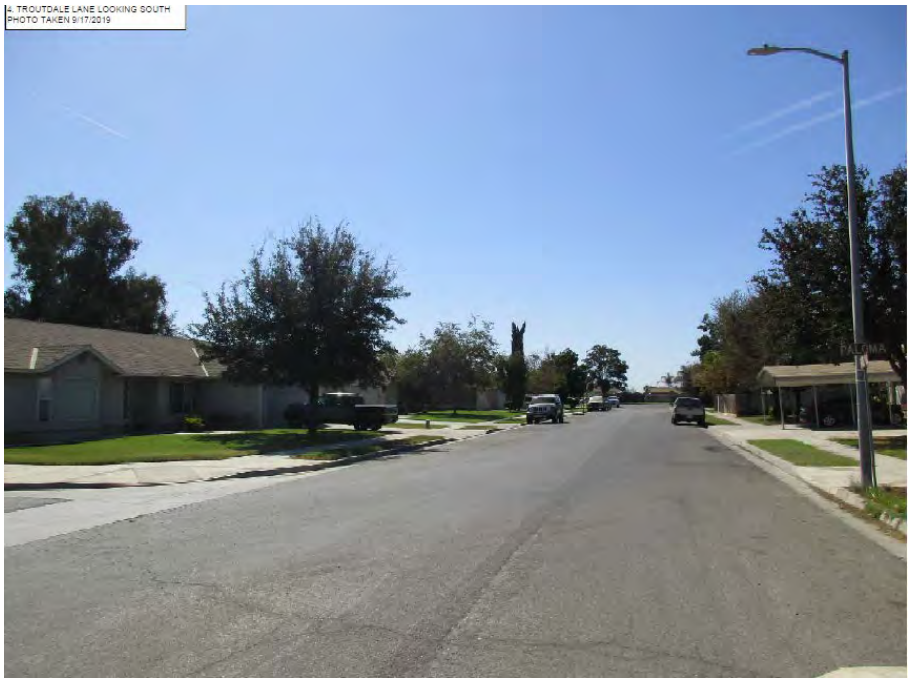
Paloma Avenue looking West



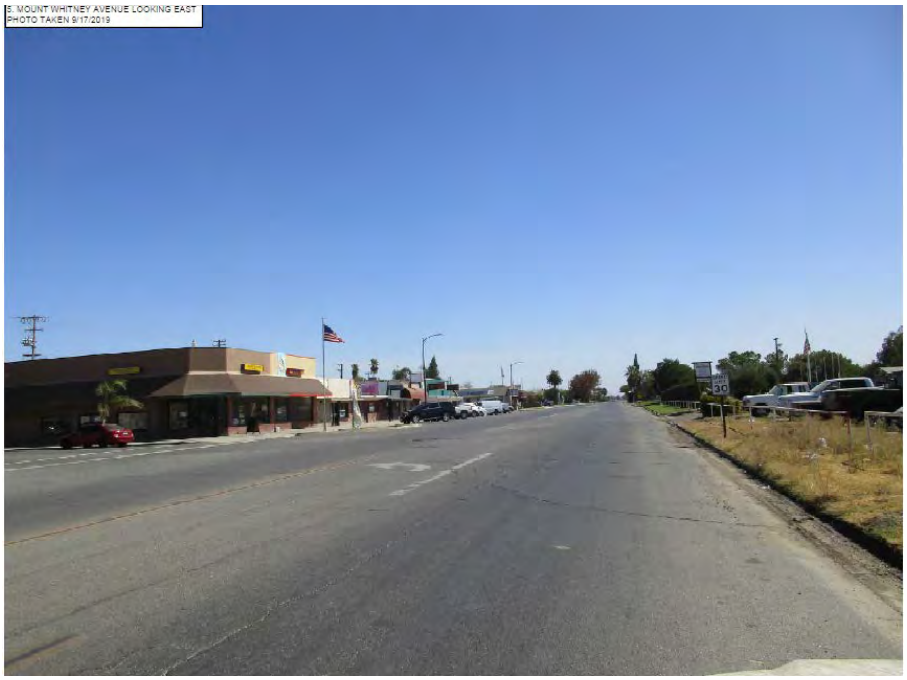
Malsbary Street looking North



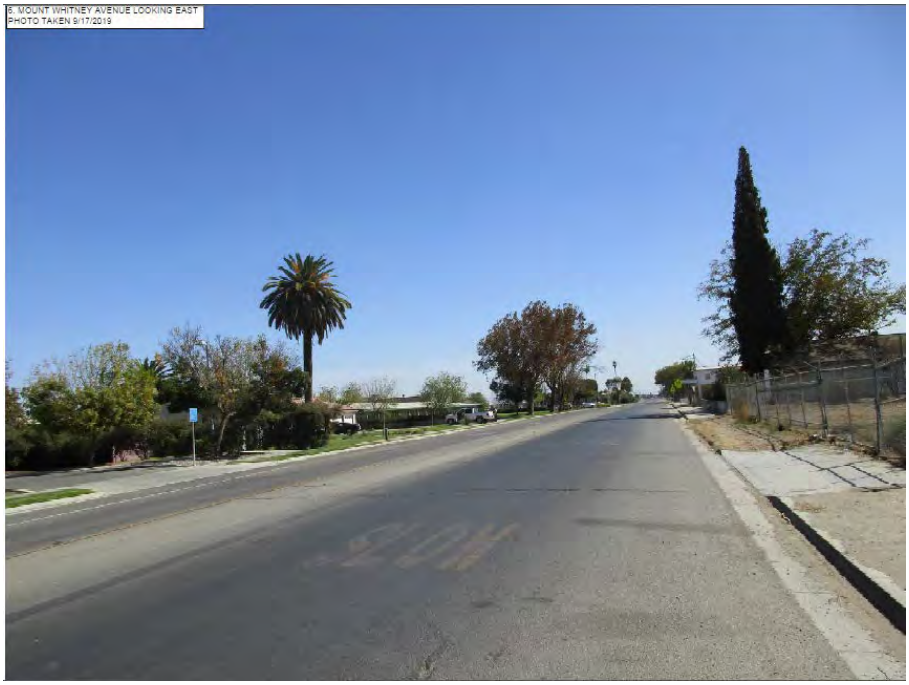
Summit Avenue looking West



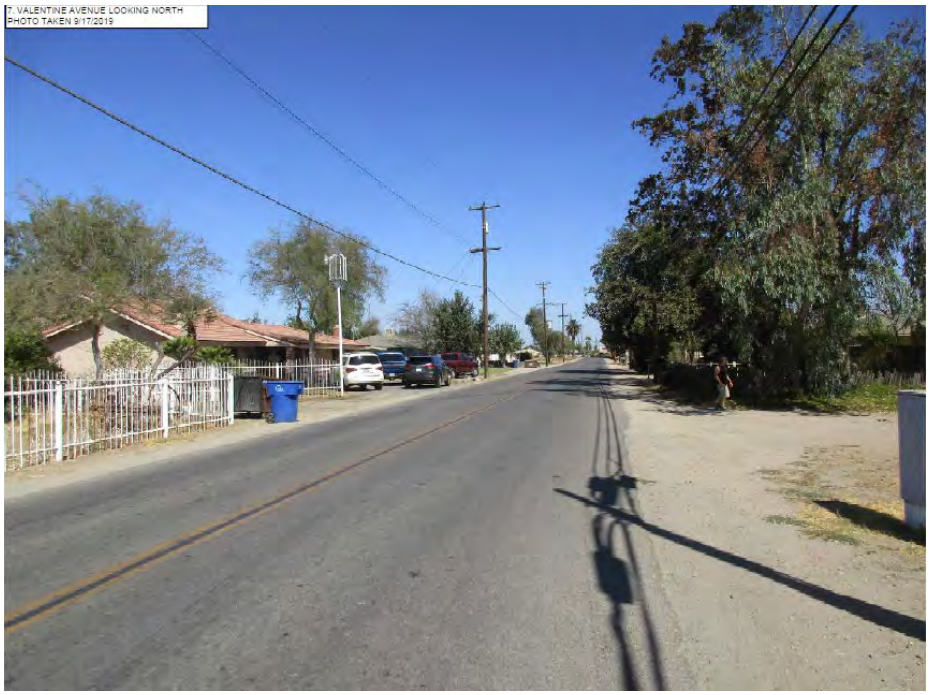
Troutdale Lane looking South



Mount Whitney Avenue looking East

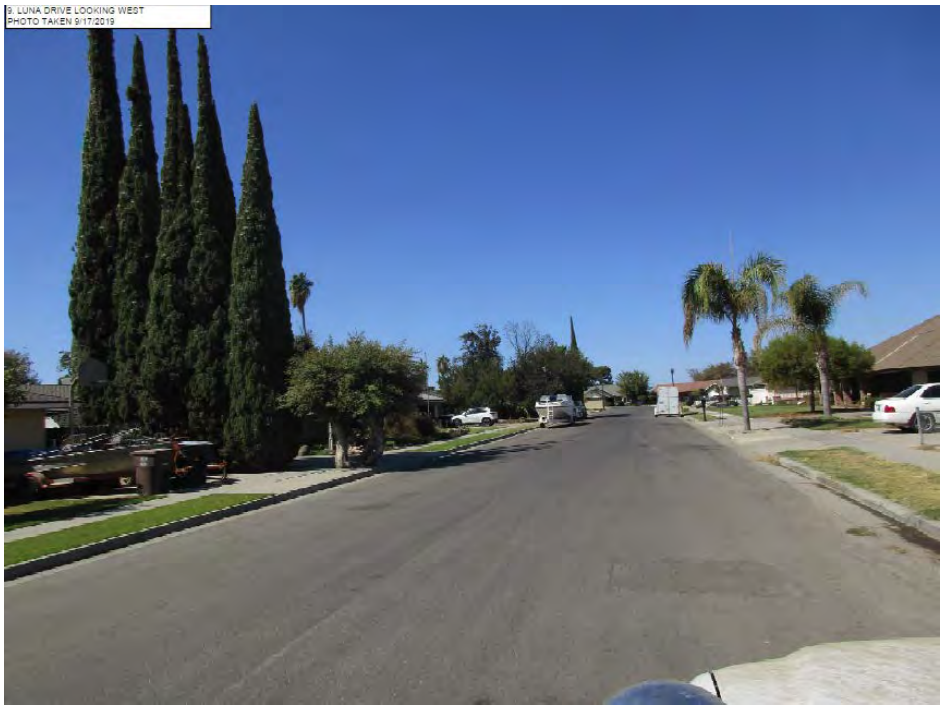


Mount Whitney Avenue looking East



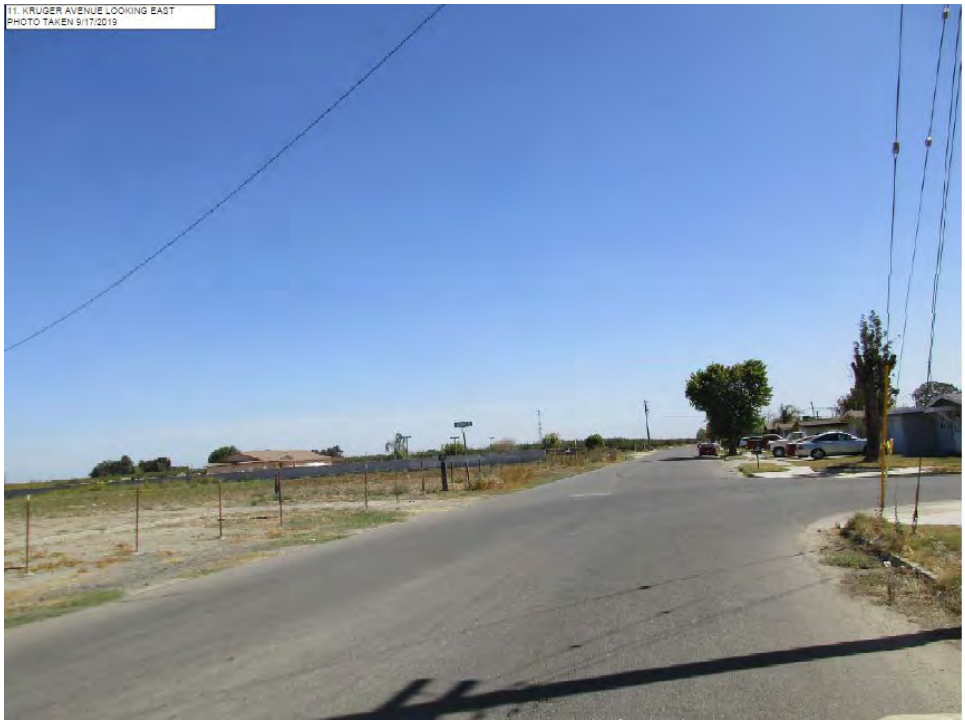
Valentine Avenue looking North

Feland Avenue looking North

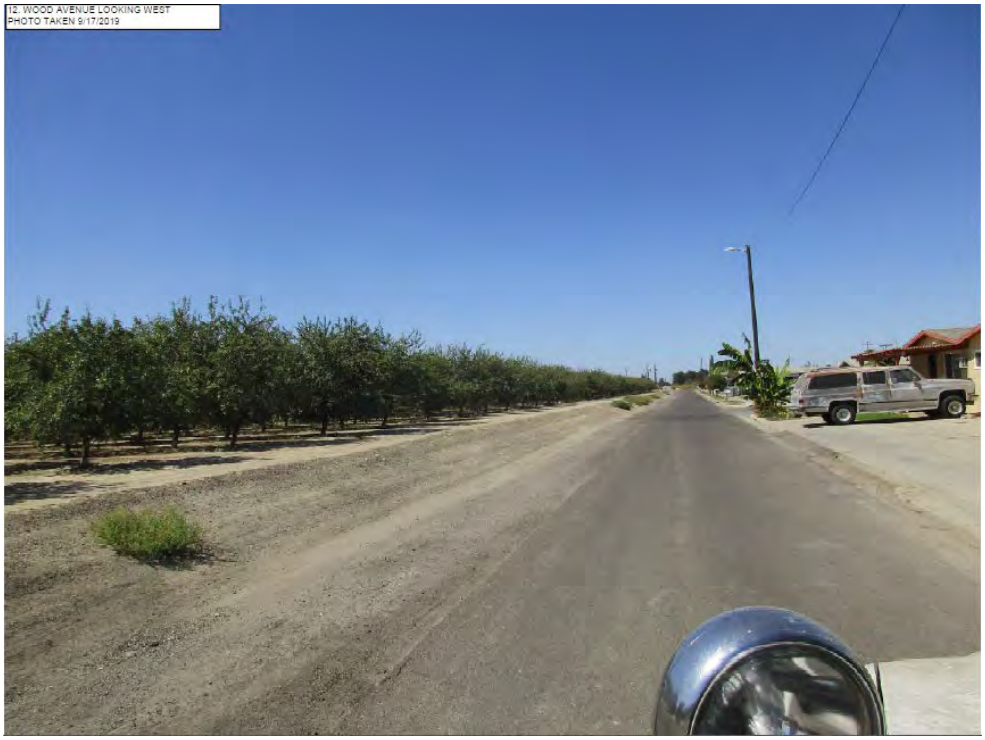


Luna Drive looking West

Marks Avenue looking South

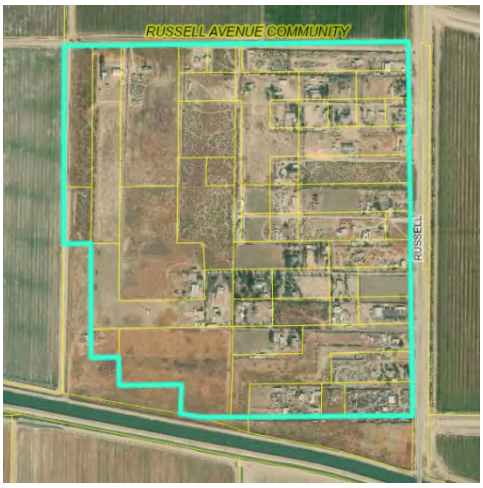


Kruger Avenue looking East



Wood Avenue looking West

32. RUSSELL AVENUE COMMUNITY



The Russell Avenue Community is located on the west side of Russell Avenue approximately four miles north of its intersection with Nees Avenue, and approximately four miles southwest of the City of Dos Palos, located in Merced County. The community includes 158 parcels totaling approximately 51 acres (Fresno County Department of Public Works and Planning, 2019c).

The area is in Census Tract 84.02.

Water – Private wells provide water to the residents of this community. During the past ten years, there have been permits issued for five new wells and two well destruction and replacements (Fresno County Department of Public Health, 2019).

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents for wastewater disposal. During the past ten years one permit for an existing septic system to be issued for a replacement mobile home was noted (Fresno County Department of Public Works and Planning, 2019a).

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads. County staff conducted a community site visit on October 8, 2019. Staff noted no improvements on Russell Avenue. Residences gained access directly off Russell or via unimproved private driveways that intersect with Russell.

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no known fire service deficiencies in this community. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – The Russell Avenue Community has no identified service deficits. Well and septic replacement activity does not indicate high rates of failure. No incidents of severe flooding or drainage issues have been observed or reported and there is no evidence that fire protection resources are deficient for this community. As the area is not designated or zoned for future intensive growth opportunities, there is no anticipation that the community will observe additional strain on its limited infrastructure.

Russell Avenue looking North

Residences Along Russell Avenue

Typical Private Driveway Intersecting with Russell Avenue

Residences Along Russell Avenue

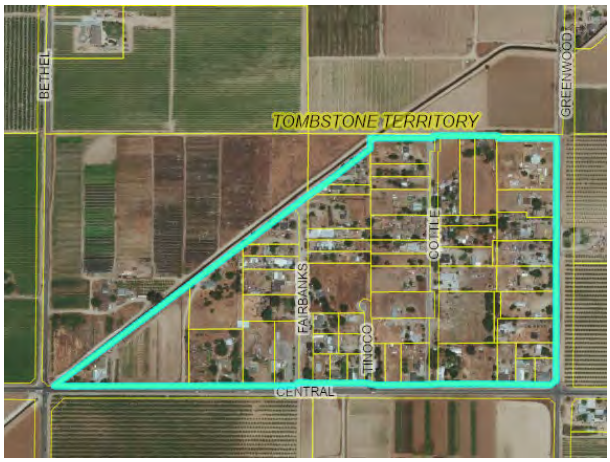
Private Driveway Intersecting with Russell Avenue

Private Driveway North of Previous Photo

Private Driveway Intersecting Russell Avenue

Private Drive - Northern part of Community Intersecting Russell Avenue

33. TOMBSTONE TERRITORY



The Tombstone Territory is located at the intersection of East Central Avenue South Greenwood Avenue. The community consists of 57 rural residential-sized lots with 83 residential units covering approximately 50 acres. It is situated about one-half mile south of the nearest Sanger city limits (Fresno County Department of Public Works and Planning, 2019c; Self-Help Enterprises, 2020).

Tombstone Territory is not located within a census tract/block group unit that meets the MHI DUC threshold but does meet the MHI DUC threshold by Census Tract datasets. According to ACS, Census tract 61.00 has a reported MHI of $44,043, but according to a recent study prepared by Self-Help Enterprises, income levels are estimated to be approximately $27,000 annually (Fresno County Department of Public Works and Planning, 2019c; United States Census Bureau, 2019b; Self-Help Enterprises, 2020).

The area is in Census Tract 61.

Water – Private wells provide water to the residents of this community. During the past ten years, there have been six new well permits issued and one destruction and replacement well permit issued (Fresno County Department of Public Health, 2019). In the past year the City of Sanger has pursued funding to receive $1 million to connect the community to the City of Sanger's potable water system to improve water reliability (Chauhan, NKGSA, 2020). The City's engineer, in separate efforts, has reached out to County staff regarding efforts to determine community boundaries as a step in initiating this effort (Yamabe & Horn, 2019). This effort is due in part to the Safe and Affordable Drinking Water Bill signed by the governor in 2019 (California Water News Daily, 2019).

In February of this year, Self-Help Enterprises prepared a preliminary engineering report for a water connection project for the community. The report concluded that the most feasible and cost-effective approach is to connect the community to the City of Sanger to provide domestic water service and fire protection for Tombstone Territory. The estimated project cost is $3.0 million. The study was funded by a grant from the California State Water Resources Board Division of Financial Assistance (Self-Help, 2020).

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents for wastewater disposal. For septic, during the past ten years there was one demolition of an existing single-family residence in which the septic system was permitted to remain (Fresno County Department of Public Works and Planning, 2019a).

Drainage – There is no community storm drain system in place for this community. There are noticeable areas of potential standing water and noticeable areas of erosion based on survey of the DUC's during spring of 2019. However, no incident of flooding was reported during the winter of 2018 – 2019 or during the spring of 2019, which experienced average rainfall in the Fresno area (Fresno County Department of Public Works and Planning, 2019e; National Weather Service, 2019).

County staff conducted a site visit on April 26, 2019. Staff noted no developed or undeveloped drainage infrastructure on Fairbanks Avenue, but did not noticeable areas of erosion and areas of potential standing water. Other comments included fences at the right-of-way line and the road offset to the west creating a large shoulder on the east side of the road. Staff noted no developed or undeveloped drainage infrastructure on Tinoco or Cottle Avenues but did note areas of potential standing water with both roads being relatively narrow. For Greenwood Avenue, staff noted no developed or undeveloped drainage infrastructure but areas of potential standing water, fences at the right-of-way line and grade changes drain road run-off back onto properties. On Central Avenue, staff noted roughly 50 feet of AC dike and an edge drain between Greenwood and Cottle avenues, with grade changes causing road drainage on to properties.

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no fire service deficiencies in this community. Two fire stations are located within three miles of the Tombstone Territory community. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008). A preliminary engineering report prepared by Self-Help Enterprises for a community water connection project includes discussion of pressurized hydrants as part of extending community services from the City of Sanger to Tombstone Territory (Self-Help, 2020).

Service Deficits – Availability of reliable potable water sources has been an identified deficiency for the Tombstone Territory Community. This deficiency may be resolved with available grant funding to connect the community to the City of Sanger for water service. No evidence that fire protection resources are deficient for this community have been noted, but according to a Self-Help study, there is consideration to having the City of Sanger expand fire protection services to the community via pressurized hydrants as part of a possible water system expansion. Instances of flooding and areas of potential flooding or standing water were noted. The area has no developed drainage infrastructure.

Fairbanks Avenue looking North from Central Avenue

Fairbanks Avenue looking North from Central Avenue – April 6, 2020

Tinoco Avenue looking North from Central Avenue

Cottle Avenue looking North from Central Avenue

Looking East from North end of Cottle

Looking South down Cottle towards Central

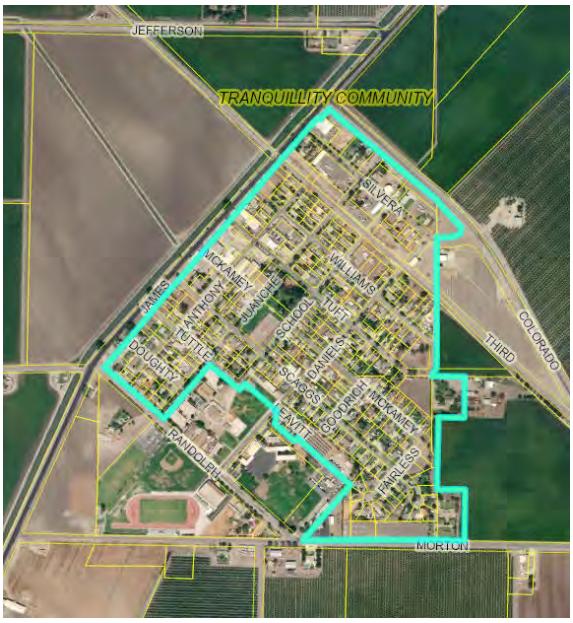
Greenwood Avenue looking North from Central Avenue

South Fairbanks Avenue looking North – April 6, 2020

Looking West from S. Fairbanks Avenue - April 6, 2020

Looking South from South Fairbanks Avenue – April 6, 2020

34. TRANQUILLITY COMMUNITY



The Tranquillity Community is in western Fresno County, northwest of the City of San Joaquin near the intersection of South James Road and Colorado Road. It includes 296 parcels totaling approximately 157 acres (Fresno County Department of Public Works and Planning, 2019c).

The area is in Census Tract 82.

Water – Water is provided to this community by Tranquillity Irrigation District (TID) through pumped groundwater and provided through a public water distribution system. According to the 2007 TID MSR and SOI Revision, the water infrastructure is sufficient to serve the current population (Braitman & Associates, 2007). TID maintains the following website http://trqid.com/wp/

Wastewater – Wastewater services are provided to this community by Tranquillity Public Utility District (TPUD) through a wastewater collection and treatment plant located north of the District service area. TPUD provides wastewater collection and treatment services to 263 sewer connections. The treatment plant is near its permitted capacity of 120,000 gpd. Sewer lines need repairs or replacement in various locations. Any additional development connecting to the District sewer system would require expansion of the wastewater treatment facility. According to the 2018 TPUD MSR and SOI Revision, the wastewater collection system consists of gravity fed lines to a series of lift stations that convey sewage to the wastewater treatment plant. In addition to the lift stations, the wastewater treatment plant includes six unlined oxidation lagoons, two irrigation lagoons, two sludge-drying beds, and a 34-acre reclamation area. Two of the six oxidation lagoons have been out of operation since 2010 but are available for use when necessary. The current wastewater treatment plant infrastructure has a design capacity of 120,000 gallons per day (Fey, Flemming, Uc, & Lara, 2018b).

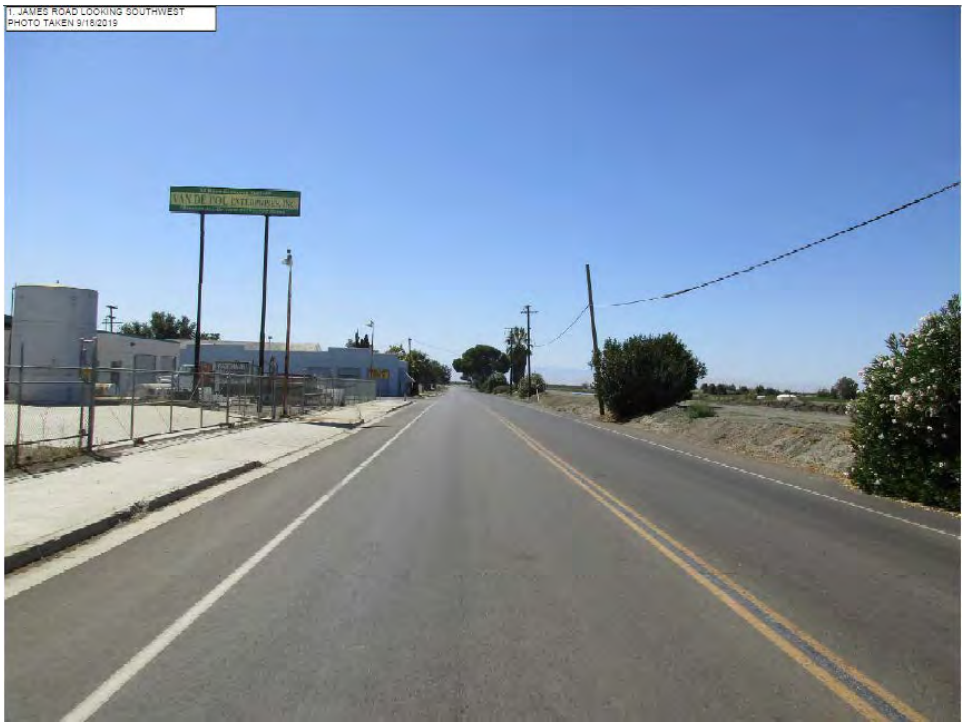
Current daily flows are averaging 50,000 gallons per day. The infrastructure is sufficient to serve the current population (Fey, Flemming, Uc, & Lara, 2018b).

Drainage – Drainage services are provided to this area by TPUD through a series of natural drainage paths that connect to a series of underground collection pipes. According to the 2018 TPUD MSR and SOI Revision, the drainage infrastructure consists of curbs and gutters, underground piping, and two lift pump stations. Collected stormwater is then funneled into the Colorado Canal system on the southeast side of the community adjacent to Colorado Avenue. The MSR notes that the existing infrastructure needs repair in the north and northeastern parts of the community, especially the curbs and gutter system. Currently, there is no capital improvement funding mechanism in place to address the needed upgrades to infrastructure. Even though there is no revolving funding mechanism for continual repairs, infrastructure is expanded and improved whenever new development is approved within the Districts service area (Fey, Flemming, Uc, & Lara, 2018b).

TPUD does not have a website but has the following contacted information listed: P.O. BOX 622, Tranquillity, CA 93668/phone (559) 842-3310.

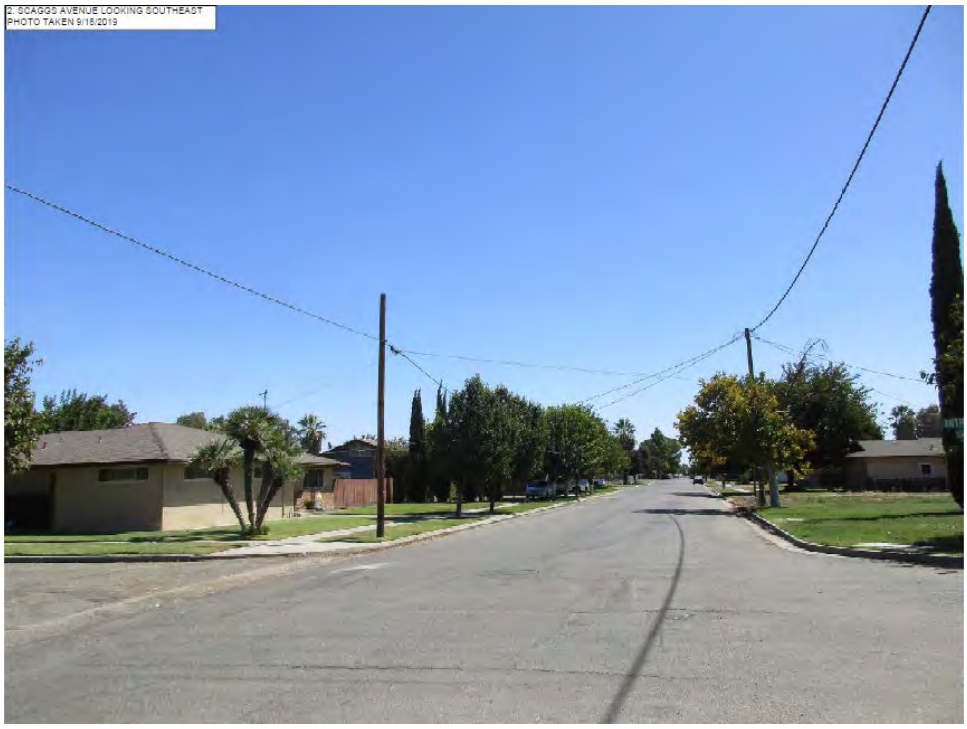
Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. There are no fire service deficiencies in this community, which has access to fire hydrants. One fire station is located within the Tranquility community. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – The Tranquillity Community has no identified water service deficits. TID has water infrastructure to serve the community for potable water and TPUD has sufficient infrastructure to continue to serve the community for wastewater services although repairs to existing infrastructure have been identified. Regarding drainage, TPUD provides drainage services for the community, and it has been acknowledged in the community's MSR that existing drainage infrastructure needs to be repaired in the north and northeastern parts of the community, primarily the curb and gutter system. Fire protection services are adequate for the community.

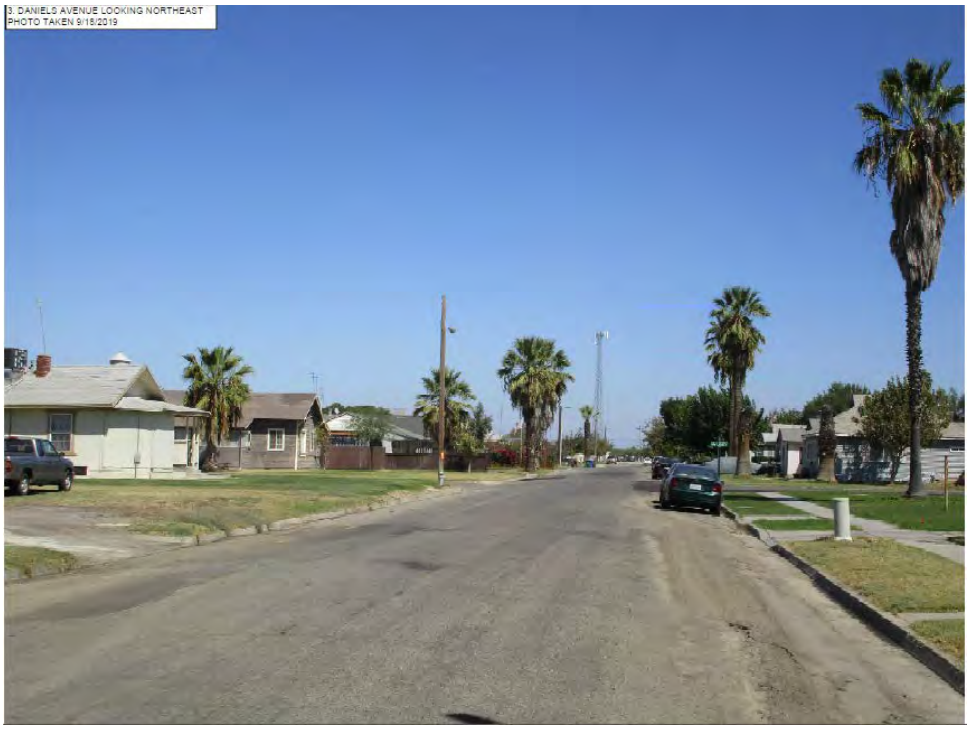


James Road looking Southwest

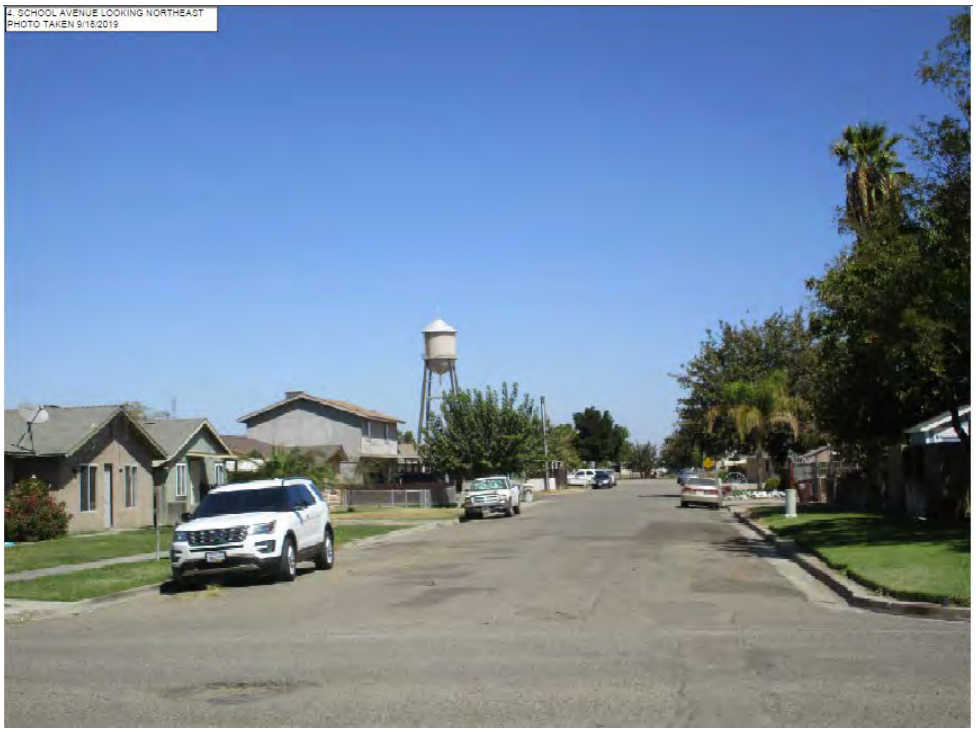
Colorado Road looking west towards James Road – March 23, 2020



Scaggs Avenue looking Southeast



Daniels Avenue looking Northeast

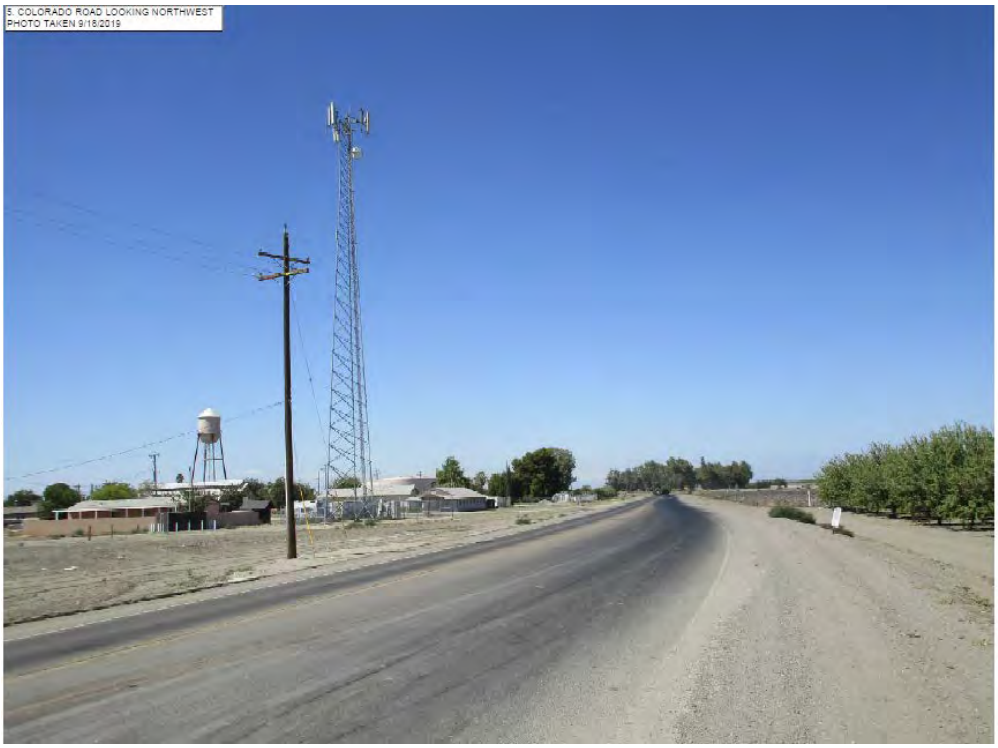


School Avenue looking Northeast

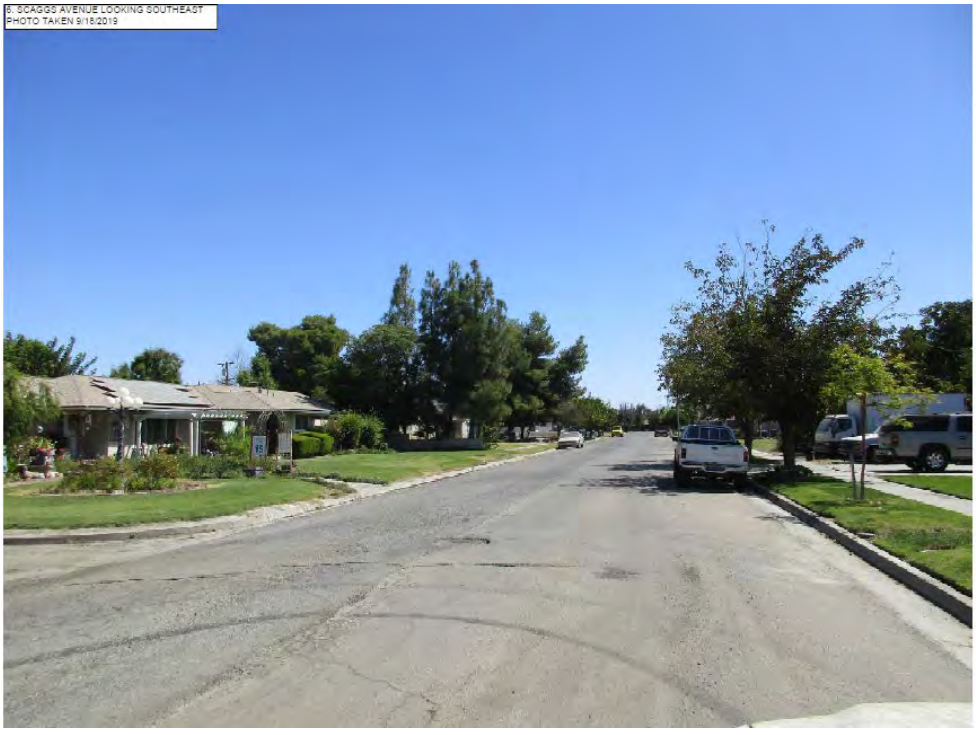
Corner of Williams and School – March 23, 2020

Tuft and School Northwest Corner – March 23, 2020

Tuft and School Southwest Corner – March 23, 2020



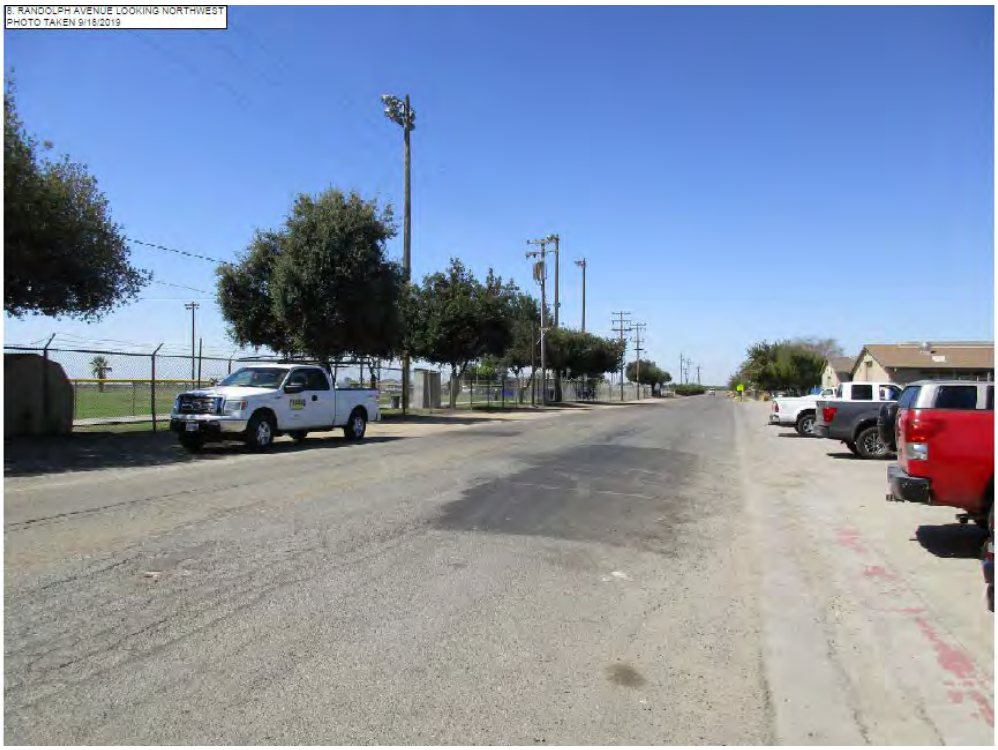
Colorado Road looking Northwest



Scaggs Avenue looking Southeast

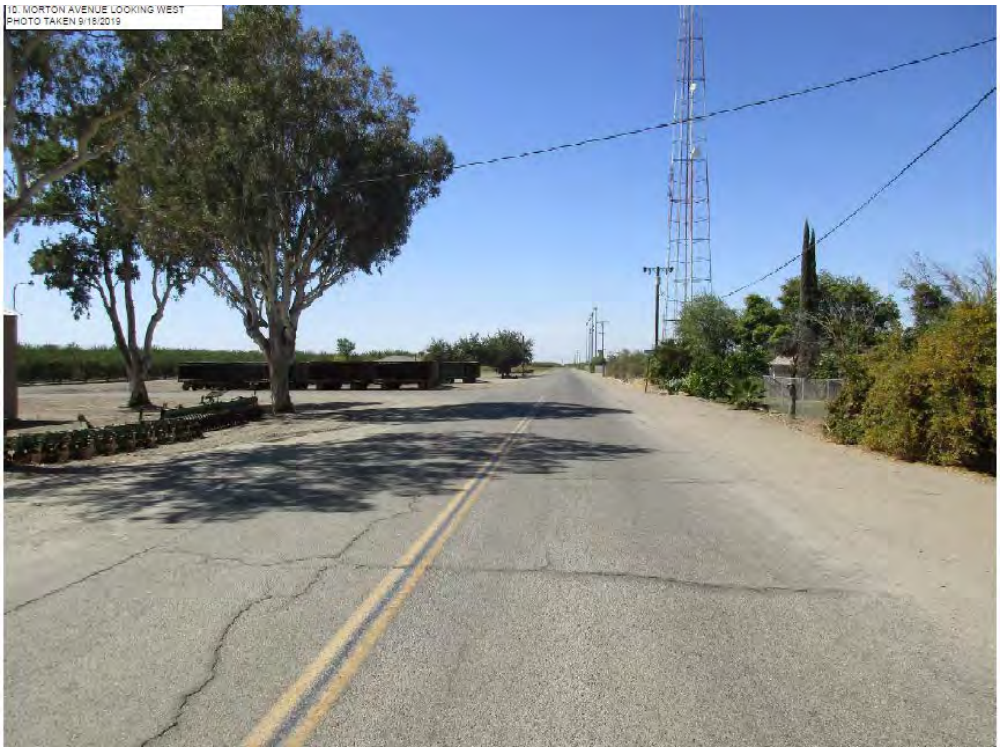
Randolph Avenue looking Southeast

Randolph Avenue Looking Northwest – March 23, 2020



Randolph Avenue looking Northwest

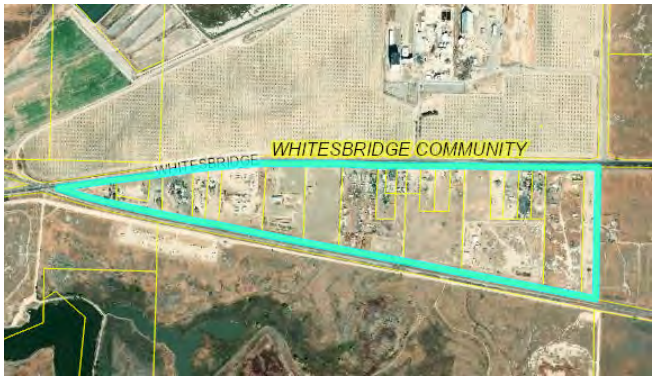
Morton Avenue looking East



Morton Avenue looking West

Southwest corner of Williams and Daniels – March 23, 2020

35. WHITESBRIDGE COMMUNITY



The Whitesbridge Community is located along the south side of State Route 180 (Whitesbridge Avenue) approximately three miles southeast of the City of Mendota and includes 139 parcels totaling approximately 24 acres (Fresno County Department of Public Works and Planning, 2019c).

The area is in Census Tract 82.

Water – Private wells provide water to the residents of this community. During the past ten years, there have been no well permits noted or issued (Fresno County Department of Public Health, 2019).

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents for wastewater disposal. During the past ten years, there were special inspection and septic permits issued for a property associated with a new mobile home. One permit for repair of an existing septic system on another property was also issued (Fresno County Department of Public Works and Planning, 2019a).

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads. County staff conducted a community site visit on October 8, 2019. Staff noted no major improvements along State Route 180, although this segment did possess some large and deep swales to catch runoff. In some areas, it appears swales not improved by Caltrans may have been improved or enlarged/deepened by individual property owners. Driveway access for lots occurs along the south side of State Route 180.

Fire – Fire protection services are provided to this community by the Fresno County Fire Protection District. Fresno County Fire District Station No. 96 is located within the City of Mendota approximately four miles northwest of this community. The Fresno County Fire Protection District has Automatic Aid and Mutual Aid Agreements with all other fire agencies within Fresno County and fire agencies within neighboring counties. The Fresno County Fire Protection District responds to structure fires by providing at least four fire engines with pump capacities of 1,250 gallons per minute (gpm) and 700-gallon water tanks, and at least two water tenders with pump capacities of 1,250 gpm and 3,000-gallon water tanks (Fey, 2013; Fresno County Fire Protection District, 2008).

Service Deficits – The Whitesbridge Community has no identified service deficits. Well and septic replacement activity does not indicate high rates of failure, and no incidents of severe flooding or drainage issues have been observed by County staff. There is no evidence that fire protection resources are deficient for this community, and as the area is not designated or zoned for future intensive growth opportunities, there is no anticipation that the community will observe additional strain on its existing, limited infrastructure.

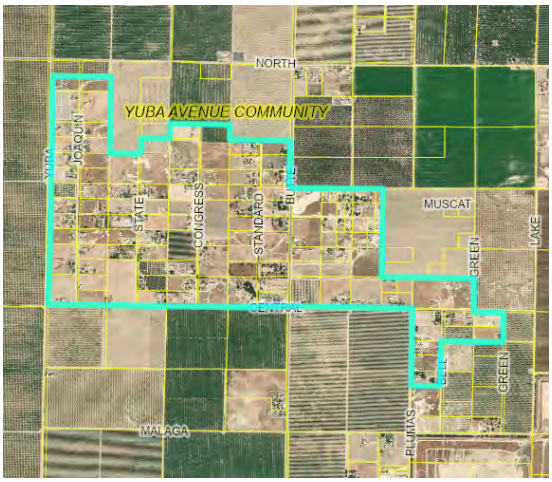
Looking Southwest Across State Route 180

Looking Southwest Across State Route 180

Typical Residences – South of State Route 180

Typical Residences – South of State Route 180

36. YUBA AVENUE COMMUNITY



The Yuba Avenue Community is located generally between S. Yuba and S. Butte avenues, north of the Central Avenue alignment, approximately five miles southwest of the City of Kerman and approximately one-mile northwest of the County-operated American Avenue Disposal Site. The community includes 633 parcels totaling approximately 118 acres (Fresno County Department of Public Works and Planning, 2019c).

The area is in Census Tract 39.

Water – Private wells provide water to the residents of this community. During the past ten years, there have been nine new well permits issued and two properties that obtained well destruction and replacement permits (Fresno County Department of Public Health, 2019).

Wastewater – There is no community wastewater system in place for this community. Septic tanks are used by residents for wastewater disposal. During the past ten years there have been twelve septic permits issued. Five permits were for new septic systems, two test hole permits, one septic system repair, one open and pump for a mobile home replacement, three septic permits related to farm labor housing (mobile home) (Fresno County Department of Public Works and Planning, 2019a).

Drainage – There is no community storm drain system in place for this community. Unpaved road shoulders and/or adjacent agricultural lands absorb runoff from paved roads. County staff conducted a community site visit on October 8, 2019. Staff noted no improvements on Yuba or Butte avenues. Residences gained access directly off these roads, from unimproved road alignments or via unimproved private driveways that intersect with improved roads or unimproved road alignments.

Fire – Fire protection is provided to this community by the North Central Fire Protection District. The North Central Fire Protection District provides a full range of emergency services including fire prevention, fire suppression, emergency medical care, hazardous materials response, search and rescue response, emergency preparedness planning, and public education. The North Central Fire Protection District's current model of service is an enhanced level of service provided through the staffing of four fire stations with a total of 15 on-duty firefighters/Emergency Medical Technicians (EMTs) (Fey, Flemming, Uc, & Lara, 2016a).

Service Deficits – The Yuba Avenue Community has no identified service deficits. Well and septic replacement activity does not indicate high rates of failure for the number of parcels associated with the community. No incidents of severe flooding or drainage issues have been noted and there is no evidence that fire protection resources are deficient for this community. As the area is not designated or zoned for future intensive growth opportunities, there is no anticipation that the community will observe additional strain on its exiting, limited infrastructure.

Intersection of Butte Avenue and Central (unimproved) Avenue

Central Avenue Alignment looking West

Typical Unimproved Roadway

Unimproved Roadway with Housing

Housing and Unimproved Roadway

Housing and Unimproved Roadway

Butte Avenue

TABLE 1 IDENTIFIED DISADVANTAGED UNINCORPORATED COMMUNITIES FRESNO COUNTY		
Name	**Size (acres)**	**Parcels**
1. Ashlan Avenue Community	57	18
2. Biola Community	242	335
3. Britten Avenue/Cherry Avenue Community	20	26
4. Burrel Community	12	26
5. Camden Avenue Community	4	1
6. Carillo Avenue Community	20	28
7. Caruthers Community	453	787
8. Chesnut Avenue Community – Shady Lakes	26	2
9. Church Avenue/Floyd Avenue Community	44	36
10. Cornelia Avenue/Floral Avenue Community	60	38
11. CSA 30 Community – El Porvenir	29	61
12. CSA 32 Community – Cantua Creek	80	79
13. CSA 39 Zone A Community	19	52
14. CSA 39 Zone B Community	51	111
15. CSA 43 Community – Raisin City	38	75
16. CSA 49 Community – O'Neill Farms/Westside	93	15
17. Del Rey Community	108	316
18. East Adams Avenue Community	9	18
19. Easton Community	701	522
20. Five Points Community	16	3
21. Flamingo Mobile Home Community	9	1
22. Hayes Road Community/Perrin Colony	54	42
23. Hughes Avenue/Magnolia Avenue Community	40	30
24. Lanare Community	51	346
25. Laton Community	251	510
26. Lost Hills Community	172	162
27. Madera Avenue Community	22	27
28. Malaga Community	72	232
29. Monmouth Community	15	36
30. Parlier Avenue/Elm Avenue Community	36	30
31. Riverdale Community	501	1,042
32. Russell Avenue Community	158	51
33. Tombstone Territory	57	50
34. Tranquillity Community	157	296
35. Whitesbridge Community	139	24
36. Yuba Avenue Community	633	118

Figure 1
Disadvantaged Unincorporated Communities – Fresno County

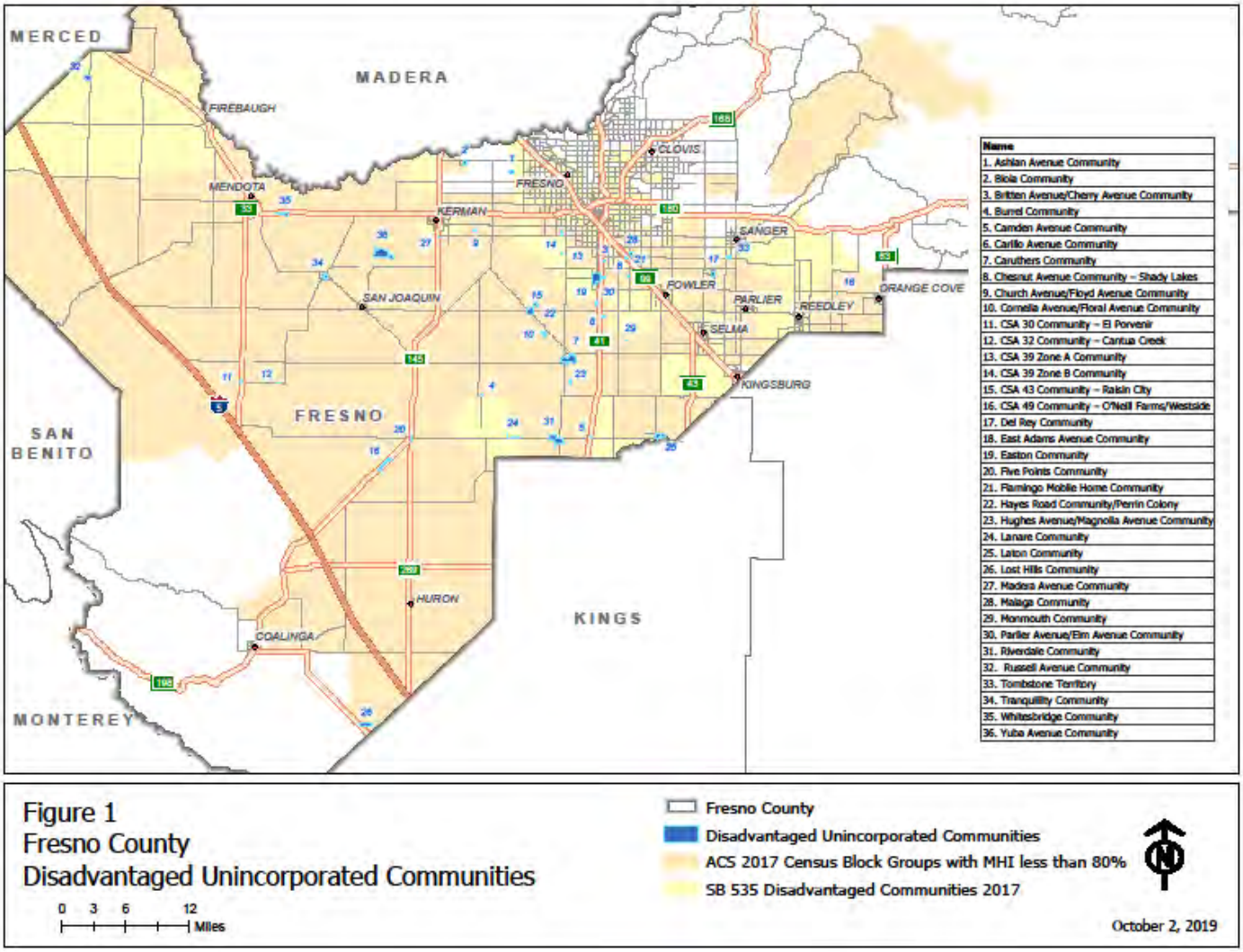


Figure 1a
Northwest Disadvantaged Unincorporated Communities – Fresno County

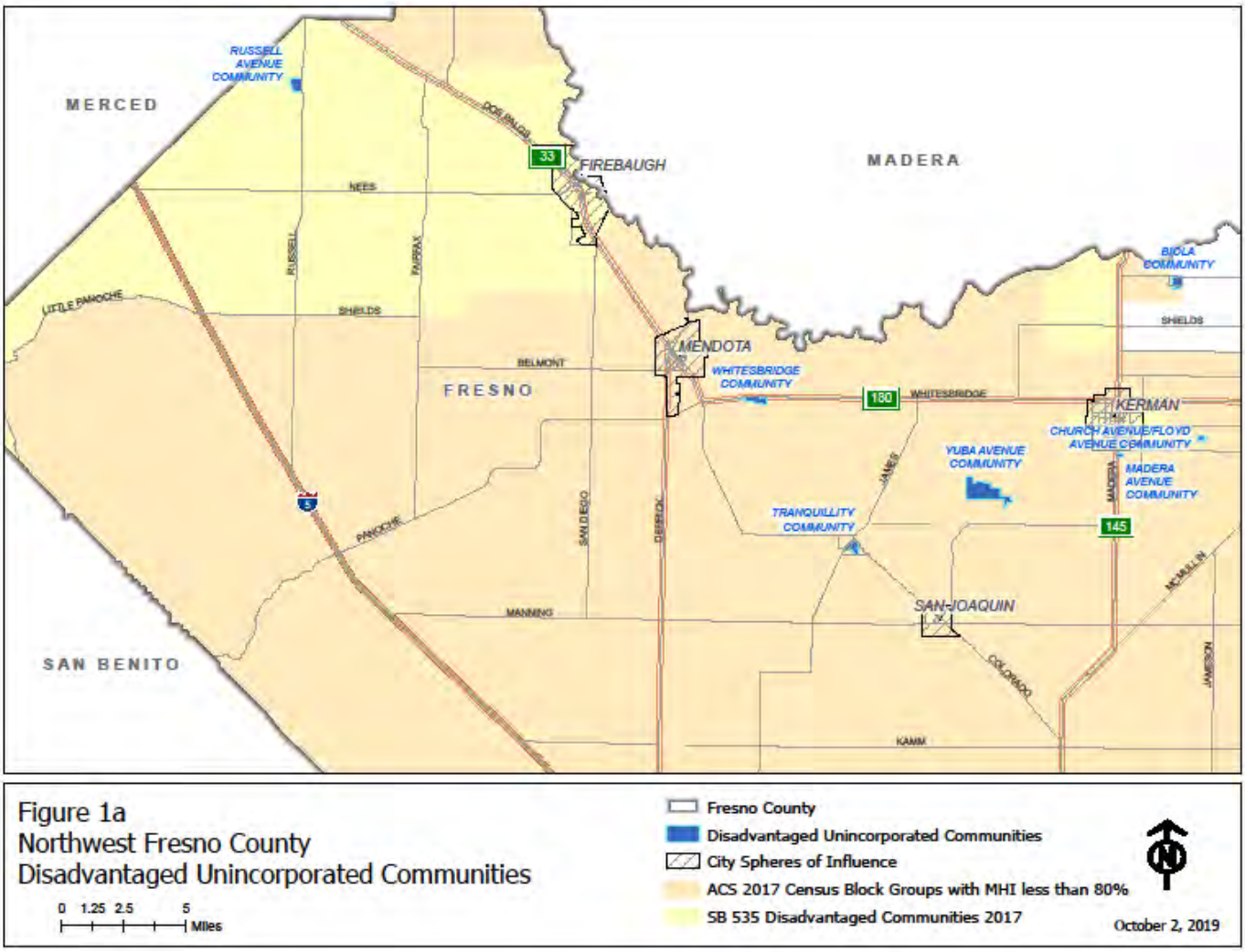


Figure 1a
Northwest Fresno County
Disadvantaged Unincorporated Communities

0 1.25 2.5 5 Miles

Fresno County
Disadvantaged Unincorporated Communities
City Spheres of Influence
ACS 2017 Census Block Groups with MHI less than 80%
SB 535 Disadvantaged Communities 2017

N

October 2, 2019

Figure 1b
Southwest Disadvantaged Unincorporated Communities – Fresno County

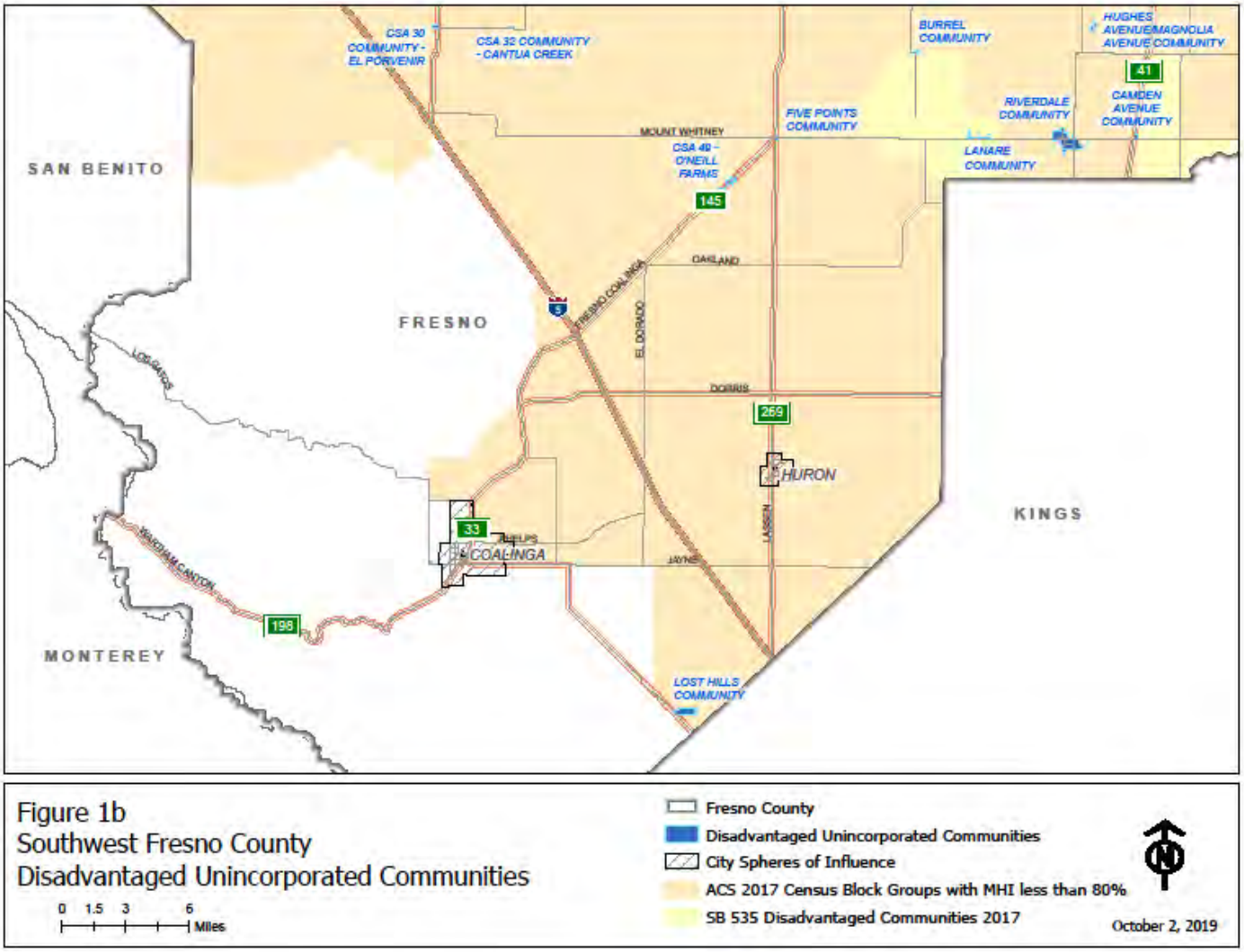


Figure 1c
North Central Disadvantaged Unincorporated Communities – Fresno County

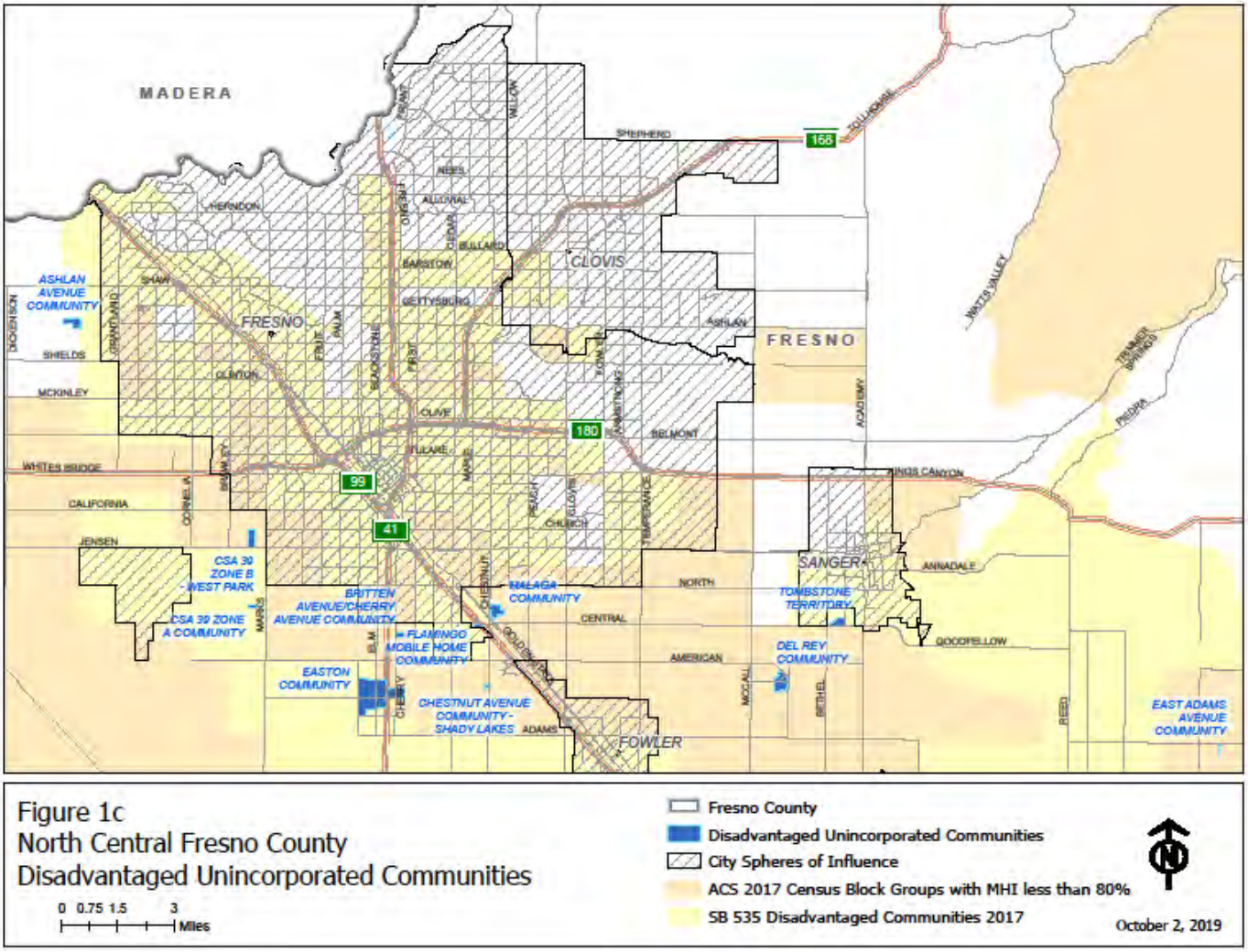
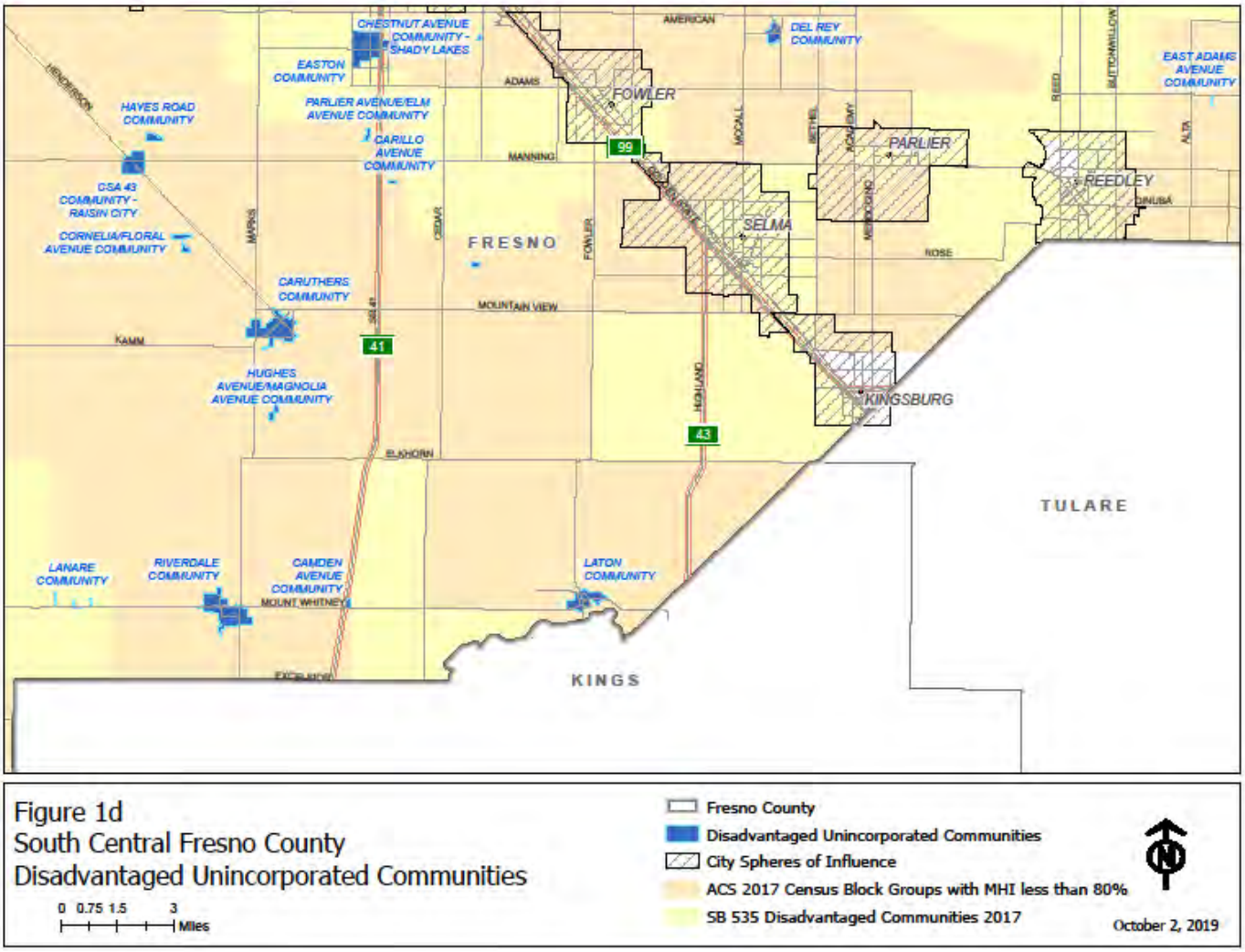


Figure 1d
South Central Disadvantaged Unincorporated Communities – Fresno County



INFRASTRUCTURE ANALYSIS

OVERVIEW OF SERVICE PROVIDERS IN UNINCORPORATED FRESNO COUNTY

SB 244 requires an analysis of infrastructure services for each DUC. This section first provides an overview of service providers in the County that provide one or more services in the DUCs and then describes public services within each DUC consistent with the requirements of SB 244.

SB 244 calls for "an analysis of water, wastewater, stormwater drainage, and structural fire protection needs or deficiencies" for all identified DUCs. In Fresno County, these services are provided by special districts, except for the Madera Avenue Community, which receives water from the City of Kerman. Where public water and wastewater services are not provided, onsite systems (e.g., private wells and septic systems) are used. Private wells and septic systems were not evaluated in this report. The following is an overview of how services are provided to the DUCs in Fresno County.

WATER

Regulatory Setting

Water in California is managed by a complex network of Federal and State regulations. California administers rights to surface water at the State level, but not rights to groundwater, which is managed under a variety of authorities including local governments. Major regulatory policies pertaining to domestic water management are summarized below.

Federal Regulations

Safe Drinking Water Act. The Safe Drinking Water Act (SDWA), administered by the United States Environmental Protection Agency (EPA) in coordination with the California Department of Public Health California Department of Public Health (CDPH), is the main Federal law that ensures the quality of Americans' drinking water. Under SDWA, EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards. In 1996 Congress amended the Safe Drinking Water Act to emphasize sound science and risk-based standard setting, small water supply system flexibility and technical assistance, community-empowered source water assessment and protection, public right-to-know, and water system infrastructure assistance through a multi-billion-dollar state revolving loan fund.

U.S. Environmental Protection Agency (EPA). The EPA is responsible for developing and enforcing regulations that implement environmental laws enacted by Congress. EPA is responsible for researching and setting national standards for a variety of environmental programs, and delegates to states and tribes the responsibility for issuing permits and for monitoring and enforcing compliance.

Arsenic is an example of a groundwater contaminant that is regulated by the EPA. Arsenic is a naturally occurring element and its presence can be traced back to geologic deposits. These natural deposits of arsenic can be found throughout the United States and are prevalent in New England and the Southwest. Groundwater that flows over these deposits may be contaminated with arsenic, which then makes its way into public and private drinking water wells. In 2001 the U.S. EPA lowered the existing 50 ppb standard to 10 ppb; all water

systems must comply with this standard by January 2006. The California CDPH must adopt a new arsenic standard that is equal to or more stringent than the U.S. EPA standard and set as close as economically feasible to the Public Health Goal (PHG). A PHG is the level of arsenic in drinking water that would not pose a significant health threat if consumed over a lifetime. The CDPH adopted the 10-ppb standard for arsenic on November 28, 2008.

State Regulations

California Water Code. The California Water Code, a section of the California Code of Regulations, establishes the governing laws pertaining to all aspects of water management in California. Domestic water service in the unincorporated areas of San Joaquin County is generally provided by special districts. These agencies operate in accordance with the California Water Code.

Urban Water Management Planning Act. In 1983 the California Legislature enacted the Urban Water Management Planning Act (Water Code Section 10610 to 10656). The Act states that every urban water supplier that provides water to 3,000 or more customers, or that provides over 3,000 acre-feet annually, should make every effort to ensure the appropriate level of reliability in its water service is sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry years. The Act requires that urban water suppliers adopt and submit an urban water management plan at least once every five years to the Department of Water Resources. Non-compliant urban water suppliers are ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26 (commencing with Section 79000) or receive drought assistance from the State until the Urban Water Management Plan (UWMP) is submitted pursuant to the Urban Water Management Planning Act.

Cortese-Knox-Hertzberg Governmental Reorganization Act of 2000. The Cortese-Knox-Hertzberg Governmental Reorganization Act of 2000 requires California Local Agency Formation Commission's (LAFCO) to conduct municipal service reviews for specified public agencies under their jurisdiction. One aspect of municipal service review is to evaluate an agency's ability to provide public services within its ultimate service area. A municipal service review is required before an agency can update its sphere of influence.

Senate Bills (SB) 610 and SB 221. SB 610 and SB 221 amended State law, effective January 1, 2002, to improve the link between the information on water supply availability and certain land use decisions made by cities and counties. Both statutes require detailed information regarding water availability to be provided to the City and County decision-makers prior to approval of specified large (greater than 500 dwelling units) development projects. Both statutes also require this detailed information to be included in the administrative record that serves as the evidentiary basis for an approval action by the City or County on such projects. Under SB 610, water assessments must be furnished to local governments for inclusion in any environmental documentation for certain projects as defined in Water Code 10912 subject to the California Environmental Quality Act (CEQA). Under SB 221, approval by a City or County of certain residential subdivisions requires an affirmative written verification of sufficient water supply.

Sustainable Groundwater Management Act. Signed into law on September 16, 2014, the Sustainable Groundwater Management Act (SGMA) is a comprehensive legislation for the management of groundwater throughout the State. The SGMA was created through a combination of Senate Bills 1168 and 1319 and Assembly Bill 1739. It established a new structure for managing California's groundwater resources at a local

level by local agencies. SGMA requires, by June 30, 2017, the formation of locally controlled groundwater sustainability agencies (GSAs) in California's high- and medium-priority groundwater basins and subbasins (basins). A GSA is responsible for developing and implementing a groundwater sustainability plan (GSP) to meet the sustainability goal of the basin to ensure that it is operated in its sustainable yield, without causing undesirable results. DWR is required to develop and adopt emergency regulations for evaluating GSPs, the implementation of GSPs, and coordination of agreements by June 1, 2016. A GSP may be any of the following (Water Code § 10727(b)):

- A single plan covering the entire basin developed and implemented by one GSA
- A single plan covering the entire basin developed and implemented by multiple GSAs
- Multiple plans implemented by multiple GSAs and coordinated pursuant to a single coordination agreement that covers the entire basin and which is subject to Water Code Section 10727.6

The legislative intent of SGMA was to recognize and preserve the authority of cities and counties to manage groundwater pursuant to their existing powers. As such, local governments play an important land use and water management role in California and should be involved in GSA formation and GSP implementation. GSPs are required to take into account the most recent planning assumptions stated in local general plans of jurisdictions overlying the basin. (Water Code §10726.9)

- In the event that there is an area in a high- or medium-priority basin that is not in the management area of a GSA, the county in which that unmanaged area lies will be presumed to be the GSA for that area. (Water Code § 10724(a))
- A county shall provide notification to DWR of its intent to manage the unmanaged area pursuant to Water Code §10723.8 unless the county notifies DWR in writing that it will not be the GSA for the area. (Water Code § 10724(b))
- An "unmanaged area" as used in Water Code §10724(a) is an area of a basin that has not yet had (or will not have) a local agency file a GSA formation notice with DWR.
- Water Code §10724 does not give the county exclusive authority to be the GSA in a basin if other local agencies have also declared their intent to manage groundwater but have not yet resolved their service area overlap.

Since the 2014 adoption and starting in early 2020 individual GSAs have begun reviewing and providing comments on various County planning documents and well permitting activity. The intent of better coordination is to meet some of the key goals of SGMA, including the contained availability and sustainability of groundwater resources.

State Water Resources Control Board. In 2014 oversight of state drinking water was shifted from the California Department of Public Health to the State Water Resource Control Board Division of Drinking Water (EPA delegation agreement). A major component remains the regulation of public water systems. Regulatory responsibilities include the enforcement of Federal and State Safe Drinking Water Acts, the regulatory oversight

of approximately 8,700 public water systems, the oversight of water recycling projects, issuance of water treatment permits, and certification of drinking water treatment and distribution operators. Other functions include supporting and promoting water systems security, providing support for small water systems, and improving technical, managerial, and financial (TMF) capacity, and for providing subsidized funding for water system improvements under the State Revolving Fund (SRF) and Proposition 50.

California Department of Water Resources. The California Department of Water Resources is responsible for preparing and updating the California Water Plan, which is a policy document that guides the development and management of the State's water resources. The plan is updated every five years to reflect changes in resources and urban, agricultural, and environmental water demands. The California Water Plan suggests ways of managing demand and augmenting supply to balance water supply with demand.

Potable water service in DUCs in Fresno County is provided primarily by special districts or private community systems, although several areas are reliant on individual wells. Special districts that provide water include:

- Biola Community Services District
- Caruthers Community Service District
- City of Kerman
- County Service Area No. 30 – El Porvenir
- County Service Area No. 32 – Cantua Creek
- County Service Area No. 39AB
- County Service Area No. 43 – Raisin City
- County Service Area No. 49 – O'Neill Farms/Westside
- Del Rey Community Service District
- Double L Mobile Ranch Park/Church and Floyd (deactivated)
- Britz/Five Points System (CA1009179)
- Lanare Community Service District
- Laton Community Service District
- Malaga County Water District
- Riverdale Public Utilities District
- Tranquility Irrigation District
- Easton Estates Water Company and Washington Unified School District (Easton)
- Shady Lakes Water System

WASTEWATER

Regulatory Setting

Key organizations that regulate wastewater treatment and disposal in California include the United States EPA and the State Water Resources Control Board (SWRCB). These agencies are responsible for carrying out and enforcing environmental laws enacted by Congress. Local government agencies, including the San Joaquin County Environmental Health Department (EHD), are responsible for establishing and implementing specific design criteria related to onsite septic systems. Major regulatory policies pertaining to sanitary sewer management are summarized below.

Federal Regulations

U.S. Environmental Protection Agency (EPA). The EPA Office of Wastewater Management (OWM) supports the Federal Water Pollution Control Act (Clean Water Act) by promoting effective and responsible water use, treatment, disposal and management, and by encouraging the protection and restoration of watersheds. The OWM is responsible for directing the National Pollutant Discharge Elimination System (NPDES) permit, pretreatment, and municipal bio-solids management (including beneficial use) programs under the Clean Water Act. The OWM is also home to the Clean Water State Revolving Fund, the largest water quality funding source, focused on funding wastewater treatment systems, non-point source projects, and estuary protection.

Clean Water Act (CWA). The CWA is the cornerstone of surface water quality protection in the United States. The stature employs a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff.

Section 303 of the CWA requires states to adopt water quality standards for all surface water of the United States. Where multiple uses exist, water quality standards must protect the most sensitive use. Water quality standards are typically numeric although narrative criteria based on biomonitoring methods may be employed where numerical standards cannot be established or where they are needed to supplement numerical standards. The SWRCB and the RWQCB are responsible for ensuring implementation and compliance with the provisions of the Federal CWA.

State Regulations

State Water Resources Control Board (SWRCB). The SWRCB, in coordination with nine Regional Water Quality Control Boards (RWQCB), performs functions related to water quality, including issuance of wastewater discharge permits (NPDES and WDR) and other programs on stormwater runoff, and underground and above ground storage tanks.

Cortese-Knox-Hertzberg Governmental Reorganization Act of 2000. The Cortese-Knox-Hertzberg Governmental Reorganization Act of 2000 requires California Local Agency Formation Commission's (LAFCO) to conduct municipal service reviews for specified public agencies under their jurisdiction. One aspect of municipal service review is to evaluate an agency's ability to provide public services within its ultimate service area. A municipal service review is required before an agency can update its sphere of influence.

Small Community Wastewater Grant Program. The small community wastewater grant program (SCWG), funded by Propositions 40 and 50, provides grant assistance for the construction of publicly owned wastewater treatment and collection facilities. Grants are available for small communities with financial hardships. Communities must comply with population restrictions (maximum population of 20,000 people) and annual median household income provisions (maximum income of $37,994) to qualify for funding under the SCWG Program.

Title 22 of California Code of Regulations. Title 22 regulates the use of reclaimed wastewater. In most cases, only disinfected tertiary water may be used on food crops where the recycled water would come into contact with the edible portion of the crop. Disinfected secondary treatment may be used for food crops where the edible portion is produced above ground and will not come into contact with the secondary effluent. Lesser levels of treatment are required for other types of crops, such as orchards, vineyards, and fiber crops. Standards are also prescribed for the use of treated wastewater for irrigation of parks, playgrounds, landscaping and other non-agricultural irrigation. Regulation of reclaimed water is governed by the nine RWQCBs and CDPH.

Wastewater collection and treatment services are provided to Fresno County DUCs through a combination of special districts and onsite septic systems. Special districts that provide wastewater include:

- Biola Community Services District
- Caruthers Community Service District
- County Service Area No. 30
- County Service Area No. 32
- Del Rey Community Service District
- Laton Community Service District
- Malaga County Water District
- Riverdale Public Utilities District
- Shady Lakes Wastewater Treatment System
- Tranquility Public Utility District

STORMWATER DRAINAGE AND FLOOD PROTECTION

Overview

During winter and spring months, river systems in Fresno County swell with heavy rainfall and snow melt runoff. To prevent flooding, a wide variety of storm drainage and flood control measures are utilized throughout the county. Storm drainage systems composed of street gutters, inlets, underground storm drains, retention basins, pumping stations, and open channels are used to collect and control stormwater runoff. The following discussion characterizes the storm drainage and flood control systems for unincorporated areas within Fresno County.

Existing Conditions

Most of the storm drainage systems within the unincorporated areas of Fresno County are managed by a single flood control district. The Fresno Metropolitan Flood Control District services the Fresno and Clovis areas

including unincorporated areas stretching east into the Foothills. A small number of individual communities have storm drainage systems serviced by special districts. Drainage services in these areas center on the creation and maintenance of retention basins to collect stormwater. Data for each service provider was primarily obtained from Municipal Service Review (MSR) documents filed with the Fresno County Local Area Formation Commission (LAFCo).

Regulatory Setting

Key organizations that regulate the stormwater industry in California include the EPA and SWRCB. These agencies are responsible for carrying out and enforcing environmental laws enacted by Congress. The need to protect the environment has resulted in several laws and subsequent regulations and programs. Local government agencies are responsible for establishing and implementing specific design criteria related to storm drain systems. Various Federal and State programs related to the control of pollutants in stormwater are summarized below.

Federal Regulations

Clean Water Act. In 1972, the CWA was amended to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with an NPDES permit. The 1987 amendments to the CWA added Section 402(p), which establishes a framework for regulating municipal and industrial stormwater discharges, including discharges associated with construction activities, under the NPDES program.

U.S. Environmental Protection Agency (EPA). In 1990 EPA published final regulations that establish stormwater permit application requirements. The regulations, also known as Phase I of the NPDES program, provide that discharges of stormwater to waters of the United States from construction projects that encompass one or more acres of soil disturbance are effectively prohibited unless the discharge complies with an NPDES permit. Phase II of the NPDES program expands the requirements by requiring operators of small MS4s in urbanized areas and small construction sites to be covered under an NPDES permit, and to implement programs and practices to control polluted stormwater runoff.

State Regulations

State Water Resources Control Board (SWRCB). In California, the NPDES stormwater permitting program is administered by the SWRCB. The SWRCB has established a construction General Permit that can be applied to most construction activities in the State. Construction permittees may choose to obtain individual NPDES permits instead of obtaining coverage under the General Permit, but this can be an expensive and complicated process, and its use is generally limited to very large construction projects that discharge to critical receiving waters. In California, owners of construction projects may obtain NPDES permit coverage by filing a Notice of Intent (NOI) to be covered under the SWRCB Order No. 99-08- DWQ, NPDES General Permit No. CAS00002, WDRs for Discharges of Storm Water Runoff Associated with Construction Activity (General Permit) and subsequent adopted modification.

Storm drainage services are provided to Fresno County DUCs by the following special districts:

- Biola Community Services District
- Caruthers Community Services District
- County Service Area No. 30
- County Service Area No. 32
- Del Rey Community Services District
- Easton Community Services District
- Fresno Metropolitan Flood Control District
- Tranquility Public Utility District

FIRE PROTECTION

Existing Conditions

Unincorporated Fresno County is served by the Fresno County Fire Protection District, Fig Garden Fire Protection District, North Central Fire Protection District, Orange Cove Fire Protection District, Bald Mountain Fire Protection District, Laton Community Service District, Riverdale Public Utilities District, County Service Area 31 (Shaver Lake), and the California Department of Forestry and Fire Protection (CAL FIRE), County Service Area 50 (Auberry Volunteer Fire Department), and various Volunteer Fire Companies.

ISO Ratings

The Insurance Services Office (ISO) rates fire departments and assigns public protection classifications for the establishment of fire insurance rates. The higher the Insurance Rating number, the lower the level of service and the higher the cost for a homeowner's fire insurance. An area with no organized fire protection services is assigned a Class 10 rating, but that rating would not be applicable to areas covered under a recognized fire protection district. The ISO ratings for fire protection service providers are included in the following profiles (CalFire/FCFPD, 2020).

According to CalFire, to obtain a premium reduction on insurance, a residence must be within proximity of five road miles from a 24/7 staffed station, which limits this reduction availability for rural areas. (CalFire/FCFPD, 2020).

Relevant Fire Districts to this Analysis

Fresno County Fire Protection District

The Fresno County Fire Protection District provides fire prevention and suppression, emergency medical response, search and rescue, building permits and inspections, and emergency dispatch services. The District encompasses approximately 2,547 square miles and serves a population of more than 220,000 residents. It extends from Kings and Tulare Counties on the south to Madera County on the north, and from the coastal range on the west to the foothills of the Sierras on the east. District territory includes unincorporated "islands" surrounded by the Cities of Clovis and Fresno. The District contracts with Cal Fire for staff and is administered by the District Fire Chief. In addition, the District provides full fire protection services to many incorporated and unincorporated communities within the County.

Fresno County FPD operates 14 permanent fire stations located throughout is boundaries. An additional three stations are staffed with Paid Call Firefighters (PCF). The District operates its fire engine companies with a minimum of 2-3 career Firefighters on duty every day, totaling 56 Firefighters on duty daily. District fire apparatus include 25 engines, 2 ladder trucks, 1 Bulldozer, 2 Squads, 1 rescue apparatus, 6 water tenders, and 20 support vehicles.

The District's response standards range from five-minute response times in heavy urban areas to fifteen-minute response times in rural areas. It normally meets these standards unless multiple incidents are occurring, or the incidents are in a few areas that cannot be reached within the referenced time standard. The District's ISO ratings are as follows:

- The Fresno County Fire Protection District's ISO rating, updated approximately every five years, is currently a 4/4y rating. The District has implemented several operational changes recently and has improved its rating further. The District will achieve a 3/3Y in October of 2020 which is an excellent performance rating for a fire district of this size (FCFPD, 2020).

The Fresno County FPD and the North Central FPD have faced reductions in the size of their districts due to the growth of the Cities of Fresno and Clovis. Such growth has resulted in the reduction of District tax bases, as a significant portion of District revenues are generated from property taxes on properties located within the Spheres of Influence of the Cities of Fresno and Clovis. Although a tax sharing agreement is in effect between the FPDs and the Cities of Fresno and Clovis, continued detachments of District land will result in long-term revenue loss and a potential reduction of service levels over time. (FCFPD 2020)

North Central Fire Protection District

North Central Fire Protection District, originally established in 1947, encompasses approximately 138,700 acres within the northern portion of Fresno County. Its services include fire prevention and suppression, emergency medical response, search and rescue, building permits and inspections, emergency dispatch services, and hazardous material response. District territory includes the City of Kerman.

In 2017, and the District and City of Fresno agreed to splitting effective in July of 2019. The District took over operations again of three stations, fire engines, trucks and other equipment. After splitting from the City of Fresno, the District re-assumed responsibility for fire services in a 230-square-mile service area west of State Route 99.

Laton Community Service District

The Laton Community Service District is located in the south-central portion of Fresno County adjacent to the Kings River. It provides fire protection services to about 500 acres and an approximate population of 1,600 during harvest season (August-September) and 1,230 throughout the remainder of the year. The District owns one station located at Dewitty and Fowler Avenues. The station has a staff of one fire chief and ten volunteers. There are no Emergency Medical Technicians. Approximately three to four calls are received each month. The Laton CSD has an ISO rating of 8. (Laton Community Services District MSR, 2011; Fresno County, Fresno County General Plan, October 2000).

Riverdale Public Utilities District

The Riverdale Public Utilities District contracts with Fresno County FPD for fire protection services. Its infrastructure includes one station within the District at 10068 Malsbury in Riverdale, two fire trucks, and an administrative building. The Station is staffed by 18 volunteer firefighters. Response time within a three-mile radius is approximately five minutes. The Riverdale station has an ISO rating of 6 (MSR). (Riverdale Public Utilities District MSR, 2007)

Mutual and Automatic Aid

Mutual Aid is defined as the provision of resources (personnel, apparatus, and equipment) to a requesting jurisdiction already engaged in emergency operations, which have exhausted or will shortly exhaust local resources.

Mutual aid was designed as a cost-effective solution to help mitigate this shortage of resources as well as providing for those rare major emergencies that border upon or are actual disasters. Mutual Aid is simply a plan designed to allow fire agencies to assist each other during situations when an agency cannot muster sufficient resources to bring a successful completion to the incident.

Mutual Aid is provided using a progressive system, commencing with the closest neighboring agencies and working out from the incident until all resource needs are fulfilled. This strategy has been designed to minimize delays for agencies needing additional help when calling for Mutual Aid.

Automatic aid is a relatively new concept in the fire service. It is the process whereby the closest piece of emergency apparatus responds to a call for assistance regardless of jurisdiction. As city boundaries continue to expand, County fire stations find themselves surrounded by annexed neighborhoods and in a position to assist the cities with response in the area surrounding them. Conversely, the city fire stations constructed to mitigate the development allow the County Fire Department to relocate its equipment and stations to locations better serving the county residents by automatically responding to county areas to which they are closer. In this way, automatic aid also helps agencies become more cost effective by doing away with duplication of services.

The Fresno County Fire Protection District participates in mutual aid and response agreements with other agencies to obtain enhanced levels of service and coverage. These include cities and special districts in Fresno County, adjacent counties, the California Department of Forestry and Fire Protection (CAL FIRE), U.S. Army Corp of Engineers, and the U.S. Forest Service.

POTENTIAL INFRASTRUCTURE FUNDING SOURCES

There are potential funding and financing mechanisms the County may pursue to address infrastructure and service deficiencies. Principal funding sources for local government infrastructure usually include taxes, benefit assessments, bonds, and exactions (including impact fees). Table 2 provides a list of these mechanisms. There are also federal and state programs that could potentially help address existing deficiencies identified in the communities discussed above. Table 3 provides a brief summary of programs that could provide funding to address infrastructure deficiencies in Fresno County's DUCs.

TABLE 2 POTENTIAL FUNDING AND FINANCING MECHANISMS
Funding Options for Existing Deficiencies
Assessment District
Certificates of participation
General obligation bonds
Infrastructure Financing District
Mello-Roos Community Facilities District
Revenue bonds
Tax allocation bonds
User rate increases – no financing
User rate increases – with loans
Funding Options for Expansion of Facilities for New Development
Assessment District
Developer-assisted extensions
Infrastructure Financing District
Mello-Roos Community Facilities District

TABLE 3 POTENTIAL INFRASTRUCTURE FUNDING SOURCES				
Agency	**Program Name (year passed/created)**	**Funding Provided**	**Funding Remaining/ Available**	**Limitations/Barriers on Use of Funds**
United States Housing and Urban Development Department (HUD)	Community Development Block Grants (CDBG) (1974) (grants)	Grants of various sizes, generally $250,000 to $100 million, for the construction or reconstruction of streets, water and sewer facilities, neighborhood centers, recreation facilities, and other public works.	Annually	Not less than 70 percent of CDBG funds must be used for activities that benefit low- and moderate-income persons. In addition, each activity must meet one of the following national objectives for the program: benefit low- and moderate-income persons, prevention or elimination of slums or blight, or address community development needs having a urgency because existing conditions pose a serious and immediate threat to the health or welfare of the community for which other funding is not available.
USDA (United States Department of Agriculture) Rural Development Program	Rural Utilities Service - Water & Environmental Programs: Circuit Rider Program Emergency Community Water Assistance Grants Household Water Well System Grants Individual Water & Wastewater Grants	Varies. See website.		

TABLE 3 CONTINUED				
Agency	**Program Name (year passed/created)**	**Funding Provided**	**Funding Remaining/ Available**	**Limitations/Barriers on Use of Funds**
USDA (United States Department of Agriculture) Rural Development Program (CONTINUED)	SEARCH - Special Evaluation Assistance for Rural Communities and Households Solid Waste Management Grants Water & Waste Disposal Grants to Alleviate Health Risks on Tribal Lands and Colonies Water & Waste Disposal Loans & Grants Water & Waste Disposal Loan Guarantees Water & Waste Disposal Predevelopment Planning Grants Water & Waste Disposal Revolving Loan Funds Water & Waste Disposal Technical Assistance & Training Grants Drinking water disinfecting projects using UV technology and ozone treatment (2002) (grants)	Varies. See website.		

TABLE 3 CONTINUED				
Agency	**Program Name (year passed/created)**	**Funding Provided**	**Funding Remaining/ Available**	**Limitations/Barriers on Use of Funds**
California Financing Coordinating Committee (CFCC)	Made up of six funding agencies: four state and two federal (1998)	CFCC member agencies facilitate and expedite the completion of various types of infrastructure projects by helping customers combine the resources of several agencies. Project information is shared between members so additional resources can be identified.	CFCC member agencies conduct free funding fairs statewide each year to educate the public and potential customers about the different member agencies and the financial and technical resources available.	
State Water Resources Control Board (SWRCB) (State Water Board)	Safe Drinking Water State Revolving Fund (SDWSRF) (1996) (grants and loans)	Generally, $100–$150 million: Low-interest loans and some grants to support water systems with technical, managerial, and financial development and infrastructure improvements.	$130–$150 million (revolving funds) (annually).	20 to 30 percent of annual federal contribution can be used for grants. The remainder must be committed to loans. Funds can be used only for capital costs. Cannot be used for operation and maintenance. Only loans (not grants) for privately owned water systems. Some funds available for feasibility and planning studies for eligible projects/systems. Can only be used for public water systems (not domestic wells or state small systems)

TABLE 3 CONTINUED				
Agency	**Program Name (year passed/created)**	**Funding Provided**	**Funding Remaining/ Available**	**Limitations/Barriers on Use of Funds**
" "	Proposition 1, Water Quality, Supply and Infrastructure Improvement Act (2014) (grants) Storm Water Grant Program Prop. 1 funds are administered by multiple agencies.	$7.545 billion for water projects including surface and groundwater storage, ecosystem and watershed protection and restoration, and drinking water protection (Storm Water Program is $200 million; Groundwater Program is $800 million).	$7.545 billion. Project selection anticipated in 2016.	Eligible applicants: Public agencies, nonprofit organizations, public utilities, federally recognized Indian tribes, state Indian tribes listed on Native American Heritage Commission's California Tribal Consultation List, and mutual water companies. State Water Board Guideline Adoption Hearings: Prop 1. SWGP Guidelines adoption hearings - tentatively December 2015/January 2016 Storm Water Resource Plan Guidelines – Tuesday, December 1, 2015
" "	Clean Water State Revolving Fund (Expanded Use Program) (CWSRF) (1987) (loans)	$200–$300 million per year: Water quality protection projects, wastewater treatment, nonpoint source contamination control, and watershed management.	$50 million per agency per year; can be waived.	Eligible uses: Stormwater treatment and diversion, sediment and erosion control, stream restoration, land acquisition. Drinking water treatment generally not eligible except under certain expanded use scenarios. Capital cost only. Operation and maintenance is not eligible.

TABLE 3 CONTINUED				
Agency	**Program Name (year passed/created)**	**Funding Provided**	**Funding Remaining/ Available**	**Limitations/Barriers on Use of Funds**
" "	Small Community Groundwater Grants (Prop. 40) (2004, amended 2007) (grants)	$9.5 million. Assist small disadvantaged communities (less than 20,000 people) with projects where the existing groundwater supply exceeds maximum contaminant levels, particularly for arsenic or nitrate.	$1.4 million remaining – $300,000 available to encumber; $1.1 million available to appropriate.	Funding can go to local government or nongovernmental organization. Must demonstrate financial hardship. Can only provide alternate water supply. No operation and maintenance costs. Program not currently active due to staff resource limitations.
" "	Small Community Wastewater Grant (SCWG) Program	The SCWG Program was most recently funded in 2002 (by Propositions 40 and 50), and provided grants to small (i.e., with a population of 20,000 persons, or less) disadvantaged (i.e., annual median household income [MHI] is 80 percent or less of the statewide MHI) communities for planning, design, and construction of publicly owned wastewater treatment and collection facilities.	All available SCWG funds were committed to projects several years ago; however, some of the funds previously committed to projects have gone unused for various reasons. These "residual bond funds" have been disencumbered and can be used to fund new projects.	

TABLE 3 CONTINUED				
Agency	**Program Name (year passed/created)**	**Funding Provided**	**Funding Remaining/ Available**	**Limitations/Barriers on Use of Funds**
" "	Nonpoint Source (NPS) Grant Program - Clean Water Act §319(h) and Timber Regulation and Forest Restoration Fund	Funding range per project for CWA 319(h) is $250,000–$800,000. Projects are implementation actions to restore impaired surface waters and groundwater by controlling NPS pollution. Funding range per project for Timber Fund Projects is $250,000–$1,000,000. Projects are implementation actions to improve water quality on forest lands in watersheds with State Responsibility Area. Projects that involve disadvantaged communities may be eligible for a waiver or reduction of matching funds.	No additional specifics available.	
" "	State Water Quality Control Fund: Cleanup and Abatement Account (2009)	$10 million in 2012 (varies annually): Projects to (a) clean up waste/abate effects on state waters, when no viable responsible party, or (b) address significant unforeseen water pollution problem (reg. boards only). Funds can be allocated to public ag., tribal governments, and NOP orgs. serve DUCs.	No additional specifics available. $10 million is most recent available figure, but varies.	Eligible uses: Emergency cleanup projects; projects to clean up waste or abate its effects on waters of the state; regional water board projects to address a significant unforeseen water pollution problem. Recipient must have authority to clean up waste. Under certain circumstances this fund has been used to provide drinking water operation and maintenance for limited durations.

TABLE 3 CONTINUED				
Agency	**Program Name (year passed/created)**	**Funding Provided**	**Funding Remaining/ Available**	**Limitations/Barriers on Use of Funds**
" "	Agricultural Drainage Loan Program (created by the Water Conservation and Water Quality Bond Act of 1986)	$6.66 million. Loan repayments are for a period of up to 20 years.	Accepting applications.	To address treatment, storage, conveyance, or disposal of agricultural drainage water that threatens waters of the state.
" "	Agricultural Drainage Management Loan Program (created by Proposition 204 and distributed through the Agricultural Drainage Management Subaccount)	$10.44 million for loans. (All grants have been disbursed.)	Accepting applications.	Funding for Drainage Water Management Units (land and facilities for the treatment, storage, conveyance, reduction, or disposal of agricultural drainage water that, if discharged untreated, would pollute or threaten to pollute the waters of the state.)
" "	Water Recycling Funding Program (2008) (grants)	$5 million for construction.	Accepting applications. $0, fully committed.	Provide for treatment and delivery of municipal wastewater to users that replace the use of local water supply with recycled water. Provide treatment and reuse of groundwater contaminated due to human activity and provide local water supply benefits. Provide for the treatment and disposal of municipal wastewater to meet waste discharge requirements imposed for water pollution control. Projects that do not have identifiable benefits to the state or local water supply.

TABLE 3 CONTINUED				
Agency	**Program Name (year passed/created)**	**Funding Provided**	**Funding Remaining/ Available**	**Limitations/Barriers on Use of Funds**
California Department of Water Resources (DWR)	Integrated Regional Water Management (IRWM) (2002) (grants)	Recently announced awards for the final solicitation.	Check website for possible continued funding	Must be consistent with an adopted IRWM Plan and other program requirements. For capital investment only. Covers infrastructure but not operations and maintenance.
" "	Contaminant treatment or removal technology pilot and demonstration studies (2002) (grants)	Up to $5 million per grant.	$15 million available.	Eligible applicants are public water systems under the regulatory jurisdiction of the California Department of Public Health and other public entities. For capital investment only.
" "	Safe Drinking Water Bond Law (Prop 81) (1988)	Up to $74 million to be awarded to current priority list.	Remaining balance to be determined.	Provides funding for projects that investigate and identify alternatives for drinking water system improvements.
" "	Drinking water disinfecting projects using UV technology and ozone treatment (2002) (grants)	$5,000 minimum, up to $5 million per grant.	$19 million remaining.	Eligible applicants are public water systems under the regulatory jurisdiction of the California Department of Public Health. For capital investment only.

TABLE 3 CONTINUED				
Agency	**Program Name (year passed/created)**	**Funding Provided**	**Funding Remaining/ Available**	**Limitations/Barriers on Use of Funds**
iBank (CA Infrastructure and Development Bank)	Infrastructure State Revolving Fund (ISRF) Program (2000) (loans)	$50,000 to $25,000,000 loans per project to finance water infrastructure that promotes job opportunities. Eligible projects include construction or repair of publicly owned water supply, treatment, and distribution systems.	$52.6 million approved to date for water supply, treatment, and distribution. Applications continually accepted.	Finances system capital improvements only. Must show job creation. Special loan tier for DUCs was discontinued.
Local Governments and Public Agencies	Ongoing	Taxation	n/a	In 1982, the California State Legislature enacted the Community Facilities Act, commonly referred to as Mello-Roos. This act authorized local jurisdictions to establish community facility districts, which would directly serve as another funding mechanism for financing public work projects, and even public services. This method of revenue generation potentially could be used to finance projects that will make the necessary improvements to the deficiencies in these communities.

TABLE 3 CONTINUED				
Agency	**Program Name (year passed/created)**	**Funding Provided**	**Funding Remaining/ Available**	**Limitations/Barriers on Use of Funds**
Local Governments and Public Agencies	Ongoing	Impact Fees	n/a	Development Impact Fees can be imposed for new development, in order to acquire funding to construct capital facilities. Applying development impact fees to projects does have substantial limitations under the California Mitigation Fee Act and under the State and Federal Constitutions.
Local Governments and Public Agencies	Ongoing	User Rate Increases	n/a	Method for funding existing deficiencies. Could be implemented in conjunction with loans or with no financing. Would be subject to a Proposition 218 hearings process.

KEY TERMS

Community. An inhabited area within a city or county that is comprised of no less than 10 dwelling units adjacent or in close proximity to one another.

Disadvantaged Unincorporated Community (DUC). A fringe, island, or legacy community in which the median household income is 80 percent or less than the statewide median household income.

Island Community. Any inhabited and unincorporated territory that is surrounded or substantially surrounded by one or more cities or by one or more cities and a county boundary or the Pacific Ocean.

Fringe Community. Any inhabited and unincorporated territory that is within the city's sphere of influence.

Legacy Community. A geographically isolated community that is inhabited and has existed for at least 50 years.

Local Agency Formation Commission (LAFCo). A commission within each county that reviews and evaluates all proposals for formation of special districts, incorporation of cities, annexation to special districts or cities, consolidation of districts, and merger of districts with cities. Each county's LAFCo is empowered to approve, disapprove, or conditionally approve such proposals. This commission is made up of two members of the County Board of Supervisors, two City Council members, and a public member.

Municipal Service Review (MSR). A study conducted for a city, county, or special district that examines all public service needs for the area and recommends action to promote the efficient provision of public services.

Sphere of Influence (SOI). The probable physical boundaries and service area of a local agency, as determined by the Local Agency Formation Commission (LAFCo).

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