Stanislaus County, California

Local Hazard Mitigation Plan

Updated 2017

Submitted by
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Stanislaus County

Office of Emergency Services

Local Hazard Mitigation Plan

July 2017

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SECTION ONE

Introduction

SECTION ONE - INTRODUCTION

PURPOSE

In the State of California and around the world, natural disasters occur frequently. The time and money needed to recover from these events can strain or deplete local resources. The purpose of hazard mitigation planning is to identify policies, actions, and strategies that will help to reduce risk and prevent future losses. Hazard mitigation is best realized when community leaders, businesses, citizens, and other stakeholders join together to undertake a process of learning about hazards that can affect their area and use this knowledge to prioritize needs and develop a strategy for reducing damage. Hazard mitigation is most effective when it is based on a comprehensive long-term plan that is developed prior to a disaster occurring.

HAZARD MITIGATION PLANNING

The Federal Emergency Management Agency (FEMA) has determined that there is a critical link between Hazard Mitigation Planning and sustainability. This means if Stanislaus County has the foresight to plan ahead to reduce the impacts of hazards, we will be better able to prevent injury, loss of life and damage to our homes, businesses, and neighborhoods. The County can use the threat of disaster as a catalyst to act and develop a plan so we can recover more quickly following a disaster.

Stanislaus County has committed itself to reducing long-term risk to our citizens and damage to property from the effects of natural hazards. By planning, preparing, and adopting a Hazard Mitigation Plan, the County is taking a proactive approach to reduce or eliminate the impacts of hazards before they occur.

FEMA defines Hazard Mitigation as any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards. The County's plan will serve as a tool for learning from disasters that have already occurred, so we can deal with them more effectively and efficiently with less expenditure than in the past.

Direct benefits include:

- Reduced loss of life;
- Reduced loss of property and essential services;
- Reduced economic hardship;
- Reduced reconstruction costs;
- Increased cooperation and communication within the community through the planning process; and
- Expedited post-disaster funding.

Indirect benefits include:

- Disaster resilience;
- Environmental quality;
- Economic vitality; and
- Improved quality of life.

PLANNING REQUIREMENTS

Section 322, Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act ("the Stafford Act"), enacted by Section 104 of the Disaster Mitigation Act of 2000 ("DMA 2000"), provides revitalized approaches to mitigation planning. Section 322 continues the requirement for a State mitigation plan as a condition of disaster assistance, and establishes a new requirement for local mitigation plans. In order to apply for Federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with DMA 2000 and its implementing regulations (44 CFR Part 201.6).

Under the 2008 44 CFR update, requirements have changed governing mitigation planning provisions for local mitigation plans published under 44 CFR §201.6. Local mitigation plans now qualify communities for the Federal mitigation grant programs including:

DISASTER FUNDED GRANTS:

- Hazard Mitigation Grant Program (HMGP)
- Hazard Mitigation Assistance Grants:
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)
- Severe Repetitive Loss (SRL)
- Repetitive Flood Claim (RFC)

PLAN UPDATE

The Stanislaus County Local Hazard Mitigation Plan identifies risks posed by disasters, and identifies ways to minimize damage from those disasters. The plan is a comprehensive resource document that serves many purposes, including: enhancing public awareness and understanding, creating a decision tool for management, promoting compliance with State and Federal program requirements, enhancing local policies for hazard mitigation capability, and providing inter-jurisdictional coordination.

The Stanislaus County plan, initially approved by FEMA on January 12, 2006, and updated and approved by FEMA on July 20, 2011, must be updated every five years. This Plan Update will demonstrate the County's commitment to reducing risk and will serve as a guide for decision makers as they commit resources to minimize the effects of natural hazards. By proactively mitigating the possible effects of a disaster and/or emergency, the County continues to work toward the goal of reducing risk to human life and property and ensuring the priorities of a safe and healthy community.

Federal emergency management agencies only provide disaster relief funds to local governments that have shown positive steps to prevent loss and damage from disasters by adopting a Hazard Mitigation Plan. Planning now, ensures that the County will be covered later, in the event that disaster strikes.

Each section of the County's Local Hazard Mitigation Plan was reviewed and revised as appropriate to reflect changes in development, updated property values, and progress in local mitigation efforts. It will be resubmitted for approval to the California Governor's Office of Emergency Services (Cal OES) and FEMA. If FEMA determines the plan is "approvable pending adoption," the County will then proceed with the adoption process by the Board of Supervisors as required in the prerequisites. Adoption legitimizes the plan and authorizes responsible agencies to execute their responsibilities. The plan, upon adoption, shall include documentation of adoption in the form of a Board Resolution and Board Agenda item and minutes.

PLAN COMPONENTS

The basic elements involved in our Hazard Mitigation Plan include:

Prerequisite - This section addresses the formal adoption of the plan by each governing body to demonstrate the commitment of the community and elected officials to the County's goal of becoming disaster-resistant.

Community Profile - This section provides the history and background of the County, including population trends and the demographic and economic conditions that have shaped the area.

Planning Process - This section identifies the planning process, the Planning Team members, the meetings held as part of the planning process, documents the outreach efforts, and the review and incorporation of existing plans, reports, and other appropriate information.

Risk Assessment - This section describes the process through which the Planning Team and our local partners identified, screened, and selected the hazards to be profiled. The hazard analysis includes the description, location, extent, and probability of future events for each hazard.

Mitigation Plan/Strategy - The mitigation strategy section provides a plan for reducing the potential losses identified in the vulnerability analysis. Mitigation goals and potential actions to minimize the risks and losses associated with each hazard will be described along with a strategy for implementation.

Plan Maintenance - This section describes the method and schedule for monitoring, evaluating and updating the plan to ensure that the LHMP remains an active and applicable document.

SUMMARY

This plan is designed to identify specific actions to reduce loss of life and property from the following five hazards: earthquake, landslide, dam failure, flood, and wildfire. It is not intended to establish procedures to respond to disasters or replace an existing Emergency Operations Plan. The goal of hazard mitigation is to decrease the need for response as opposed to outlining a plan for responding to a disaster.

Natural disasters cannot be prevented from occurring. However, it is the intent of this LHMP to steadily lessen the impacts associated with future hazard events.

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SECTION TWO

Prerequisites

SECTION TWO - PREREQUISITES

STANISLAUS COUNTY BOARD OF SUPERVISORS

ADOPTION BY LOCAL GOVERNING BODY

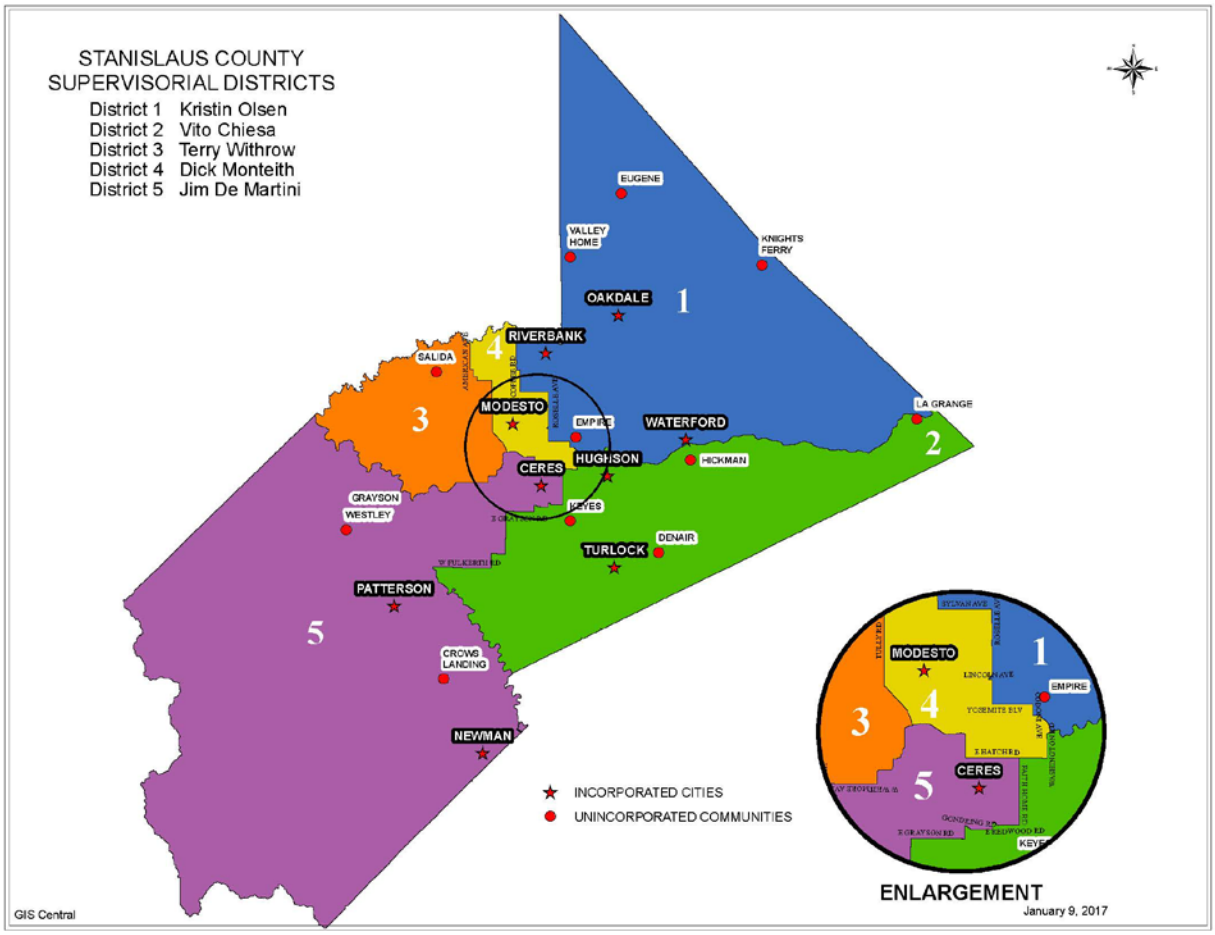
The Federal Emergency Management Agency's (FEMA) 44 Code of Regulations (CFR) Part 201.6(c) (5) requires that the Local Hazard Mitigation Plan is formally adopted by the governing body of the jurisdiction requesting approval of the plan. The Plan shall include documentation of plan adoption, usually in the form of a resolution.

"Approval Pending Adoption" is a recommended and potentially time-saving process by which the County submits the final draft of the LHMP to the California Governor's Office of Emergency Services (Cal OES), and the Federal Emergency Management Agency (FEMA) for a review *prior* to formal jurisdictional adoption. If the County's plan meets all the plan requirements, the plan will then be returned with an approvable pending adoption status. When the approval pending adoption plan is adopted by the jurisdiction, and FEMA has received the documentation of adoption, it will then be formally approved through a signed FEMA approval letter.

The County intends to follow this recommended process and, as such, will wait to receive an "Approval Pending Adoption" before taking the plan to the Board of Supervisors for adoption.

If the plan is not adopted, the County is not eligible to apply for and/or receive project grants under the following hazard mitigation assistance programs:

Hazard Mitigation Grant Program (HMGP)
Pre-Disaster Mitigation (PDM)
Flood Mitigation Assistance (FMA)
Severe Repetitive Loss (SRL)
Repetitive Flood Claim (RFC)



PLAN UPDATE

The County is required to review and revise its plan, and resubmit it for approval within five (5) years in order to continue to be eligible for mitigation project grant funding. The County understands that a plan update is not an annex to the previously approved plan, but stands on its own as a complete and current plan, that has been reviewed and updated in all aspects.

PLAN EXPIRATION DATE

The County's most recent plan update was approved on July 20, 2011, and expired on July 20, 2016.

PLAN ADOPTION

Adoption of the LHMP by the Stanislaus County Board of Supervisors on _____ Resolution Number _____ demonstrates the County's commitment to fulfilling the mitigation goals and objectives as outlined in the plan. Adoption legitimizes the plan and authorizes responsible agencies to execute their responsibilities.

Stanislaus County
Striving to be the Best

SECTION THREE

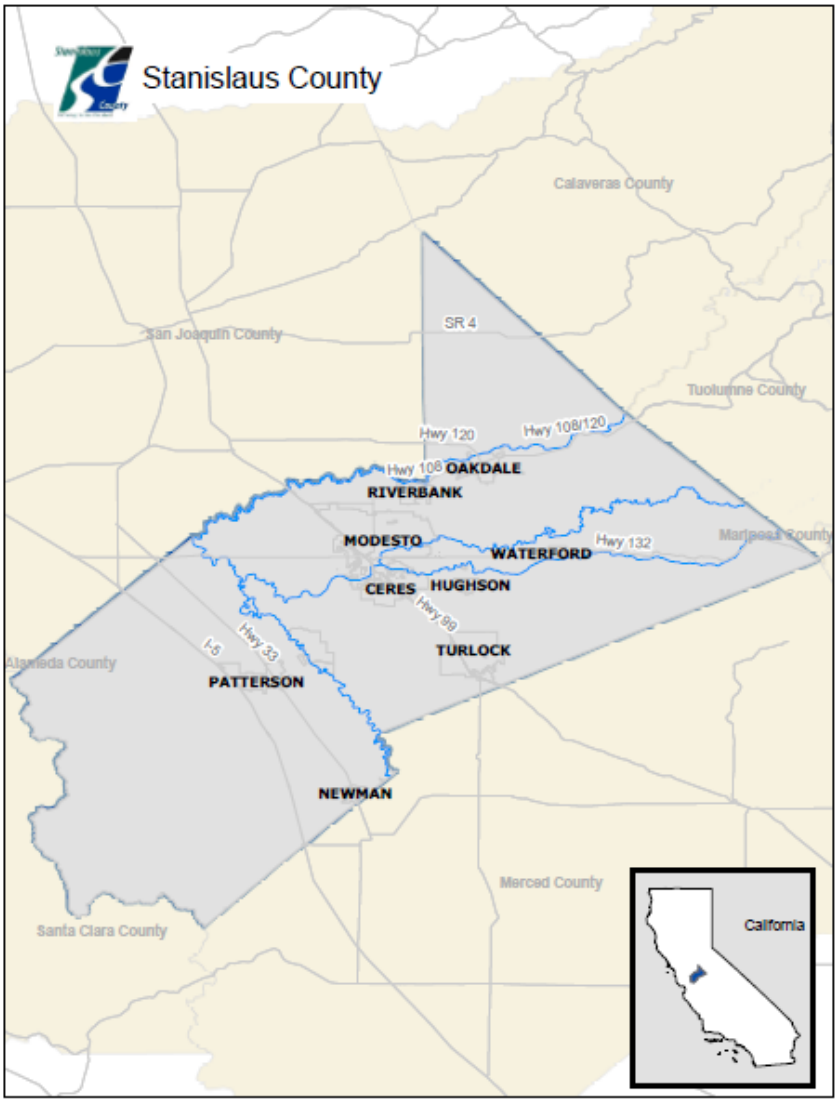
Community Profile

SECTION THREE - COMMUNITY PROFILE

GENERAL INFORMATION

Stanislaus County is located in the heart of California's Central Valley, (see Figure -1) within 90 minutes of the San Francisco Bay Area, the Silicon Valley, Sacramento, the Sierra Nevada Mountains, including Yosemite National Park, and California's Central Coast. It is also within a five-hour drive of Los Angeles. Two of California's major north-south routes (Interstate 5 and Highway 99) intersect the area making the County one of the dominant logistics center locations on the west coast.

It is bordered on the north by San Joaquin County, the east by Mariposa, Tuolumne, and Calaveras Counties, the south by Merced County, and the west by Alameda and Santa Clara Counties. Established in 1854, Stanislaus County's total land area is 1,494 square miles. The County seat is the City of Modesto, located near the center of the County.



The mild Mediterranean climate makes Stanislaus County one of the best agricultural areas in the world, positioning it as a global center for agribusiness. The County averages approximately twelve inches of rainfall each year and experiences a full spectrum of the seasons. Temperatures range from an average low of 38 degrees Fahrenheit in the winter, to an average high of 85 degrees Fahrenheit during the spring and fall, and to average highs in the 90's during the summer months.

Temperature Averages and Average Rainfall for Stanislaus County (Source U.S. Climate Data)

Average High/Low Temperature	Average Rainfall
January 55°/40° F (13°/4.5° C)	January 2.6 inches
August 94°/62° F (34.2°/16.8°C)	August .05 inches
Annual 76°/52.2° F (24.4°/10.6° C)	Annual 13.2 inches

RIVERS

There are four major rivers in Stanislaus County. Three, the Stanislaus, Calaveras, and Tuolumne Rivers, run east to west, with the Calaveras River crossing just the tip of the northeast County border. The fourth, the San Joaquin River, runs southeast to northwest. Dry Creek also runs east to west, and then merges with the Tuolumne River in Modesto. There are no flow control systems on Dry Creek. Rainfall and runoff in the eastern portion of the County directly affect this creek. The County also has three major reservoirs; Modesto, Woodward, and Turlock.

TRANSPORTATION

According to the California Department of Transportation, in 2014 Stanislaus County had 181 miles of State Highways, 2,940 miles of public roads, and 382 bridges. There were 265,347 registered automobiles, 11,958 registered motorcycles, and 102,349 registered trucks. Bus inventory was 73. The County had 317,718 licensed drivers and 79.6% commuted by car alone.

HIGHWAYS/ROADS/BRIDGES

State Highways 99, 108/120, 33, 132, and Intestate 5 are major transportation routes through the County. Highways 99, 33 and I-5 run north – south and Highways 108/120 and 132 run east – west. These major highway/freeway routes would be highly utilized by both County residents and tourists as possible evacuation routes.

Public roadways and bridges within Stanislaus County are owned and maintained by the California Department of Transportation, Stanislaus County Public Works Department and the nine city Public Works Departments. A high potential exists for road closures due to flooding or earthquakes. Parts of the County may become isolated for a period of time when these conditions exist. While most secondary roads are paved, there are still a number of unpaved public roads within the County.

AIRPORTS

One joint County/City of Modesto operated airport is located in Stanislaus County. The Modesto City-County-Harry Sham Field Airport's runways are 5904' and 3464' respectively. The airport operates 24 hours daily, although the tower is closed at night. It is capable of multiple engine propeller aircraft or jet aircraft, as large as a 737-400. There are an additional four airports in Stanislaus County; Oakdale Municipal Airport (2400 foot east-west runway), Turlock Municipal Airport (2985 foot north-south runway), Patterson Airport (2500 foot north-south runway) and the Crows Landing Naval Air Station. Both the Patterson Airport and the Crows Landing Naval Air Station are not functional Airports. In Patterson, the runway and tarmac are leased by a private company and a landing area is used for medical helicopters.

RAILROADS

The Union Pacific (UP) and Burlington Northern Santa Fe (BNSF) Railroads are the freight lines serving Stanislaus County. Both have tracks running north – south in the County. Amtrak passenger service is provided on the BNSF track with a passenger station located in eastern Modesto. Sierra Railroad serves between Tuolumne County and the City of Oakdale in Stanislaus County. Also, the Modesto and Empire Traction Company (M&ET), a short line freight railroad, provides interconnection services between UP and BNSF Railroads, as well as serving the industrial hub of the County. M&ET operates 5 miles of yard main track and 39 miles of spurs and sidetracks.

MEDICAL FACILITIES

Stanislaus County is home to Doctors Medical Center, Emanuel Medical Center, Memorial Medical Center, Kaiser-Permanente Hospital, Oak Valley Hospital, and Stanislaus Surgical Hospital. All but the Stanislaus Surgical Hospital provide Basic Emergency Services. Only Doctor's Medical Center and Memorial Hospital provide Level II Trauma Services.

The County also has approximately 20 licensed Nursing and Rehabilitation Care Centers that can coordinate with hospitals to alleviate surge during an incident. In addition, Stanislaus County Health Services Agencies has medical offices in Ceres, Hughson, Modesto, and Turlock, and provides a variety of medical services throughout the County.

Hospital	Number of Licensed Beds	ER Services	Trauma Services
Doctor's Medical Center, Modesto	394	Basic Emergency	Level II
Emanuel Medical Center, Turlock	209	Basic Emergency	None
Kaiser Hospital, Modesto	140	Basic Emergency	None
Memorial Hospital, Modesto	423	Basic Emergency	Level II
Oak Valley Hospital, Oakdale	35	Basic Emergency	None
Stanislaus Surgical Hospital, Modesto	23	None	None

Source: California Office of Statewide Health Planning and Development Healthcare Atlas

ARTS, ENTERTAINMENT AND RECREATION

Stanislaus County offers a variety of arts, entertainment and recreation opportunities. The County is home to a vibrant arts community with the world class Gallo Center for the Arts, a symphony orchestra, and abundant visual and performing arts. Notable places of interest include the McHenry Mansion, McHenry Museum, the State Theater in Modesto, the Carnegie Arts Center in Turlock, and the Assyrian Cultural Center in Ceres.

For sports enthusiasts, John Thurman Field, located in the City of Modesto, is home to the Modesto Nuts, a minor league Class A baseball team that serves as a farm team of the Colorado Rockies.

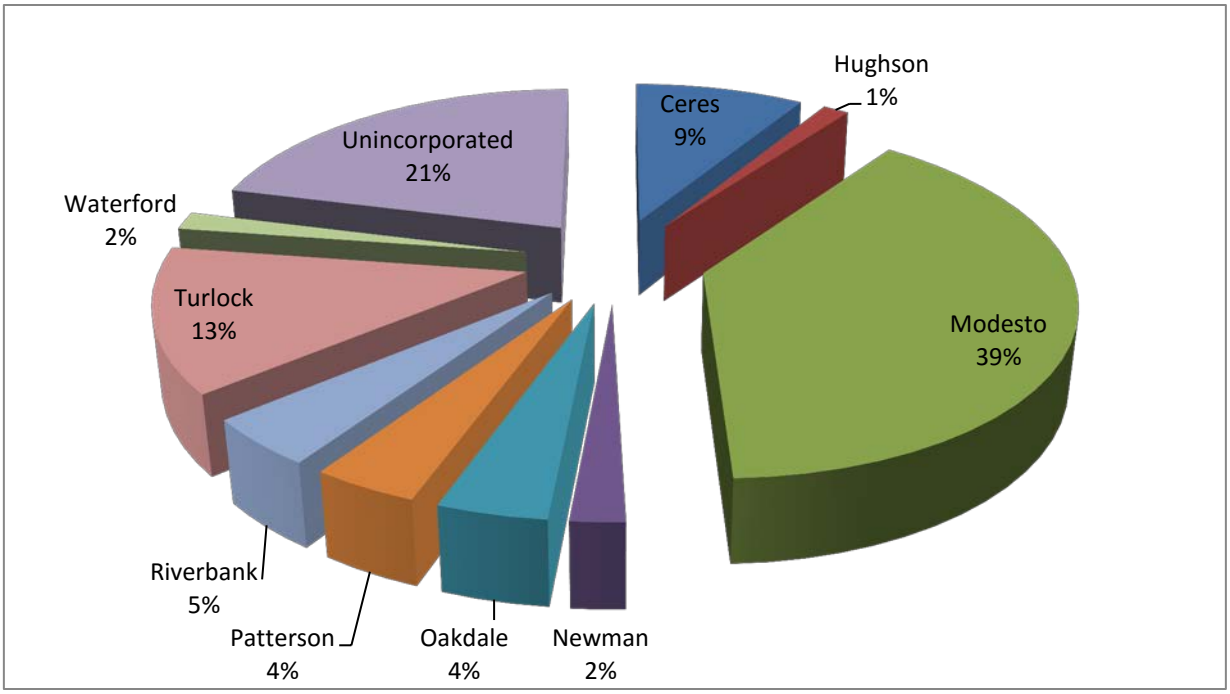
Stanislaus County maintains five regional parks, twelve neighborhood parks, ten community parks, two Off-Highway Vehicle parks, five fishing access points along rivers and lakes, and one swimming pool. Day use and camping is available at Frank Raines Regional Park, and camping, boating and other recreational activities are available at the Modesto Reservoir Regional Park and Woodward Reservoir Regional Park.

COUNTY POPULATION

Stanislaus County has nine municipalities: the Cities of Ceres, Hughson, Modesto, Newman, Oakdale, Patterson, Riverbank, Turlock, and Waterford. Additionally, there are thirteen unincorporated communities within the County and substantial areas of State and Federally controlled lands such as parks, wildlife areas and other public lands. Modesto has the largest population within the County. The

United States Office of Management and Budget has designated Stanislaus County as the Modesto, CA Metropolitan Statistical Area. The United States Census Bureau ranked the Modesto, CA Metropolitan Statistical Area as the 103rd most populous metropolitan statistical area of the United States as of July 2012.

Stanislaus County Estimated Population 2015



Source: California Department of Finance and US Census

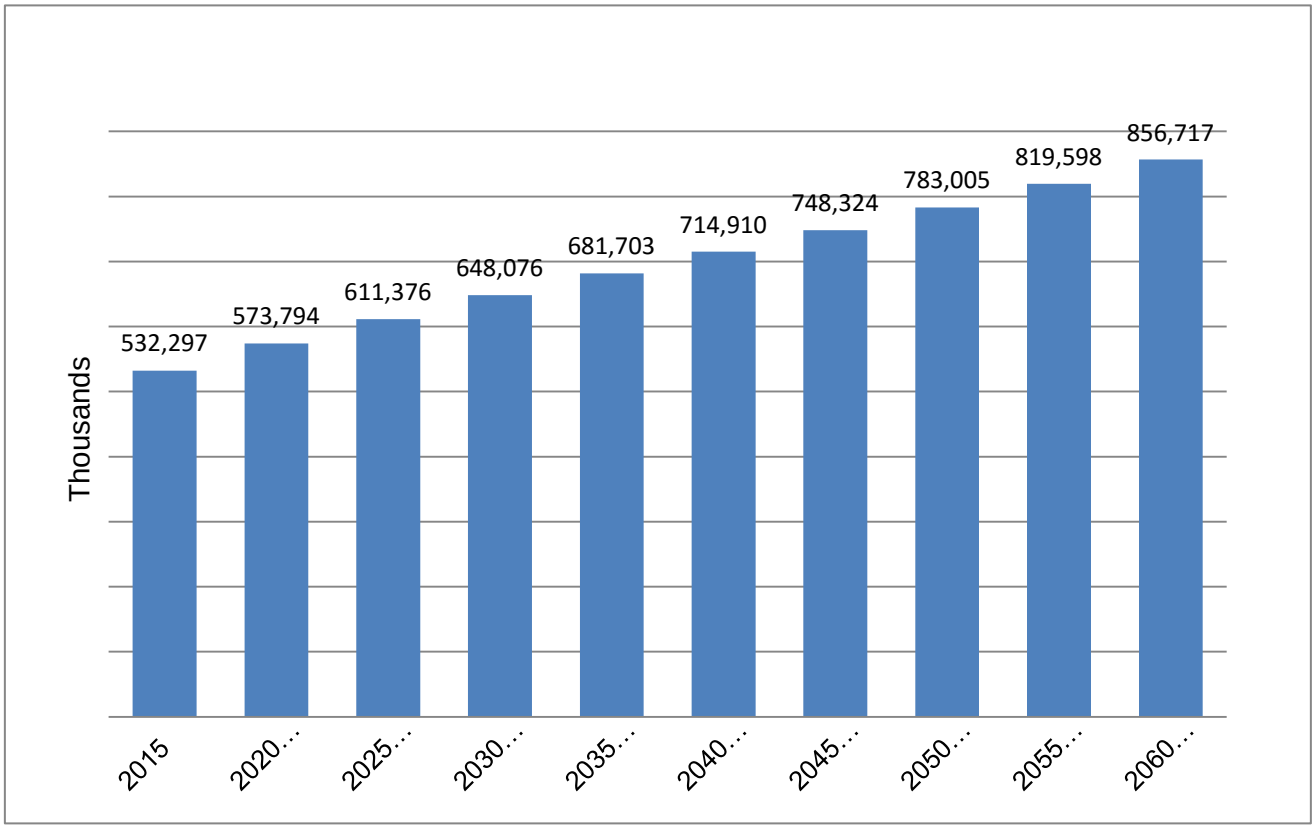
Estimated Population Increase 2010 – 2015

County/City	2010 Census	2015 Estimate Pop.	% Increase
Stanislaus	514,453	532,297	3.5%
Ceres	45,417	46,989	3.5%
Hughson	6,640	7,222	8.7%
Modesto	201,165	209,185	3.9%
Newman	10,224	10,753	5.1%
Oakdale	20,675	21,773	5.3%
Patterson	20,413	21,094	3.3%
Riverbank	22,678	23,485	3.5%
Turlock	68,549	71,043	3.6%
Waterford	8,456	8,686	2.7%
Unincorporated	110,236	112,066	1.6%

Source: California Department of Finance and US Census

According to the State of California Department of Finance Demographic Research Unit, as of January 2015, the estimated total population for Stanislaus County was 532,297. The State of California Department of Finance projects the population for Stanislaus County in 2060 to be 856,717. This represents a 61% increase in population.

Stanislaus County
Projected Population Growth



Source: California Department of Finance

Stanislaus County Population Characteristics – 2010-2015 U.S. Census

Population	Number	Percent
Total Population	538,388	100%
Sex and Age		
Male	266,503	49.5%
Female	271,885	50.5%
Median Age (years)	32.9	
18 and under	146,979	27.3%
65 years and older	65,144	12.1%
Disabled	69,078	13.4%
Total Households	**168,090**	
Persons per household	3.07	
Median household income	$49,573	
Persons in poverty, percent	93,115	18.1%
Language other than English spoken at home	208,352	40.5%
Education		
High School graduate or higher, percent	397,156	77.2%
Bachelor's degree or higher	84,369	16.4%
Stanislaus County School Enrollment (K-12)	106,126	19.7%

The median resident age for Stanislaus County residents is 32.9. Approximately 11.7% of the population is over the age of 65. The disability status of the civilian non-institutionalized population is 13.4%. Of the 13.4%, 4.2% are under 18 years, 11.1% are 18-64 years, and 47.6% are 65 years and older.

For the total population five years and older, 59.5% speak English only in the home and 40.5% speak a language other than English.

2014 American Community Survey – Race and Hispanic/Latino

Estimated Population	531,997	100%
Hispanic or Latino	234,452	44.1%
White	234,649	44.1%
Black	12,171	2.3%
American Indian and Alaska Native	3,130	.6%
Asian	28,694	5.4%
Native Hawaiian and Other Pacific Islander	3,416	.6%
Some Other Race	1,479	.3%
Two or more races	14,006	2.6%

The 2014 American Community Survey provide by the California Department of Finance shows that the total population of Stanislaus County is comprised of 44.1% Hispanic or Latino, 44.1% White, 2.3 % Black, .6% American Indian and Alaska Native, .6% Native Hawaiian and Other Pacific Islander, .3% some other race, and .6% two or more races.

Household Income

The estimated median household income for Stanislaus County for 2014 was $49,573 compared to $61,933 for the State of California.

EDUCATION

An estimated 77.2% of Stanislaus County residents over 25 are high school graduates or above, with 16.4% having a Bachelor's degree or higher.

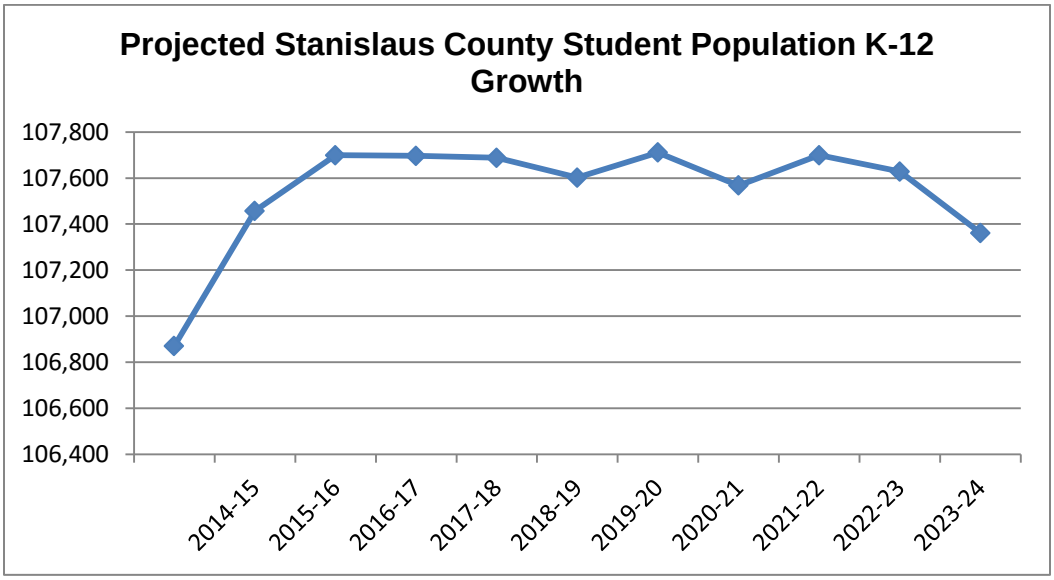
Post-Secondary Education

California State University, Stanislaus - Stanislaus County is home to California State University, Stanislaus (CSUS). The 228-acre campus located in the City of Turlock, along with the Stockton Center, serves a diverse student body of more than 9,000.

Modesto Junior College - Modesto Junior College offers two main campuses on the east and west side of Highway 99. The east campus comprises 58.3 acres, and the west campus comprises 167.1 acres which includes six large scale agricultural units. The college has a current enrollment of 19,262 students, including more than 8,000 students in the Community Education Program.

Stanislaus Public School Enrollment

The California Department of Finance and Stanislaus County Office of Education (SCOE) lists 106,126 students enrolled in K-12, or 20% of the County population, for the 2014/2015 School Year. Projections through 2024/2025 show that number increasing by less than 1000 students. SCOE is a partner agency with the Stanislaus Operational Area Council and participates in quarterly meetings.

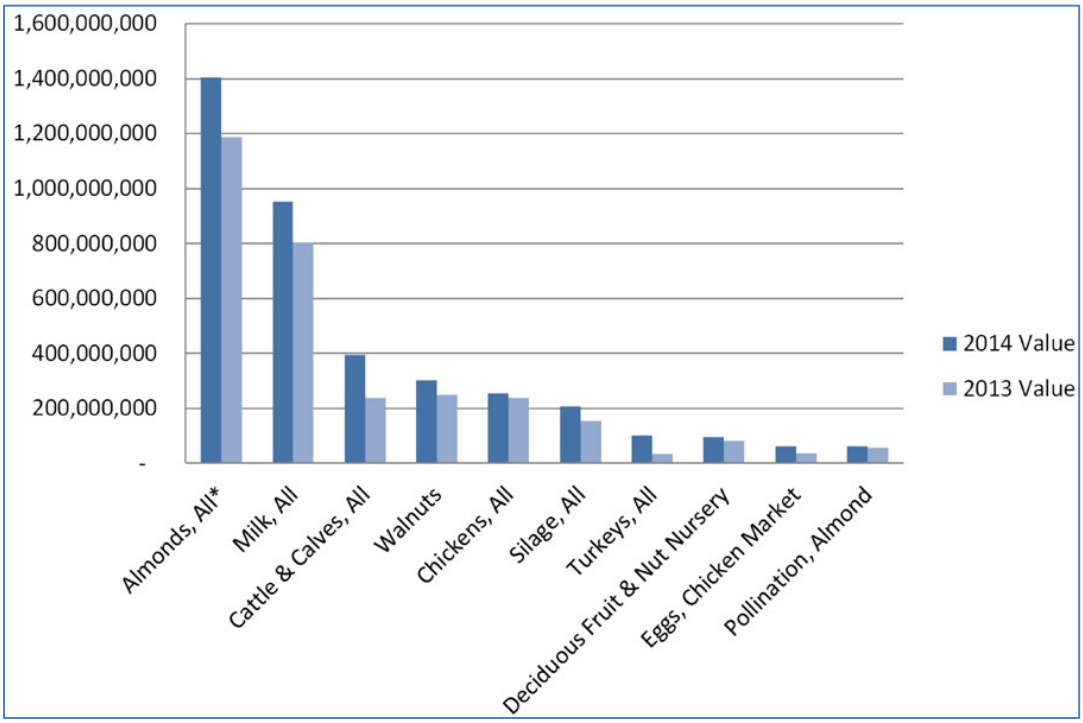


Source: Stanislaus County Office of Education and California Department of Finance

ECONOMY

Stanislaus County's productive soils, long growing seasons, and extensive transportation network combine to make a successful farm and business region.

Agriculture is the County's core industry with the value of agricultural commodities produced in 2014 valued at $4,397,286,000. This represents at 20% increase from the 2013 gross production value and is primarily attributed to a significant raise in the value of almond meats, cattle and calves, milk production, turkeys, silage, and walnuts. However, 13,000 fewer acres were harvested than in 2013 due to forced fallowing brought on by a fourth year of drought conditions. Most of the acres fallowed were vegetable and silage crops on the west side of the County.



Source: Stanislaus County Agricultural Crop Report 2014.

The Stanislaus Business Alliance, a local organization, oversees both economic development and workforce training activities in Stanislaus County. They maintain current statistics and other reports relevant to conducting business in the County. According to the Alliance, manufacturing continues to be an important employer in Stanislaus County. The top ten major manufacturing employers in 2016 are listed in the following chart.

Major Manufacturing Employers – 2016

Employer	Description	Employees*
E & J Gallo	Winery	3,300
Seneca Foods	Fruit Products	2,275
Del Monte Foods	Fruit Products	2,200
Stanislaus Food Products	Tomato Products	1,850
Foster Farms	Poultry Processor	1,500
ConAgra	Tomato & Bean Products	1,050
Bronco Wine	Winery	834
Silgan Containers	Metal Food Containers	750
Frito-Lay	Snack Food Products	684
Racor	Filtration Products	444

**Reflects peak seasonal levels where applicable. Source: Stanislaus Business Alliance*

The top ten private employers in Stanislaus County in the non-manufacturing field for 2016 are listed in the following chart.

Major Non-Manufacturing Private Employers – 2016

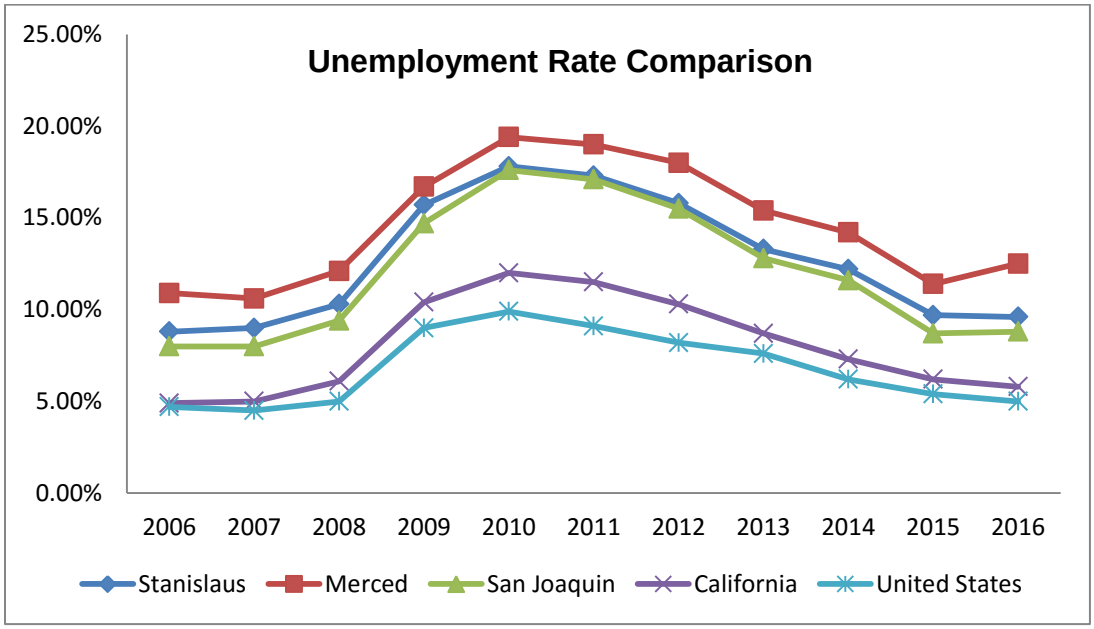
Employer	Description	Employees*
Memorial Medical Center	Healthcare	2,600
Doctors Medical Center	Healthcare	2,467
Save Mart Supermarkets	Retail Supermarket	1,661
Duarte Nursery	Plant Nursery	1,500
Emanuel Medical Center	Healthcare	1,250
Sutter Gould Medical Foundation	Healthcare	1,200
MedAmerica Billing Services	Medical Billing	900
Kaiser Permanente	Healthcare	800
Amazon	Fulfillment	750
Oak Valley Hospital District	Healthcare	750

**Reflects peak seasonal levels where applicable. Source: Stanislaus Economic Development and Workforce Alliance*

According to the California Employment Development Department, the unemployment rate in Stanislaus County was 9.6 percent in March 2016, up from a revised 9.3 percent in February 2015, and below the year-ago estimate of 10.7 percent for the nation during the same period.

UNEMPLOYMENT RATE COMPARISON

The County's unemployment rate rose to 17.8% in 2010, the highest figure recorded in 10 years, up from 15.7% in 2009, and a low of 8.8% in 2006, according to the California Employment Development Department and the United States Department of Labor. Since 2010, unemployment rates have dropped to 9.6% in 2016. This number is still significantly higher than the State percentage of 5.8% and the United States average of 5%. Unemployment rates can affect the number of commuters who must travel outside the County for work.

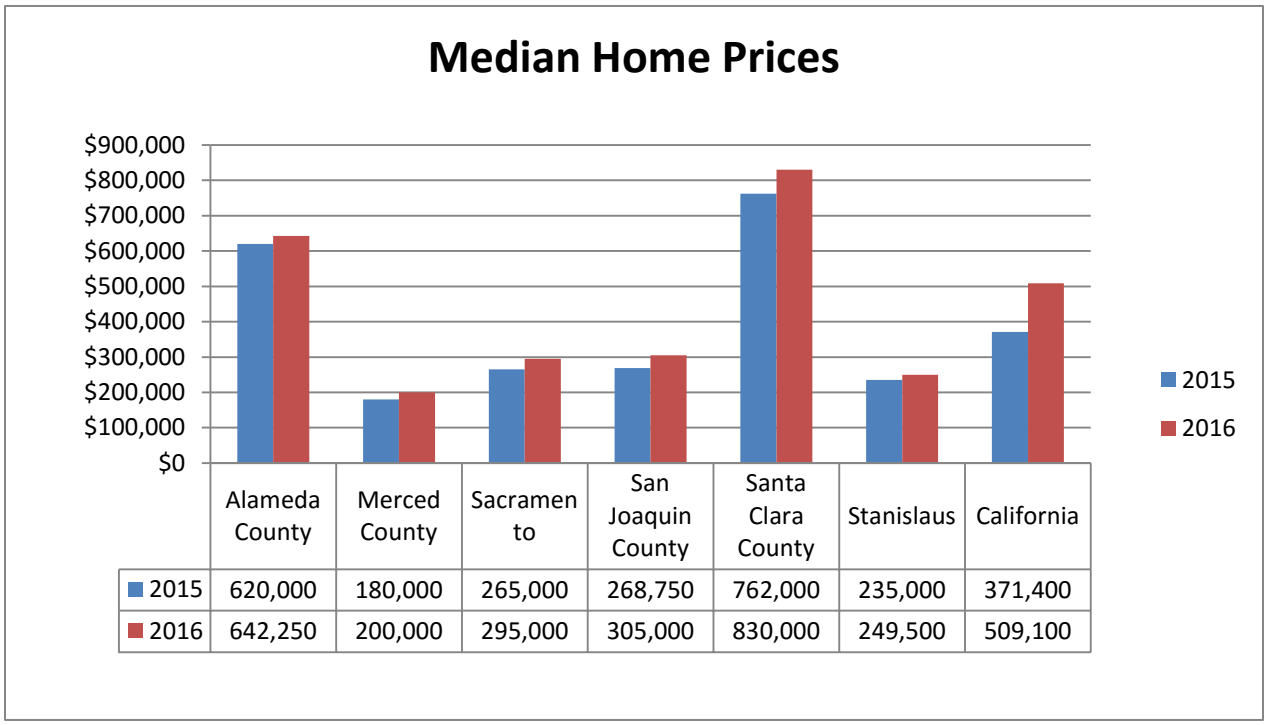


Source: California Employment Development Department, United State Department of Labor

HOUSING

Home values in California experienced a dramatic decrease during the Great Recession from 2007 to 2009. The median home price in Stanislaus County peaked at $256,000 in December 2005 and fell to $129,000 by March 2012. In 2015, median home values in Stanislaus County had reached $235,000, and by 2016, they had increased by 6.2% to $249,500. Although median home prices in Stanislaus County have increased, the County still lags behind four of the five comparison counties and the State. Santa Clara County had the largest increase with an 8.9% increase in median home values between 2015 and 2016.

Within the unincorporated area of Stanislaus County there has been no significant development since the previous plan was adopted in 2011. The exception to this is the planned community on the western side of the County called Diablo Grande. Limited building has resumed within this area. Other building within the County has occurred within the cities.

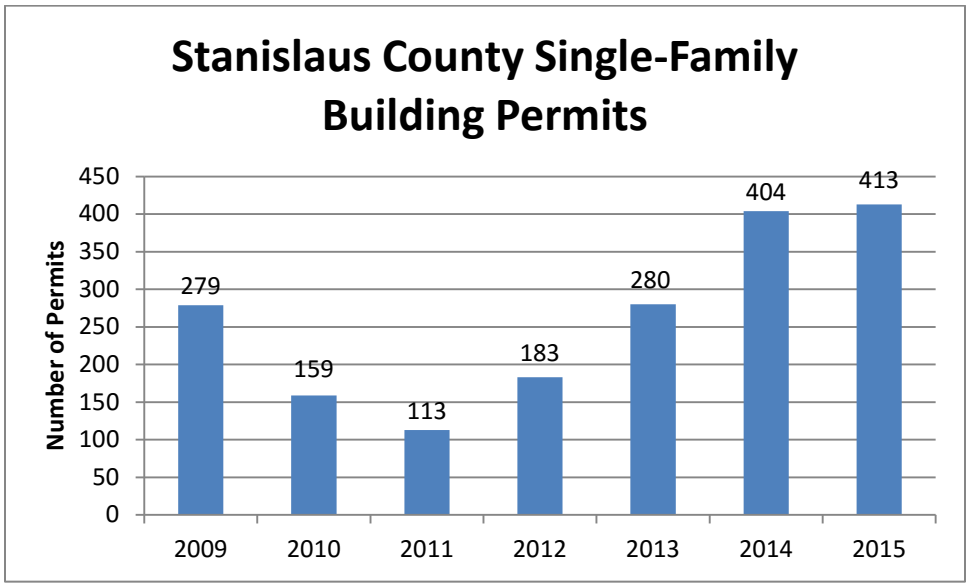


	Alameda County	Merced County	Sacramento	San Joaquin County	Santa Clara County	Stanislaus	California
2015	620,000	180,000	265,000	268,750	762,000	235,000	371,400
2016	642,250	200,000	295,000	305,000	830,000	249,500	509,100

Source: Corelogic.com

SINGLE-FAMILY BUILDING PERMITS

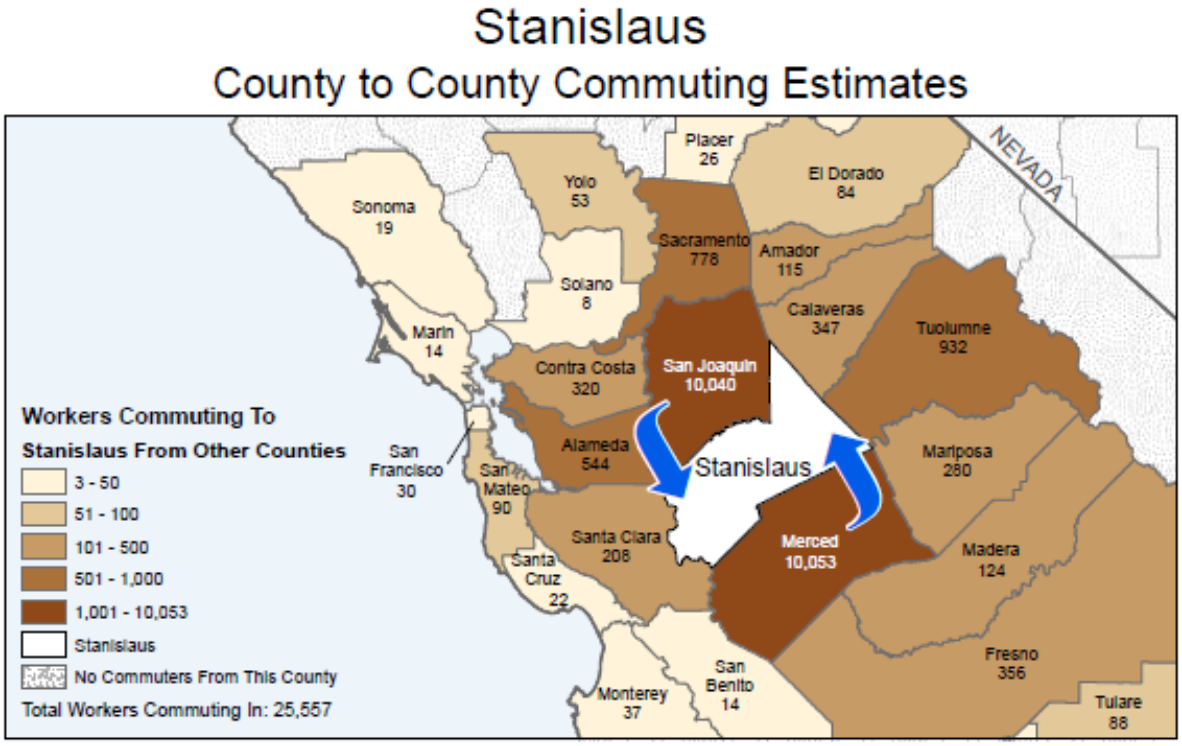
Stanislaus County tracks issued single-family residential construction permits as a way of monitoring the home construction, building materials and construction employment sector. After reaching a low of 113 in 2011, issued permits have experienced a steady increase to 413 permits issued in 2015.

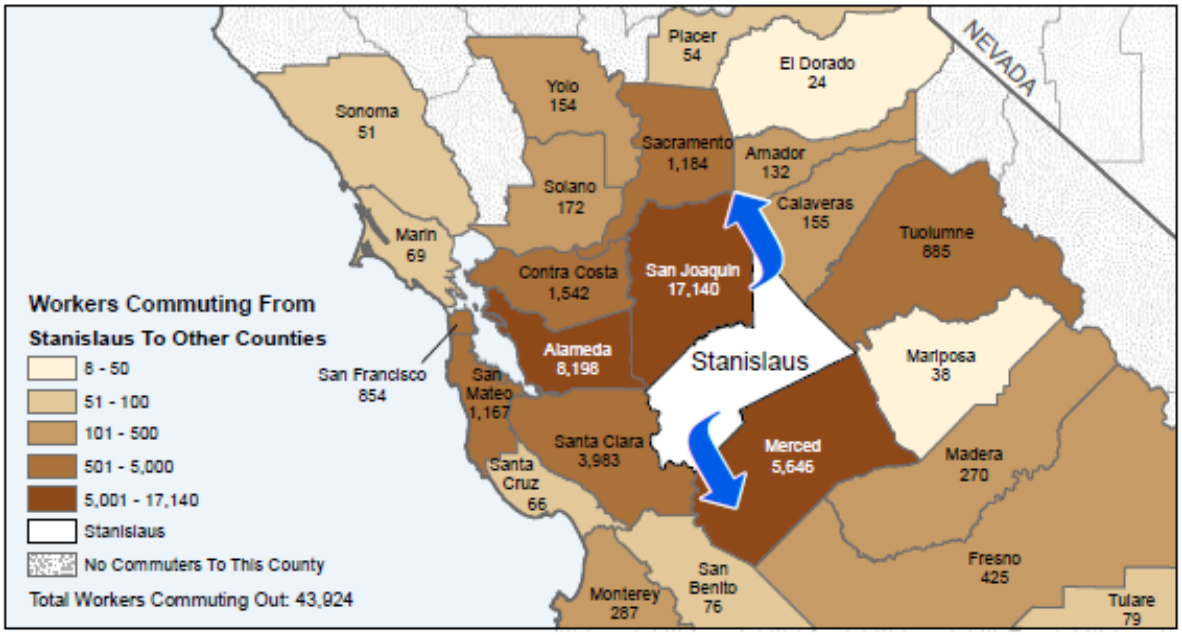


Source: United States Census Bureau

COMMUTERS

Based on a January 2013 report by the U.S. Census Bureau, the State of California Employment Development Department estimates that 25,557 workers commuted to work from other counties to Stanislaus County and 43,924 workers commuted from Stanislaus County to other Counties. The total number of workers estimated to live and work in Stanislaus County is 157,079.





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SECTION FOUR

Planning Process

SECTION FOUR - PLANNING PROCESS

This section identifies the planning process, the Planning Team members, the meetings held as part of the planning process, documents the outreach efforts, and the review and incorporation of existing plans, reports, and other appropriate information.

A comprehensive description of the planning process in this document informs citizens and other readers about the plan's development and serves as a record of how decisions were reached. A detailed summary of the participation demonstrated by each jurisdiction is presented under Supporting Documentation at the end of this section.

At the Kickoff Meeting on March 31, 2016, the Office of Emergency Services convened an internal meeting with Planning Team members. The Planning Team members include representatives who are leads in the development of the Stanislaus County General Plan, the Capital Improvement Plan and the Emergency Operations Plan. Their involvement in the plan development ensures the integration of the mitigation plan with other local plans. The following is list of Planning Team members, including their roles in the planning process.

PLANNING TEAM MEMBERS

ROLE	NAME	DEPARTMENT
Assistant Director of Emergency Services/Fire Warden • Authority on mitigation planning, hazard response, and community issues.	Dale Skiles	Office of Emergency Services
Deputy Director of Emergency Services/Fire Warden • Project Leader • Flood and Dam Inundation Risk Assessment and Mitigation Strategy	Eric Holly	Office of Emergency Services
Project Manager/Plan Author to July • Initiate and managed the plan update through June, 2016; • Involved participating jurisdictions and stakeholders and represented the Chief Executive Office; and • Developed text and orchestrates actual production of plan document.	Paul Gibson	SBT / Office of Emergency Services
Project Manager/Plan Author – July forward • Assumed responsibility for completing the plan and managed the final development • Responsible for final submittal and approval of the LHMP • Project Lead for Plan • Project Lead for Earthquake Risk Analysis and Mitigation Strategy	Deborah Thrasher	Office of Emergency Services
Project Assistant • Provides project management assistance to the Project Manager/Plan Author; and Planning Team.	Peter Ishaya	Chief Executive Office / Office of Emergency Services

ROLE	NAME	DEPARTMENT
Emergency Management • Assists in coordinating emergency services for OES and Operational Area. • Project Lead for Landslide Hazard Risk Analysis and Mitigation Strategy	Melba Hibbard	Office of Emergency Services
Plan Development/Hazard Knowledge • Edited and finalized plan document for adoption; • Historical data of past events; and • Knowledge of Emergency Operations Plan for the County and nine cities.	Chris Holmer	Office of Emergency Services
Fire Marshal • Responsible for Federal, State and local code interpretations; and • Code variance, pre-engineering analysis, new business development, and fire code development for the County. • Wildfire Hazard Expert	Jerry McDaniel/ Randy Crook	Office of Emergency Services
Planner • Plan development, land use, future development, and safety element of the General Plan.	Angela Freitas, Director	Planning & Community Development
Planner • Plan development, land use, future development, and safety element of the General Plan.	Kristin Doud	Planning & Community Development
Chief Building Official • Building code enforcement, land use, and mitigation goal and strategy contact.	Denny Ferreira	Planning & Community Development
Public Works • Expert on County infrastructure. This includes inventory and valuation information for public infrastructure for each of the five identified hazards. The inventory is comprehensive and includes: roads, traffic signals, drainage facilities, lighting facilities, bridges, and airports; and • GIS mapping is now done through the Public Works Department, but will soon be handled by the Strategic Business Technology department.	Randy Avants	Public Works
Public Works/GIS Manager • GIS implementation and mapping.	Peou Khiek	Public Works / SBT
Public Works/GIS Application Specialist • GIS map creation, research, data collection, data verification, and hazard analysis.	Aron Harris	Public Works / SBT

ROLE	NAME	DEPARTMENT
Assessor • Determines property values of parcels in County; and • Shares database and resources to aid in determining property values for risk assessment and integration with GIS mapping of hazards.	Don Gaekle	Assessor's Office
Assessor • Information Technology Specialist; • Shares database and resources to aid in determining property values for risk assessment and integration with GIS mapping of hazards; • Information Technology Specialist	Clarence Willmon	Assessor's Office
Capital Projects • Provides inventory of current and future County facilities for integration into GIS mapping. • Provides link to Capital Projects and Capital Improvement Plan	Tim Fedorchak	Chief Executive Office
Senior Application Specialist • IT expert; and coordinating efforts between SBT and Planning Team members.	Debra Siebrecht	Strategic Business Technology
Risk Management • Provides a list of the insured value of each County owned facility.	Kevin Watson	Risk Management Division / Chief Executive Office

LHMP KICK-OFF MEETING

On March 16, 2016, the Project Assistant sent an e-mail to the Planning Team members across multiple County departments, inviting them to participate in the Kick-Off Meeting for the LHMP Update. These County personnel were assigned to execute specific roles for the update.

On March 31, 2016, fifteen individuals participated in the Kick-Off Meeting held at 1010 10th Street Modesto, California, Room 2008. The Assistant Director of Emergency Services explained the importance of participating in the plan update and presented an overview of the process with a discussion explaining the plan requirements. The Project Manager and Assistant Director of Emergency Services reviewed the FEMA Planning Guide requirements and discussed the importance of accurately completing the planning process. The Project Manager provided training on the desired organization of the plan document and reviewed the requirements of the Prerequisites, Planning Process, and Risk Assessment sections of the plan. Training on the Mitigation Strategy and Plan Maintenance sections of the plan were identified to be discussed at the next meeting.

PUBLIC INVOLVEMENT IN THE PLAN DEVELOPMENT PROCESS/DECLARATION OF INTENT TO PARTICIPATE WITH STANISLAUS COUNTY

On April 12, 2016, the Project Assistant sent an email notification to local jurisdictions and participating agencies inviting them to participate in the Public/Participating Agency Meeting to be held at Salida Library. Over 190 individuals were contacted from various jurisdictions within the County. A press release

was submitted by David Jones, Stanislaus County Director of Communications and Legislative Affairs. Mr. Jones also informed the media about the public notification. The press release can be found here: http://www.stancounty.com/news-room/news-releases/news-2016/pdf/press-release-20160411-oes.pdf.

CHIEF EXECUTIVE OFFICE
Office of Emergency Services/
Fire Warden

Dale Skiles
Fire Warden
Assistant Director of OES

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Phone: 209.552.3600 Fax 209.552.2512

PRESS RELEASE

For Immediate Release
April 8, 2016

Contact: Paul Gibson
(209) 552-3600

PUBLIC MEETING:
Stanislaus County Multi-Jurisdictional Hazard Mitigation Plan Update

The Office of Emergency Services will hold a public meeting on **April 28th, 2016 from 1:00 p.m. to 3:00 p.m. at the Salida Library.** You are invited to attend. The purpose of the meeting is to provide a project overview and gather input from citizens regarding natural, human-caused and other hazards in Stanislaus County and the risk to critical facilities and vulnerable areas in our County.

Natural disasters, such as earthquake and flooding are real threats to citizens, property, businesses and government operations. In California, wildfires are a perennial concern. Stanislaus County would hope to hear from you about the types and natures of hazards that we all face, and your thoughts about how to minimize or curb their impacts.

Details:

Stanislaus County Hazard Mitigation Plan Update Public Meeting
Time & Date: 1:00-3:00PM, Thursday, April 28, 2016
Location: Nick W. Blom Salida Regional Library
4835 Sisk Rd, Salida, CA 95368

About the Hazard Mitigation Plan

The plan, when approved, will guide Stanislaus County toward greater disaster resistance as part of on-going efforts to create a more sustainable community. An approved plan will also qualify the County for certain kinds of Federal mitigation project funding. This plan will be a blueprint for reducing or eliminating long-term property damage and saving lives from the effects of future natural and man-made disasters in the community. This detailed plan update will address a variety of potential hazards that could affect some or all of the County's residents.

Hazard mitigation plans must be implemented on an ongoing basis, and updated every five years to ensure that they remain applicable representations of local risk and locally-preferred risk reduction strategies. More information about the project is maintained on the County's website at http://stanoes.com/mjhmp.shtm.

Each jurisdiction was asked to formally declare if they were going to participate with Stanislaus County. This information was used to determine participation so the Project Manager could schedule meetings and share resources.

JURISDICTIONS INVITED	PARTNERS INVITED
Mayors/City Managers	18 partners
School Districts	27 partners
Community Service Districts	8 partners
Fire Protection Districts	15 partners
Fire Services	7 partners
Police Services	5 partners
Hospital Districts	3 partners
Irrigation Districts	6 partners
Sanitary Districts	2 partners
Cemetery districts	3 partners
Drainage Districts	2 partners
Flood Control Districts	2 partners
Mosquito Abatement Districts	2 partners
Reclamation Districts	2 partners
Resource Conservation Districts	2 partners
Water Districts	7 partners

On April 4, 2016, the Office of Emergency Services convened an internal meeting with the hazard team leads to discuss the plan update process and schedule, set the agenda for the public/participating agency meeting, review tasks to be accomplished, and assign hazard team leads their individual responsibilities for each hazard identified in the plan update.

On April, 6, 2016, the Project Manager and the Project Assistant met with the GIS Team to discuss data gathering and GIS mapping for the plan update. An update strategy was assigned to the GIS Team to assist them in completing and delivering high-quality GIS maps for the 2016 Local Hazard Mitigation Plan.

On April 13, 2016, a teleconference call was scheduled with CalOES representative, Victoria LaMar-Haas to discuss the update strategy, process, and planning with Planning Team members. Other topics discussed during this meeting included review tools and guides that may be used in the plan update. The following individuals participated in the conference call: Peter Ishaya, Paul Gibson, Kevin Watson, Don Gaekle, Debbie Siebrecht, Melba Hibbard, Marvin Afable, Jerry McDaniel, Randy Avants, Eric Holly, Dennis Cordova, and Francine Gutierrez.

On April 28, 2016, the Office of Emergency held the Public/PA Meeting at the Nick W. Blom Salida Regional Library, located at 4835 Sisk Road, Salida, California 95368. The Assistant Director of

Emergency Services explained the importance of participating in the plan update and presented an overview of the process with a discussion explaining the plan requirements.

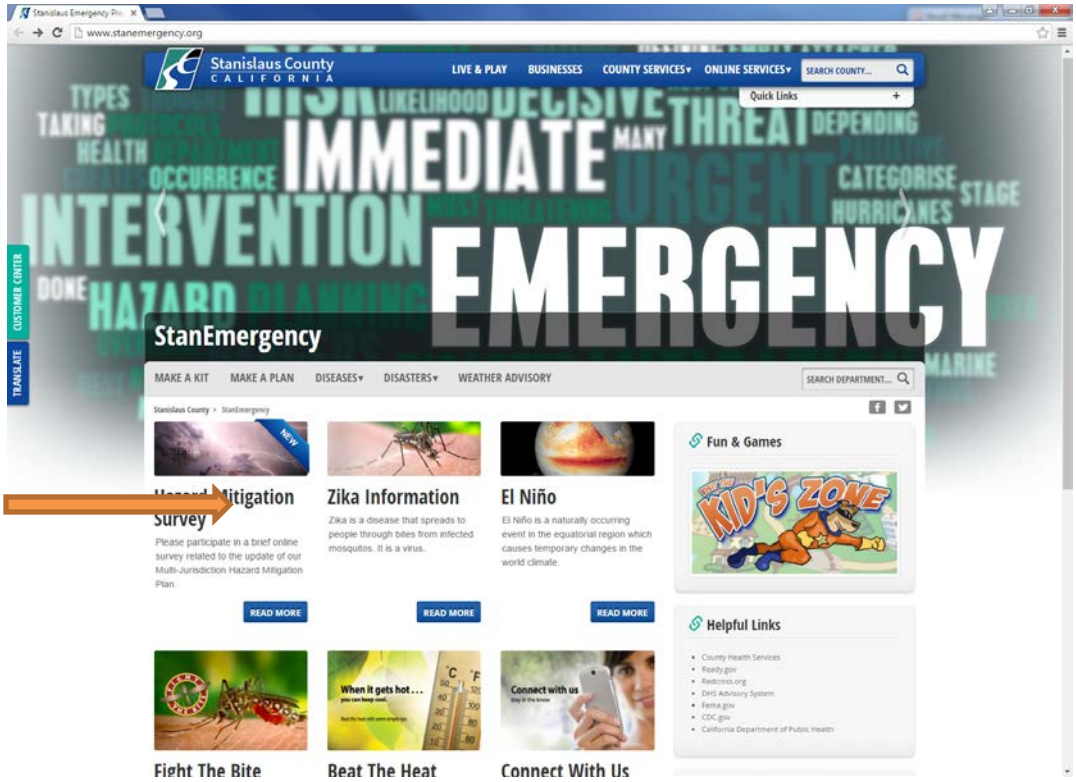
Local Hazard Mitigation Plan
Public Participating Agency Meeting
April 28, 2016
Attendees

NAME	POSITION	DEPARTMENT/ORGANIZATION
Melba Hibbard	OES Manager	Stanislaus County OES
Deborah Thrasher	OES Planner/Personal Services Contractor	Stanislaus County OES
Eric Holly	Deputy Fire Warden	Stanislaus County OES
Richard Murdock	Executive Director	Mountain-Valley Emergency Medical Services Agency
Matt Erickson	Public Works Director	City of Waterford
Adam Scheuber	Water Operations and Resources Manager	Del Puerto Water District
John Black	Director of District Security, Compliance and Emergency Preparedness	Yosemite Community College District
Erik Klevmyr	Fire Prevention Specialist II	Stanislaus County OES
Mike Borges	Chief of Police	Mike Borges
Paul Willette	Director of Ambulance Operations	Patterson District Ambulance
Mike Payton	Fire Division Chief	Modesto Fire Department
Jaime Towe	Chief Business Officer	Salida Union School District
Beronia Beniamine	Hazardous Materials Division Manager	Stanislaus County Department of Environmental Resources
Steve Jackson	Probation Manager	Adult Probation Department
Norma Torres-Manriquez	Administration Analyst II/Human Services Specialist	City of Riverbank
Teresa Fields	Facilities Analyst	Stanislaus County Office of Education
Dan Bernaciak	Deputy Agricultural Commissioner/Sealer	Stanislaus County Agricultural Commissioner

NAME	POSITION	DEPARTMENT/ORGANIZATION
Jeff Gregory	Fire Chief	City of Patterson and West Stanislaus Fire Protection District
Darlene Barber-Martinez	City Council Member	City of Riverbank
Laura Rodriguez-Mascorro	Campus Continuity Coordinator	California State University Stanislaus
Jerry McDaniel	Personal Services Contractor	Stanislaus County OES
Paul Easter	Deputy Fire Marshal	City of Modesto Fire Department
Elsy Voltino	Emergency Services Coordinator	Cal OES
Don Gaekle	Assessor	Stanislaus County Assessor's Office
Jeff Rufo	Road Supervisor	Stanislaus County Public Works Department
James Ferrera	Manager II	Stanislaus County Health Services Agency
Ray Martin	Board Member	Oakdale Fire Protection District
Casi Persons	Confidential Assistant IV	Stanislaus County OES
Tim Spears	Fire Marshal	Stanislaus Consolidated Fire Protection District
John W. Barios	Board Member	Stanislaus Consolidated Fire Protection District
Kristin Doud	Associate Planner	Stanislaus County Planning and Community Development Department
Tom Price	Superintendent/Principal	Valley Home Unified School District
Danielle Denczek	District Manager	Salida and Oakdale Rural Fire Protection Districts
Mike Anderson	Veteran and Military Liaison	Congressman Jeff Denham's Office
Ed Miller	Director of Child Welfare	Modesto City Schools

Participants provided feedback during the meeting through their completion and submittal of the Hazard Identification Questionnaire. Each entity was asked to review the hazards and state if they concurred with the determination and to provide information on: (a) any unique concerns; (b) any notable events since 2010, including the date, number of injuries, and types (and or dollar amounts) of damages to buildings, utilities, infrastructure and, especially, critical facilities; and (c) any areas of the County and/or specific facilities that they felt were particularly at risk, even if there are no historic occurrences.

There were fifteen surveys received and reviewed at the meeting. Seven respondents indicated no additional hazards should be included in the updated plan. The following hazards were mentioned at least once for inclusion in the current plan: chemical spills, climate change, cyber terrorism, drought, extreme heat and windstorms / tornados. Cyber terrorism was noted five times, the most of any new hazards. The survey specific to new hazards was also available on the internet via SurveyMonkey. One response was received with the responder indicating avalanche, chemical spill, climate change, cyberterrorism, drought and windstorms/tornadoes should be considered for inclusion in the plan update. The meetings participants had a lively discussion and reached consensus that the County would include the original five hazards identified in previous plans and not include new hazards at this time. The five hazards are earthquake, landslide, dam failure, flood, and wildfire. Climate change impacts will be discussed specific to each of these five hazards.

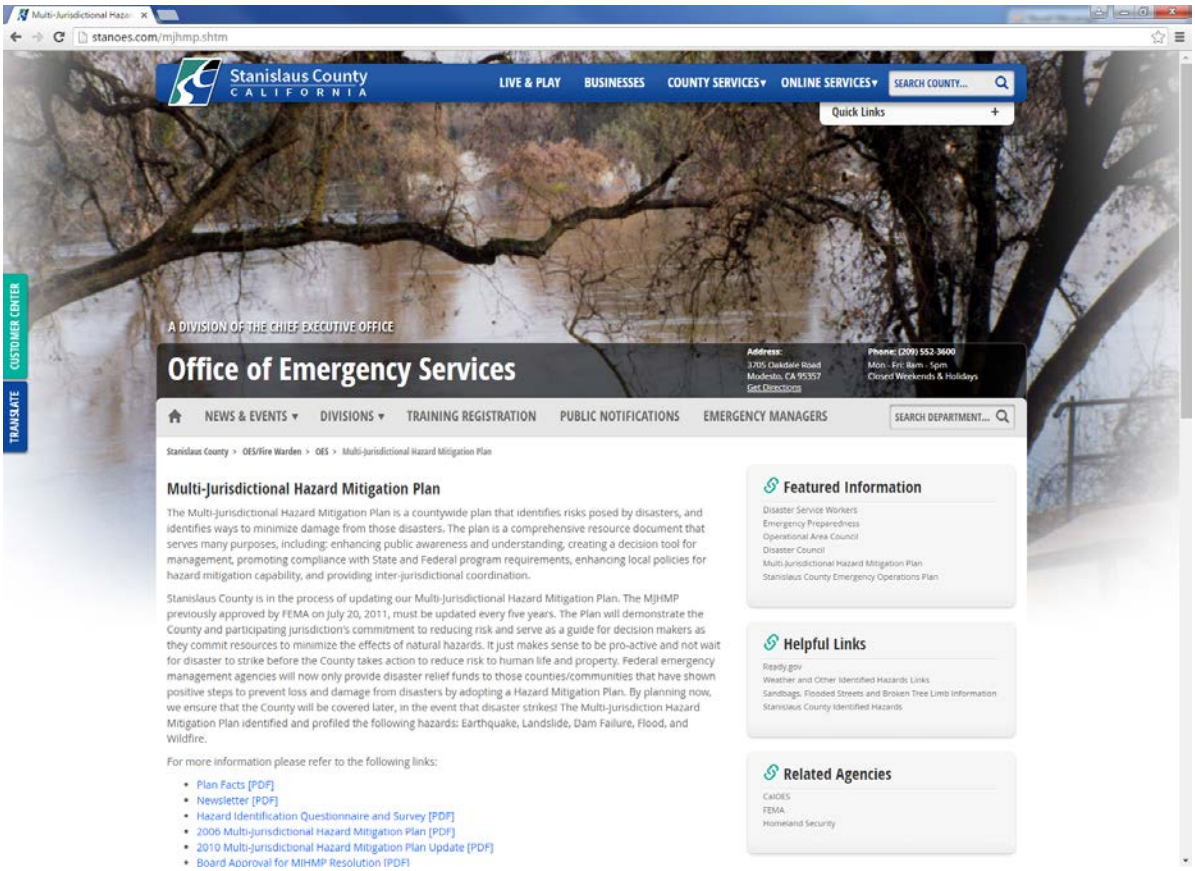


The meeting was the perfect opportunity to discuss the benefits of local mitigation planning. A local plan offers an opportunity to cooperate on mutual concerns, allows economies of scale, and avoids duplication of efforts.

The LHMP Update website http://stanoes.com/LHMP.shtm was shared at the meeting. Resource materials such as: Plan Facts, Hazard Identification Questionnaire and Survey were reviewed.

It is important to provide the general public with a means to not only learn about the Plan Update, but to voice concerns and to provide input throughout the planning process. The LHMP website served as a means to alert the public to the fact that the County was working to develop a Hazard Mitigation Plan Update and to provide the public with an opportunity to participate, ask questions, and submit comments and/or suggestions on the process through the SurveyMonkey link posted on the website. The website provided an opportunity to ensure that the participating jurisdictions were fully aware of the plan update and to make it easier for them to become involved and engaged during the planning process. The website will continue to be maintained on a regular basis to alert the public on the progress of the update

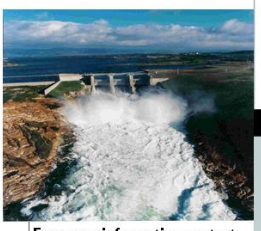
and subsequent updates. The website also has a Contact Us link with the name and phone number of the Assistant Director of Emergency Services and Project Manager so individuals can reach out for information on how to become involved. The following screen shot shows the County's site.



PLAN FACTS

Plan Facts was created to increase public awareness of the hazard mitigation plan process by providing a simple one page handout that could be used to inform the public and community leaders and other stakeholders about the importance of hazard mitigation planning and the plan update. Hard copies were handed out at the Public/PA Meeting.

Stanislaus County Multi-Jurisdictional Hazard Mitigation Plan Facts



For more information contact:

- Dale Skiles, Assistant Director of Emergency Services (209) 552-3600
- Paul Gibson, Project Manager (209) 552-3868
- pgibson@stanoes.com
- Visit our website at: http://www.stanoes.com/oes.shtm
- Office of Emergency Services 3705 Oakdale Road, Modesto, California 95357
- Natural disasters can't be prevented, but their impacts can be reduced through hazard mitigation
- The County Multi-Jurisdictional Hazard Mitigation Plan is currently being updated. If you are interested in participating, please contact the Project Manager.
- Components of a MJHMP include: prerequisites, planning process, risk assessment, mitigation strategy, and plan maintenance.
- Don't miss out—join Stanislaus County as one of our multi-jurisdictional partners!

Stanislaus County
Striving to be the Best

Protect Your Future...

What is Hazard Mitigation?

Natural hazards have the potential to cause property damage, loss of life, economic hardship, and threats to public health and safety. Hazard mitigation measures are essential to breaking the typical disaster cycle of damage, reconstruction, and repeated damage. Hazard Mitigation measures are the things you do today to be more protected in the future. They are measures taken before a disaster happens to reduce the impact that future disasters will have on people and property in the community. Mitigation reduces the risk of loss and creates a more disaster-resistant and sustainable community.

Purpose and Need for the Plan

Hazard mitigation plans are developed BEFORE a disaster strikes. The plans identify community policies, actions, and tools for long-term implementation to reduce risk and potential for future losses. Adopted, implemented, and maintained on an ongoing basis, these plans will lessen the impacts associated with hazard events in Stanislaus County. As of November 1, 2004 communities that do not have a FEMA approved hazard mitigation plan in place are no longer eligible for FEMA project grant monies under programs such as the Hazard Mitigation Grant Program, Flood Mitigation Assistance Program, Pre-Disaster Mitigation Grant Program, and Severe Repetitive Loss.

Participation

Jurisdictions located within Stanislaus County who wish to be recognized by FEMA as being compliant with DMA 2000 must either: (a) participate with the County in the multi-jurisdictional plan development process and formally adopt the final plan, or (b) prepare their own hazard mitigation plan. All jurisdictions in Stanislaus County are being invited to participate in the process. Active participation in the process is the only way a jurisdiction can be seen in FEMA's eyes as a "participating jurisdiction" that has met the requirements of DMA 2000 and is therefore eligible to apply for Federal funds for hazard mitigation projects. Participation includes attending meetings, providing feedback, reaching out to the public and other key stakeholders in the community, and adopting the final plan.

All jurisdictions received an email following the Public/PA Meeting with an update of what was discussed along with copies of the resource materials and link to the website. The initial meeting generated a lot of interest and subsequent one-on-one meetings with various jurisdictions wanting additional information on how to proceed.

In past years, the County coordinated the development of a Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). After Stanislaus County Office of Emergency Services staff reviewed the previous hazard mitigation plans and the short timeline to complete the update, the County decided to focus on the development of a Local Hazard Mitigation Plan (LHMP). References to the MJHMP in other county plans should be considered synonymous with the term LHMP. The LHMP developed for the County may be used as a base plan by other local government within Stanislaus County to complete their specific plans. County OES staff will be available to assist with the development of mitigation plans by local agencies.

INVOLVEMENT OF OTHER STAKEHOLDERS IN THE PLAN DEVELOPMENT PROCESS

In order to meet Federal requirements, the plan development process must be open to stakeholders beyond planning group members and the general public. Opportunities must be available for other stakeholders such as businesses, neighboring communities, academia, and other relevant private and non-profit interests to become involved in the planning process. The Planning Team determined that the LHMP website, previously mentioned, would provide an opportunity for the public to be notified of the plan update.

GEOGRAPHICAL INFORMATION SYSTEM (GIS) PROJECT PLANNING

When the Risk Assessment for the Local Hazard Mitigation Plan was originally prepared in 2004, the County's Public Works Department was responsible for all GIS mapping. Between 2004 and June 2016, the GIS mapping function was transferred to Strategic Business Technology (SBT) Department. Since July 1, 2016, the GIS mapping function has returned to the Strategic Business Technology (SBT) Department as part of some organizational restructuring executed by the Chief Executive Office.

The Project Manager, who previously served as the County's former Chief Information Officer in the previous Local Hazard Mitigation Plan in 2011, scheduled a GIS internal meeting on April 6, 2016, to discuss the update process and schedule, plan review, data gathering, and GIS hazard mapping for the Plan update. In attendance were representatives from the County's Information Technology Department (Strategic Business Technology), Public Works – GIS, and the Assessor's Office. The GIS team proceeded to discuss the details of the GIS mapping requirements, such as including inventory and valuation information for public infrastructure for each of the five identified hazards: earthquake, landslide, dam failure, flood, and wildfire. Other related comprehensive inventory information that was discussed included: roads, traffic signals, drainage facilities, lighting facilities, bridges and airports.

Other data collection partners included: Kevin Watson from Risk Management who was contacted to provide a list of the insured value of each County owned facility, and Tim Fedorchak of Capital Projects, who was contacted to provide a list of the County-owned and occupied facilities. Assessor, Don Gaekle, was contacted by the GIS Manager to provide access to the Assessor's database for the LHMP update. The Assessor previously assisted the County in 2004 when the original Hazard Mitigation Plan was drafted.

Most of the inventory and risk data can be layered into the County's existing GIS system to provide nearly instant aggregation of asset values within specifically identified risk areas. This data will then be updated and made available in a live database to ensure that the information is current. A GIS-based solution provides an interactive tool that can be shared with emergency responders and policy-makers in addition to supplying the preventative hazard mitigation-planning tool for development analysis purposes. Use of the GIS system will also be expanded in the future to provide for automation of notification to responders for virtually any "emergency alert" situation such as evacuations. Other resources were used for data integration for hazard mapping, including CalOES tools such as MyHazards and MyPlan.

PUBLIC WORKS/GIS PROJECT PLANNING MEETINGS

The Project Manager and Project Assistant met with the GIS team on April 29, 2016 to describe the role, responsibilities and expectation of Public Works in the plan update. Also in attendance was Victoria LaMar-Haas from CalOES. Participants discussed what information was needed to prepare the GIS maps and how to obtain resources from State Cal OES and FEMA. In attendance were Aron Harris, Mike Baliel, Peter Ishaya, and Paul Gibson. Victoria LaMar-Haas presented on MyHazards and MyPlan tools for use in the plan update.

On July 8, the Project Lead met with the Director of the Strategic Business Technology (SBT) Department and the GIS Manager to review the progress on the GIS maps. SBT continued regular meetings to oversee the development of GIS components of the plan. GIS worked with the Project Lead to ensure accurate and up to date information.

GIS SCOPE OF WORK FOR EACH HAZARD INCLUDES:

- Identify Structures—buildings, infrastructure, critical facilities, structures that house elderly or disabled and transportation systems—both for present assets and those planned for the future.
- Address Repetitive Loss Properties—by type including residential, commercial, and institutional.
- Estimate Potential Losses. The development of the Local Hazard Mitigation (LHMP) will include an inventory of assets from each publicly governed jurisdiction, coordinated by Stanislaus County, and an assessment of hazard risks: earthquakes, flooding, dam failure, wildfires and landslides.
- The LHMP must include the five specified risks gauged at 22 levels. The asset inventory provided by the County Assessor's Office database includes individual parcels; various lands use codes, and various taxing agencies or districts.
- County property (building asset) inventory and valuation—for both present assets and those planned for the future. This inventory to be by APN number with Assessor's use code, government jurisdiction, and valuation data for all APN's.
- Update the separate GIS layers for present assets and those planned for the future, to allow for GIS queries and reports to distinguish between the two. When new facilities are completed, the corresponding feature will be moved from the "future assets" layer to the "current asset" layer.
- From Census data, the number of people that would be affected by each natural hazard.
- During an update to the risk assessment, local jurisdictions must consider current and expected future vulnerability to all hazards and integrate new hazard data such as flood studies. Local jurisdictions are asked to incorporate updated estimates of cost of living and replacement costs for vulnerable buildings and impacts of population growth or loss in vulnerable areas.
- The number of properties/assets by general use code, for privately owned properties, and the sum of the property values, and improvement values from the Assessor's database.
- The number of people impacted by the disaster.

STRATEGIC BUSINESS TECHNOLOGY (SBT)—GEOGRAPHICAL INFORMATION SYSTEM (GIS)

The GIS maps and reports developed for the Local Hazard Mitigation Plan were developed by the Stanislaus County Public Works Department. This system is not connected to, dependent on, or in any way related to the GIS system developed by California CAD Solutions for the Alliance project. The Alliance project was developed using the Autodesk MapGuide software—a browser based "inquiry only" type system with limited analysis and mapping capabilities. That project addressed the specific needs of the Alliance group, and runs on an entirely different server from any other County GIS system.

The GIS system used for the LHMP, is based on ESRI's ArcInfo software, and is capable of performing sophisticated GIS layer creation, analysis, and mapping tasks. ESRI's software is the County GIS standard, used by most, if not all other County departments actively involved in GIS—including SBT, the Emergency Operations Center, and 9-1-1.

RISK ASSESSMENT MEETING

All Planning Team members were invited to attend a Risk Assessment meeting held on May 3, 2016 and May 4, 2016 in Room 2008 of 1010 10th Street, Modesto, California. Planning Team members, along with hazard team leaders, consulted with various experts within the County, in order to develop a comprehensive risk assessment for each hazard identified in this plan update.

MITIGATION STRATEGY MEETING

On June 1, 2016, the Project Manager and Project Assistant convened a meeting with the Planning Team. The previous plan was reviewed and new mitigation goals and actions were discussed along with incorporating information from the Safety Element of the Stanislaus County General Plan.

The Planning Team was charged to review and further analyze the mitigation goals and strategies in order to set hazard mitigation goals, set objectives for mitigation actions, and review implementation strategy. Incorporating feedback and comments from all Planning Team members into the draft plan was helpful in updating the mitigation strategies for this plan update. The Planning Team then developed a mitigation strategy with goals and actions to increase the disaster resistance of the County, along with

procedures for monitoring, evaluating, and updating the Plan to ensure that it remains a "living document."

JOINT DISASTER COUNCIL/OPERATIONAL AREA COUNCIL MEETING

On May 26, 2016, Stan Risen, the Chief Executive Officer, who also serves as the Director of Emergency Services, and Dale Skiles, the Assistant Director of Emergency Services, presented the planning process for the 2016 Local Hazard Mitigation Plan. Participants included the nine incorporated cities within the County and partnering agencies.

FINAL REVIEW

On August 30, 2016, all members of the Planning Team received a draft copy of the hazard mitigation plan for review and feedback. The Planning Team was given a turnaround time in which to review the plan and provide comments to the Project Manager for incorporation into the final submission to CalOES and FEMA. Comments were received from Planning Team members representing GIS, Capital Projects, the Office of Emergency Services, Assessor, Public Works and Planning. Input included updated information specific to the flood and dam risks along with GIS data. The team also provided guidance on areas that needed additional editing.

The plan was submitted for local government and public review on September 15, 2016. The draft LHMP was posted on the Stanislaus County website and a comment form was included. The public comment period was also promoted via a press release and on Facebook and Twitter. Operational Area partners, including cities and districts, were sent emails with link to the website that included the draft plan and comment form. The public comment period closed on October 3, 2016 and no comments were received through the website. There were additional comments during this period from the Stanislaus County Planning Department and the Office of Emergency Services. The comments were specific to the General Plan references, the dam failure risk assessment and general edits for the plan. The comments were incorporated into the document. Below is the Press Release for the September 15, 2016 plan review.

SUPPLEMENTAL REVIEW

The State of California Office of Emergency Services reviewed the LHMP and contacted the Stanislaus County Office of Emergency Services with suggestions to enhance the plan. As a result members of the planning team met on January 12, 2017. Representatives present were from the Planning Department, Assessors Office, Public Works, Office of Emergency Services/Fire Warden and the Chief Executive Office. Items for discussion included the mitigation activities and the cost-benefit analysis. The updated plan was re-submitted to the State of California on February 2, 2017.

CHIEF EXECUTIVE OFFICE
Office of Emergency Services/
Fire Warden

Dale Skiles
Fire Warden
Assistant Director of OES

3705 Oakdale Rd, Modesto, CA 95357
Phone: 209.552.3600 Fax 209.552.2512

PRESS RELEASE

For Immediate Release
September 15, 2016

Contact: Dale Skiles
(209) 552-3600

PLAN REVIEW AND COMMENT PERIOD:
Stanislaus County Local Hazard Mitigation Plan Update

Every five years the Federal Emergency Management Agency (FEMA) requires local government to update the Local Hazard Mitigation Plan (LHMP). The LHMP identifies risks posed by disasters and ways to minimize damage from those disasters. A FEMA approved plan allows Stanislaus County to qualify for federal hazard mitigation funding as well as recovery funds after a disaster. The last plan was approved by FEMA in 2011.

The Office of Emergency Services has coordinated the update of the Stanislaus County Local Hazard Mitigation Plan. The plan is available for review and comment on the County website at http://www.stanoes.com/lhmp.shtm

The plan will be open for comment until October 3, 2016. After comments are reviewed and the plan is updated, the County will submit the LHMP to the California Governor's Office of Emergency Services for review and comment. Once approved by the State, the plan will then be submitted to FEMA. After FEMA approves the plan, the LHMP will be submitted to the Stanislaus County Board of Supervisors for plan adoption.

Details:

Stanislaus County Local Hazard Mitigation Plan Update
Plan Location: http://www.stanoes.com/lhmp.shtm
Public Comment: September 15, 2016 through October 3, 2016

# # #

REVIEW AND INCORPORATION OF EXISTING PLANS

In the process of preparing this hazard mitigation plan, many other existing plans, studies, reports, and technical information were evaluated or used as guidance. The Planning Team for the development of the Local Hazard Mitigation Plan included representatives who are charged with developing the Stanislaus County General Plan, the Stanislaus County Capital Improvement Plan and the Stanislaus County Emergency Operations Plan. The team members work to ensure that local plans are integrated with the LHMP and also provide expertise for the integration of other local, state and federal plans, codes and regulations. The list below includes the sources that were referenced for the development of the Stanislaus County Local Hazard Mitigation Plan.

U.S. Government:

- Federal Emergency Management Agency (FEMA) to obtain current 100 and 500 year flood data;
- FEMA Technical Bulletin 11-01 Crawlspace Construction for Buildings located in Special Flood Hazard Areas National Flood Insurance Program Interim Guidance provides guidance on crawlspace construction.
- National Flood Insurance Program
- This program aims to reduce the impact of flooding on private and public structures by providing affordable insurance to property owners and by encouraging communities to adopt and enforce floodplain management regulations. These efforts help mitigate the effects of flooding on new and improved structures.
- National Incident Management System (NIMS)
- This system directs the creation of a comprehensive, national approach to incident management by federal, state, territorial, Tribal and local responders and across all functional disciplines.
- Federal Energy Regulatory Commission (FERC)
- FERC is an independent agency that regulates interstate transmission of electricity, natural gas, and oil. FERC also reviews proposals to build liquefied national gas (LNG) terminals and interstate natural gas pipelines as well as licensing hydropower projects and providing regulations of dams.
- USGS to obtain seismic data;
- Census Bureau to obtain County census block data;

State of California:

- California Code of Regulations, Title 24, Part 9 (California Building Standards Code) (Fire Code)
- CCR Title 24 governs the design and construction of all building occupancies and associated facilities and equipment throughout California and is also known as building standards. It contains requirements for the structural, mechanical, electrical, and plumbing systems, and requires measures for energy conservation, green design, construction and maintenance, fire and life safety, and accessibility.
- Alquist-Priolo Earthquake Fault Zoning Act
- The Alquist-Priolo Earthquake Fault Zoning Act's main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults.
- California Environmental Quality Act (CEQA)
- The California Environmental Quality Act (CEQA) is a California statute passed in 1970 shortly after the United States federal government passed the National Environmental Policy Act 9NEPA), to institute statewide policy of environmental protection.
- California Public Resources Code (PRC) Section 4291 – Clearance Around Structures provides direction for persons owning, leasing, controlling, operating, or maintaining any building or structure in, upon, or adjoining any mountainous area of forest-covered lands, brush-covered lands, or grass-covered lands, or any lands which is covered with flammable material, to maintain clearance from structures and minimize the changes of a forest fire entering into populated areas.
- 2013 California Enhanced State Multi-Hazard Mitigation Plan – The State plan addresses hazards, mitigation capabilities, strategies and actions. The plan was reviewed for coordination with the local plan.
- California Department of Forestry and Fire Prevention to obtain current "Fire Hazard Severity Zones" and "Historical Burn Areas."

Stanislaus County:

- General Plan
  The Stanislaus County General Plan was adopted by the Board of Supervisors on August 23, 2016. The County proactively addresses hazards through the General Plan Safety Element and has many references to the MJHMP, which is synonymous with the LHMP. Representatives from the work group for the General Plan are also members of the LHMP planning team, ensuring that both plans are integrated. The recent General Plan update and the 2016 Hazard Mitigation Plan work together to achieve the goal of hazard risk reduction. Future updates of the General Plan will continue to be consistent with the LHMP.

  The General Plan also includes the Housing Element chapter. The Housing Element is incorporated into the LHMP to identify development trends. The Housing Element was reviewed by the Planning Commission on November 11, 2015, February 18, 2016, and March 3, 2016. The Housing Element was formally approved and adopted by the Stanislaus County Board of Supervisors on April 5, 2016. No development project was proposed as part of the Housing Element Update.

- Capital Improvement Plan
  Projects included in the Stanislaus County Capital Improvement Plan (CIP) include 44 approved/funded projects, 21 projects pending implementation and 64 future projects/master planned. The projects are evaluated to ensure consistency with the Stanislaus County General Plan. These projects will be individually reviewed in terms of conceptual plan, project schedule and funding plan by the Board of Supervisors before they are implemented. Included in the review by the Board of Supervisors are the concept, scope and cost of the project as well as the appropriate environmental reviews before a project is initiated.

  The Stanislaus County Capital Improvement Plan, along with the Capital Project Program, supports the goal of the County to protect critical facilities and infrastructure. The Capital Projects Team is actively working to incorporate LHMP priorities in the CIP development to protect facilities and infrastructure important to the County Areas of repetitive loss are high priorities for mitigation funding as they can negatively affect County coffers.

- Stanislaus County Emergency Operations Plan
  The Stanislaus County Emergency Operations Plan (EOP) establishes an emergency management organization and assigns functions and tasks consistent with California's Standardized Emergency Management System (SEMS) and the National Incident Management System (NIMS). It provides for the integration and coordination of planning efforts of multiple jurisdictions. This plan was developed utilizing the "whole community" planning process as outlined in FEMA's Comprehensive Preparedness Guide 101, and was reviewed and approved by representatives from each Stanislaus County department as well as members of the Operational Area Council and County/City Disaster Council. The content is based on guidance approved and provided by the State of California and FEMA. The EOP provides direction on how to respond to an emergency from the initial onset, through an extended response, and into the recovery process.

  A key element of the update process for this hazard mitigation plan was the annual review of the EOP. The Hazard Mitigation Planning Team remained informed of major review findings of the EOP with the intent to integrate with key components of the hazard mitigation plan. Future updates to the EOP will coincide with the future updates of the Local Hazard Mitigation Plan.

- Stanislaus County Code, Title 16 Buildings and Construction
  The Stanislaus County Code, Title 16 provides minimum standards to safeguard life, health, property, and the public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings and structures within the unincorporated areas of the County.
  - Chapter 16.50, Flood Damage Prevention
    The purpose of this Chapter is to promote the public health, safety and general welfare, and to minimize public and private losses due to flood conditions in specific areas through specific provisions.

    - Chapter 16.55, Fire Code
      Addresses requirements, responsibilities, and provisions for the prevention of fires and the spreading of fires as it pertains to structures.
- Stanislaus County Multi-Jurisdictional Hazard Mitigation Plan Updated 2010 – The plan was reviewed to provide a basis for the current update.
- Assessor for parcel data including Use Codes; assessed categories; and values;
- Public Works for current infrastructure list (Bridges, Drainage, Street Lights, and Traffic Lights) and their geographic placement;
- SBT/GIS for numerous base map shape files such as cities, county, parcels, rivers, and roads;
- All relevant plans, codes, and ordinances currently in place such as building codes, zoning ordinances, subdivision ordinances, special purpose ordinances, site plan review requirements, growth management ordinances, economic development plans, and emergency response plans were reviewed.

SECTION FIVE

Risk Assessment

SECTION FIVE - RISK ASSESSMENT

INTRODUCTION

Stanislaus County has identified several hazards that are addressed in the County's previous update. These hazards were identified through a process that utilized input from the various local partners, work groups, Stanislaus County Emergency Operations Plan, the Safety Element of the General Plan, input from the Planning Director, Public Works Director, Public Health Director, Assistant Director of Emergency Services, City governments, researching past disaster proclamations and declarations in the County and public input. Hazards that are unlikely to occur, or for which the risk of damage is accepted as being very low, were eliminated from consideration after review by the Planning Team.

The County's Public Work's Department developed a Geographical Information System (GIS) database that will map the County's infrastructure, critical facilities, and land uses. Initial data from this study was also used to determine those hazards that present the greatest risk. As discussed in Section Four of this plan, stakeholders attended a meeting on April 28, 2016 and were asked to review the hazards discussed in previous plans and to provide input on other hazards that should be considered. After discussion and review of surveys, the decision was to continue with the original hazards identified previously and to include a discussion of climate change implications for each hazard. The hazard areas are:

Earthquake
Landslide
Dam Failure
Flood
Wildfire

The Risk Assessment component includes the following subsections for each of the five hazards:

Identifying Hazard - includes a description of the types of all natural hazards;

Profiling Hazard - identifies the location, extent, previous occurrences, new occurrences, and probability of future events;

Assessing Vulnerability: Overview - identifies an overall summary description of vulnerability to each hazard and the impact of each hazard on the jurisdiction. Plans approved after of October 1, 2008, must also address National Flood Insurance Program insured structures that have been repetitively damaged by floods;

Assessing Vulnerability: Identifying Structures/Estimating Potential Losses - includes the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas, and includes estimates of potential dollar losses to vulnerable structures and describes the methodology used to prepare the estimate;

Assessing Vulnerability: Analyzing Development Trends - includes the land uses and development trends;

Impact of Climate Change - identifies the potential impacts to each hazard as discussed within the individual risk assessment; and

Probability Scale – identifies the terms used to define the probability of future events for each hazard.

Highly Likely	Occurring every 1 to 10 years
Likely	Occurring every 10 – 50 years
Unlikely	Occurring more than 50 years

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Stanislaus County
Striving to be the Best

RISK ASSESSMENT

Earthquake

EARTHQUAKE HAZARD

Identifying Hazard

The State of California is particularly vulnerable to earthquakes due to its location between two tectonic plates, the North American Plate and the Pacific Plate. Historically, earthquakes within the State have proven extremely destructive. Earthquakes usually occur without warning and, after just a few seconds, can cause massive damage and extensive casualties. The most common effect of earthquakes is ground motion, usually felt as shaking and vibrations. The severity of the ground motion generally increases with the amount of energy released and decreases with distance from the fault or epicenter of the earthquake. Earthquakes are usually measured in terms of magnitude and intensity.

Profiling Hazard

NATURAL HAZARD	HOW IDENTIFIED	WHY IDENTIFIED
EARTHQUAKE	• County General Plan • County Emergency Operations Plan • Input from Planning Director • Input from Public Works Director • Input from LHMP Planning Team • Risk Assessments • Feedback from LHMP partners	• Previous occurrences • Potential to cause harm

LOCATION

There are several faults known to exist within Stanislaus County. In the extreme eastern parts of the County, the Bear Mountain and Melones faults are found, though both are believed to have been inactive for the past 150 million years. No faults are currently known to exist within the valley portion of the County. Within the Diablo Range, the most recent movements were along the Tesla-Ortigalita fault approximately five million years ago.

EXTENT

Since 1930, one earthquake epicenter of a magnitude greater than 4.0 on the Richter Scale was recorded within Stanislaus County. On June 27, 1986, an earthquake with a magnitude of 3.7 on the Richter Scale occurred with an epicenter several miles west of Crows Landing.

Numerous earthquakes occur each year along California's major faults. The active faults that may have the most potential impact on Stanislaus County include the San Andreas, Calaveras, and Hayward. The western region of Stanislaus County experiences a higher level of earthquake hazard than the eastern portion of the County. According to the California Geological Survey Map Areas Damaged by Earthquakes (1800-2007), except for the extreme eastern portion of Stanislaus that borders Santa Clara County, there have been zero occurrences of earthquake damage for Stanislaus County within the 207 year time period. Over that period, there have been two occurrences of damage in that eastern portion of the County. Stanislaus County has zero declared disasters for earthquake since 1950.

PROBABILITY OF FUTURE EVENTS

Although Stanislaus County is not known for its seismic activity, all of California is at high risk for earthquakes and it is imperative that we plan for a potential earthquake disaster. While there are no known active faults within Stanislaus County, there are faults on the western and eastern edges of the County. The western section of the County border is nearer to the Calaveras and Hayward faults that run through neighboring Santa Clara County.

Stanislaus County is not expected to be an epicenter for a major earthquake but damage could result from shaking and aftershocks in other areas. The United States Geological Survey database indicates there is an 80.62% chance of a major 5.0 earthquake within 50km (31 miles) of Stanislaus County within the next 50 years. The probability of an earthquake impacting Stanislaus County is likely.

Information furnished by the State Department of Mines and Geology and the California Governor's Office of Emergency Services indicate that potential ground shaking can produce damage within the County to reach varying intensities as rated on the Modified Mercalli Intensity (MMI) Scale of 1931. Per the Modified Mercalli Intensity Scale, the eastern half can expect to have shaking to an intensity of a VI or VII. This range of shaking may be felt by all with some negligible building damage to buildings of good design and construction. Older buildings or poorly designed structures would suffer considerable damage. The western half of the County can expect to receive shaking to an intensity of VII to VIII Mercalli, which is more intense shaking with damage to ordinary structures and potential building collapse. The area around Newman may have shaking intensity of IX or X which results in considerable damage and may be judged a major hazard.

The following is an abbreviated description of the levels of Modified Mercalli intensity.

Intensity	Shaking	Description/Damage
I	Not felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

Abridged from The Severity of an Earthquake, a U. S. Geological Survey General Interest Publication.

NEW OCCURRENCES

There have been no new occurrences since the County's original LHMP was adopted on January 12, 2006.

Assessing Vulnerability: Overview

Although no known active faults are identified within Stanislaus County, its proximity to the Calaveras, Hayward and San Andreas faults on the western side of the County increases its vulnerability to earthquakes. The Earthquake Shaking Potential for California (2008) map developed by the California Geological Survey and United States Geological Survey emphasizes the vulnerability of Stanislaus County on the western side including the Interstate 5 corridor. This information is reflected in the County map included in the LHMP for the earthquake hazard. The cities of Patterson and Newman are near Interstate 5. According to the map, this region is near major or active faults and will experience on average stronger earthquake shaking. Migrating east from the Interstate 5 corridor the earthquake hazard level decreases. The map indicates this region is distant from known, active faults and will experience lower levels of shaking less frequently.

Structures and populations along the Interstate 5 corridor and within the Diablo Range are most vulnerable to damage. All populations are vulnerable to impacts of any earthquake. However, the area of the county identified for the most intense shaking is the least populated. The most vulnerable populations are those that live in older homes. The structures in place prior to 1976 are considered most vulnerable due to less strict building codes.

Stanislaus County is home to several reservoirs including Modesto, Woodward and Turlock. A secondary effect of an earthquake can include a seiche. A seiche is an earthquake-induced wave. Seiches impact enclosed or partially enclosed bodies of water including reservoirs and swimming pools. The most severe hazard would exist if a seiche occurred while many people were using a reservoir for recreation.

Earthquakes can result in other secondary impacts that may include dam failure, landslides and wildfires. These hazards are discussed in separate sections of this plan.

VULNERABILITY IMPACTS

The combined population of the cities of Patterson and Newman (31,847) are located near major or active faults.

Structures built prior to 1976 are most vulnerable due to less strict building codes.

Interstate 5 is a main transportation route for California. Economic impacts would affect the County and the State.

The County Library, Public Works Patterson Yard, Fink Road Landfill and Waste-to – Energy plant and privately-owned major distribution centers are located near I-5. Job loss, revenue loss and environmental hazards may result.

There is no hospital in the area, however, schools, police, fire stations and medical care facilities could be at risk.

Assessing Vulnerability: Identifying Structures/Estimating Potential Losses

The vast majority of the County occupied space is within the highest population density along the State Route 99 corridor in Salida, Modesto, Ceres and Turlock. This area is located within a shaking intensity zone of 21-30% gravity spectral acceleration. Of most critical concern is County operated facilities located in the area of greatest probabilistic shaking potential (41-50%) gravity on the western side of the County, located in Patterson and west of Crows Landing. Of the facilities located in Patterson, the County Library and Public Works Patterson Yard are owned and the Women Infants and Children (WIC) is leased. The County's Fink Road Landfill Is also located in this area. The landfill is collocated with a waste-to-energy facility and could be of critical use in situations where safe disposal is required after emergency events.

Interstate 5 runs along the western edge of the county. If Interstate 5 is damaged in an earthquake, there may be economic repercussions for local and state economies as Interstate 5 is a major transportation thoroughfare. The Interstate is maintained by the State of California.

All property within Stanislaus County is subject to the effect of seismic activity. Structures built prior to 1976 are most vulnerable. Hazard maps show the probabilistic shaking potential of populated lands within Stanislaus County at a spectral acceleration one second period of up to 50% the force of gravity. The map delineates five zones in 10% increments of shaking intensity, with the greatest intensity along the western-most edge of the valley floor near the Interstate 5 corridor. Probabilistic ground shaking intensity is shown on each map by colored zone, keyed to the legend. The following table illustrates the housing and population expected to be impacted at various shaking potential. The data provides a detailed identification of the number of housing units and population within each seismic risk increment by jurisdiction for unincorporated Stanislaus County and the incorporated nine cities within the County. The table also shows the number and total value of existing County owned or leased parcels impacted at each level.

Probabilistic Shaking Potential (Spectral acceleration: 1 second period)	Number of Housing Units	Population	County Parcels, Structures and Content (Owned or leased)	Value of County owned Structures
5%	54	70	1	19,330,029
15%	16,693	48,905	4	2,671,914
25%	134,257	419,703	83	528,437,232
35%	7,998	23,384	5	8,758,659
45%	6,456	20,434	4	2,995,409

The Recommended Proposed Stanislaus County Capital Improvement Plan (CIP) for fiscal years 2015-2017 identifies several projects that would be impacted during an earthquake. The projects expand existing facilities and parcels already identified in the table above. There are six projects in the 25% probabilistic shaking potential for a total value of $212,700,000. There are two projects identified in the 35% probabilistic shaking potential area for a total of $2,365,000. Stanislaus County has identified eight bridges for seismic bridge replacement within the (CIP) totaling $129,088,192.

Assessing Vulnerability: Analyzing Development Trends

There has been limited development in the Diablo Grande. Diablo Grande is located seven miles west of I-5. The development was approved by the Board of Supervisors in 1993 for 5,000 residences. As a result of the economic turn down in 2008, build out of the residential area was stalled. There are currently 425 occupied residences and building is projected to continue over the next few years. Aside from the limited development in the area of Diablo Grande, there has been no significant change in development in the unincorporated areas impacted by earthquake within Stanislaus County since the last LHMP update.

Most development is occurring on the valley floor within cities or within spheres of influence in cities. Very little development is taking place in the agricultural areas. There is minimal growth within the unincorporated areas of the County. According to the LAFCO Municipal Service Review only minor infill growth is anticipated for the unincorporated area on the west side of the County including Grayson and Westley.

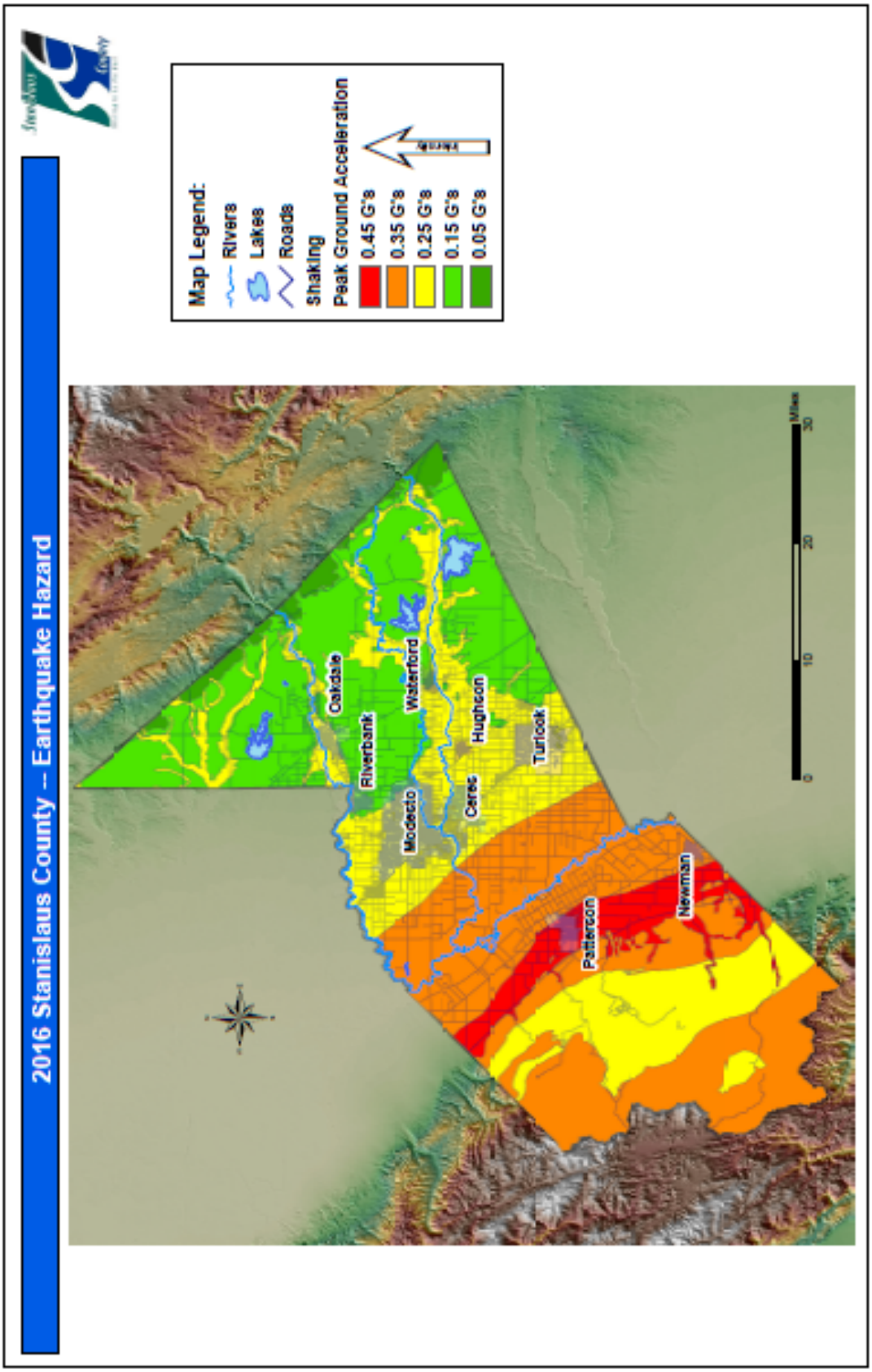
Stanislaus County has initiated the development of the 1,528 acre former Crows Landing Airfield. The California Environmental Quality Act (CEQA) review is in process for the Crows Landing Industrial Business Park. The timeline for construction of new buildings is unknown but may be initiated within the

next five years. However, all new buildings within Stanislaus County are constructed to prevent loss of life as a result of an earthquake and will meet current building codes.

The General Plan provides for diverse land use needs by designating patterns that are responsive to the physical characteristics of the land. The Planning and Community Development Department has a policy that urban development shall be prohibited in geological fault areas unless measures to mitigate the problem are included as part of the development application. The County enforces the provisions of the Alquist-Priolo Earthquake Fault Zoning Act that limits development in areas identified as having special seismic hazards. Construction is prohibited without a geologic study.

Impact of Climate Change

The impact of climate change on earthquakes is unclear. There are some articles that claim climate change and drought, resulting from climate change, may increase the likelihood of earthquakes, but there seems to be no consensus within the scientific community.


2016 Stanislaus County -- Earthquake Hazard
Map Legend:
Rivers
Lakes
Roads
Shaking
Peak Ground Acceleration
0.45 G's
0.35 G's
0.25 G's
0.15 G's
0.05 G's
Oakdale
Riverbank
Waterford
Modesto
Ceres
Hughson
Turlock
Patterson
Newman
Miles
0
10
20
30

Stanislaus County
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RISK ASSESSMENT

Landslide

LANDSLIDE HAZARD

Identifying Hazard

According to the USGS National Landslide Information Center (NLIC), the term "landslide" is defined as the movement of a mass of rock, debris, or earth down a slope. The force of gravity acting upon a steep (or sometimes, even a moderately steep) slope is the primary cause of a landslide. Slope failure occurs when the force of gravity pulling the slope downward exceeds the strength of the earth materials that comprise the slope to hold it in place. In addition to the force of gravity, other contributing factors to landslides can include rainfall, earthquakes, changes in groundwater, and human-induced modifications to existing slopes. The potential for a landslide to occur exists in every state wherever very weak or fractured materials are resting on a moderate to steep slope.

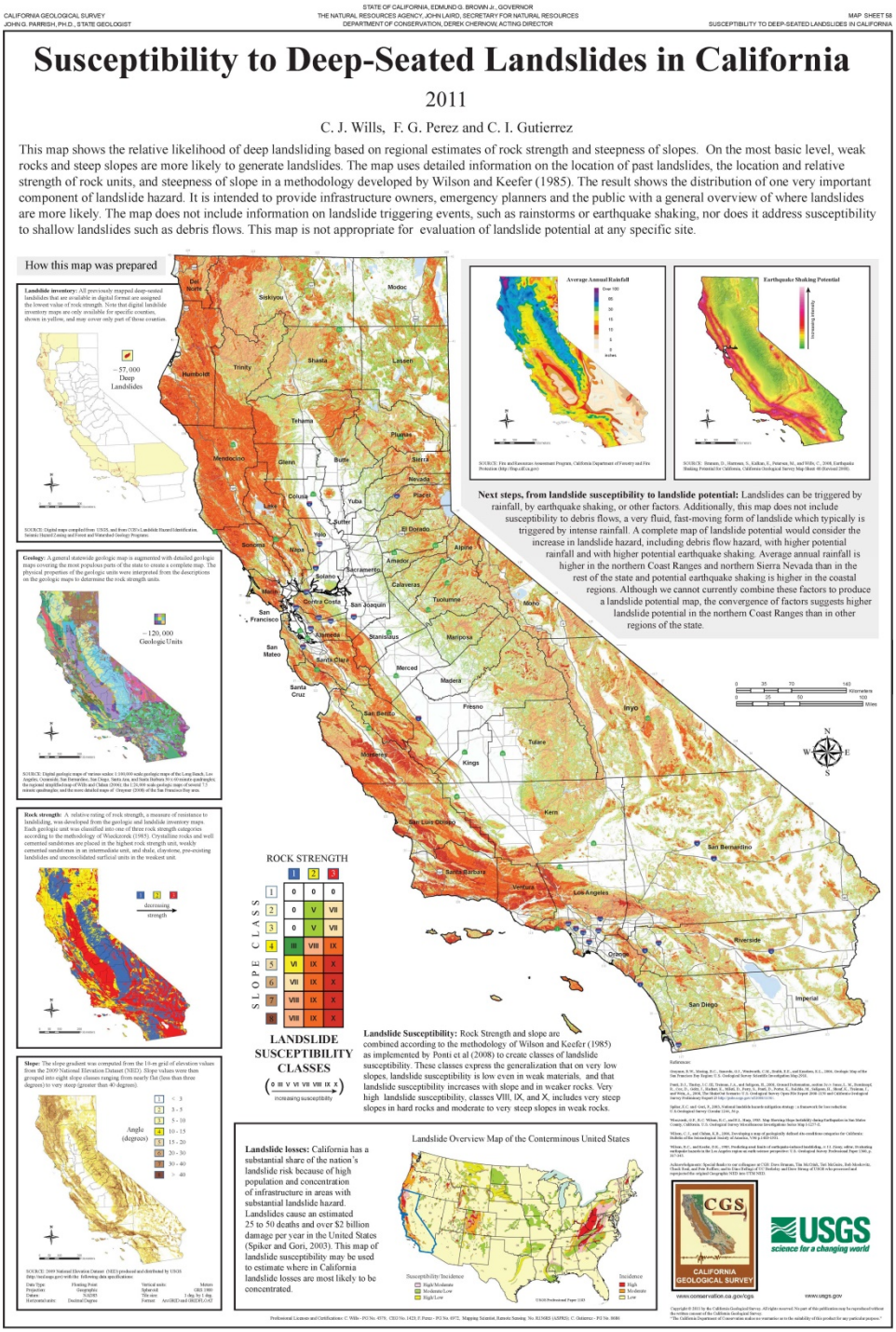
The severity of a landslide depends in large part on the degree of development in the area in which it occurs and the geographic area of slide itself. Generally speaking, landslides often result in devastating consequences, but in very localized areas. A landslide occurring in an undeveloped area would be less severe because lives and property would not be affected; the only impacts would be to land, vegetation, and possibly some wildlife. On the contrary, a landslide occurring in a developed area could have devastating effects, ranging from structure and infrastructure damage to injury and/or loss of life. Structures or infrastructure built on susceptible land would likely collapse as their footings slide downhill, while those below the land failure would likely be crushed. Landslides in the area of roadways could have the potential to fall and damage or destroy vehicles, and force other drivers to have accidents.

Profiling Hazard

NATURAL HAZARD	HOW IDENTIFIED	WHY IDENTIFIED
LANDSLIDE	• California proclaimed State of Emergency • County General Plan Safety Element • County Emergency Operations Plan • Input from Planning Director • Input from Public Works Director • Input from LHMP Planning Team • Risk Assessments • Feedback from LHMP partners	• Previous and potential occurrences

LOCATION

Hazards due to landslide events are mostly limited to areas within the foothills at the western and eastern edges of Stanislaus County. The western edge of the County is part of the Diablo Range which stretches almost 200 miles along the west side of the Central Valley, running parallel to the Pacific Ocean. Virtually the entire area located west of Interstate 5 is composed of geological formations that, due to structure, slope, runoff, lack of vegetation, earthquake and human activity, are considered extremely susceptible to failure and sliding. The eastern edge of the County touches the Sierra Nevada mountain range. The west-facing slope of the Sierra Nevada range has a series of streams whose waters ultimately reach the Pacific Ocean. It is along these areas and other locally identified specific river bluff regions near rivers and streams that are susceptible to landslide, though occurrences are few. Those areas near rivers and streams are subject to natural erosion, although erosion activity may be increased during flood events.



EXTENT

Developed for the 2013 State of California Multi-Hazard Mitigation Plan, the above California Geological Surveymapshows the relative likelihood of deep landsliding based on regional estimates of rock strength and steepness of slopes. The map uses detailed information on the location of past landslides, the location and relative strength of rock units, and steepness of slope in a methodology developed by Wilson and Keefer (1985) as implemented by Ponti et al (2008) to create classes of landslide susceptibility. These classes express the generalization that on very low slopes, landslide susceptibility is low even in weak materials, and that landslide susceptibility increases with slope and in weaker rocks. The convergence of factors suggests a low landslide potential in most of Stanislaus County due to the very low slopes. There are areas on the west side where the potential increases due to increase in slope.

Landslides are often triggered by other natural hazards such as earthquakes, heavy rain, flood or wildfires. Landslide frequency is often related to the frequency of these other hazards. In Stanislaus County, landslides typically occur during and after major storms so the potential for landslides largely coincides with the potential for sequential severe storms that saturate steep, vulnerable soils. In the winter of 1982-1983, saturation of the soil in the Diablo Range area resulted in a considerable amount of damage to Del Puerto Canyon Road. During the winter storms of 1997, Del Puerto Canyon Road experienced an approximately .10 mile landslide consisting of mud, rocks and boulders. One lane was closed for repair 2-3 months while the other lane stayed open to traffic. This caused minor traffic delays since the road is not a major thoroughfare. These types of landslides are typical for this area following storms due to vertical cuts for roadways without sufficient sloping for run-off.

VULNERABILITY IMPACTS

Roads in the Diablo Range are at greatest risk.

Debris removal on Del Puerto Canyon Road averages 5 to 12 times per year with 1-2 hour cleanup and very little impact to traffic.

The area is sparsely populated. There are currently 425 occupied residences.

No critical County buildings are located in the area.

Economic impacts would be minimum due to lack of population and buildings.

PROBABILITY OF FUTURE EVENTS

It is evident that the steep slopes and undesirable geology of the area on the west side of the County, even without considering the possibility of an earthquake, present risks in certain conditions. It is common for minor incidents requiring some debris clearing of Del Puerto Canyon Road to occur on average of 5-12 times a year. On the east side of the County there are frequent landslides on Hwy 132 along the river bluffs. These landslides are usually due to rain and occur during or within days after a storm. Based on these past events, landslides are highly likely to continue to impact the Diablo Range and areas on Hwy 132.

NEW OCCURRENCES

A significant rain event in January 2016 required one lane closure of Del Puerto Canyon Road which caused minimum impact to traffic. The most recent storms of January 2017 created landslides across Del Puerto Canyon Road ranging from 3 feet to 40 feet in size. These slides consist of mud, rocks and boulders and caused minor traffic delays. Clean up was completed within 1-2 hours and the road was fully open for traffic. Also during the January 2017 storms, two landslides occurred on Highway 132 approximately 1 mile from La Grange Road. The landslide consisted of rocks and boulders and closed one lane for about 3 hours while Caltrans removed the debris. The slides were 10 to 15 feet on the roadway.

Assessing Vulnerability: Overview

The California Geological Survey (CGS) uses three factors that most determine susceptibility of landslide: prior failure, rock or soil strength, and steepness of slope. Landslides can also be triggered by rainfall, earthquake shaking, or other factors. The unstable formation comprising the underlying geologic structure of the Diablo Range makes this area of Stanislaus County more vulnerable to landslides and its effects.

Stanislaus County took into account the following when updating our vulnerability assessment:

a. Updates to inventories of existing structures in hazard areas, including new development, and redeveloped areas or structures;
b. Potential impacts of future land development, including areas that may be annexed in the future;
c. New buildings; and
d. Completed mitigation actions that reduced overall vulnerability.

Impacts in the Diablo Range, specifically Del Puerto Canyon Road, are limited. Del Puerto Canyon Road is not a major thoroughfare and the area is sparsely populated. Debris clearing of the road occurs an average of 5 to 12 times per year. Lane closure is less frequent. Stanislaus County Public Works maintains the road and within 1-2 hours debris is cleared with little to no impact to traffic. Staffing and equipment needs to clear the landslide are minimal. The few structures and population within the Diablo Range are most vulnerable to damage due to landslides. There are no critical buildings in the area. The area is sparsely populated and landslide. The impacts of landslides on the population have been minimal due to the short duration of road closure during debris removal. The landslides experienced on Hwy 132 are also limited occurring due to rain and during or within days after a storm. These happen along the river bluff and there are no critical structures in the area. Roadways may be blocked causing traffic delays.

Assessing Vulnerability: Identifying Structures and Estimating Potential Losses

No County occupied buildings other than non-critical "out" structures are located at sites having a landslide risk. County infrastructure (roads, utilities, drainage, and bridge structures) may be subject to landslide hazards; however, most landslide threats are limited in scale to a specific point.

Several State highways traverse cuts through hillsides or along river bluffs where landslide hazards may pose a risk, including State Routes 4, 108, 120, 132, 219 and Interstate 5. County roads at risk include

COUNTY ROADS AT RISK	
Ingram Creek Road	Roberts Ferry Road
Del Puerto Canyon Road	Lake Road
Diablo Grande Parkway	Warnerville Road
Orestimba Road	Crabtree Road
Crows Landing Road-at San Joaquin River	La Grange Road
South Carpenter Road	Cooperstown Road
Grayson Road (at San Joaquin River)	Los Cerritos Road
Paradise Road (at San Joaquin River)	River Road (Ceres area)
Shiloh Road (at Tuolumne River)	Mitchell Road (at Tuolumne River)
Santa Fe Avenue	Hills Ferry Road
Geer/Albers Roads	

While no critical County-occupied facilities are exposed to the landslide hazard, infrastructure may be impacted. Roads in the Diablo Grande area are prone to mass movement hazards. Access to these roads is crucial to life-safety after a disaster event and to response and recovery operations. Landslides can block egress and ingress causing isolation for residents and responders.

Assessing Vulnerability: Analyzing Development Trends

There has been limited development in the Diablo Grande area. Diablo Grande is located seven miles west of I-5. The development was approved by the Board of Supervisors in 1993 for 5,000 residences. As a result of the economic turn down in 2008, build out of the residential area was stalled. There are currently 425 occupied residences and building is projected to continue over the next few years. Aside from the limited development in the Diablo Grande area, there has been no significant change in development in the unincorporated areas impacted by landslide within Stanislaus County since the last LHMP update.

Construction is possible west of Interstate 5, but any proposals for significant development (anything other than the currently permitted two dwellings for every 160 acres), should include a geological report identifying potential problems and mitigation measures to be incorporated into the development plan.

The County shall utilize the California Environmental Quality Act (CEQA) process to ensure that development does not occur that would be especially susceptible to landslides. Most discretionary projects require review for compliance with CEQA. As part of this review, potential impacts must be identified and mitigated or a statement of overriding concerns adopted.

The routes of new public roads in areas subject to landslides shall be designed to minimize landslide risks. Engineered benchmarks will be utilized to monitor movement of slopes in order to stabilize and mitigate the hazard before it occurs, if possible. Road-clearing and debris equipment will be pre-staged to make response time faster to maintain accessibility to roads and infrastructure. Improved mapping and data collection will assist in identifying needed mitigation strategies for the future.

Impact of Climate Change

Climate change may impact storm patterns in California, increasing the probability of more frequent, intense storms with varying duration. Increase in global temperature could affect the snowpack and its ability to hold and store water. Warming temperatures also could increase the occurrence and duration of droughts, which would increase the probability of wildfire, reducing the vegetation that helps to support steep slopes. Tree mortality resulting from drought, pests or any other threat could also pose an increase to landslides. Currently, Stanislaus County is not experiencing tree mortality as severe as other areas of California due to the drought and bark beetle. However, any future loss of trees would reduce the protection of steep slopes and thereby increase the probability for landslide occurrences.

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Stanislaus County
Striving to be the Best

RISK ASSESSMENT

Dam Failure

DAM FAILURE HAZARD

Identifying Hazard

Dam failure is the breakdown, collapse or other failure of a dam structure characterized by the uncontrolled release of impounded water that results in downstream flooding. In the event of a dam failure, the energy of the water stored behind even a small dam is capable of causing loss of life and severe property damage if development exists downstream. An uncontrolled breach is the unintentional discharge from the impounded water body and is considered a failure. Dam failure can result from natural events or human-induced events. Natural occurrences that may cause dam failure include floods, earthquakes and landslides. Dams have received more attention recently in the emergency management community as a potential target for terrorist acts.

Dam failure presents a significant potential for disaster, because there would be considerable loss of life and property in addition to the possible loss of power and water resources. The most common cause of dam failure is prolonged rainfall that produces flooding. Failures due to other natural events such as earthquakes or landslides are significant because there is little advance warning. The best way to mitigate dam failure is through the proper construction, inspection, maintenance, and operation of the dam.

Profiling Hazard

NATURAL HAZARD	HOW IDENTIFIED	WHY IDENTIFIED
DAM FAILURE	• County General Plan Safety Element • County Emergency Operations Plan • Emergency Action Plans (EAPs) for dams • Input from LHMP Planning Team • Feedback from LHMP Partners	• Potential to cause devastation.

LOCATION

Three major dams have a direct effect on Stanislaus County: Don Pedro, New Melones and New Exchequer.

Don Pedro Dam is located in Tuolumne County on the upper Tuolumne River. It has a gross pool capacity of 2,030,000 acre feet and is operated jointly by the Modesto and Turlock Irrigation Districts and the City of San Francisco. Below Don Pedro, the Tuolumne River feeds into the LaGrange Dam. It is situated on the Tuolumne River just above the town of LaGrange and operated by the Modesto and Turlock Irrigation Districts. The Tuolumne River flows through populated areas of the County including the cities of Waterford and Modesto.

New Melones Dam, located in both Tuolumne and Calaveras Counties, is located on the Stanislaus River and operated by the U.S. Bureau of Reclamation. Gross pool capacity of New Melones is 2,420,000 acre feet. The Stanislaus River flows through the cities of Oakdale, Riverbank and Modesto.

New Exchequer Dam is on the Merced River in Central California. The Merced River feeds into the San Joaquin River which flows through the western side of Stanislaus County. Releases from New Exchequer Dam impact the flows on the San Joaquin River and can threaten the cities of Newman and Patterson.

EXTENT

A severe storm, earthquake or erosion of the embankment and foundation leakage may cause the collapse and structural failure of dams in or adjacent to Stanislaus County. Seismic activity may also cause inundation by the action of a seismically induced wave that overtops the dam without causing failure of the dam, but significant flooding downstream. Landslides flowing into lakes and reservoirs may also cause dams to fail or overtop.

A catastrophic failure of the Don Pedro Dam is assumed to be followed by the failure of the La Grange Dam located approximately 2.5 miles downstream. Inundation modeling provided by the Turlock Irrigation District for the Don Pedro Hydroelectric Project Emergency Action Plan, indicates that maximum water level elevation in some areas could reach 111.4 to 113.3 feet above sea level. Flooded areas would extend beyond the borders of Stanislaus County, roughly 153 river miles from the Don Pedro Dam to Mandeville Island in San Joaquin County. Flooded areas in Stanislaus County could see 11 to 13 feet of water in as little as 8 hours and 53 minutes depending on ground level elevation.

Inundation modeling provided by the U.S. Bureau of Reclamation for the Emergency Action Plan for Central California Area Office Facilities, indicates a catastrophic failure of the New Melones Dam could impact waterways and areas in Stanislaus County within 5 miles of the Stanislaus River with a water depth in excess of 5 meters in less than 10 hours. Flood waters would extend beyond the borders of Stanislaus County, reaching as far as San Joaquin and Sacramento Counties.

Inundation modeling provided by the Merced Irrigation District for the New Exchequer and McSwain Dams Emergency Action Plan, indicates that following a catastrophic failure of the Exchequer Dam, the section of the San Joaquin River that runs through Stanislaus County could experience river level rise in excess of 20 feet above normal water level elevation in less than 7 hours.

The inundation map on page 60 in this section, illustrates the maximum probable flood areas that could occur following the catastrophic failure of the Don Pedro, New Melones, and Exchequer Dams.

PROBABILITY OF FUTURE EVENTS

There have been no previous occurrences. The probability of dam failure is not likely. Dams are regulated and inspected by either the State of California's Division of Safety of Dams or the Federal Energy Regulatory Commission (FERC) or both with follow up written inspection reports. There have been no findings that would raise concern for a potential dam failure.

VULNERABILITY IMPACTS

Catastrophic failure of Don Pedro, New Melones or New Exchequer dams would have severe consequences.

Loss of life could result due to insufficient time to warn people who live downstream.

Major transportation routes and critical infrastructure would be affected causing business disruption and economic loss.

Agriculture losses would occur and affect production.

A majority of the population of Stanislaus County would be significantly impacted including County facilities, hospitals, schools, fire and police stations, and health-care services.

Historical buildings located throughout the County could be at risk.

NEW OCCURRENCES

There have been no new occurrences since the County's original MJHMP plan was originally adopted on January 12, 2006.

Assessing Vulnerability: Overview

The catastrophic failure of Don Pedro, New Melones or New Exchequer dams would have severe consequences resulting in injuries, loss of life, limited transportation routes, and decrease in vital utilities. Additionally, because of Stanislaus County's strong agricultural influences, significant downstream property damage and the loss of domestic and farm production animals are a major concern.

There are a number of smaller dams, both in and out of the County on the east and west sides, which could produce flooding should they fail. Although the incident would have severe impacts, the likelihood of such an occurrence is remote. The Federal Energy Regulatory Commission (FERC) requires dam operators to prepare comprehensive emergency action plans (EAP) in case of a failure. These EAPs include inundation maps whose information is used for the maps provided in this plan. FERC also requires annual training and exercises for each individual plan. Stanislaus County maintains copies of the dam emergency action plans at its Emergency Operations Center and participates in exercises with the dam operators. In partnership with the dam operators, Stanislaus County has identified the vulnerable areas specific to dam inundation.

Vulnerable populations are downstream from a potential dam failure. The populations most vulnerable are those that have the least time to evacuate and need assistance. Populations that may need assistance to evacuate include the elderly, disabled and young. The vulnerable population also includes those who may not have adequate warning to evacuation from emergency notification systems. The loss of life is impacted by the amount of early warning time first responders and the public has prior to the incident.

Assessing Vulnerability: Identifying Structures and Estimating Potential Losses

In the unlikely event of a complete dam failure, the majority of the populated areas within Stanislaus County are impacted. Specifically, those areas along the Stanislaus, Tuolumne and San Joaquin Rivers will see major flooding and damage. Inundation due to dam failure within the San Joaquin Valley is a low-probability but high-risk hazard. The potential risk for inundation of property is present in nearly all of the developed areas of Stanislaus County; however, catastrophic failure or flood release of water from multiple dams at a single point in time is considered to be extremely unlikely.

If dam failure occurred, the impacts to the local economy and infrastructure would be severe. Impacts to cities would affect key infrastructure including hospitals, fire stations, clinics, and businesses. Economic impacts in the unincorporated areas of the county would include the agriculture industry. According to the 2015 Stanislaus County Agriculture Report, the value of agricultural commodities produced in Stanislaus County was $3.8 billion.

The following table illustrates the populations and households that will be impact by a failure for each of the major dams that may impact Stanislaus County.

POPULATION AND PROPERTY VALUE ANALYSIS BY DAM		
Name of Dam	**Population**	**Property Values**
Don Pedro	59,554	1,453,719,334
New Exchequer	6,291	418,354,184
New Melones	226,789	5,687,785,473
Pine Flat	2,356	136,191,252
San Luis	16,062	603,060,314
Tulloch	31,194	767,527,511

The table below shows a breakdown the number of existing and future County facilities and the total value by dam. The total value includes buildings and content. In the event of a dam failure it is anticipated that the facilities would be negatively impacted. Key facilities include law enforcement stations, jails, health and the County administration building.

EXISTING AND FUTURE COUNTY FACILITIES TOTAL VALUE BY DAM				
Name of Dam	**Existing Facilities**	**Value**	**Future Facilities**	**Value**
Don Pedro	21	9,342,767	0	0
New Exchequer	21	5,672,586	2	7,500,000
New Melones	73	303,933,135	1	24,000,000
Pine Flat	22	7,386,424	2	7,500,000
San Luis	22	7,386,424	2	7,500,000
Tulloch	3	2,432,991	0	0

Bridges that may be damaged by a dam failure and their value are included below:

COUNTY BRIDGES BY DAM		
Name of Dam	**# of Bridges**	**Value**
Don Pedro	42	152,253,027
New Exchequer	16	114,846,804
New Melones	42	124,724,934
Pine Flat	9	23,747,042
San Luis	15	29,253,889
Tulloch	12	24,030,355

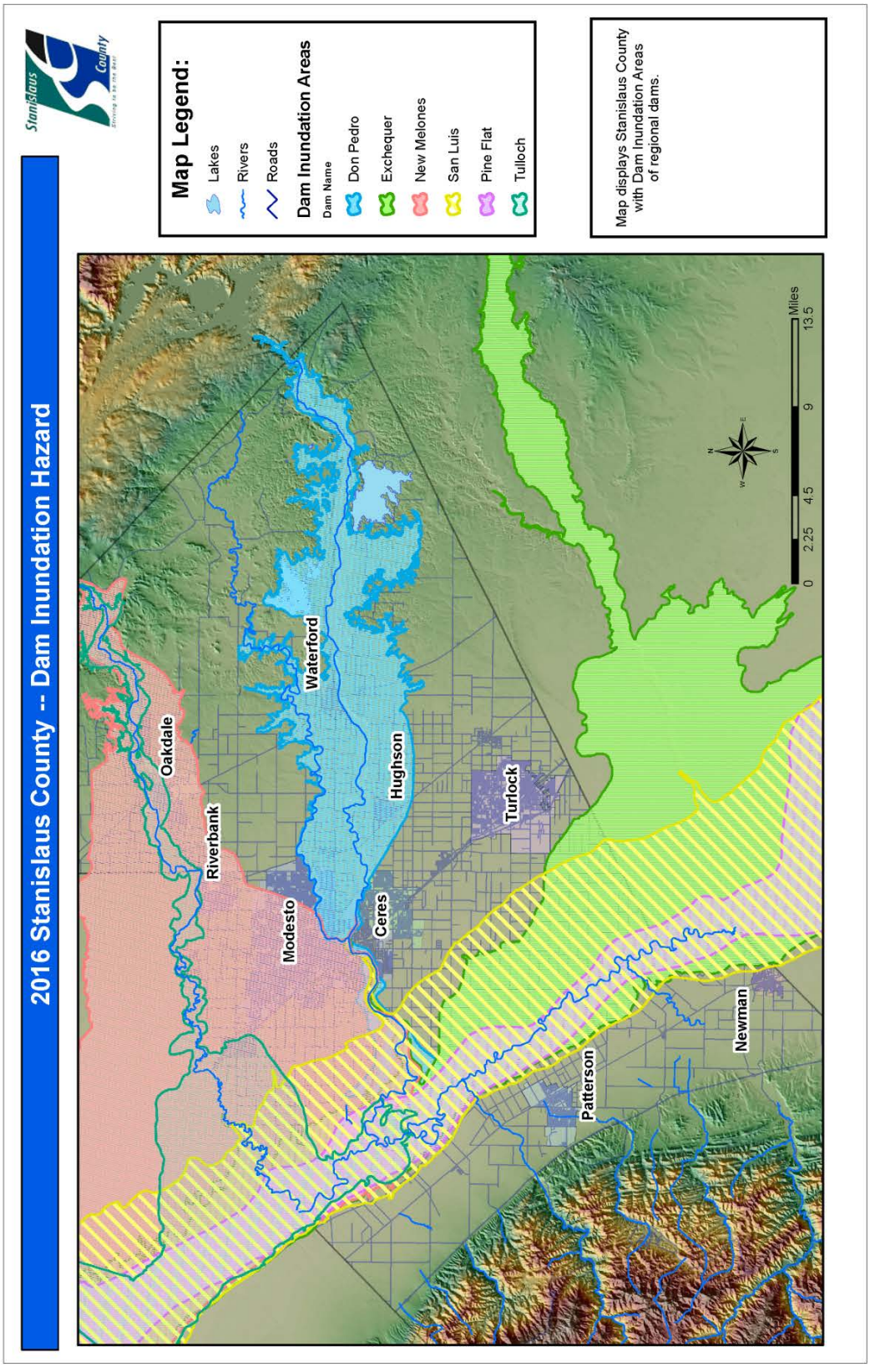
Assessing Vulnerability: Analyzing Development Trends

The Stanislaus County Board of Supervisors has maintained support for the preservation of agricultural resources through the adoption of the Agricultural Element of the General Plan. This policy has minimized "leap frog" development and the resulting conflict with agricultural uses throughout Stanislaus County. The Board has also encouraged the development of "infill" areas within existing communities as a priority over expansion into existing agricultural lands.

There has been no significant change in development in the unincorporated areas impacted by dam failure within Stanislaus County since the last LHMP update. The proposed industrial development of the Crows Landing Airfield on the western side of the County along Interstate 5 would be impacted by inundation caused by failure of the San Luis Dam and Exchequer Dam. The Crows Landing Industrial Business Park is currently in the CEQA process and no firm date for development has been identified.

Impact of Climate Change

An article published by researchers D. E. Rheinheimer and J.H. Viers from the University of California at Davis discusses the effects of climate change on reservoir operations. The article is titled *Combined Effects of Reservoir Operations and Climate Warming on the Flow Regime of Hydropower Bypass Reaches of California's Sierra Nevada*. This article and others implies that climate change will impact the traditional operation measures and flow regimes used for dams as river conditions and water levels are fluctuating. Climate change may increase drought which lessens the water available or may produce intense sudden storms. Reservoir operators may need to change operations to mitigate the impact of climate change on rivers and the ecosystem.


2016 Stanislaus County -- Dam Inundation Hazard
Stanislaus County
Map Legend:
Lakes
Rivers
Roads
Dam Inundation Areas
Dam Name
Don Pedro
Exchequer
New Melones
San Luis
Pine Flat
Tulloch
Map displays Stanislaus County with Dam Inundation Areas of regional dams.
Oakdale
Riverbank
Modesto
Waterford
Hughson
Ceres
Turlock
Patterson
Newman
0 2.25 4.5 9 13.5
Miles

Stanislaus County

Striving to be the Best

RISK ASSESSMENT

Flood

FLOOD HAZARD

Identifying Hazard

A flood is the temporary inundation of water or mud on normally dry land. Heavy or prolonged rain or dam collapse can cause inundation, as can flash floods. Urban flooding occurs in developed areas where the amount of water generated from rainfall and runoff exceeds the storm water systems' capacity. As land is converted from agricultural to urban uses, it often loses its ability to absorb rainfall. Rain flows over impervious surfaces such as concrete and asphalt and into nearby storm sewers and streams. This runoff can result in the rapid rise of floodwaters. During urban floods, streets can become inundated, and storm drains often back up because of the volume of water and become blocked by vegetative debris like yard waste, which can cause additional flooding. Development in or near the floodplain puts lives and property at risk. Flood damage can include: structure inundation, erosion of stream banks, road embankments, foundations footings for bridges, impact damage from debris, blockage of infrastructure, cropland destruction, sewage releases from damaged tanks, and economic loss to agriculture.

Profiling Hazard

NATURAL HAZARD	HOW IDENTIFIED	WHY IDENTIFIED
FLOOD	• County General Plan Safety Element • County Emergency Operations Plan • Input from LHMP Planning Team • Risk Assessments • Feedback from LHMP partners through submittal of the Hazard Identification Questionnaire • FEMA Flood Hazard Mapping	• Previous instances • Several repetitive loss properties are located in the County.

LOCATION

Substantial action has been taken place to reduce flood hazards. Construction of Don Pedro Dam on the Tuolumne River and New Melones Dam on the Stanislaus River has permitted officials to monitor the flows of water in those rivers, significantly reducing the chances of flooding. New Melones Dam has, since its completion in 1978, prevented flooding above the 8000 cubic feet per second (cfs) level on the Stanislaus River. Regulation of the flows from Don Pedro limits flooding along the Tuolumne River, but does not completely eliminate it. Another seasonal flooding threat is Dry Creek. It originates near the Modesto Reservoir and flows past Waterford through Modesto where it finally terminates at its confluence with the Tuolumne River. The Mid San Joaquin Regional Flood Management Working Group is working on mitigation measures that would further limit flooding from the San Joaquin River. The San Joaquin River impacts the areas along Interstate 5 and the unincorporated communities of Grayson and Westley.

EXTENT

Flooding has been a major problem throughout the history of Stanislaus County, particularly with the encroachment of urban growth into flood plains. Major floods have occurred in 1861, 1938, 1950, 1955,

1969, 1983, 1995, 1997, and 1998. Minor flooding occurred in 2006 with limited impacts to County property. The State Reclamation Board has identified and adopted designated floodways, defined in feet per second of flow, along the San Joaquin River, Stanislaus River, Tuolumne River, and portions of Dry Creek. Seasonal flooding along Dry Creek and the San Joaquin River is common during very wet years or periods.

The Federal Emergency Management Agency Flood Insurance Rate Map (FIRM) provides information on flood risk in Stanislaus County using 100 and 500-year floodplain GIS mapping layers. Areas within the 100-year floodplain zone have a 1% annual exceedance probability of flood, meaning a flood has a 1% chance of being equaled or exceeded in any single year in those areas. Areas between the limits of the 100-year and 500-year floodplain zone have a 0.2% annual chance of flooding. The 100-year and 500-year floodplain zones are identified on the 2016 Stanislaus County-Flooding Hazard Map on page 67 in this section.

The Department of Housing and Urban Development (HUD) has also developed flood hazard zones, which are referenced in the County's Flood Control Ordinance and used for insurance purposes. Any non-agricultural encroachment into these areas requires special permits that are difficult to obtain and often costly to implement. Permits for encroachment into the designated floodways must be obtained from the Reclamation Board. The County administers other permits. These measures still do not control flood hazards for existing development. Information regarding flood-prone areas as shown on the HUD maps is available in the Department of Public Works.

PROBABILITY OF FUTURE EVENTS

The probability of flooding in Stanislaus County is likely. Historically, there have been clusters of flooding incidents within the County approximately every 14 years. Flooding risks are present among several creeks and rivers, including Del Puerto Canyon, Dry Creek, Orestimba Creek, Salado Creek, San Joaquin River, Stanislaus River, and the Tuolumne River. Stanislaus County is most regularly impacted by flooding along Dry Creek, the Tuolumne River and San Joaquin River.

The Dry Creek watershed is a major factor in flooding in eastern Stanislaus County and the east side of Modesto. The watershed was traditionally un-monitored and un-controlled. To improve monitoring capabilities, in 2011 Stanislaus County purchased a Remote Automated Weather System (RAWS) to help monitor rainfall on the watershed near Crabtree Road. Turlock Irrigation District is now planning to install another weather station on the upper Dry Creek watershed to give further capabilities for managing this flood hazard.

The Mid San Joaquin Regional Flood Management Working Group is focused on increasing transitory storage on the San Joaquin River. Flooding on the San Joaquin generally impacts the west side of the County. Increased storage will help reduce seasonal flood threats as well as the impact of larger incidents.

NEW OCCURRENCES

Since the current plan was updated in 2010, there has been one new occurrence. In April 2011, Stanislaus County proclaimed a local state of emergency for limited flooding at various locations within the County. This was considered a minor incident as there was limited damage.

VULNERABILITY IMPACTS

Seasonal flooding is experienced along the San Joaquin River and Tuolumne River.

Life and property loss could occur as well as damage to agricultural land.

Road and bridge closures, and communication systems may cause disruption to normal process.

Population most vulnerable are those living in low-lying trailer parks along the rivers and the homeless. There is usually sufficient time to alert and warn those that may be affected.

There are no County buildings or historical buildings located in these areas. The Modesto Water Treatment Plant could experience problems should waters rise high enough.

Assessing Vulnerability: Overview

There is commonly seasonal flooding along the San Joaquin River and Dry Creek in wet years.

Most flood conditions are from heavy, prolonged rain or rapid snow thaw. Flooding could involve extensive life and property loss, interruption of transportation and communications systems, loss and damage to agricultural land, and interruption of government infrastructure.

Most The San Joaquin Regional Flood Management Working Group is focused on reducing the flood risk on the San Joaquin River. The working group includes local and state government, irrigation districts and levee districts. The group has proposed mitigation measures and has made available grants to help local government and districts implement recommendations. The working group has recommended increasing transitory storage on San Joaquin River.

The Stanislaus County and Turlock Irrigation District have installed or is in the process of installing equipment to monitor the flow of Dry Creek and rain amounts within that watershed. Turlock Irrigation District is also examining methods to increase and decrease inflows from Don Pedro Reservoir on the Tuolumne River to lesson flooding probability at the Dry Creek / Tuolumne River confluence in Modesto.

Flooding on the Stanislaus River is not common and is only an issue in a major flood event. Even in the largest flood event in recent history (1997 and 1998), there were minimal impacts on the Stanislaus River.

Historically, emergency officials have received notice of potential flooding before the incident giving first responders time to notify and evacuate residents. The more vulnerable populations are those who are not able to self-evacuate including the elderly, young and those with disabilities. The homeless population is vulnerable in a flood incident and may need expanded notification and relocation efforts. Law enforcement and fire departments have coordinated the notification of homeless in past incidents. Drivers who ignore warnings of flood are also a population of concern particularly in the west side of the County at Eastin Road and Orestimba Creek. The county maintains crossing guards for this section, but they are sometimes ignored.

REPETITIVE LOSS PROPERTIES

Stanislaus County participates in the National Flood Insurance Program (NFIP) and complies with the NFIP requirements. The Stanislaus County Planning Department is the conduit for the program within this jurisdiction. The Planning Department provides information to the public specific to NFIP and flood hazards within the County on its website at the following link:

http://www.stancounty.com/planning/bp/floodplain-management.shtm

In compliance with the NFIP, Repetitive Loss Properties (RLP) has been identified in Stanislaus County. There are four (4) properties identified and they are located in Crows Landing, Modesto and Newman. There have been no new claims to these properties since the last plan update in 2010.

Assessing Vulnerability: Identifying Structures and Estimating Potential Losses

This section is based on an inventory of existing and future buildings, infrastructure, and critical facilities located within the identified flood hazard zones. Using maps from the FEMA 100 and 500-year floodplain layers, the following table lists a summary of the population, properties and values at risk from 100-year and 500-year floods from various source rivers. This exhibit also lists a summary of the housing units, population, and number of parcels and valuation of properties at risk of flooding from various rivers within unincorporated Stanislaus County.

FLOOD RISKS IN STANISLAUS COUNTY				
River	**Population**	**Households**	**# of Parcels**	**Total Value**
100 Year Flood Zone				
Del Puerto Canyon	97	36	150	37,560,049
Dry Creek	205	103	649	114,525,728
Orestimba Creek	1,729	620	765	76,556,776
Salado Creek	1,419	462	645	53,314.273
San Joaquin River	866	231	702	130,354,364
Stanislaus River	64	40	544	109,002,577
Tuolumne River	3,077	894	1,596	174,037,212
River	**Population**	**Households**	**# of Parcels**	**Total Value**
500 Year Flood Zone				
Del Puerto Canyon	96	37	91	25,142,995
Dry Creek	259	122	325	38,689,834
Orestimba Creek	1,869	640	761	54,969,118
Salado Creek	14,281	4,574	4,629	258,849,978
San Joaquin River	52	18	32	12,148,637
River	**Population**	**Households**	**# of Parcels**	**Total Value**
Stanislaus River	974	347	701	98,840,359
Tuolumne River	10,187	2,730	2,983	197,213,289

There are seventeen existing County facilities in the 100 and 500 year flood zones with a total value of $5,467,908. Both future facilities that would be impacted and the total value is $2,365,000. The two facilities are expansion of the existing Honor Farm that is impacted by the 100 year flood zone along the San Joaquin River.

The table below reflects the value of County Bridges in the event of a flood hazard:

COUNTY BRIDGES FLOOD RISK		
River	**# of Bridges**	**Total Value**
100 Year Flood		
Del Puerto Canyon	2	1,549,524
Dry Creek	3	12,112,883
Orestimba Creek	11	12,775,729
Salado Creek	4	4,016,025
San Joaquin River	4	24,544,988
Stanislaus River	4	25,734,308
Tuolumne	11	129,333,913

COUNTY BRIDGES FLOOD RISK		
River	**# of Bridges**	**Total Value**
500 Year Flood Zone		
San Joaquin River	1	490,454
Stanislaus River	1	256,050

Assessing Vulnerability: Analyzing Development Trends

There is no significant development in the unincorporated County impacted by flood since the last plan update. Most development has been infill in cities within the county.

Urban development is discouraged in areas with growth-limiting factors such as a high water table, poor soil percolation and flood plains unless measures to mitigate the problems are included as part of the development application.

Development is not allowed in areas that are within the designated floodway. Development within the 100-year flood boundary shall meet the requirements of Chapter 16.50 Flood Damage Protection of the County Code and within the designated floodway shall obtain Reclamation Board approval.

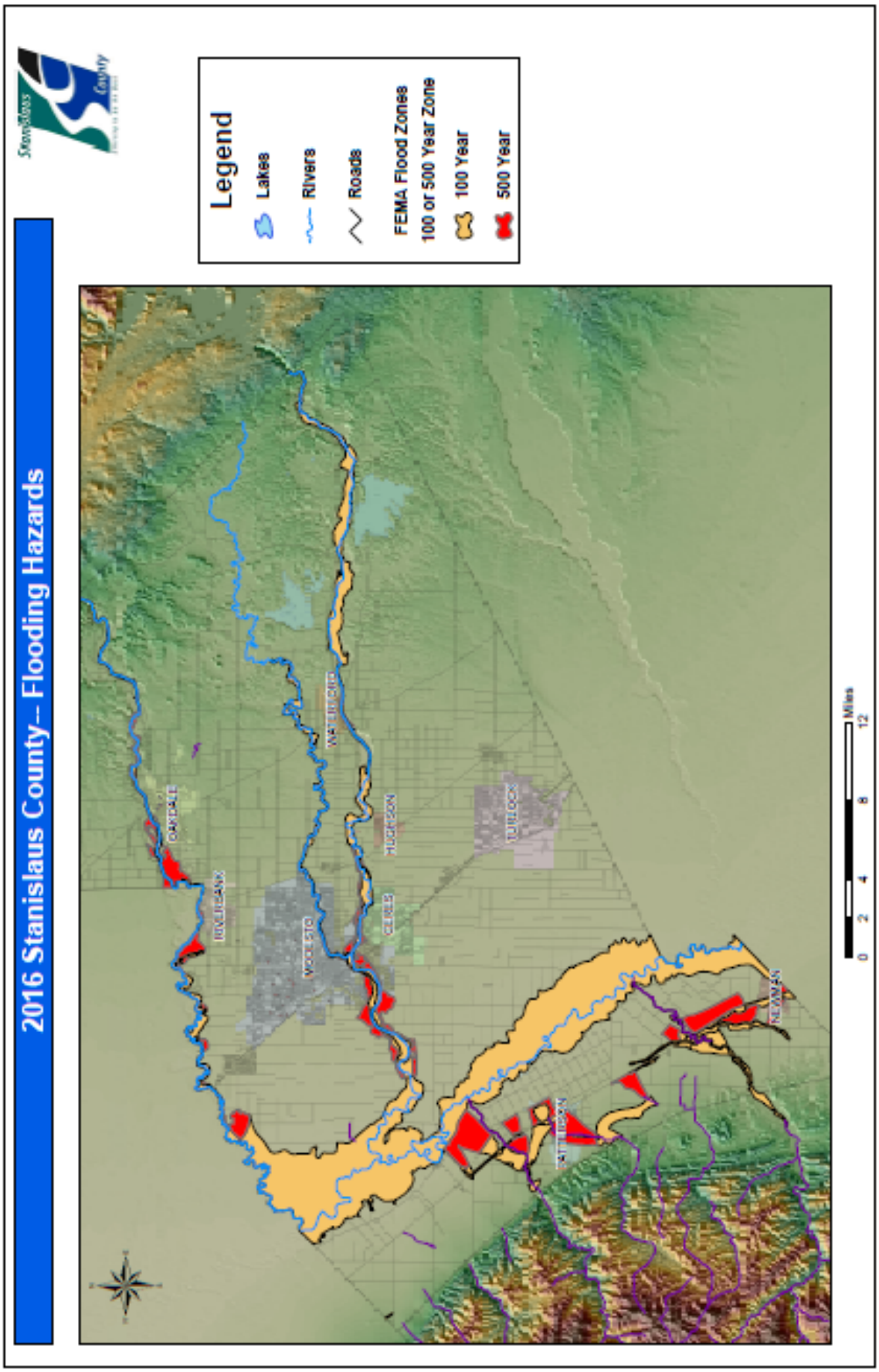
With several rivers traversing the County, flooding is a concern. The County makes information available to landowners in areas subject to flooding and supports the formation of improvement districts including flood control districts to eliminate safety hazards.

The County also utilizes the California Environmental Quality Act (CEQA) process to ensure that development does not occur that would be especially susceptible to flooding. Most discretionary projects require review for compliance with CEQA. As part of this review, potential impacts must be identified and mitigated.

The County continues to support the Federal Emergency Management Agency (FEMA) Flood Insurance Program so that residents who qualify may purchase such protection.

Impact of Climate Change

The impact of climate change may lessen the flood risk in some areas including Stanislaus County. Climate change may increase drought and lessen snow pack in the mountains resulting in less water in the region. Climate change may produce unpredictable weather patterns that results in strong or slow moving storms that could cause localized flooding. It is anticipated that climate change will cause the sea level to rise. It is unclear how the rising sea level impacts of coastal flooding and coastal erosion may impact inland areas including Stanislaus County.


2016 Stanislaus County– Flooding Hazards
Legend
Lakes
Rivers
Roads
FEMA Flood Zones
100 or 500 Year Zone
100 Year
500 Year
OAKDALE
RIVERBANK
MODESTO
WATERFORD
HUGHSON
CERES
TURLOCK
PATTERSON
NEWMAN
Miles
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RISK ASSESSMENT

Wildfire

WILDFIRE HAZARD

Identifying Hazard

A wildfire is an uncontrolled fire burning in an area of vegetative fuels such as grasslands, brush, or woodlands. Wildfires can occur in areas essentially void of development, or in areas where development intermingles with this natural area known as the wildland-urban interface. Many wildfires occur in locations that abound in grasslands and brush. Heavier fuels with high temperatures, low humidity, low rainfall, and high winds all work to increase risk.

Wildfires can occur at any time of the year, but will usually occur during warmer and dryer months. Wildfires are most commonly caused by people through arson, debris, burns, and carelessness. Areas that are typically considered to be safe from wildfires include highly urbanized, developed areas that are not contiguous with vast areas of wild lands. Areas typically considered being prone to wildfires include large tracks of wild lands.

Profiling Hazard

NATURAL HAZARD	HOW IDENTIFIED	WHY IDENTIFIED
WILDFIRE	• County General Plan Safety Element • County Emergency Operations Plan • Input from LHMP Planning Team • Feedback from LHMP partners	• Potential to cause devastation.

LOCATION

Generally from May to October of each year, Stanislaus County experiences its wildfire season. Most of the fire susceptible areas are located in the extreme eastern and western portion of the County. This is due to the underdeveloped, rugged terrain and the highly flammable, grass and brush covered land. High temperatures, low humidity, strong winds and drought may exacerbate the potential for wild land fires. Included within the Eastern and Western portion of the County, locations have been identified by the California Department of Forestry and Fire Protection (CAL FIRE) as State Responsibility Area (SRA).

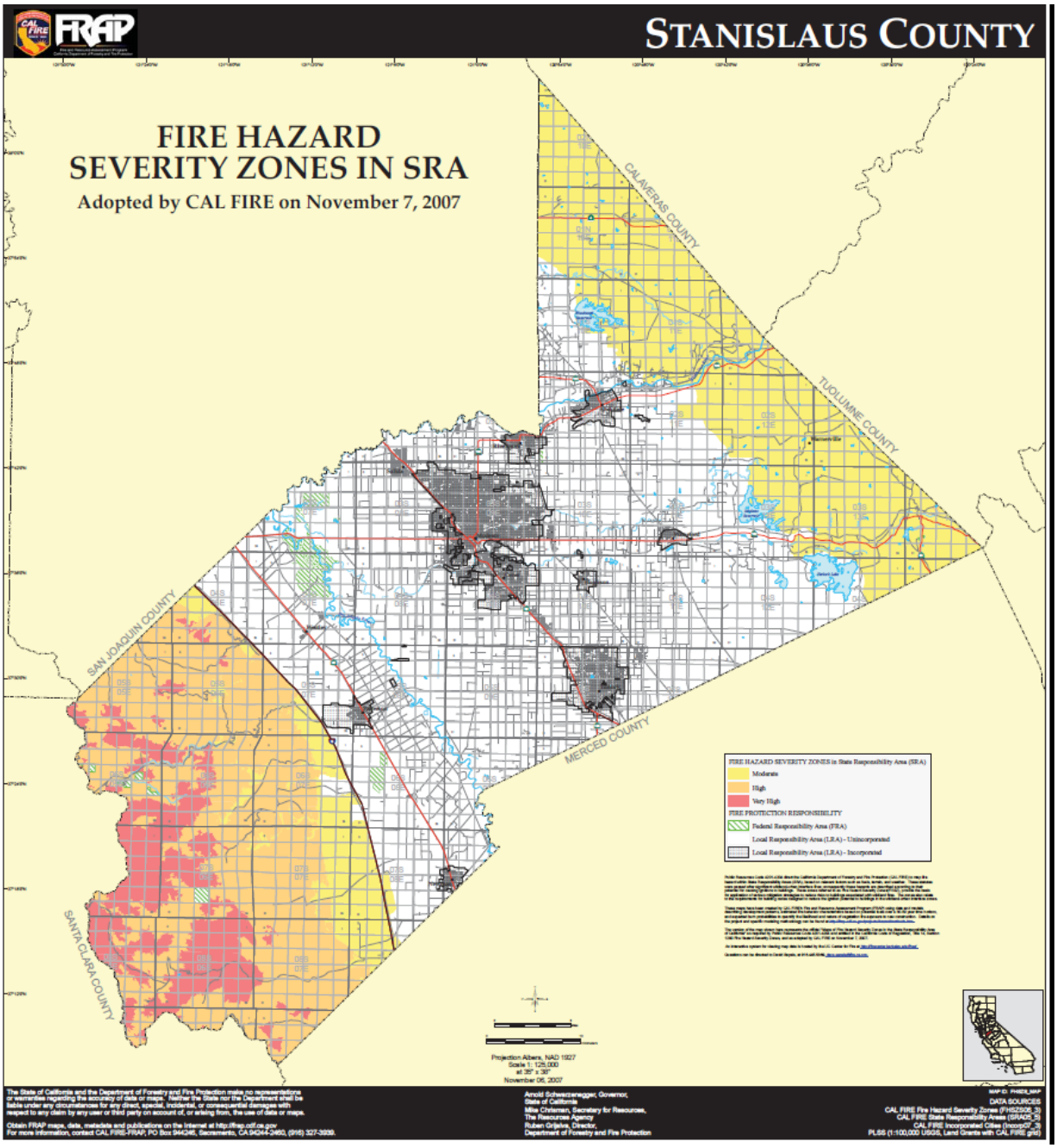
Within Stanislaus County, the areas of potential brush fires are the Diablo Range, generally located west of Interstate 5, and the Sierra Nevada foothills in the eastern portions of the County. According to CAL FIRE, which includes the Santa Clara Unit (SCU) and Tuolumne Calaveras Unit (TCU), the majority of these areas are rated as having the highest possible critical fire weather frequency on an annual basis. Assessments of current and anticipated hazards/risks have been identified in CAL FIRE's Strategic Fire Plans for SCU and TCU. This factor, combined with vegetation and slope percentage, produce overall fire ratings of moderate to high throughout the fire hazardous areas as identified in the Fire Hazard Severity Zones (FHSZ map).

EXTENT

Brush fire hazards can be traced to four causes: topography, vegetation, climate, and people. Chaparral, grasslands and other wild plant life provide the major sources of fire fuel. Stanislaus County has a Mediterranean type of climate with cool, wet winters and hot, dry summers. The hot, dry summers in Stanislaus County produce large areas of extremely dry vegetation often located on topography which enhance the spread of flames and prohibits access of firefighting equipment. When people are added to the above situation, the chances of fires are greatly increased.

The largest wildfires occurring in Stanislaus County have been on the western side of the County in the SRA. THE SRA is rural and sparsely populated. The Del Puerto Fire and The Canyon Fire were in July 2006. They burnt 2,593 and 34,217 acres respectively. There were no structures residences lost in the

Del Puerto Fire, but 11 residents were lost in the Canyon Fire. The Lick Incident was in July 2007 in the SRA encompassing Santa Clara and Stanislaus Counties. Approximately 47,460 acres burned and four residences were lost.



As depicted in the CAL Fire Fire Hazard Severity Zones in State Responsibility Area (SRA) map, above, Stanislaus County has a high to very high hazard severity zone on the western side of the County in the SRA. The eastern side of the County is indicated with a moderate severity zone rating in the SRA.

CAL FIRE has determined that Stanislaus County has no very high fire hazard severity zones in the Local Responsibility Area (LRA) indicated on the map in white.

PROBABILITY OF FUTURE EVENTS

The potential of future wildfires within Stanislaus County is highly likely. New construction continues to encroach into the wildland creating Urban Wild Land Inter Face in the State Responsibility Areas on the

West and East sides of the County. The increase of human activity in these areas will increase the frequency and the significance of wildland fires as population increases.

The Stanislaus County, Stanislaus Consolidated, West Stanislaus and Cal Fire, Fire Prevention Bureaus will continue to work with new construction projects enforcing the California Fire Code, District Ordinances and the California Code of Regulations Title 14, Section 1273 working to reduce the significance of wildfires in the Wildland Interface and the State Responsibility Areas.

The drought experienced in the past years continues to reduce the fuel moisture levels in all fuel models. Increased wildfire numbers and more extreme fire behavior can be expected throughout the County if drought conditions persist.

The Northeast and East portions of the County continue to see conversion of State Responsibility Area land that historically contained grassland to irrigated land used for tree crops. The conversion of this SRA into irrigated land reduces the wildfire threat in the converted areas. Cal Fire is due to issue a new SRA map for the State in the coming years. The irrigated crop land should be removed from the SRA.

NEW OCCURRENCES

There have been over several hundred wildfire starts in Stanislaus County since the plan was updated in 2010. Only one of the fires grew to be significant in acreage. The Grayson Fire in 2016 was 2,000 acres and in the Local Responsibility Area (LRA). Drought conditions contributed to the spread of this fire including hot and dry conditions, drier than normal fuels and more river bottom exposure. It is unusual to have a fire of this size outside the SRA within Stanislaus County. No homes were lost as a result of the fire and there was no economic impact.

ASSESSING VULNERABILITY: OVERVIEW

Stanislaus County took into account the following when updating our vulnerability assessment:

- Updates to inventories of existing structures in hazard areas, including new development, and redeveloped areas or structures;
- Potential impacts of future land development, including areas that may be annexed in the future;
- New buildings; and
- Completed mitigation actions that reduced overall vulnerability.

Wild land fires are generally limited to the foothills on either side of the County. Although there is less of a hazard to structures and people, controlling such fires is more difficult because of their inaccessibility. While urban fires result in injuries and loss of property, brush fires may result in loss of natural vegetation, loss of agricultural crops, vulnerability to flood and landslides, erosion of the soil, and intrusion of the eroded soil into lower lying areas where it may be deposited.

Stanislaus County has developed several mechanisms for dealing with fire hazards. Building Code Standards require use of the safest construction methods. In the State Responsibility Areas (CA Building Code Chapter 7A) is enforced to create a higher level of fire resistance to wildland fires. Upgraded windows, doors, siding, roofing and deck construction enable a residence to withstand a wildfire moving through the area. Since the January 2011 adoption of the Fire Code all new residences in the State of California have been required

VULNERABILITY IMPACTS

Wildland fires are generally limited to the foothills on either side of the County, identified as State Responsibility Area (SRA).

There is little population or development in these high risk areas due to the rugged terrain.

Inaccessibility in the area makes controlling fires in these areas more difficult.

Loss of natural vegetation and soil erosion could make the area susceptible to flood and landslide.

Agricultural crops could be lost threatening economic health.

The few homes in the rural areas of the SRA are isolated with limited egress. Timely notification of fire threat is critical.

to be fitted with fire sprinklers which reduce the fire occurrences in those residences.

The County Fire Warden's Office and Fire District's enforce a section of the County Code which requires removal of "all dirt, rubbish, weeds, ... which constitute a fire menace or which is otherwise a menace to health or safety..." in urban areas. If the property owner does not remove the material, the Fire Warden's Office can do so and charge the cost of removal to the property owner (Stanislaus County Weed Abatement Ordinance Title 9, Chapter 9.20)

Cal Fire and Fire Prevention Bureau's having Jurisdiction also enforce the Public Resources Code Section 4290 in State Responsibility Areas of Stanislaus County requiring defensible space for structures.

Vulnerable populations are those who live in the rural areas of the SRA. Their homes are isolated with limited egress. It is important that these residents receive timely notification regarding potential evacuations.

Assessing Vulnerability: Identifying Structures and Estimating Potential Losses

The majority of areas threatened by potential wildfire losses within Stanislaus County are in the foothills at the far eastern and western edges of Stanislaus County where little population or development presently exist. Exceptions include:

- Pockets of development west of Interstate 5 (Diablo Grande; Fink Road Landfill)
- Frank Raines Regional Park (restrooms, well/pump facilities)
- Radio communications facilities (Mt. Oso)
- Woodward, Turlock Lake and Modesto Reservoir park improvements
- La Grange Regional Park improvements

Wildfires can threaten any improvements, particularly those which are not protected by buffer zones or which are constructed of combustible materials. The highest risk areas are also those with the least density of development, but may include ranches, farmland and pasture properties and their associated structures and fences. Most of the County's infrastructure facilities are less vulnerable to wildfire due to the materials used in their construction. Wildfires may threaten infrastructure of other utilities, such as power and telecommunications lines.

The vulnerability in terms of dollar losses is defined and provides the community and the State of California with a common framework in which to measure the effects of hazards on vulnerable structures. The County has reviewed and revised this new plan to reflect changes in development and updated the inventory of structures.

POPULATION AND PROPERTY VALUE ANALYSIS FOR WILDFIRE			
Wildfire Zone	Population	Households	Total Value
Fire Zone <1 Mile	1,242	725	288,748,713
Fire Zone >1 Mile < 2 Miles	9,384	3,459	514,345,331
Fire Zone >2 Mile < 3 Miles	10,796	3,484	470,840,443
Fire Zone >3 Mile < 4 Miles	6,720	2,270	398,277,093
Fire Zone >4 Mile < 5 Miles	5,243	1,976	387,601,549

EXISTING COUNTY FACILITIES PROPERTY VALUE BY FIRE ZONE		
Wildfire Zone	Existing Facilities	Total Value
Fire Zone <1 Mile	0	0
Fire Zone >1 Mile < 2 Miles	4	1,340,597
Fire Zone >2 Mile < 3 Miles	14	3,456,344
Fire Zone >3 Mile < 4 Miles	4	1,860,754

Fire Zone >4 Mile < 5 Miles	1	1,713,838

There are currently no future County facilities planned within a wildfire zone.

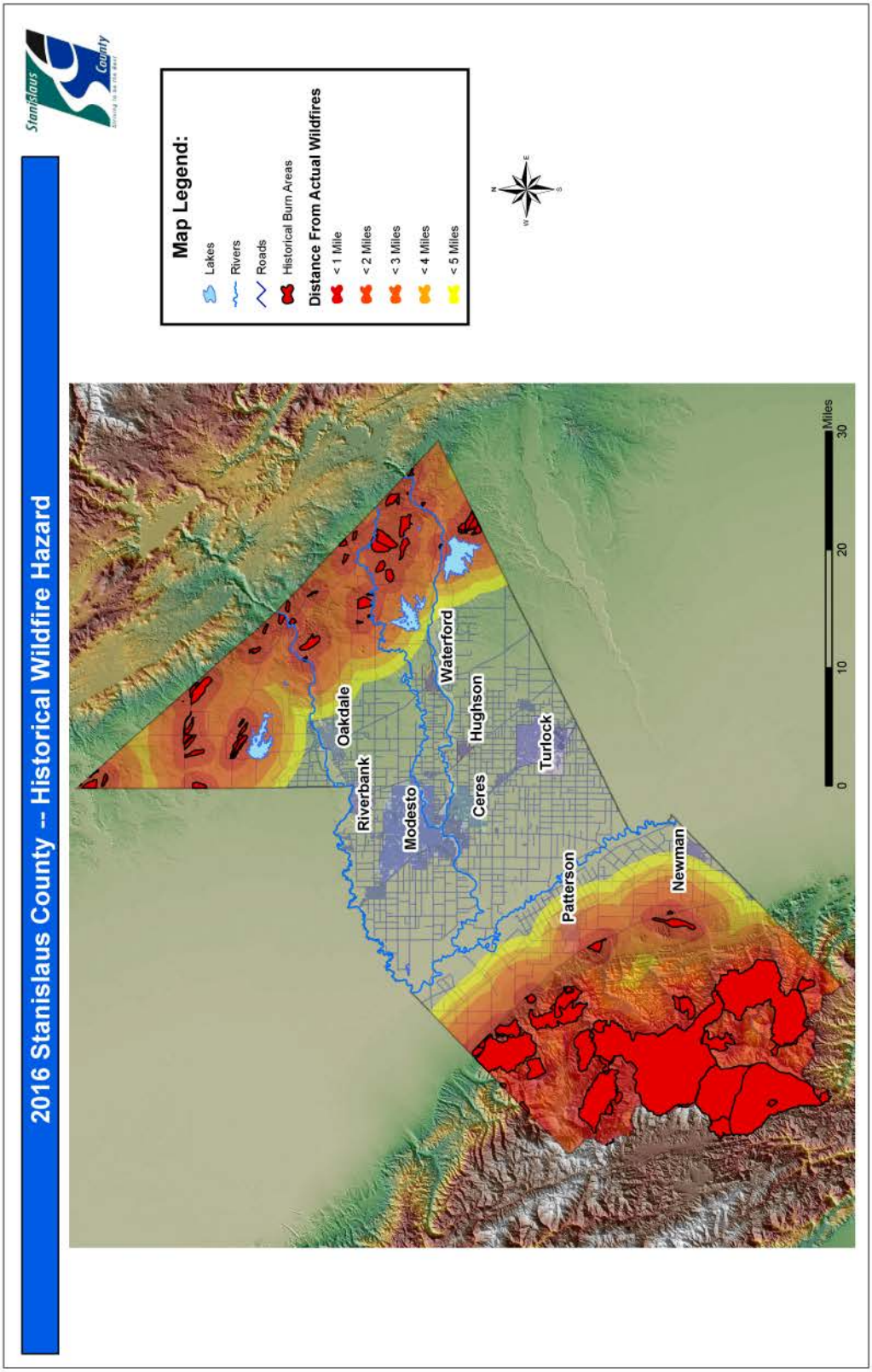
Assessing Vulnerability: Analyzing Development Trends

The areas most vulnerable to wildfire are in the SRA on the east and west sides of the County. There has been little to no development within the majority of the SRA with two exceptions. On the Western side, there has been limited development in the Diablo Grande. Diablo Grande is located seven miles west of I-5. The development was approved by the Board of Supervisors in 1993 for 5,000 residences. As a result of the economic turn down in 2008, build out of the residential area was stalled. There are currently 425 occupied residences and building is projected to continue over the next few years.

There has been development of ranchettes, two to ten acre homesteads, on the eastern side of the county between Knights Ferry and the City of Oakdale. These ranchettes are located primarily in the SRA. Aside from these limited developments, there has been no significant change in development in the unincorporated areas impacted by wildfire within Stanislaus County since the last LHMP update.

Impact of Climate Change

California has experienced a significant drought over the past five years. The drought has stressed all ranges of fuel in the wildland in Stanislaus County producing extreme fire behavior. The areas most affected by the drought would be the river bottom fuels and the fuels in the extreme west and east foothill portions of the County.


2016 Stanislaus County -- Historical Wildfire Hazard
Stanislaus County
Map Legend:
Lakes
Rivers
Roads
Historical Burn Areas
Distance From Actual Wildfires
< 1 Mile
< 2 Miles
< 3 Miles
< 4 Miles
< 5 Miles
Oakdale
Riverbank
Modesto
Waterford
Hughson
Ceres
Turlock
Patterson
Newman
0
10
20
30
Miles

SECTION SIX

Mitigation Strategy

SECTION SIX – MITIGATION STRATEGY

INTRODUCTION

The mitigation strategy serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy includes the development of goals and prioritized hazard mitigation actions. Goals are long-term policy statement and global visions that support the mitigation strategy. A critical step in the development of specific hazard mitigation actions and projects is assessing the community's existing authorities, polices, programs, and resources and its capability to use or modify local tools to reduce losses and vulnerability from profiled hazards.

Stanislaus County utilitized a four-step process to reaffirm or update goals and actions based on current conditions including: Developing mitigation goals,

- Identifying mitigation actions,
- Evaluating mitigation actions, and
- Implementing mitigation action plans.

The Planning Team developed the mitigation goals, reviewed potential mitigation actions, and developed the Mitigation Action Plan for the unincorporated portion of the County. The plan was also reviewed and shared with our local partners to receive feedback and help us prioritize goals and objectives.

WHY DO WE NEED A MITIGATION STRATEGY

- To help the County make decisions that will reduce its vulnerability to hazards;
- It costs too much money to only address the effects of a disaster after it occurs;
- State and Federal aid is usually insufficient to cover the extent of physical and economic damages resulting from disasters;
- Damage from hazards can be prevented if the County takes the time to anticipate where and how disasters will occur, and then take appropriate action to minimize damages;
- The County can lessen the impact of disasters and speed the response and recovery process;
- The County has a moral responsibility to its citizens to plan and recognize the potential for hazards; and
- Awareness can help our community become more sustainable and disaster resistant.

DEVELOPING MITIGATION GOALS

Mitigation goals are defined as general guidelines that explain what the County wants to achieve in terms of hazard and loss prevention. Goals are typically long-range statements representing community-wide visions. The Planning Team reviewed the goals from the 2010 plan which focused on minimizing future loss of life, reducing property damage, and avoiding long-term vulnerabilities to the identified hazards. After the Risk Assessment was completed, the Planning Team developed additional goals. This included: increased planning and mitigation efforts for dam and flood along with increased preparedness in participating in ShakeOut for earthquakes. The goals were developed to be compatible with the goals of the community as expressed in the Safety Element of the General Plan, and the Emergency Operations Plan. The County's Mitigation Strategy is guided by the vision of a safe and resilient County. Our mission is to integrate existing laws and programs into a mitigation strategy that will serve the citizens by reducing and preventing injury and damage from natural hazards.

Stanislaus County routinely performs activities such as issuing building permits, approving development plans, and repairing roads. The County is conscious that these activities should reflect our vision and goals by using the most current building code, restricting development in hazard-prone areas, or making infrastructure decisions based on our latest Risk Assessment findings. The table below highlights the County's existing authorities, policies, and programs and the ability to expand upon and improve them through continuous review and integration with the Mitigation Plan.

Existing Authority, Policy or Program Title	*Goal*	*Policy / Program Improvements*
Stanislaus County General Plan	Hazard Risk Reduction	Addresses hazards through the General Plan Safety Element and integrated with the stated goals and priorities of the LHMP. The plan is continuously reviewed and revised based on current identified hazards.
Capital Improvement Plan	Protect Critical Facilities and Infrastructure	Incorporates LHMP priorities in the Capital Improvement Plan and requires project review by the Board of Supervisors during the concept, scope and cost of the project as well as the appropriate environmental reviews before a project is initiated. The Board of Supervisors review insures continuous expansion and improvement of critical facilities and infrastructure capability.
Stanislaus County Emergency Operations Plan (EOP)	Establish Emergency Management Organization	The Hazard Mitigation Planning Team remains informed of major review findings during the annual review of the EOP with the intent to integrate with key components of the LHMP. Annual review of this plan allows emergency management staff to continue to improve and expand capability to identify opportunities to mitigate hazards.
Stanislaus County Codes, Title 16 Buildings and Construction	Safeguard life, health, property and the public welfare	Reviews the LHMP to ensure integration by: Assessor for parcel date including use codes, assessed categories and values; Public Works for current infrastructure (bridges, drainage, street lights and traffic lights) and their geographic placement; Strategic Business Technology for numerous GIS base map shape files for cities, county, parcels, rivers and roads. Changes to County Code can be made as needed to expand and improve capability to protect life and property of Stanislaus County residents.

IDENTIFYING MITIGATION ACTIONS

For the Plan Update, the County proceeded to evaluate potential mitigation actions after reviewing our mitigation goals. Mitigation actions are activities, measures, or projects that help achieve the goals of a mitigation plan. Particular effort was made to identify at least one new mitigation action per identified hazard and define whether the existing actions were completed, deleted, deferred, or ongoing. County and jurisdiction-specific mitigation actions to reduce hazard impacts to new and existing buildings and infrastructure were also reviewed. Mitigation efforts should occur both before and after emergencies or disasters. This includes eliminating or reducing the impact of hazards that exist within Stanislaus County.

Mitigation efforts include:

- Amending local ordinances and statutes, such as zoning ordinances, building codes, and other enforcement codes;
- Integrating mitigation efforts into the County General Plan;
- Improving the understanding of the vulnerability of building types;

- Ensuring that all development in high-risk areas is protected by mitigation measures that provide for safety;
- Assessing tax levies or abatements;
- Emphasizing public education and awareness;
- Assessing and altering land use planning; and/or
- Establishing partnerships between all levels of government and the business community to improve and implement methods to protect property and lives.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) COMPLIANCE

Stanislaus County actively participates in FEMA's National Flood Insurance Program (NFIP) and has implemented floodplain policies, regulations, and ordinances to protect the threatened population and infrastructure to assure NFIP compliance.

COMMUNITY ASSISTANCE AND MONITORING ACTIVITIES

The Building Permits Division has a Flood Plain Administrator that attends and schedules workshops, provides informational assistance to the general public, and creates ordinance adoptions to comply with FEMA requirements. The Flood Plain Administrator also monitors FEMA publications and has close contact with the State Water Resources Board to maintain accurate information. The Public Works Department provides FEMA flood plain maps on the County Website for community review.

EVALUATING AND PRIORITIZING MITIGATION ACTIVITIES

The Planning Team reviewed mitigation activities identified in the 2010 mitigation plan. The mitigation strategies for each risk were reviewed and then validated or more clearly defined. The Planning Department, Building Permits Division and the Public Works Department enforce local, state and federal building codes that mitigate damage during a disaster. Their role is key in preventing future losses. The Chief Executive Office / Office of Emergency Services and other County departments ensure that emergency plans are developed and implemented and that personnel are trained in disaster response including the National Incident Management System. During this review cycle, no changes in priorities were identified by the Planning Team or through public comment. However, new mitigation actions were added for earthquake, landslide, dam, flood and fire risks to reflect current conditions. Mitigation is an ongoing activity that is incorporated into the day-to-day work flow for many County departments involved. The work is often funded through general fund, application fees or federal and state grants.

IMPLEMENTING A MITIGATION ACTION PLAN

The mitigation activities table for each hazard identifies the action, associated objectives, progress/status responsible agency and time frame. Many of these actions are considered ongoing or continuous County initiatives. The progress/status section of the table indicates the status of the activity if it was included in the previous plan or indicates if it is a new activity for the current plan.

COST-BENEFIT REVIEW

A cost-benefit review was applied in order to prioritize the mitigation recommendations for implementation. The priority for implementing mitigation recommendations depends upon the overall cost effectiveness of the recommendation, when taking into account monetary and non-monetary costs and benefits associated with each action. The cost-benefit table for each hazard provides an analysis of the benefit, cost and a relative priority rank (High, Medium and Low) for each mitigation activity. The general guidelines are listed below.

- High – Benefits are perceived to exceed costs without further study or evaluation.
- Medium – Benefits are perceived to exceed costs, but may require further study or evaluation prior to implementation.
- Low – Benefits and cost evaluations requires additional evaluation prior to implementation.

Funding projects that will help to mitigate imminent hazards are cost effective and assist in efforts to help communities recover from disasters. Most of the projects are already funded through general fund, application fees or state/federal funds. The majority of the projects are ongoing to ensure mitigation

measures are implemented within the County. It is not anticipated that all future projects will be identified in this Local Hazard Mitigation Plan. The County's Mitigation Plan will help guide local government to prioritize, be flexible, and identify critical mitigation strategy needs that may arise from a disaster when there is no time to update the local plan.

It is also important for the County to protect critical facilities and infrastructure. Stanislaus County has a Capital Improvement Plan with a Capital Projects Program in place. The Capital Projects Team is actively working to protect facilities and infrastructure important to the County. Areas of repetitive loss are high priorities for mitigation funding as they can drain County coffers.

EARTHQUAKE HAZARD

Hazard Mitigation Goals

- Minimize loss of life and reduce property damage as a result of earthquakes
- Reduce economic impact of earthquakes
- Increase public preparedness for disasters

Identification and Analysis of Mitigation Actions

OBJECTIVES	
Objective No.	**Description**
EQ01	Encourage and comply with higher development standards in geological fault areas.
EQ02	Discourage urban development in geological fault and hazard areas unless measures to mitigate the problems are included as part of the application.
EQ03	All new public and private development shall be designed to increase safety.
EQ04	The County shall continue to enforce State-mandated Health and Safety Codes, which include but are not limited to the California Code of Regulations Title 24 and International Property and Maintenance Code. Specifically for Seismically designed structures that meet or exceed the requirements stated in the California Building Code Volumes 1 and 2.
EQ05	Continue critical business operations.
EQ06	Train emergency responders.
EQ07	Enable the public to prepare for, respond to, and recover from disasters by improving hazard information.
EQ08	Support efforts to identify and rehabilitate structures that are not earthquake resistant.
EQ09	Integrate mitigation plan with other local government plans.

Implementation of Mitigation Actions

EARTHQUAKE HAZARD MITIGATION ACTIVITIES					
Mitigation Activity	Objective	Progress / Status	Responsible Agency	Time Frame	Potential Funding Source/s
2016. HMP.01 Ensure all Development and Building Permit Applications in areas with geological faults shall include measures to mitigate the impacts based on the Seismic Design Category associated with Soil Classification, liquefaction and seismic activity, in accordance with California Code of Regulations Title 24.	EQ01 EQ02 EQ03	Fully implemented since the 2010 plan and continues to be implemented to ensure building structural safety.	Planning and Community Development	Ongoing at time of development and building permit review.	County General Funds; Fees; State Earthquake Hazard Mitigation Funding
2016. HMP.02 Proposed Residential development may not be approved at the maximum density if it is in a geological fault area or if it does not meet the requirements of Ordinance 1182(Building Code adoption), Title 24 and 16, Stanislaus County Code unless mitigation measures are approved at application.	EQ01 EQ02 EQ03	All new residential development and structures within are reviewed, permitted and inspected in accordance with the most currently adopted code. Title 24 and 16.	Planning and Community Development	Ongoing at time of development and building permit review	County General Funds; State Earthquake Hazard Mitigation Funding
2016. HMP.03 The County shall enforce provisions of the Alquist-Priolo Earthquake Fault Zoning Act.	EQ01 EQ02 EQ03	All new residential developments are designed, reviewed and approved through entitlement process.	Planning and Community Development	Ongoing	County General Funds
2016. HMP.04 Conduct public outreach about earthquake risk and mitigation activities through participation in and publicizing The Great California Shake Out.	EQ07	This activity is new to the Local Hazard Mitigation Plan.	Chief Executive Office / Office of Emergency Services	Annual	County General Funds; US Department of Homeland Security
2016. HMP.05 Continue to integrate LHMP priorities with policies included in the Emergency Operation Plan (EOP), General Plan and Capital Improvement Plan and other local plans.	EQ09	Previous plan focused on EOP development only. This updated strategy emphasizes integration between local plans.	Chief Executive Office / Office of Emergency Services	Ongoing as plans are updated.	County General Funds; US Department of Homeland Security
2016. HMP.06 Develop, adopt, maintain, and update a Continuity of Operations Plan (COOP). Provide disaster management to assist and support County departments to maintain their critical functions.	EQ05	The COOP is updated as needed with a scheduled review annually.	Chief Executive Office / Office of Emergency Services	Ongoing with scheduled annual update.	County General Funds; US Department of Homeland Security

EARTHQUAKE HAZARD MITIGATION ACTIVITIES					
Mitigation Activity	Objective	Progress / Status	Responsible Agency	Time Frame	Potential Funding Source/s
2016. HMP.07 Provide NIMS training to all County employees who may be called upon during an emergency. The National Incident Management System (NIMS) was developed so that responders from different jurisdictions and disciplines can work together to provide a unified approach to incident management.	EQ06	Since 2006 Stanislaus County has provided NIMS training to employees and maintains an active training plan that emphasizes NIMS.	Chief Executive Office / Office of Emergency Services	Ongoing as county employees move through attrition or new responsibilities.	County General Funds; US Department of Homeland Security
2016. HMP.08 New public roads and bridges in areas subject to significant seismic hazard shall be designed to minimize seismic risk.	EQ03	Continuous implementation since 2010 and will continue to implement to ensure road and bridge safety.	Public Works	Ongoing	County General Funds; State Earthquake Hazard Mitigation Funding
2016. HMP.09 Additional width shall be required if right-of-way widths greater than those specified in the Circulation Element are necessary to provide added safety in geologically unstable areas.	EQ03	Continued implementation as warranted by specific projects.	Public Works	Ongoing	County General Funds; State Earthquake Hazard Mitigation Funding
2016. HMP.10 Take advantage of programs that would provide funds to identify and rehabilitate structures that do not currently meet building standard minimums for earthquake resistance.	EQ04 EQ08	Continuous implementation based on the number of grant applications and the approval of application for funds.	Planning and Community Development	Ongoing based on applications received.	County General Funds; State Earthquake Hazard Mitigation Funding

EARTHQUAKE HAZARD COST BENEFIT TABLE			
Mitigation Activity	Benefits	Costs	Priority
2016. HMP.01 Ensure all Development and Building Permit Applications in areas with geological faults shall include measures to mitigate the impacts based on the Seismic Design Category associated with Soil Classification, liquefaction and seismic activity, in accordance with California Code of Regulations Title 24.	• Avoids Casualties • Avoids Physical Damage	• Staff time for development process, plan review, and Inspection(s) associated with Building Permit costs.	High
2016. HMP.02 Proposed Residential development may not be approved at the maximum density if it is in a geological fault area or if it does not meet the requirements of Ordinance 1182, Title 24 and 16, Stanislaus County Code unless mitigation measures are approved at application.	• Avoids casualties • Avoids physical damage	• Staff time for development process, plan review, and Inspection(s) associated with Building Permit costs	High
2016. HMP.03 The County shall enforce provisions of the Alquist-Priolo Earthquake Fault Zoning Act.	• Avoids casualties • Avoids physical damage	• Staff time for development process	High
2016. HMP.04 Conduct public outreach about earthquake risk and mitigation activities through participation in and publicizing The Great California Shake Out.	• Avoids casualties • Avoids emergency management costs	• Staff time for development and coordination • Costs for publications	High
2016. HMP.05 Continue to integrate LHMP priorities with policies included in the Emergency Operation Plan (EOP), General Plan and Capital Improvement Plan and other local plans.	• Avoids emergency management costs	• Staff time for coordination	High
2016. HMP.06 Develop, adopt, maintain, and update a Continuity of Operations Plan (COOP). Provide disaster management to assist and support County departments to maintain their critical functions.	• Avoids loss of function costs	• Staff time for maintenance and coordination • $10,000 for annual maintenance fees	High
2016. HMP.07 Provide NIMS training to all County employees who may be called upon during an emergency. The National Incident Management System (NIMS) was developed so that responders from different jurisdictions and disciplines can work together to provide a unified approach to incident management.	• Avoids emergency management costs	• Staff time for Coordination • Costs for trainers and materials	High

EARTHQUAKE HAZARD COST BENEFIT TABLE			
Mitigation Activity	Benefits	Costs	Priority
2016. HMP.08 New public roads and bridges in areas subject to significant seismic hazard shall be designed to minimize seismic risk.	• Avoids casualties • Avoids loss of function • Avoids physical damage	• Staff time for coordination • Specific project costs outlined in Stanislaus County Capital Improvement Plan	Medium
2016. HMP.9 Additional width shall be required if right-of-way widths greater than those specified in the Circulation Element are necessary to provide added safety in geologically unstable areas.	• Avoids physical damage	• No cost unless purchase or right of way or imminent domain needed	Low
2016. HMP.10 Take advantage of programs that would provide funds to identify and rehabilitate structures that do not currently meet building standard minimums for earthquake resistance.	• Avoids physical damage • Avoids casualties	• Staff time for coordination of applications and grants	Low

LANDSLIDE HAZARD

Hazard Mitigation Goals

- Minimize loss of life and reduce property damage as a result of landslides
- Reduce economic impact of landslides
- Promote sustainable economy
- Identification and Analysis of Mitigation Actions

OBJECTIVES	
Objective No.	**Description**
LS01	Development west of Highway 5 in areas susceptible to landslides shall be permitted only when a geological soils report has been completed with (a) documented evidence that no such potential exists on the site, or (b) identifying the extent of the problem and the mitigation measures necessary to correct the identified problem.
LS02	All new development, including near river bluffs shall be designed to increase safety and reduce health hazards.
LS03	Discourage development on lands that are subject to landslides.
LS04	Implement engineering benchmarks to monitor landslide susceptibility to prevent impacts to roadways.
LS05	Manage landslide hazard areas by pre-staging road clearing equipment.
LS06	Continue critical business operations.
LS07	Train emergency responders.
LS08	Integrate mitigation plan with other local government plans.

Implementation of Mitigation Actions

LANDSLIDE HAZARD MITIGATION ACTIVITIES					
Mitigation Activity	Objective	Progress / Status	Responsible Agency	Time Frame	Potential Funding Source/s
2016. HMP.05 Continue to integrate LHMP priorities with policies included in the Emergency Operation Plan (EOP), General Plan and Capital Improvement Plan and other local plans.	LS08	Previous plan focused on EOP development only. This updated strategy emphasizes integration between local plans.	Chief Executive Office / Office of Emergency Services	Ongoing as plans are updated.	County General Funds; US Department of Homeland Security
2016. HMP.06 Develop, adopt, maintain, and update a Continuity of Operations Plan (COOP). Provide disaster management to assist and support County departments to maintain their critical functions.	LS06	The COOP is updated as needed with a scheduled review annually.	Chief Executive Office / Office of Emergency Services	Ongoing with scheduled annual update.	County General Funds; US Department of Homeland Security
2016. HMP.07 Provide NIMS training to all County employees who may be called upon during an emergency. The National Incident Management System (NIMS) was developed so that responders from different jurisdictions and disciplines can work together to provide a unified approach to incident management.	LS07	Since 2006 Stanislaus County has provided NIMS training to employees and maintains an active training plan that emphasizes NIMS.	Chief Executive Office / Office of Emergency Services	Ongoing as county employees move through attrition or new responsibilities.	County General Funds; US Department of Homeland Security
2016. HMP.11 All building permit applications shall be reviewed to ensure compliance with the California Code of Regulations Title 24 and Subdivision Ordinance in areas of unstable soils.	LS01, LS02, LS06	Fully implemented since the 2010 plan and continues to be implemented to ensure building structural safety.	Planning and Community Development	Ongoing at the time of development and building permit review.	County General Funds; Fees
2016. HMP.12 Development west of Highway 5 located in Seismic Design Category D shall submit a geological soils report unless the Chief Building Official and Planning Director are satisfied that no need for the report is present.	LS01	Fully implemented since the 2010 plan and continues to be implemented to ensure building structural safety.	Planning and Community Development	Ongoing at the time of development and building permit review.	County General Funds; Fees
2016. HMP.13 The County shall utilize the California Environmental Quality Act (CEQA) process to ensure that development does not occur that would be especially susceptible to landslides. Most discretionary projects require review for	LS03	Continuous implementation since 2010 and will continue to utilize CEQA to ensure that new development is safe.	Planning and Community Development	Ongoing at the time of development review and the CEQA process.	County General Funds

LANDSLIDE HAZARD MITIGATION ACTIVITIES					
Mitigation Activity	Objective	Progress / Status	Responsible Agency	Time Frame	Potential Funding Source/s
compliance with CEQA. As part of this review, potential impacts must be identified and mitigated or a statement of overriding concerns adopted.					
2016. HMP.14 The routes of new public roads in areas subject to landslides shall be designed to minimize landslide risks.	LS03	Continuous implementation since 2010 to ensure minimizing of landslide risks to public roads.	Public Works	On-going	County General Funds; Bonds; Tax Measures
2016. HMP.15 Engineering benchmarks will be utilized to survey slope differences over time and monitor for changes in topography to prevent roadway damage and traffic disruptions.	LS04	This activity is new to the Local Hazard Mitigation Plan.	Public Works	On-going	County General Funds; Bonds; Tax Measures
2016. HMP.16 Manage landslide hazard areas by staging road-clearing equipment in known landslide prone areas for faster stabilization.	LS05	This activity is new to the Local Hazard Mitigation Plan.	Public Works	Annual (seasonal)	County General Funds
2016. HMP.17 Development proposals in an area identified as having unstable soils and subject to landslides such as areas in the foothills and river bluffs shall include an engineered design with emphasis on soil, degree of slope measures for mitigating possible hazards.	LS03	Fully implemented since the 2010 plan and continues to be implemented to ensure building structural safety.	Planning and Community Development	Ongoing at the time of development and building permit review.	County General Funds; Bonds; Tax Measures

LANDSLIDE HAZARD COST BENEFIT TABLE			
Mitigation Activity	Benefits	Costs	Priority
2016. HMP.05 Continue to integrate LHMP priorities with policies included in the Emergency Operation Plan (EOP), General Plan and Capital Improvement Plan and other local plans.	• Avoids emergency management costs	• Staff time for development and coordination	High
2016. HMP.06 Develop, adopt, maintain, and update a Continuity of Operations Plan (COOP). Provide disaster management to assist and support County departments to maintain their critical functions.	• Avoids loss of function costs	• Staff time for maintenance and coordination • $10,000 for annual maintenance fees	High
2016. HMP.07 Provide NIMS training to all County employees who may be called upon during an emergency. The National Incident Management System (NIMS) was developed so that responders from different jurisdictions and disciplines can work together to provide a unified approach to incident management.	• Avoids emergency management costs	• Staff time for coordination • Costs for trainers and materials	High
2016. HMP.11 All building permit applications shall be reviewed to ensure compliance with the California Code of Regulations Title 24 and Subdivision Ordinance in areas of unstable soils.	• Avoids physical damage	• Staff time for coordination	High
2016. HMP.12 Development west of Highway 5 located in Seismic Design Category D shall submit a geological soils report unless the Chief Building Official and Planning Director are satisfied that no need for the report is present.	• Avoids physical damage	• Staff time for coordination	High

LANDSLIDE HAZARD COST BENEFIT TABLE			
Mitigation Activity	Benefits	Costs	Priority
2016. HMP.13 The County shall utilize the California Environmental Quality Act (CEQA) process to ensure that development does not occur that would be especially susceptible to landslides. Most discretionary projects require review for compliance with CEQA. As part of this review, potential impacts must be identified and mitigated or a statement of overriding concerns adopted.	• Avoids physical damage	• Staff time and development • Application fees	High
2016. HMP.14 The routes of new public roads in areas subject to landslides shall be designed to minimize landslide risks.	• Avoid casualties • Avoid physical damage	• Staff time of Public Works Engineering Department	High
2016. HMP.15 Engineering benchmarks will be utilized to survey slope differences over time and monitor for changes in topography to prevent roadway damage and traffic disruptions.	• Avoid physical damage • Avoid traffic disruptions	• Staff time to survey and monitor changes	High
2016. HMP.16 Manage landslide hazard areas by staging road-clearing equipment in known landslide prone areas for faster stabilization.	• Avoid traffic disruptions • Avoid emergency management costs	• Staff time • Equipment costs	High
2016. HMP.17 Development proposals in an area identified as having unstable soils and subject to landslides such as areas in the foothills and river bluffs shall include an engineered design with emphasis on soil, degree of slope measures for mitigating possible hazards.	• Avoids physical damage	• Staff time and development • Application fees	High

DAM FAILURE HAZARD

- Minimize loss of life and reduce property damage as a result of dam inundation
- Reduce the economic impact of flooding due to dam inundation
- Promote sustainable economy
- Increase public preparedness for disasters

Identification and Analysis of Mitigation Actions

OBJECTIVES	
Objective No.	**Description**
DI01	Continue critical business operations.
DI02	Train emergency responders.
DI03	Enable the public to prepare for, respond to, and recover from disasters by improving hazard information.
DI04	Integrate mitigation plan with other local government plans.
DI05	Coordinate with partner agencies to limit impacts to public, infrastructure and environment.

Implementation of Mitigation Actions

DAM FAILURE HAZARD MITIGATION ACTIVITIES					
Mitigation Activity	Objective	Progress / Status	Responsible Agency	Time Frame	Potential Funding Source/s
2016. HMP.05 Continue to integrate LHMP priorities with policies included in the Emergency Operation Plan (EOP), General Plan and Capital Improvement Plan and other local plans.	DI04	Previous plan focused on EOP development only. This updated strategy emphasizes integration between local plans.	Chief Executive Office / Office of Emergency Services	Ongoing as plans are updated.	County General Funds; US Department of Homeland Security
2016. HMP.06 Develop, adopt, maintain, and update a Continuity of Operations Plan (COOP). Provide disaster management to assist and support County departments to maintain their critical functions.	DI01	The COOP is updated as needed with a scheduled review annually.	Chief Executive Office / Office of Emergency Services	Ongoing with scheduled annual update.	County General Funds; US Department of Homeland Security
2016. HMP.07 Provide NIMS training to all County employees who may be called upon during an emergency. The National Incident Management System (NIMS) was developed so that responders from different jurisdictions and disciplines can work together to provide a unified approach to incident management.	DI02	Since 2006 Stanislaus County has provided NIMS training to employees and maintains an active training plan that emphasizes NIMS.	Chief Executive Office / Office of Emergency Services	Ongoing as county employees move through attrition or new responsibilities.	County General Funds; US Department of Homeland Security
2016. HMP.18 Continue to partner with dam operators to identify projected flood path of travel as if total loss of dam occurs.	DI05	Since 2010, Stanislaus County has participated in exercises with dam operators and initiated working groups specific to dam inundation.	Chief Executive Office / Office of Emergency Service	Ongoing	County General Funds; US Department of Homeland Security
2016. HMP.19 Participate in the Stanislaus County /Turlock Irrigation District Flood Working Group to develop and approve plans specific to public notification and evacuation.	DI02, DI04, DI05	This activity is new to the Local Hazard Mitigation Plan.	Chief Executive Office / Office of Emergency Services	Ongoing	County General Funds; US Department of Homeland Security
2016. HMP.20 Participate in the Mid San Joaquin Regional Flood Management Working Group. The group is developing plans for watershed reservoir management on the San Joaquin River.	DI05	This activity is new to the Local Hazard Mitigation Plan.	Chief Executive Office / Office of Emergency Services	Ongoing	County General Funds; US Department of Homeland Security

DAM FAILURE HAZARD MITIGATION ACTIVITIES					
Mitigation Activity	Objective	Progress / Status	Responsible Agency	Time Frame	Potential Funding Source/s
2016. HMP.21 Identify structures within the flood path of travel and note impacted properties in data base.	DI05	County continues to work with dam operators to identify flood path of travel and impacted areas.	Planning and Community Development	Ongoing	County General Funds; US Department of Homeland Security
2016. HMP.22 The County will continue to participate in Emergency Action Plan training and exercises. Lessons learned will be reflected in plans developed for dam inundation.	DI04, DI05	This activity is new to the Local Hazard Mitigation Plan.	Chief Executive Office / Office of Emergency Services	Ongoing / Annual	County General Funds; US Department of Homeland Security

DAM FAILURE HAZARD COST BENEFIT TABLE			
Mitigation Activity	Benefits	Costs	Priority
2016. HMP.05 Continue to integrate LHMP priorities with policies included in the Emergency Operation Plan (EOP), General Plan and Capital Improvement Plan and other local plans.	• Avoids emergency management costs	• Staff time for development and coordination	High
2016. HMP.06 Develop, adopt, maintain, and update a Continuity of Operations Plan (COOP). Provide disaster management to assist and support County departments to maintain their critical functions.	• Avoids loss of function costs.	• Staff time for maintenance and coordination • $10,000 for annual maintenance fees	High
2016. HMP.07 Provide NIMS training to all County employees who may be called upon during an emergency. The National Incident Management System (NIMS) was developed so that responders from different jurisdictions and disciplines can work together to provide a unified approach to incident management.	• Avoids emergency management costs.	• Staff time for Coordination • Costs for trainers and materials	High
2016. HMP.18 Continue to partner with dam operators to identify projected flood path of travel as if total loss of dam occurs.	• Avoids casualties • Avoids property damage • Avoids emergency management costs	• Staff time for coordination	High
2016. HMP.19 Participate in the Stanislaus County Turlock Irrigation District Flood Working Group to develop and approve plans specific to public notification and evacuation.	• Avoids casualties • Avoids emergency management costs	• Staff time for coordination and development • Costs for public notification systems	High
2016. HMP.20 Participate in the Mid San Joaquin Regional Flood Management Working Group. The group is developing plans for watershed reservoir management on the San Joaquin River.	• Avoids casualties • Avoids property damage • Avoids emergency management costs	• Staff time for coordination and development	Medium
2016. HMP.21 Identify structures within the flood path of travel and note impacted properties in data base.	• Avoids casualties • Avoids property damage • Avoids emergency management costs	• Staff time for coordination	High

DAM FAILURE HAZARD COST BENEFIT TABLE			
Mitigation Activity	Benefits	Costs	Priority
2016. HMP.22 The County will continue to participate in Emergency Action Plan training and exercises. Lessons learned will be reflected in plans developed for dam inundation.	• Avoids emergency management costs	• Staff time for coordination and development	High

FLOOD HAZARD

- Minimize loss of life and reduce property damage as a result of floods
- Reduce the economic impact of floods
- Promote sustainable economy
- Increase public preparedness for disasters

Identification and Analysis of Mitigation Actions

OBJECTIVES	
Objective No.	**Description**
FL01	Provide ordinances to ensure that flood insurance can be made available to qualified property owners through State and Federal programs.
FL02	Support programs and activities that increase Community Rating System (CRS) premium discounts through National Flood Insurance Program (NFIP).
FL03	Development should not be allowed in areas that are within the designated floodway.
FL04	New developments shall be designed to increase safety.
FL05	Discourage development in areas susceptible to floods.
FL06	Continue critical business operations.
FL07	Integrate mitigation plan with other local government plans.
FL08	Train emergency responders.
FL09	Coordinate with partner agencies to limit impacts to public, infrastructure and environment.

Implementation of Mitigation Actions

FLOOD HAZARD MITIGATION ACTIVITIES					
Mitigation Activity	Objective	Progress / Status	Responsible Agency	Time Frame	Potential Funding Source/s
2016. HMP.05 Continue to integrate LHMP priorities with policies included in the Emergency Operation Plan (EOP), General Plan and Capital Improvement Plan and other local plans.	FL07	Previous plan focused on EOP development only. This updated strategy emphasizes integration between local plans.	Chief Executive Office / Office of Emergency Services	Ongoing as plans are updated.	County General Funds; US Department of Homeland Security
2016. HMP.06 Develop, adopt, maintain, and update a Continuity of Operations Plan (COOP). Provide disaster management to assist and support County departments to maintain their critical functions.	FL06, FL07	The COOP is updated as needed with a scheduled review annually.	Chief Executive Office / Office of Emergency Services	Ongoing with scheduled annual update.	County General Funds; US Department of Homeland Security
2016. HMP.07 Provide NIMS training to all County employees who may be called upon during an emergency. The National Incident Management System (NIMS) was developed so that responders from different jurisdictions and disciplines can work together to provide a unified approach to incident management.	FL08	Since 2006 Stanislaus County has provided NIMS training to employees and maintains an active training plan that emphasizes NIMS.	Chief Executive Office / Office of Emergency Services	Ongoing as county employees move through attrition or new responsibilities.	County General Funds; US Department of Homeland Security
2016. HMP.23 GIS layers will be maintained and kept current of the probability and extent of flooding based on various models, primarily data about historical flooding. Capturing real time flood reporting and monitoring for integration into flood maps is a key focus for GIS mitigation efforts.	FL09	Stanislaus County continues to integrate flood data into GIS layers and develop flood maps for emergency managers based on current data.	Strategic Business Technology	Ongoing as new information becomes available.	County General Funds; US Department of Homeland Security; State Flood Hazard Mitigation Funding
2016.HMP.24 Through enforcement of Title 16, require that structures in a flood plain will have the Lowest Flood Elevation constructed at a minimum level of one food above Base Flood Elevation and to adopt FEMA section 11-01 and provide clarity on basement definition.	FL01, FL02, FL04	All new residential development and structures within the County are reviewed, permitted and inspected in accordance with the most currently adopted code. (Tile 24 and Title 16).	Planning and Community Development	Ongoing at the time of development and building permit review.	County General Funds; Fees

FLOOD HAZARD MITIGATION ACTIVITIES					
Mitigation Activity	Objective	Progress / Status	Responsible Agency	Time Frame	Potential Funding Source/s
2016. HMP.25 Elevate existing homes out of the flood plain due to repetitive loss.	FL02	Any substantial improvement or repair would require the structure be elevated.	Planning and Community Development	Ongoing at the time of improvement or repair.	County General Funds; State Flood Hazard Mitigaton Funding
2016. HMP.26 Coordinate participation in the National Flood Insurance Program (NFIP) for Stanislaus County and ensure compliance with the requirements.	FL01, FL02, FL04, FL05	Continual compliance with Stanislaus County Flood Damage Protection Ordinance and NFIP.	Planning and Community Development	Ongoing	County General Funds
2016. HMP.27 Enforce Chapter 16.50 Flood Damage Protection Ordinance of the County Code and within the designated floodway shall obtain State Floodway Agency and Reclamation District Board approval.	FL03	Continual enforcement of the ordinance.	Planning and Community Development	Ongoing	County General Funds; US Department of Homeland Security
2016. HMP.28 The Public Works Department will provide information to landowners in areas subject to flooding to help them form a flood control district in Stanislaus County.	FL04, FL05	Continuous implementation as development and infrastructure meet.	Public Works	Ongoing	County General Funds
2016. HMP.29 The County shall use the California Environmental Quality Act (CEQA) process to ensure that development does not occur in areas that would be especially susceptible to flooding. As part of this review potential impacts must be identified and mitigated.	FL01, FL07	Continuous implementation since 2010 and will continue to utilize CEQA to ensure that new development is safe.	Planning and Community Development	Ongoing at the time of development review and the CEQA process.	County General Funds
2016.HMP.30 Participate in the Mid San Joaquin Regional Flood Management Working group to develop infrastructure, plans, training and exercises to limit flooding and flooding impacts on the San Joaquin River within Stanislaus County.	FL09	This activity is new to the Local Hazard Mitigation Plan.	Chief Executive Office /Office of Emergency Services	Ongoing	County General Funds; US Department of Homeland Security
2016. HMP.31 Increase monitoring capabilities for the Dry Creek watershed.	FL09	This activity is new to the Local Hazard Mitigation Plan.	Chief Executive Office / Office of Emergency Services	Ongoing	County General Funds; US Department of Homeland Security; State Flood Hazard Mitigation Funding

FLOOD HAZARD COST BENEFIT TABLE			
Mitigation Activity	Benefits	Costs	Priority
2016. HMP.05 Continue to integrate LHMP priorities with policies included in the Emergency Operation Plan (EOP), General Plan and Capital Improvement Plan and other local plans.	• Avoids emergency management costs	• Staff time for development and coordination	High
2016. HMP.06 Develop, adopt, maintain, and update a Continuity of Operations Plan (COOP). Provide disaster management to assist and support County departments to maintain their critical functions.	• Avoids loss of function costs.	• Staff time for maintenance and coordination • $10,000 for annual maintenance fees	High
2016. HMP.07 Provide NIMS training to all County employees who may be called upon during an emergency. The National Incident Management System (NIMS) was developed so that responders from different jurisdictions and disciplines can work together to provide a unified approach to incident management.	• Avoids emergency management costs	• Staff time for Coordination • Costs for trainers and materials	High
2016. HMP.23 GIS layers will be maintained and kept current of the probability and extent of flooding based on various models, primarily data about historical flooding. Capturing real time flood reporting and monitoring for integration into flood maps is a key focus for GIS mitigation efforts.	• Avoids casualties • Avoids emergency management costs	• Staff time for development and coordination • $2,000 for licenses and support	High
2016.HMP.24 Through enforcement of Title 16, require that structures in a flood plain will have the Lowest Flood Elevation constructed at a minimum level of one food above Base Flood Elevation and to adopt FEMA section 11-01 and provide clarity on basement definition.	• Avoids casualties • Avoids emergency management costs	• Staff time and development • Building permit fees	High
2016. HMP.25 Elevate existing homes out of the flood plain due to repetitive loss.	• Avoids Casualties • Avoids Property Damage • Avoids Emergency Management Costs	• Staff time and development • Application fees	Medium
2016. HMP.26 Coordinate participation in the National Flood Insurance Program (NFIP) for Stanislaus County and ensure compliance with the requirements.	• Avoids casualties • Avoids emergency management costs	• Staff time for coordination	High

FLOOD HAZARD COST BENEFIT TABLE			
Mitigation Activity	Benefits	Costs	Priority
2016. HMP.27 Enforce Chapter 16.50 Flood Damage Protection Ordinance of the County Code and within the designated floodway shall obtain State Floodway Agency and Reclamation District Board approval.	• Avoids casualties • Avoids emergency management costs	• Staff time for coordination	High
2016. HMP.28 The Public Works Department will provide information to landowners in areas subject to flooding to help them form a flood control district in Stanislaus County.	• Avoids casualties • Avoids property damage	• Staff time for coordination	High
2016. HMP.29 The County shall use the California Environmental Quality Act (CEQA) process to ensure that development does not occur in areas that would be especially susceptible to flooding. As part of this review potential impacts must be identified and mitigated.	• Avoids casualties • Avoids emergency management costs	• Staff time and development • Application fees	High
2016.HMP.30 Participate in the Mid San Joaquin Regional Flood Management Working group to develop infrastructure, plans, training and exercises to limit flooding and flooding impacts on the San Joaquin River within Stanislaus County.	• Avoids casualties • Avoids property damage • Avoids emergency management costs	• Staff time for participation and coordination • Cost for trainers and exercise coordinators	High
2016. HMP.31 Increase monitoring capabilities for the Dry Creek watershed.	• Avoids casualties • Avoids property damage Avoids emergency management costs	• Staff time for coordination • Cost for materials, equipment and labor	Medium

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WILDFIRE HAZARD

Hazard Mitigation Goals

- Minimize the effects of hazardous conditions that might cause loss of life and property
- Reduce the economic impact of wildfires
- Promote sustainable economy
- Increase public preparedness for disasters
- Identification/Analysis of Mitigation Actions

OBJECTIVES	
Objective No.	**Description**
WF01	All new development shall be designed to increase protection from wildfire.
WF02	Adequate fire protection shall be provided.
WF03	Roads shall be maintained for the safety of travelers for wildfire.
WF04	Future growth shall not exceed the capacity to provide services such as water and public safety.
WF05	The County will continue to enforce the State Mandated Health and Safety Code, the Public Resources Code and the California Code of Regulations, Title 24.
WF06	The County to adopt an ordinance that meets or exceeds the regulations in 14 CCR 1270 et seq to be used in lieu of the minimum State Standards in the State responsibility Areas.
WF07	The County shall continue to support the training of emergency responders.
WF08	Integrate mitigation plan with other local government plans.
WF9	Continue critical business operations.

Implementation of Mitigation Actions

WILDFIRE HAZARD MITIGATION ACTIVITIES					
Mitigation Activity	Objective	Progress / Status	Responsible Agency	Time Frame	Potential Funding Source/s
2016. HMP.05 Continue to integrate LHMP priorities with policies included in the Emergency Operation Plan (EOP), General Plan and Capital Improvement Plan and other local plans.	WF08	Previous plan focused on EOP development only. This updated strategy emphasizes integration between local plans.	Chief Executive Office / Office of Emergency Services	Ongoing as plans are updated.	County General Funds; US Department of Homeland Security
2016. HMP.06 Develop, adopt, maintain, and update a Continuity of Operations Plan (COOP). Provide disaster management to assist and support County departments to maintain their critical functions.	WF09	The COOP is updated as needed with a scheduled review annually.	Chief Executive Office / Office of Emergency Services	Ongoing with scheduled annual update.	County General Funds; US Department of Homeland Security
2016. HMP.07 Provide NIMS training to all County employees who may be called upon during an emergency. The National Incident Management System (NIMS) was developed so that responders from different jurisdictions and disciplines can work together to provide a unified approach to incident management.	WF07	Since 2006 Stanislaus County has provided NIMS training to employees and maintains an active training plan that emphasizes NIMS.	Chief Executive Office / Office of Emergency Services	Ongoing as county employees move through attrition or new responsibilities.	County General Funds; US Department of Homeland Security
2016.HMP.32 All building permit applications shall be reviewed to ensure compliance with the California Code of Regulations, Title 24, County Ordinances and California Public Resources Code.	WF01, WF04, WF06	All new development is reviewed, permitted and inspected in accordance with the most currently adopted code. Title 24 and 16.	Planning and Community Development	Ongoing at time of development and building permit review.	County General Funds; Fees
2016. HMP.33 The California Fire Code shall be enforced during inspections and maintenance of structures regulated under that code.	WF01, WF04, WF06	All new development is reviewed, permitted and inspected in accordance with the most currently adopted code. Title 24 and 16.	Fire Warden / Fire Prevention Bureau	Ongoing at the time of development.	County General Funds; Fees

WILDFIRE HAZARD MITIGATION ACTIVITIES					
Mitigation Activity	Objective	Progress / Status	Responsible Agency	Time Frame	Potential Funding Source/s
2016. HMP.34 All discretionary projects in the County shall be referred to the County Fire Prevention Bureau and to the appropriate Fire District for comment. The comments of these agencies will be used to condition or recommend modifications of the project as it relates to fire safety and rescue issues	WF01, WF04, WF05	All new development is reviewed, permitted and inspected in accordance with the most currently adopted code. Title 24 and 16.	Fire Warden / Fire Prevention Bureau	Ongoing at the time of development.	County General Funds; Fees
2016.HMP.35 The County Fire Prevention Bureau shall work with the California Department of Forestry and Fire Protection and with local fire districts to minimize the danger from wildfires and the related impacts of post fire conditions	WF02, WF03, WF05, WF06	Weed abatement is actively and continually enforced during and prior to fire season.	Fire Warden / Fire Prevention Bureau	Annually.	County General Funds; Fees; State Wildfire Hazard Mitigation Funding
2016.HMP.36 All New development shall have adequate fire flow water supply that meets or exceeds the requirement specific to the project as required by the California Fire Code-appendix B, NFPA 1142, County-District Ordinance or the California Code of Regulations Title 14 1270 in the SRA.	WF02, WF04, WF05, WF06	All new development is reviewed, permitted and inspected in accordance with the most currently adopted code. Title 24 and 16.	Fire Warden / Fire Prevention Bureau	Ongoing at the time of development.	County General Funds; Fees; State Wildfire Hazard Mitigation Funding
2016.HMP.37 All building permits and discretionary projects within the State Responsibility Areas, as identified by the California Department of Forestry and Fire Protection, shall meet the minimum development standards outlined in the California Code of Regulations Title 14 1270	WF02, WF04, WF05, WF06	All new development is reviewed, permitted and inspected in accordance with the most currently adopted code. Title 24 and 16.	Planning and Community Development	Ongoing at time of development and building permit review.	County General Funds; Fees; State Wildfire Hazard Mitigation Funding
2016. HMP.38 Adopt a County Ordinance as requested by the State Board of Forestry to be enforced in the SRA within Stanislaus County that meets or exceeds the regulations of 14 CCR 1270.	WF05, WF06, WF08	This activity is new to the Local Hazard Mitigation Plan.	Fire Warden / Fire Prevention Bureau	Ongoing and updated to comply with state regulations.	County General Funds; Fees; State Wildfire Hazard Mitigation Funding

WILDFIRE HAZARD COST BENEFIT TABLE			
Mitigation Activity	Benefits	Costs	Priority
2016. HMP.05 Continue to integrate LHMP priorities with policies included in the Emergency Operation Plan (EOP), General Plan and Capital Improvement Plan and other local plans.	• Avoids emergency management costs	• Staff time for development and coordination	High
2016. HMP.06 Develop, adopt, maintain, and update a Continuity of Operations Plan (COOP). Provide disaster management to assist and support County departments to maintain their critical functions.	• Avoids loss of function costs	• Staff time for maintenance and coordination. • $10,000 for annual maintenance fees	High
2016. HMP.07 Provide NIMS training to all County employees who may be called upon during an emergency. The National Incident Management System (NIMS) was developed so that responders from different jurisdictions and disciplines can work together to provide a unified approach to incident management.	• Avoids emergency management costs	• Staff time for coordination • Costs for trainers and materials	High
2016.HMP.32 All building permit applications shall be reviewed to ensure compliance with the California Code of Regulations, Title 24, County Ordinances and California Public Resources Code.	• Avoids emergency management costs	• Staff time for coordination • Building permit fees	High
2016. HMP.33 The California Fire Code shall be enforced during inspections and maintenance of structures regulated under that code.	• Avoids casualties • Avoids property damage • Avoids emergency management costs	• Staff time for coordination • Fire Prevention fees	High
2016. HMP.34 All discretionary projects in the County shall be referred to the County Fire Prevention Bureau and to the appropriate Fire District for comment. The comments of these agencies will be used to condition or recommend modifications of the project as it relates to fire safety and rescue issues	• Avoids casualties • Avoids property damage • Avoids emergency management costs	• Staff time for coordination • Fire Prevention fees	High
2016.HMP.35 The County Fire Prevention Bureau shall work with the California Department of Forestry and Fire Protection and with local fire districts to minimize the danger from wildfires and the related impacts of post fire conditions	• Avoids casualties • Avoids property damage • Avoids emergency management costs	• Staff time for coordination • State fees	High

WILDFIRE HAZARD COST BENEFIT TABLE			
Mitigation Activity	Benefits	Costs	Priority
2016.HMP.36 All New development shall have adequate fire flow water supply that meets or exceeds the requirement specific to the project as required by the California Fire Code-appendix B, NFPA 1142, County-District Ordinance or the California Code of Regulations Title 14 1270 in the SRA.	• Avoids casualties • Avoids property damage • Avoids emergency management costs	• Staff time for coordination • Fire Prevention fees	High
2016.HMP.37 All building permits and discretionary projects within the State Responsibility Areas, as identified by the California Department of Forestry and Fire Protection, shall meet the minimum development standards outlined in the California Code of Regulations Title 14 1270	• Avoids casualties • Avoids property damage • Avoids emergency management fees	• Staff time for coordination • Building permit	High
2016. HMP.38 Adopt a County Ordinance as requested by the State Board of Forestry to be enforced in the SRA within Stanislaus County that meets or exceeds the regulations of 14 CCR 1270.	• Avoids casualties • Avoids property damage • Avoids emergency management costs	• Staff time for coordination	High

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SECTION SEVEN

Plan Maintenance

SECTION SEVEN - PLAN MAINTENANCE

INTRODUCTION

This section describes a formal plan maintenance process to ensure that the LHMP remains an active and applicable document. It includes an explanation of how Stanislaus County and the Planning Team intend to organize their efforts to ensure that improvements and revisions to the LHMP occur in a well-managed, efficient, and coordinated manner.

The following three process steps are addressed in detail below:

- Monitoring, evaluating, and updating the LHMP;
- Implementation through existing planning mechanisms; and
- Continued public involvement.

MONITORING, EVALUATING, AND UPDATING THE LHMP

The LHMP was prepared as a collaborative effort among Stanislaus County and the participating jurisdictions. To maintain momentum and build upon previous hazard mitigation planning efforts and successes, the County will use the Planning Team Members expertise to monitor, evaluate, and update the LHMP. The Assistant Director of Emergency Services will serve as the primary point of contact and will coordinate all local efforts to monitor, evaluate, and revise the LHMP. The Planning Team Members will monitor integration between the LHMP and other plans including the General Plan, Capital Improvement Plan (CIP) and Emergency Operation Plan. Proposed projects that are included in the CIP must be individually reviewed in terms of conceptual plan, project schedule and funding plan by the Board of Supervisors before they are implemented. The Board of Supervisors reviews the concept, scope and cost of the project and appropriate environmental reviews are completed before a project is initiated.

The Office of Emergency Services will send an email to the planning team and conduct an annual review to monitor the progress in implementing the LHMP. The LHMP Progress Report Form has been developed for this purpose and will be sent to the planning team beginning one year from the date of FEMA's approval of the Final Plan Update.

The LHMP Progress Report Form will provide the basis for possible changes to the overall LHMP and the County and/or jurisdiction will have an opportunity to refocus on any new or more threatening hazards. This will allow the County to make any necessary adjustments to, or changes in resource allocations, and engage additional support for the LHMP implementation, if warranted. The findings will be reviewed by the Assistant Director of Emergency Services and used for the plan update in 2021.

LHMP Progress Report Form will be used to evaluate the plan for the following:

- Have any new hazard/disaster events occurred during the reporting period?
- Did anyone from the public comment on the plan during this reporting period?
- Do the goals and objectives address current and expected conditions?
- Were any mitigation projects identified in the LHMP implemented during this reporting period?
- What obstacles, problems, or delays did any current or ongoing mitigation projects encounter, if any?
- Are the current resources appropriate for implementing the plan?
- Have the outcomes occurred as expected?
- Have the agencies participated as proposed?
- Where shortcomings are identified, what can the County do to bring things back on track?
- Have there been changes in development trends that could create additional risks?

In addition to the annual review, the County will update the LHMP every five (5) years to maintain FEMA mitigation funding eligibility. The Plan Update will include the following activities:

- Review FEMA LHMP update requirements for the new planning cycle;
- Thoroughly analyze and update the risk of natural hazards Countywide;

- Coordinate with participating jurisdictions to review and update the LHMP;
- Complete a comprehensive detailed risk assessment updating costs and facilities;
- Complete a comprehensive detailed mitigation strategy review and revision;
- Update the Mitigation Action Plan for all participating jurisdictions identifying the status of the currently identified actions and adding newly considered, prioritized, and assigned actions;
- Present LHMP to Cal OES and FEMA for review and approval;
- Present LHMP to each governing agency for adoption; and
- Return a copy of the finalized LHMP with adoption resolutions from all participating jurisdictions to FEMA to finalize FEMA's approval.

CRITERIA FOR REVISIONS TO THE LHMP

- New technology;
- If changing situations have modified goals/objectives/actions and/or hazards;
- New information to update vulnerability assessments;
- Shifts in development;
- Participating jurisdictions who wish to be added or removed from the plan;
- Areas affected by recent disasters; and/or
- Significant changes in Federal, State or County regulations, codes, ordinances or policies.

CONTINUED PUBLIC INVOLVEMENT

Stanislaus County remains dedicated to involving the public in the continual reshaping and updating of the LHMP. The website designed for the plan update will remain live and the updated plan will be posted. This will provide an opportunity for the public to comment on the plan at any time. In addition to the plan being downloadable from the OES website, the site also contains contact information with an e-mail address and phone number to which people can direct their comments or concerns.

The Assistant Director of Emergency Services also has the opportunity to raise County and community awareness of the LHMP by his attendance and participation at other meetings such as: the Operational Area Council, Disaster Council, Fire Chief's Association, and Department Head meetings, to name a few. Operational Area Council meetings are attended by all nine cities as well as participating agencies such as the American Red Cross, United Way, Latino Emergency Council, private industry, schools, California Emergency Management Agency, CERT, Mountain Valley EMSA, utilities, Faith Based Organizations, and other Stanislaus County departments. Any public comments received regarding the LHMP will be collected by OES, included in the annual report, and considered during future plan updates.

LOCAL HAZARD MITIGATION PLAN
PARTICIPATING JURISDICTION
PROGRESS REPORT FORM

PURPOSE

As part of the Plan Maintenance Process for the LHMP, the Office of Emergency Services will convene the LHMP Planning Team and conduct an annual review to monitor the progress in implementing the LHMP. The LHMP Progress Report Form has been developed for this purpose and will be completed annually.

The LHMP Progress Report Form will provide the basis for possible changes to the overall LHMP and the County and/or jurisdiction will have an opportunity to refocus on any new or more threatening hazards. This will allow the County to make any necessary adjustments to, or changes in resource allocations, and engage additional support for the LHMP implementation, if warranted. The findings will be reviewed by the Assistant Director of Emergency Services and used for the next plan update.

LHMP ANNUAL PROGRESS REPORT		
Date:		
Name of Department:		
Contact Name:	Email:	Phone#:
SUMMARY OF PROGRESS—CHECKLIST REVIEW		
Have any new hazard/disaster events occurred during the reporting period? If so, list the events.		
Did anyone from the public comment on the plan during this reporting period? If so, list comments.		
Do the goals and objectives address current and expected conditions? If not, explain further below.		
Were any mitigation projects identified in the LHMP implemented during this reporting period?		
What obstacles, problems, or delays did any current or ongoing mitigation projects encounter, if any? How were the problems solved?		
Are the current resources appropriate for implementing the plan?		

Have the outcomes occurred as expected?
Have the agencies participated as proposed?
Where shortcomings are identified, what can the County do to bring things back on track?
Have there been changes in development trends that could create additional risks? Please explain.

PROGRESS REPORT VERIFICATION	
Print Name of Contact Person:	
Signature:	Date Signed: