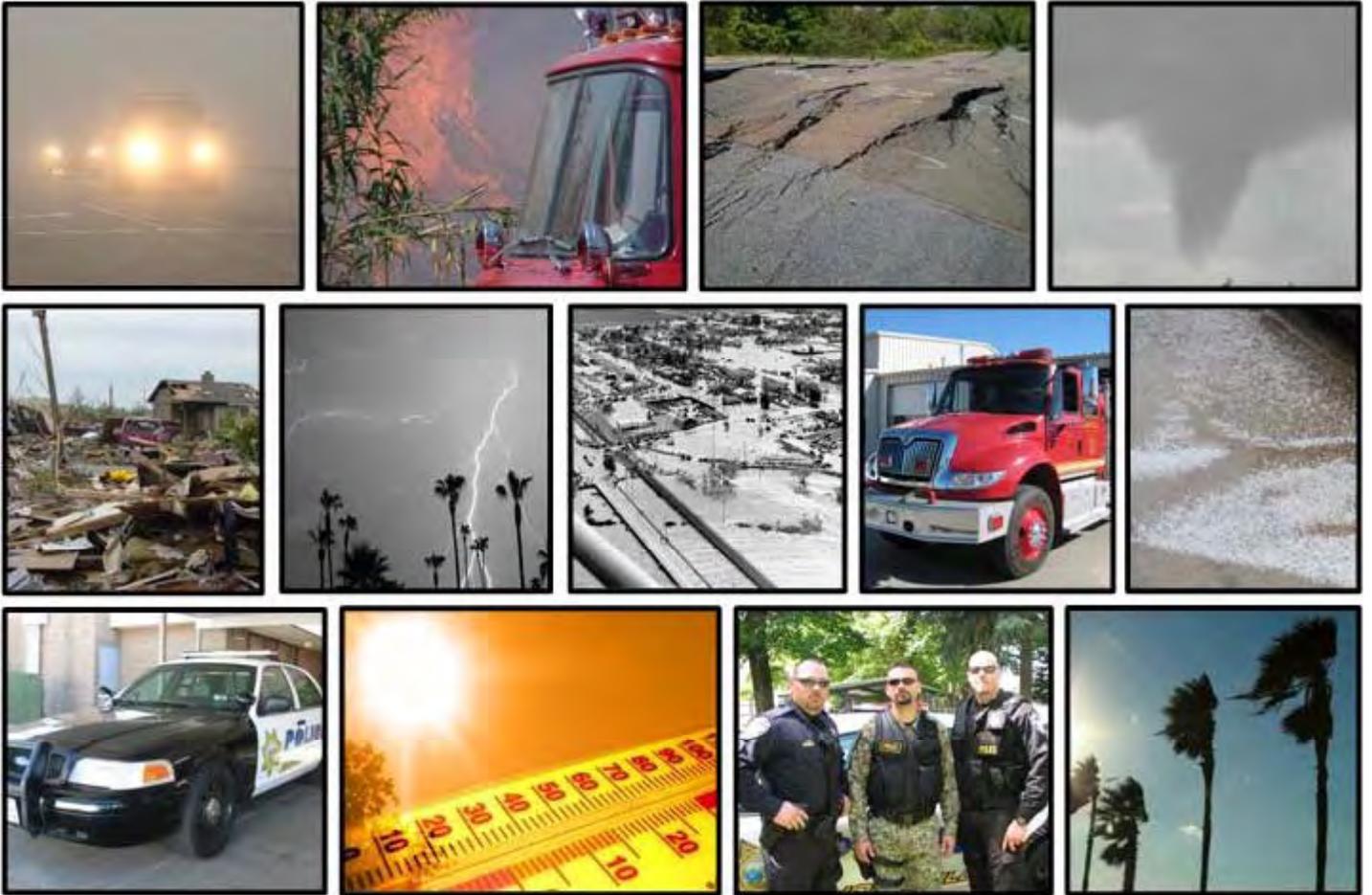


Local Hazard Mitigation Plan



Public Draft Plan

2010
City of Chowchilla

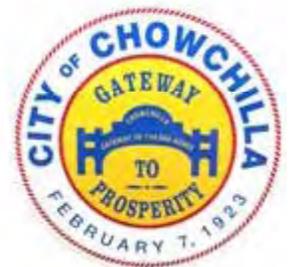


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(Source: September 2010 Madera County Local Hazard Mitigation Draft Plan)

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ACRONYMS

CHMP	Chowchilla Hazard Mitigation Plan
CHMPT	Chowchilla Hazard Mitigation Plan Team
CalEMA	California Emergency Management Agency
CFR	Code of Federal Regulations
DMA 2000	Disaster Mitigation Act of 2000
F	Fahrenheit

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FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMA	Flood Mitigation Assistance Grant Program
F-Scale	Fujita-Pearson Scale
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
LHMP	Local Hazard Mitigation Plan
M	Magnitude
MM	Modified Mercalli
Mph	Miles per hour
NFIP	National Flood Insurance Program
NWS	National Weather Service

1.0 INTRODUCTION

As defined in Title 44 of the Code of Federal Regulations (CFR), Subpart M, Section 206.401, hazard mitigation is “any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards.” As such, hazard mitigation is any work to minimize the impacts of any type of hazard event before it occurs. Hazard mitigation aims to reduce losses from future disasters. It is a process in which hazards are identified and profiled, the people and facilities at risk are analyzed, and mitigation actions to reduce or eliminate hazard risk are developed. The implementation of the mitigation actions which include short and long-term strategies that may involve planning, policy changes, programs, projects, and other activities is the end result of this process.

Over the years, community members have been working together to address certain aspects of risks having experienced a couple of local hazards in the 1990’s. Disasters result when the man-made environment, such as buildings, and infrastructure take place in areas prone to forces of nature. We recognize the potential hazards that may strike our small community, and have started to identify and recognize impacts and take steps to reduce the harm they will cause. This constant focus on disasters will make the city, its residents and businesses, much safer.

The City of Chowchilla Local Hazard Mitigation Plan “CLHMP” addresses:

- Disaster Mitigation Act 2000
- Grant Programs with hazards mitigation plans “HMP” requirements
- Community profile
- Outline of CLHMP

The City of Chowchilla started the CLHMP process several years ago and started drafting the plan in December of 2008. The City did not utilize any grant funds to develop its local hazard mitigation plan. The City of Chowchilla is not a participating jurisdiction in the Madera County Local Hazard Mitigation Plan, however the city participated in the County-wide Planning Committee and provided information and received planning data with the county.

1.1 ACKNOWLEDGMENTS

Mayor and City Council

Jim Kopshever, Mayor
David Alexander
John Chavez
Dennis Haworth
Justin White

Hazard Mitigation Project Team

Jay Varney, Chief of Police/Acting City Administrator
Harry Turner, Fire Chief/Interim Public Services Director/Code Enforcement
David Noblett, Sergeant, Chowchilla Police Department
Joanne Upton, Project Analyst/Airport Liaison

City of Chowchilla Staff

Wayne Padilla, Assistant City Administrator/Finance Director
City Black, Acting City Clerk
Peggy Haupt, Public Information Officer

Community Members and Stakeholders

Barbie Oyler, Chowchilla Historical Society
Doug Welch, Chowchilla Water District
Ronald V. Seals, Superintendent, Chowchilla Union High School
Dr. Charles Martin, Chowchilla Elementary School District
Carrie Mitchell, CEO/Manager, Chowchilla Fairgrounds

Contributors

Anna Davis, Urban Planner, URS Corporation
Robert Olsen Associates
Madera County Office of Emergency Services
Madera County Sheriff Department
Madera County Multi-Jurisdictional Local Hazard Mitigation Planning Committee
Chowchilla Water District
Madera County Office of Education (Chowchilla schools)
Madera County Environmental Health Department
Madera County Assessor's Department

1.3 COMMUNITY PROFILE

1.3.1 Regional Setting (Location and Geography)

Chowchilla's central location in the San Joaquin Valley (County of Madera) gives it great potential for positive economical growth and the ideal climate makes it a target city for new industrial innovations. Chowchilla is the prime spot for new businesses but more importantly, a stable and healthy environment for residents to enjoy living in and raising their families.

Situated in the heart of the fertile San Joaquin Valley at the very center of California, Chowchilla is today a farming community, just as it was when it was first developed. Located just south of the Chowchilla River and to the west of the Chowchilla Mountain in the Sierras.

Chowchilla covers four square miles with 480 acres and adjacent to the city limit is another 880 acres that are industrially zoned. The city is serviced by two railroads (Santa Fe and Union Pacific) and two major highways –north and south by Highway 99 and to the west by Highway 152.

1.3.2 History

Chowchilla’s colorful past began in the spring of 1844 when John Fremont and his party were making their way across what is now Madera County.

In Fremont’s memoirs we find the following recording: “Continuing along we came upon broad and deeply-worn trails which had been freshly traveled by large bands of horses, apparently coming from the San Joaquin Valley. But we heard enough to know that they came from the settlements on the coast. These and indications from horse bones dragged about by wild animals – wolves or bears – warned us that we were approaching the villages of Horse-thief Indians, a party who had just returned from a successful raid.” This brief mention of the “Horse-thief Indians” gives us an introduction through the eyes of the white man, of the early inhabitants of the Chowchilla area.

The Chowchilla Indians lived along the several channels of the Chowchilla River in the plains region of Central California. According to one authority, the Chowchilla tribe may well have been a very populous tribe. At least we know they were a warlike one and the name Chowchilla was a byword for bravery to the southernmost end of Yokuts territory in the southern end of the San Joaquin Valley.

Around 1910, Mr. Orlando Alison Robertson (Pioneer) became interested in land development in California. It was during that year he organized the United States Farm Land Company. He established a general office in Sacramento and maintained offices in Winnipeg, St. Paul and Denver.

At the time Mr. Robertson became interested in the Chowchilla area, he was estimated to be worth over four million dollars. Mr. Robertson believed that Chowchilla was ready for immediate development and held ambitious hopes for transforming the land into prosperous farms owned by happy people. He put all his money into the Chowchilla venture against the advice of his financial counselors and, as we shall see, it cost him heavily.

On May 22, 1912, Mr. Robertson purchased the Chowchilla Ranch from the California Pastoral & Agricultural Company Ltd. Over half of this ranch was divided into tracts for sale to farmers and the northeast corner of the property was set aside for the site of the town which became known as Chowchilla.

Though Chowchilla lies in the center of California and beside the main lines of the Southern Pacific, it was not the outgrowth of a geographic or economic need. It was, in fact, the result of the thinking and planning of one man: O. A. Robertson.

The City of Chowchilla was incorporated in 1923. Since that time and after a few annexations, the city now comprises four square miles.

1.3.3 Government

The City Council, consisting of five members, provides policy direction to the City Administrator. The Council adopts ordinances to control the affairs of the City and enters into contracts on behalf of the municipal government. The Council oversees the fiscal affairs of the City and approves and adopts the annual City budget. The Council also provides policy direction for the enforcement of City ordinances and may pass emergency ordinances for the immediate preservation or protection of public health, property, or safety. The Council enters into contracts and cooperative or joint activities with other government bodies. The Council also appoints members to various boards and commissions that serve the City.

Chowchilla is a full-service City with approximately 61 full and part-time employees. City services include: Municipal Airport, General Administrative Services, Streets, Water and Wastewater, Solid Waste (collection/recycle, disposal), Planning and Zoning, Public Safety (Police and Fire), Public Improvements, and Parks and Recreation.

1.3.4 Climate

The climate of Chowchilla is Mediterranean. Chowchilla receives an average of about 12 inches of precipitation per year. The wettest months are January, February, and March with March being the wettest. Chowchilla has dry, hot summers, and mild to cool, rainy winters. Chowchilla experiences frequent fog from November to March and overcast days are common, especially in January. In 2005, Chowchilla had twenty consecutive cloudy, rainy days. There are days with moderate to heavy rain during the winter months. In January, the high temperature may drop as low as 45°F (9°C). During the summer, when there is usually no rain, the temperature may reach as high as 110°F (43°C).

1.3.5 Population/Demographics (Source: U.S. 2000 Census and California Dept. of Finance)

The City of Chowchilla has sustained growth over the past decade and a-half. The current population is approximately 19,051 (Department of Finance January 2009). Between 2000 and 2009, the city grew in population with estimates at 7,924.

As of the census of 2000, there were 11,127 people, 2,562 households, and 1,908 families residing in the city. The population density was 1,567.4 people per square mile (605.1/km²). There were 2,711 housing units at an average density of 381.9/sq mi (147.4/km²). The racial makeup of the city was 63.46% White, 10.26% Black or African American, 2.60% Native American, 1.32% Asian, 0.26% Pacific Islander, 16.16% from other races, and 5.94% from two or more races. 28.20% of the population was Hispanic or Latino of any race.

There were 2,562 households out of which 40.2% had children under the age of 18 living with them, 55.3% were married couples living together, 13.2% had a female householder with no husband present, and 25.5% were non-families. 21.9% of all households were made up of

individuals and 12.6% had someone living alone who was 65 years of age or older. The average household size was 2.94 and the average family size was 3.42.

In the city, the population was spread out with 22.2% under the age of 18, 9.4% from 18 to 24, 42.8% from 25 to 44, 16.2% from 45 to 64, and 9.3% who were 65 years of age or older. The median age was 34 years. For every 100 females there were 51.1 males. For every 100 females age 18 and over, there were 39.8 males.

The median income for a household in the city was \$30,729, and the median income for a family was \$35,741. Males had a median income of \$32,306 versus \$20,538 for females. The per capita income for the city was \$11,927. About 16.5% of families and 19.2% of the population were below the poverty line, including 27.1% of those under age 18 and 7.6% of those ages 65 or over.

The building activity peaked in 2005/2006 and declined substantially thereafter. During the period of 2005/2006, Chowchilla issued permits for 810 dwelling units. While in the period from 2007-2009, only a total of 138 units were permitted. Among those permits was an 81-unit assisted apartment project. Restoration of even a mild housing market is dependent on many economic factors none of which the city can control.

The City of Chowchilla 2040 Draft General Plan identifies Chowchilla Housing Element 2009 Affordability Income Classifications as follows:

Extremely Low-Income (Households at 30% of 2009 Median Income) per household size listed:

1: \$11,750 2: \$13,400 3: \$15,100 4: \$16,750 5: \$18,100 6: \$19,450

Very Low-Income (Households at 50% of 2009 Median Income) per household size listed:

1: \$19,550 2: \$22,300 3: \$25,100 4: \$27,900 5: \$30,150 6: \$32,350

Low-Income (Households at 80% of 2009 Median Income) per household size listed:

1: \$31,250 2: \$35,700 3: \$40,200 4: \$44,650 5: \$48,000 6: \$51,800

The City 2040 Draft General Plan identifies the Housing Element Action/ Implementation Programs mandated by the State of California since Chowchilla has a large population ranging in all ages which fall in the extremely low-income to low-income classifications. Chowchilla housing unit production between 2001 and 2009 showed an all time high of approximately 600 units.

1.3.6 Economy

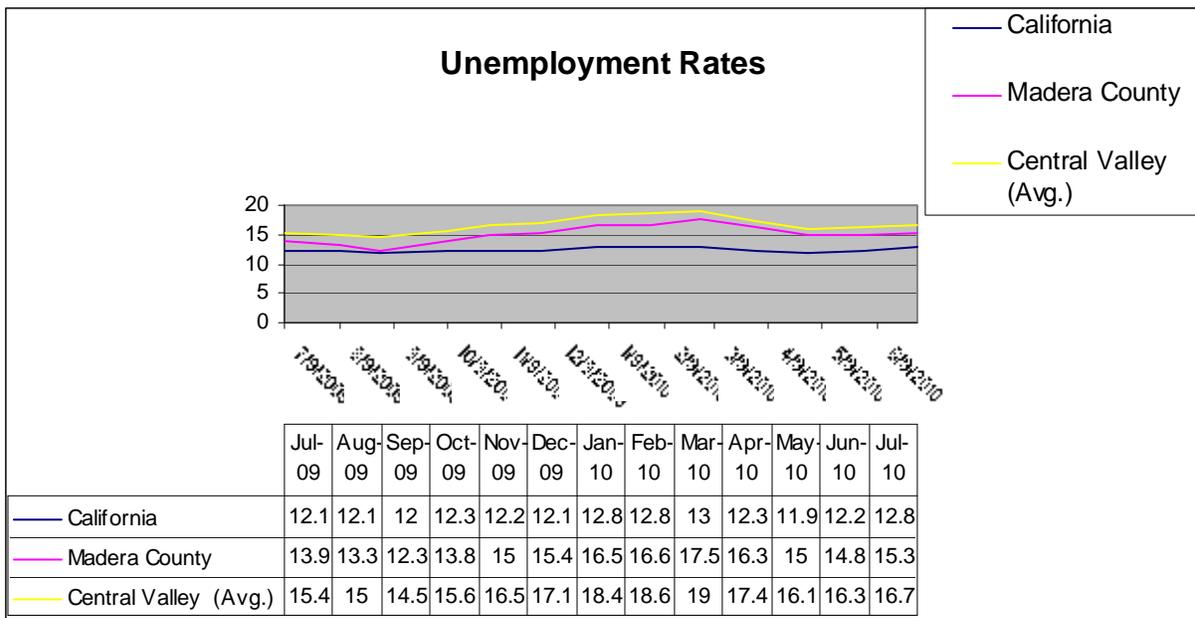
In the past decade the City of Chowchilla, which lies in the county of Madera, has seen substantial growth since 2000; Chowchilla growth was approximately 63%. The unemployment rate is approximately 11.7%. Agriculturally oriented Madera County tends to have higher unemployment rates and greater seasonal variations in unemployment. The state's unemployment rate is 5.2% for the same year.

Agriculture is the largest industry in the county, accounting for 29.9% of the employment. Government, another significant sector, accounts for 19.5% and services make up 16.8% of the total in Madera County.

Chowchilla's central location in the San Joaquin Valley gives it great potential for positive economical growth and the ideal climate makes it a target city for new industrial innovations. Chowchilla is the prime spot for new businesses but more importantly, a stable and healthy environment for residents to enjoy living in and raising their families.

Madera County Economic Development Commission recently posted the State of California Labor Force Data for Cities and Census Designated places (CDP) August **2010 – Preliminary Data Not Seasonally Adjusted for Chowchilla City in Madera County as follows:**

- Labor Force: 4,400
- Employment: 3,700
- Unemployment Number: 700
- Rate of Unemployment: 16.4%
- Census Ratios: Employed: 0.062069 Unemployment: 0.072670



The overall unemployment rate for Madera County is currently (August 2010) 15.3%, the Central Valley average is 16.7% and the State of California is 12.8%. The recent data and statistics demonstrate that the unemployment rate in Chowchilla is high in comparison to the county, valley and state. The average median family income from 2006-2008 was \$50,201 and the average median household income was \$45,646 (Source: Cal Dept of Finance).

1.3.7 Land Uses and Development Trends

The Community Development Department guides and facilitates projects and development activities within the City of Chowchilla providing the highest standard of development to preserve the health, safety, general welfare, and quality of life for all people who live, work, and visit Chowchilla. The implementation of development plans and programs strengthen and diversify the economic base of Chowchilla.

1.4 MITIGATION PLANNING OVERVIEW

The City of Chowchilla Hazard Mitigation Plan's purpose is to fulfill the federal DMA which calls for all jurisdictions to prepare mitigation plans. The plan includes resources and information to assist City residents, public and private sector organizations, and others interested in participating in planning for hazards.

In order for the City of Chowchilla to apply for and/or receive project grants under Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM), Flood Mitigation Assistance (FMA) and Severe Repetitive Loss (SRL), we must have a FEMA-approved Local Mitigation Plan. A letter of Intent was prepared and sent to OES Hazard Mitigation Section on October 15, 2004.

The local hazard mitigation planning process analyzes a community's risk from natural hazards, coordinates available resources, and implements actions to reduce or eliminate risks. A local mitigation plan should be prepared before a disaster to guide risk reduction activities before an event; it should also be reviewed, and amended regularly, so as not to overlook opportunities for vulnerability reduction (mitigation).

This document details the work of the community's Emergency Preparedness Planning Committee over the past several years to develop the planning organization, undertake the required analysis, and coordinate the mitigation initiatives that have been proposed. When implemented, this local mitigation plan shall make the people, schools, neighborhoods and businesses of Chowchilla safer from the impacts in the event of future hazardous events.

Natural hazards are inevitable. Floods, hurricanes, tornadoes, earthquakes, wildfires and other hazardous events are normal occurrences in the natural environment. Disasters, however, occur when human activities and built structures intersect with natural hazards. This may strike at any time and has the potential to cause enormous loss of life and property. Hazard mitigation is a sustained effort to permanently reduce or eliminate long-term risk to people and property from the effects of hazards. The purpose of this plan is to identify hazards that are common to the City

of Chowchilla and establish a framework for them to reduce the risks associated with these hazards.

The City of Chowchilla will develop a schedule that allows a plan update and approval to occur within five (5) years from the last approval date. Chowchilla will consider the time needed prior to the expiration of the Local Mitigation Plan and allow sufficient time for all activities up to and including adoption. This process should allow sufficient time for the following activities: *(Note: the State of California could choose to establish a schedule for more frequent Local Mitigation Plan updates.)*

- Application and award for mitigation planning grants (if applicable);
- Contracting for technical or professional services (if applicable);
- Review of mitigation plan;
- Planning process to develop the updates;
- State and/or FEMA reviews;
- Revising the updated plan, if necessary based on FEMA review comments; and;
- Plan adoption procedures

1.5 DESCRIPTION OF THE LOCAL HAZARD MITIGATION PLAN

1.5.1 Section 2: Record of Adoption

Section 2 addresses the adoption of the Chowchilla Local Hazard Mitigation Plan by the City of Chowchilla. The adoption resolution will be inserted in the plan upon CalEMA and FEMA approval of the Chowchilla Hazard Mitigation Draft Plan.

1.5.2 Section 2: Grant Programs with Mitigation Plan Requirements

Section 3 addresses the Stafford Act Grant Programs and the National Flood Insurance Act Grant Programs.

1.5.3 Section 4: Planning Process

Section 4 describes the planning process and specifically describes the plan development process including members of the Local Hazard Mitigation Team (Planning Team) including a description of the meetings held as part of the planning process. This section also documents public outreach activities and discusses the review and incorporation of relevant benefits.

1.5.4 Section 5: Hazard Analysis

Section 5 describes the process which the Planning Team identified, screened, and selected the hazards to be profiled in the local CLHMP. The hazard analysis includes nature, history, location, extent and probability of future events for each hazard.

1.5.5 Section 6: Vulnerability Analysis

Section 6 identifies the methodology for analyzing potentially vulnerable assets - population, residential buildings, and critical facilities such as community service facilities, government buildings, public safety facilities and public works facilities. The CLHMP assessed the potential impacts from each hazard using Madera County Geographic Information System (GIS) Data acquired through CLHMPT members participating in the Madera County Hazard Mitigation multi-jurisdictional planning process. Specifically, the Geographic Information was provided by URS. The resulting information identifies a number of natural hazardous events which has several unique characteristics making Chowchilla more susceptible to certain types of hazards, such as dam failure and flooding. Therefore, Chowchilla can face potential social impacts, damages, and economic losses.

1.5.6 Section 7: Mitigation Strategy

Section 7 provides a blueprint for reducing the potential losses identified in the vulnerability analysis. The Planning Team created an action plan list of several mitigation actions with no mitigation projects identified through an evaluation and prioritization process described in this section.

1.5.7 Section 8: Plan Maintenance

Section 8 describes the formal plan maintenance process to ensure that the Local Hazard Mitigation Plan remains an active and applicable document. The process includes monitoring, evaluating, and updating the plan; monitoring mitigation projects and closeout procedures; implementing the plan through existing planning mechanisms; and achieving continued public awareness and involvement.

1.5.8 Section 9: References

Section 9 includes references used to develop this CLHMP document.

2.0 OFFICIAL RECORD OF ADOPTION REQUIREMENT

The mitigation planning regulations under 44 CRR Part 201 require that local states and communities should coordinate with each other to identify procedures and schedules that will facilitate state support of local mitigation planning efforts and initial review of Local Mitigation Plans. Local jurisdictions may share drafts of their entire plan.

Adoption by the local governing body demonstrated the jurisdiction's commitment to fulfilling the mitigation goals and objectives outlined in the plan. Adoption legitimizes the plan and authorizes responsible agencies to execute their responsibilities. For final approval by FEMA, the Local Hazard Mitigation Plan must include a copy of the local governing body's resolution adopting the plan.

Adoption by Local Government Body

DMA 2000 REQUIREMENTS – PREREQUISITES

Adoption by the Local Governing Body

Requirement §201.6(c)(5) [The local hazard mitigation plan **shall** include] documentation that the plan has been formally adopted by the government body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council)

Element

- A. Has the local governing body adopted a new or updated plan?
- B. Is supporting documentation, such as a resolution, included?

Source: FEMA 2008

2.1 Adoption by the local governing body and supporting documentation

The City of Chowchilla Local Hazard Mitigation Plan (CLHMP) meets the requirements of Section 409 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Stafford Act) and Section 322 of the Disaster Mitigation Act of 2000 (DMA 2000), and FEMA 2008 Prerequisites-Adoption by the Local Governing Body. This includes complying with the requirement that the plan will be adopted by the City of Chowchilla City Council. The City of Chowchilla Local Hazard Mitigation Draft Plan has been prepared by the Chowchilla Local Hazard Mitigation Planning Team (CLHMPT). Once the final plan is approved by FEMA/CalEMA and adopted by the City Council of the City of Chowchilla, a scanned copy of the resolution will be inserted into this plan in Appendix B.

To implement planning requirements, FEMA published an Interim Final Rule in the Federal Register on February 26, 2002 (FEMA 2002) (44CFR Part 201). The local mitigation requirements are identified in sections throughout this local hazard mitigation plan (LHMP) and in Appendix Crosswalks.

1.2 GRANT PROGRAMS WITH MITIGATION PLAN REQUIREMENTS

Currently, five FEMA grant programs are available to participating jurisdictions that have FEMA-approved LHMPs and are members of the National Flood Insurance Program (NFIP). Two of the grant programs are authorized under the Stafford Act and DMA 2000 and the remaining three are authorized under the National Flood Insurance Act and the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act.

1.2.1 Stafford Act Grant Programs

• **Hazard Mitigation Grant Program.** The Hazard Mitigation Grant Program (HMGP) provides grants to state, local, and tribal entities to implement long-term hazard mitigation measures after declaration of a major disaster. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. Projects must provide a long-term solution to a problem (for example, elevation of a home to reduce the risk of flood damage rather than buying sandbags and pumps to fight the flood). Also, a project's potential savings must be more than the cost of implementing the project. Funds may be used to protect either public or private property or to purchase property that has been subjected to, or is in danger of, repetitive damage. The amount of funding available for the HMGP under a particular disaster declaration is limited. Under the program, the federal government may provide a state or tribe with up to 20 percent of the total disaster grants awarded by FEMA and may provide up to 75 percent of the cost of projects approved under the program.

• **Pre-Disaster Mitigation Program.** The Pre-Disaster Mitigation (PDM) Program provides funds to state, local, and tribal entities for hazard mitigation planning and the implementation of mitigation projects before a disaster. PDM grants are awarded on a nationally competitive basis. Like HMGP funding, the potential savings of a PDM project must be more than the cost of implementing the project and funds may be used to protect either public or private property or to purchase property that has been subjected to, or is in danger of, repetitive damage. The total amount of PDM funding available is appropriated by Congress on an annual basis. The cost-sharing for this grant is 75 percent federal and 25 percent nonfederal, although cost-sharing of 90 percent federal and 10 percent nonfederal is available in certain situations.

1.2.2 National Flood Insurance Act Grant Programs

• **Flood Mitigation Assistance (FMA) Grant Program:** The goal of the FMA Grant Program is to reduce or eliminate flood insurance claims under the NFIP. This program places particular emphasis on mitigating repetitive loss (RL) properties. The primary source of funding for this program is the National Flood Insurance Fund. Grant funding is available for three types of grants: Planning, Project, and Technical Assistance. Project grants, which use the majority of the

SECTION THREE
GRANT PROGRAMS WITH MITIGATION PLANNING REQUIREMENTS

Program's total funding, are awarded to local entities to apply mitigation measures to reduce flood losses to properties insured under the NFIP. In FY 2008, FMA funding totaled \$30 million. The cost-sharing for this grant is 75 percent federal and 25 percent nonfederal, although cost-sharing of 90 percent federal and 10 percent nonfederal is available in certain situations to mitigate severe repetitive loss (SRL) properties. As of January 2010, there are two RL properties located in Madera County. There are no SRL properties located in the City of Chowchilla.

- **Repetitive Flood Claims Program:** The Repetitive Flood Claims Program provides funding to reduce or eliminate the long-term risk of flood damage to residential and non-residential structures insured under the NFIP. Structures considered for mitigation must have had one or more claim payments for flood damages. In FY 2008, Congress appropriated \$10 million for the implementation of this program. All Repetitive Flood Claims grants are eligible for up to 100 percent federal assistance.

- **Severe Repetitive Loss Program:** The SRL Program provides funding to reduce or eliminate the long-term risk of flood damage to residential structures insured under the NFIP. Structures considered for mitigation must have had at least four NFIP claim payments over \$5,000 each, when at least two such claims have occurred within any 10-year period, and the cumulative amount of such claim payments exceeds \$20,000, or for which at least two separate claims payments have been made with the cumulative amount of the building portion of such claims exceeding the value of the property when two such claims have occurred within any 10-year period. The cost-sharing ratio for this grant is 75 percent federal and 25 percent nonfederal, although a cost-sharing ratio of 90 percent federal and 10 percent nonfederal is available to mitigate SRL properties when a state or tribal plan addresses ways to mitigate SRL properties. As of January 2010, there are no SRL properties located within the City of Chowchilla.

4.0 PLANNING PROCESS

4.1 Overview

This section describes the process in which the plan was developed. This includes the federal requirement followed by the City's actions applied to this process.

4.2 DMA 2000 PLANNING PROCESS REQUIREMENTS

The requirements for the planning process, as stipulated in DMA 2000 and its implementing regulations, are described below.

DMA 2000 REQUIREMENTS: PLANNING PROCESS

Documentation of the Planning Process

Requirement §201.6(b): In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:

- (1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
- (2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and
- (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

Requirement §201.6(c)(1): [The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

Element

- Does the new or updated plan provide a narrative description of the process followed to prepare the plan?
- Does the new or updated plan indicate who was involved in the current planning process? (For example, who led the development at the staff level and were there any external contributors such as contractors? Who participated on the plan committee, provided information, reviewed drafts, etc.?)
- Does the new or updated plan indicate how the public was involved? (Was the public provided an opportunity to comment on the plan during the drafting stage and prior to the plan approval?)
- Does the new or updated plan indicate that an opportunity was given for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the planning process?
- Does the planning process describe the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information?

Source: FEMA 2008.

4.3 SUMMARY OF PLANNING PROCESS

The initial phase of the planning process was to identify a team of leaders and to establish a project team comprised of designated staff. Initially, the City Project Manager was assigned to attend the Governor's Office of Emergency Services Local Hazard Mitigation Plan Development Workshop in August of 2003.

A Letter of Intent was filed with OES Hazard Mitigation Section on October 15, 2004 naming the local contacts as Jay Varney, Chief of Police and Harry Turner, Fire Chief. Additionally, the City Project Manager took the lead under the past City Administrator's direction to coordinate the planning process. LHMP Training of staff started in 2003. In 2004 a project team was formed as an advisory group/task group to develop the plan. Initially, in December of 2004, the City Project Manager prepared a report to City Council to provide information on the Public Law 106-380 and requirements for local governments to develop a local hazard mitigation plan approved by FEMA. Additionally, it was reported to City Council that no funding was available to develop a local hazard mitigation plan. The first public workshop notice was initiated to invite the public and interested agencies on January 10, 2005. Subsequently, several planning meetings took place, but the planning process was intermittent over the next four years. In 2009, the City of Chowchilla government was impacted by the economy and experienced severe budget shortfalls and personnel reductions. In 2009 the Chief of Police was appointed as Acting City Administrator and the Fire Chief was appointed as Interim Public Works Director. The LHMP leader and other key staff were no longer employed by the City. However, the Police Chief and Fire Chief were intent on completing the local hazard mitigation plans started in 2003/2004 for Chowchilla.

The Local Hazard Planning Guidance outlines a process for the review of Local Mitigation Plans based on the requirements described in the mitigation planning regulations under 44 CFR §201.6. The Local Mitigation Plan Review Crosswalk is an important tool in both the review and development of complete plans as they mirror the requirements in the mitigation planning regulations at 44 CFR §201.6.

Before seeking formal adoption of the CLHMP by the appropriate officials, agencies, or organizations, local jurisdictions are encouraged to submit a final draft of the mitigation plan to the State and FEMA for review. During the "Crosswalk", the State may insert additional State Mitigation planning requirements, tailoring the Local Mitigation.

Prior to drafting the mitigation plan, community members have an opportunity to review and provide input when the SEMS functional plan was developed. A number of local citizens, local, state, and federal governments' agencies, business community organizations and institutions participated or contributed in the development process of the CLHMP.

4.4 CHOWCHILLA LOCAL HAZARD MITIGATION PLANNING TEAM (CLHMPT)

The City of Chowchilla Hazard Mitigation Planning Team is comprised of team leaders directly involved with first response - fire and safety, and local government - finance and public works. Members-at-large are comprised of engineer consultants, environmental and planning consultants, law enforcement, city analyst, plan development, local water district and the historical society over the past six years. Some of the trained staff and members are no longer with the city however their contributions led to the CLHMP.

LOCAL HAZARD MITIGATION PROJECT TEAM

Project Team Leaders:	Jay Varney, Acting City Administrator/Chief of Police Harry Turner, Interim Public Works/Services Director/Fire Chief
Project Members:	Joanne Upton, City of Chowchilla Project Analyst David Noblett, Sergeant Chowchilla Police Department

**4.5 COMMUNITY PARTICIPATION AND STAKEHOLDERS
(Including County and State Agency Assistance)**

Listed below are public members and/or agencies including stakeholders involved in the hazard mitigation planning and development process which started in 2003. Members are comprised of local stakeholders, county agencies, local schools, state agencies, urban planners, plan development expert, Madera County OES, etc.

**COMMUNITY PARTICIPATION AND/OR STAKEHOLDERS,
INCLUDING COUNTY AND STATE AGENCIES**

Name (if applicable)	Agency/Organization/Facility
Anna Davis, (Urban Planner)	URS
Care Facility for Elderly & Disabled	Avalon Care Center
Barbie Oyler, Member	Chowchilla Historical Society
Carrie Mitchell, CEO/Manager	Chowchilla Fairgrounds
Carol Barney, Director	Madera County Public Health
Dan Gudgel, Warning Coordinator Meteorologist	Hanford-National Weather Services
Doris Oyler, Member	Chowchilla Historical Society
Doug Welch, Manager	Chowchilla Water District
Dr, Charles Martin, Superintendent	Chowchilla Elementary School District
Jami Childress-Byers, Hazard Mitigation Branch	California Emergency Management Agency
Janet Stanovich, Operational Area Emergency Services Coordinator	Madera County Office of Emergency Services
Jill Yaeger, Director	Madera County Environmental Health
John Anderson, Sheriff	Madera County Sheriff Department
Jorge Hunt, Emergency Services Coordinator	California Emergency Management Agency
Kathy Flores, CEO	Chowchilla Skilled Nursing Facility
Kelly Woodard	Madera County Department of Social Services
Mary Lattimore, Warden	Central California Women's Facility
Opie Riar	Madera County Office of Education
Robert Olsen	Robert Olsen Associates
Ronald V. Seals, Superintendent	Chowchilla Union High School
Tina Hornbeak, Warden	Valley State Prison for Women
Care Facility for Elderly and Disabled	Trinity Park

The Draft CLHMP was completed and a 20-day public comment period was initiated. An article was placed in the local paper to invite the public to review and comment on the draft plan. Copies of the plan were made available at the local library and at City Hall/Civic Center.

Furthermore, a draft of the plan is posted on the City's website as well as notifying the participant agencies and/or community Stakeholders listed above.

4.6 LOCAL HAZARD MITIGATION PLANNING BENEFITS

During the planning process the plan benefits were established. Below is a list of benefits:

- 4.6.1 Allowed for in-depth analysis of current hazardous material facilities in the City and potential effects of a release of hazardous material.
- 4.6.2 Allowed for in-depth analysis of current conditions of roads, streets, and critical facilities in case of future hazard events looking closely at winter storms and flooding issues.
- 4.6.3 Sharing of information and team building between city departments and community and county agencies.
- 4.6.4 Opened discussions on transportation needs and hazards; how to effectively deal with emergency planning if one should occur. Plan for the worst, hope for the best.
- 4.6.5 Allowed for Emergency Preparedness Training and practice scenario responses and mitigation measures on some of the disasters.
- 4.6.6 Heightened our awareness level as to the nature of disasters in our community.
- 4.6.7 Provided more up-to-date informational maps on specific hazards that can affect our community.
- 4.6.8 Provide better methodology for quickly calculating property loss, number of affected structures and population.
- 4.6.9 Enhanced the City of Chowchilla Emergency Preparedness Program.

4.7 SCHEDULE OF ACTIVITIES

Below shows the key activities performed by the Chowchilla Hazard Mitigation Planning Team:

TABLE 4-1: SCHEDULE OF ACTIVITIES PERFORMED

Task	2003	2004	2005	2006	2007	2008	2009	2010
Project Initiation		√						
Training on LHMP	√	√	√					
Existing Studies/Reviews/Hazards & Data Collection	√	√	√	√	√	√	√	√
Hazard Profiles	√	√	√	√	√	√	√	
Inventory Assets						√	√	√
Study/Estimate known losses						√	√	√
Public Workshops			√					
Capability Assessment							√	√
Mitigation Goals & Actions							√	√
Appendices							√	√
Plan Updates/Documentation						√	√	√
Review Draft Plans Continued Revisions						√	√	√
Planning and Review Meetings		√	√	√	√	√	√	√
Participated on Madera County Hazard Mitigation Planning Committee							√	√
Public Draft Plan Review (20-day)								√
Final Draft Plan								√
Final Draft Plan for Crosswalks								
Adoption Process for FEMA approved Plan								

5.0 HAZARD ANALYSIS

5.1 RISK ASSESSMENT

This section identifies the hazards that might affect the City of Chowchilla, profiles the major hazards, assesses the risk of such hazards, describes the City’s vulnerability, and estimates potential losses from the hazards.

5.2 DMA 2000 RISK ASSESSMENT REQUIREMENTS

The overall DMA 2000 requirements for the risk assessment are shown below. The requirements mandate only natural disasters will be addressed however the City of Chowchilla has included the most significant human-caused hazards in this plan.

RISK ASSESSMENT - OVERALL

Requirement §201.6(c))2)	Local risk assessment must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards. This includes detailed descriptions of all the hazards that could affect the jurisdiction along with an analysis of the jurisdiction’s vulnerability to those hazards. Specific information about numbers and types of structures, potential dollar losses, and an overall description of land use trends in the jurisdiction must be included in this analysis
Explanation	<p>The local risk assessment should identify what hazards are likely to affect the area. The plan should describe the sources used to identify hazards, noting any data limitations, and provide an explanation for eliminating any hazards from consideration. The process for identifying hazards could involve one or more of the following:</p> <ul style="list-style-type: none"> • Reviewing reports, plans, flood ordinances, and land use regulations among others; • Talking to experts from federal, state, and local agencies and universities; • Searching the internet and newspapers; and interviewing long-time residents. <p>Source: FEMA</p>

The requirements for hazard identification as stipulated in DMA 2000 and its implementing regulations are described below.

DMA 2000 REQUIREMENTS: RISK ASSESSMENT

Identifying Hazards

Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the type of all natural hazards that can affect the jurisdiction.

Element

- Does the new or updated plan include a description of all of the types of all natural hazards that affect the jurisdiction?

Source: FEMA 2008.

5.3 IDENTIFY AND SCREEN HAZARDS

The CLHMPT developed a list of all types of natural and human-caused hazards, including the hazards identified in the Statewide HMP, as a point of reference. CLHMPT evaluated and screened this list of potential hazards on a range of factors, including prior occurrence in Madera County (where the City of Chowchilla is located), perception of relative risks presented in each hazard, and the ability to mitigate each hazard as shown in below Table 5-1.

Table 5-1: (listed on page 3 of this section)

HMP = Hazard Mitigation Plan

Presidential declared disasters since 1988 are indicated by disaster number.

- Hazards are classified in the State Hazard Mitigation Plan as Primary Hazards, Secondary Hazards, and Additional Hazards. Some hazards are also discussed in an Appendix - State of California Office of Emergency Services 2007
- A description, including nature, history, location, extent and probability, of each hazard selected to be profiled in the 2010 HP, is provided in the section under 5.4 Hazard Profiling.

SECTION FIVE
HAZARD ANALYSIS

TABLE 5-1 HAZARD IDENTIFICATION AND SCREENING OF HAZARDS

Type of Hazard	Subhazard	Presidential Declaration	Identified in the 1986 City General Plan & 05-01 Amend	Identified in the 1995 Madera County General Plan Background Report	Identified in 2007 State HMP	Hazard to be Profiled in 2010 HMP
Avalanche			No	No	Yes: Additional Hazard	No
Civil Unrest			No	No	Yes: in Appendix	No
Dam Failure				Yes	Yes: Additional Hazard	Yes
Drought		GAAS:033:07 (2007) N/A (1976)	No	No	Yes: Additional Hazard	No
Energy Emergency/ Power Disruption			No	No	Yes: Energy Shortage	No
Flood		N/A (1997) Unknown (1969)	No	1646-DR (April 2006)	Yes: Primary Hazard	Yes
Fog			No	No	Yes: Severe Weather & Storms	Yes
Hailstorm			No	No	Yes: Severe Weather & Storms	Yes, included in the Winter Storm category
Hazardous Material Event			No	No	Yes: Additional Hazard	Yes
Extreme Heat			No	No	Yes: Additional Hazard	Yes, Additional Hazard
Hurricane			No	No	Yes: in Appendix	No
Infectious Disease			No	No	Yes: Epidemic/Pandemic	No
Landslide			No	Yes	Yes: Secondary Hazard	No
Levee Failure			No	No	Yes: Secondary Hazard	Yes, secondary Hazard
Seismic	Ground Shaking		Yes	Yes	Yes: Primary Hazard	Yes
	Liquefaction		Yes	Yes	Yes: Primary Hazard	No
	Expansive Soil/ Subsidence		Yes	Yes	No	No
	Earthquake-Induced Landslide		Yes	Yes	Yes: Primary Hazard	Yes
	Tsunami/Seiche		Yes	Yes	Yes: Secondary Hazard	No
Severe Wind			No	No	Yes: Severe Weather & Storms	Yes
Tornado			No	No	Yes: Severe Weather & Storms	Yes
Volcano			No	Yes	Yes: Additional Hazard	No
Wildland fire		N/A (2003)	Yes	Yes (wildfires)	Yes: Primary Hazard	No
Winter Storm	Flood, Ice, Wind	N/A (1998) (Freeze) DR-1044 (1995) DR-979 (1992) DR-894 (1990) (Freeze) DR-758 (1986) DR-677 (1982-1983) (Winter Storm) N/A (1982) Rains causing agricultural losses) N/A (1972)	No	1646-DR (2006) (Storms, landslides, and mudslides)	Yes: Severe Weather & Storms	Yes

The CLHMPT determined that the following hazard groups pose the greatest threat to the City of Chowchilla:

- Seismic Hazards
 - Ground Shaking
 - Earthquake
- Dam Failure
- Weather-related hazards
 - Drought
 - Flood
 - Fog
 - Extreme Heat
 - Severe Wind
 - Tornado
 - Winter Storm
- Other Hazards
 - Dam Overflows
 - Wildland Fire
 - Hazardous Material Event (Mobile and Fixed Incidents)

The remaining hazards excluded from the screening were considered to pose a lower threat to life and property in the City of Chowchilla due to the low likelihood of occurrences or the low probability that life and property would be significantly affected. Should the risk from these hazards increase in the future, the 2015 HMP can be updated to incorporate vulnerability analyses for these hazards. Section 5.4 provides a detailed description of each hazard that affects the City of Chowchilla.

5.4 HAZARD PROFILING

5.4.1 SEISMIC HAZARDS

The primary seismic hazard is ground shaking caused by the earthquake and resulting seismic waves. Ground shaking is most often reported as peak ground acceleration (PGA) which represents the largest ground acceleration recorded by a particular station during an earthquake. PGA may be given in various acceleration units but is most commonly reported as a percentage (or fraction) of the acceleration of gravity (i.e. “g”). Table 5-2 represents the approximate relationship between the Modified Mercalli intensity and PGA, as a percentage of “g”.

TABLE 5-2 Modified Mercalli Intensity and PGA

MM Intensity	I	II-III	IV	V	VI	VII	VIII	IX	X+
Perceived Shaking	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
Potential Damage	None	None	None	Very light	Light	Moderate	Moderate/ Heavy	Heavy	Very heavy
PGA	< .17	.17 – 1.4	1.4 – 3.9	3.9 – 9.2	9.2 - 18	18 - 34	34 - 65	65 - 124	>124

Secondary hazards include surface faulting, liquefaction, landslides and tsunamis. Surface faulting is displacement that reaches the earth's surface during slip along a fault. Liquefaction is the process by which water-saturated sediment temporarily loses strength and acts as a fluid.

History

The City of Chowchilla has a low level of historic seismic activity. Since 1872 to 2009 there has been no significant property damage or loss of life due to earthquakes occurring within or near the City. Maximum recorded intensities have reached magnitude of ≥ 4.5 which is a very light reading according the California Historical Earthquake Online Database. According to the California Geological Survey, the Quaternary fault located closest to Madera County is Hartely Springs Fault located in Mono County.

The City of Chowchilla is located in the less seismically active western region Madera County, referred to as an area of “light seismicity”. Earthquake activity has not been a serious hazard in the City of Chowchilla’s history, nor is it probable that it will become a serious hazard in the future.

Ground Shaking

The City of Chowchilla is located in a seismic zone of light according to the California Department of Conservation – Division of Mines and Geology (DMG), Seismic hazard mapping indicates approximate peak ground acceleration (PGA) of Maximum earthquake intensity is expected between MM IV and MM V (See Table 5-2).

For the Central Valley, few faults have been identified that contribute to the hazard and so the distances are considerably longer than for coastal areas and generally these longer distances correspond to the distance from the San Andreas Fault or the Hartely Springs Fault located in Mono County.

Earthquakes-Ground Shaking

Nature

A fault is a thin layer of crusted rock between two blocks of the earth's crust that have moved relative to one another. A fault can range in length from a few centimeters to thousands of miles.

An earthquake is the shaking and vibration at the surface of the earth resulting from underground movement along a fault plane, and less frequently from volcanic activity. Earthquakes occur when forces undergrounds cause the fault to rupture and suddenly slip. This occurs when the stress build up at the fault exceeds the strength of rock resisting the movement.

Two of the most common methods to describe and earthquake are by intensity and magnitude. Intensity and magnitude measure differently characteristics of earthquakes.

Intensity

Intensity is a measure of the strength of shaking experienced in an earthquake at a particular location. The intensity scale used in the United States is the Modified Mercalli (MM) intensity scale, which represents the local effect or damage caused by an earthquake (see Table 7.5-1) This scale, composed of twelve increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, is designated by Roman numerals (1 through XII). The lower number of the intensity scale generally deal with the manner in which the earthquake is felt by people. The higher the numbers of the scale are based on observed structural damage. The maximum observed intensity generally occurs near the earthquake epicenter, and the intensity generally decreases away from the epicenter.

Magnitude

Magnitude is a measure of the size of the earthquake and energy released at the source of the earthquake, where the fault slip has occurred. Magnitude is determined from measurements on seismographs which record the ground motion from the earthquake.

Magnitude scales, like the Richter (local) magnitude and moment magnitude, measure the size of the earthquake at its source. Thus, they do not depend on where the measurement of the earthquake is made. Earthquakes below magnitude M2.5 are generally not felt by people. Table 5-3 represents the approximate Modified Mercalli intensity near the epicenter of the earthquake versus the earthquake magnitude.

TABLE 5-3 MODIFIED MERCALLI INTENSITY SCALE

MM Intensity	Observed effects and damage
I	Not felt except by a very few under especially favorable conditions.
II	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do.
IV	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes.
V	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects.
VI	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster.
VII	Damage negligible in buildings of good design and construction; slight to moderate in well-built.
VIII	Damage slight in specially designed structures; considerable damage in ordinary substantial.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown.
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed.
XI	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
XII	Damage total. Lines of sight and level are distorted. Objects thrown into the air.

TABLE 5-4 MODIFIED MERCALLI INTENSITY AND MAGNITUDE

MM Intensity	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Magnitude	1 - 2	2 - 3	3 - 4	4	4 - 5	5 - 6	6	6 - 7	7	7 - 8	8	> 8

Vulnerability

The seismic hazard map and model presented in this Probabilistic Seismic Hazard Assessment for California indicate that the hazard is high in many regions across the state, especially within about 50 km of the San Andreas Fault system, the Eastern California Shear Zone faults, the western Transverse Ranges, and the Cascadia subduction zone. Earthquakes in populated regions have already caused considerable losses during the past 2 centuries that span California’s recorded seismic history. The hazard map is consistent with this historical seismicity, the historical damage patterns, and with geologic information regarding the slip rate and pre-historic earthquakes.

The study indicates that about three-fourths of California’s population resides in counties that have significant seismic hazard. This level of hazard reaffirms the need to examine existing infrastructure and verify that it is adequate to withstand the expected seismic shaking to prevent loss of life from structural collapse during an earthquake. The seismic hazard maps and models presented in this report should be useful for assisting policy makers, engineers, and scientists to plan for strong earthquake ground shaking.

Mitigation

The National Earthquake Hazards Reduction Program (NEHRP) seeks to mitigate earthquake losses in the United States through both basic and directed research and implementation activities in the fields of earthquake science and engineering.

The NEHRP is the Federal Government's coordinated approach to addressing earthquake risks. Congress established the program in 1977 (Public Law 95-124) as a long-term, nationwide program to reduce the risks to life and property in the United States resulting from earthquakes. The NEHRP is managed as a collaborative effort among FEMA, the National Institute of Standards and Technology, the National Science Foundation, and the United States Geological Survey.

NEHRP has four goals which are to:

- A. Develop effective practices and policies for earthquake loss-reduction and accelerate their implementation.
- B. Improve techniques to reduce seismic vulnerability of facilities and systems.
- C. Improve seismic hazards identification and risk-assessment methods and their use.
- D. Improve the understanding of earthquakes and their effects.

Building codes, which first came into use to protect communities from potential earthquake damage in the 1930s, ensure uniform minimum standards of health and safety across the United States.

By implementing building codes requires that a building or facility be located, designed, and constructed so that any threat to life, health, and welfare of its occupants and the public is minimized or prevented. The CLHMP believes that the implementation and enforcement of effective building codes has the greatest impact on the quality of construction and how structures will withstand the forces of nature.

The City of Chowchilla (CLHMPT) will review and consider E-Waste in future planning updates in the event of an earthquake or severe ground shaking. A recent earthquake of 7.2 magnitude struck Imperial County on April 4, 2010. The powerful temblor knocked computer monitors, television sets, stereos, microwaves and other electronic devices off countertops, tables, shelves, shattering the hardware and creating a mass of electronic waste. This event will spark some discussion about E-Waste and possible securing of critical hardware in the case of an earthquake or severe ground shaking event.

The City of Chowchilla received a FEMA HMGP Grant in 2004 for the seismic rehabilitation of a city governmental facility due to its historical status allowing for a complete structural reinforcement of the existing building.

Extent of Probability of Future Events

The extent of a localized earthquake is unlikely. The extent of ground shaking from an earthquake is probable. We included a map of Madera County areas susceptible to severe to violent shaking (MMI VIII-X). This map was developed by the USGS for Madera County Hazard Mitigation Plan using various earthquake fault models, as well as data from historic earthquakes in the County of Madera. See Figure C-1, C-2 and C-3 (magnitude areas greater than 4.5, regional faults and probabilistic seismic hazards).

Vulnerability to earthquake-ground shaking

The City of Chowchilla would be vulnerable in the event of an earthquake and severe ground shaking.

5.4.2 WEATHER-RELATED HAZARDS

Weather-related hazard profiles have been developed for drought, flood, fog, heat, severe wind, and winter storms in the City of Chowchilla and surrounding region. This section describes those profiles. In addition, the Madera County Hazard Planning Committee researched various weather-related events which caused \$15,000 or more in property damage.

5.4.2.1 DROUGHT

Nature

Drought is the most obstinate and pernicious of the dramatic hazard events that Nature conjures up. It can last longer and extend across larger areas than hurricanes, tornadoes, floods and an earthquake "...causing hundreds of millions of dollars in losses, and dashing hopes and dreams." (National Drought Policy Commission Report, May 2000)

History

In 1996, the Western Governors set an aggressive goal to change the way our nation prepares for and responds to droughts. Subsequent efforts by the Western Governors' Association (WGA) led to the Congressional creation of the National Drought Policy Commission (NDPC), which issued its recommendations in May 2000 to establish such a national policy. In its recommendations, they called for improving collaboration among scientists and managers to enhance the effectiveness of observation networks, monitoring, prediction, information delivery and applied research and foster public understanding of a preparedness of drought.

NOAA (National Atmospheric Administration Administrator) partnered with WGA to improve drought monitoring and forecasting system which led to 2003 creating a Drought Early Warning System for the 21st Century: "The National Integrated Drought Information System (NIDIS)."

This has led to coordinating and integrating governmental programs, establishing reliable funding for drought preparedness and response activities, facilitating state-based drought preparedness and mitigation programs, which lead to effective investments in on-the-ground solutions. The NIDIS Act was introduced in the U.S. Congress and signed by the President in 2006. This allowed to the development of the interactive systems, such as the web portal, as part of the early warning system (www.drought.gov/portal).

Location

All areas in the City of Chowchilla as well as the County of Madera are vulnerable to drought.

The City of Chowchilla is a rural community that is surrounded largely by farmland that is rich in agriculture for a variety of crops including dairy, poultry, horse and cattle ranches that may utilize surface water deliveries from approximately June –September and/or from ground water pumping systems. Since Chowchilla relies on ground water wells, it is important to the Planning Team (CLHMPT) to utilize the NIDIS web portal and integrate data/information to assess.

Chowchilla area's climate variability and vulnerability to drought formulates a better understanding to improve the forecasting of droughts in our community and how and why they impact our natural systems. This will also help the community leaders to identify short, medium, and long range forecasts and vegetation health/stress and fire danger to our community and countywide. By utilizing this data and information, we can better coordinate programs to facilitate preparedness programs in our community.

According to NIDIS the current drought conditions for regions in California uses the following legend: D0 = Abnormally Dry, D1 = Moderate Drought, D2 = Severe Drought, D3 = Extreme Drought & D4= Exceptional Drought. The Central San Joaquin Valley is classified as D2 Severe Drought region.

Extent and Probability of Future Events

Unfortunately, we accept drought's effects as an unavoidable natural hardship rather than a hazard event being a creeping phenomenon which develop slowly over large areas and an extended period of time. The slow nature of drought hinders the recognition of the true impacts, thus diminishing the urgency that would otherwise trigger a timely and comprehensive response. However given the nature of this hazard, the passive approach to droughts has an effect on the infrastructures (water systems, etc.) and economic, environmental and social impacts on our community.

The City of Chowchilla adopted Water Regulations that are currently in effect year-round at this time. The City has also taken a proactive approach by using the Updated Model Water efficient Landscape Ordinance as the water conservation ordinance as of January 1, 2010.

In California's warm, dry climate, more than half of urban water supplies may be used for landscape irrigation. Ensuring efficient landscapes in new developments and reducing water waste in existing landscapes are about the most cost-effective ways to stretch our limited water supplies and ensure that we continue to have the water we need. Other benefits include reduced irrigation runoff, reduced pollution of waterways, drought resistance, and less green waste.

The Palmer Drought Indices (Palmer Z Index, Palmer Drought Index, and Palmer Hydrological Drought Index) and the Standard Precipitation are most commonly used. In September of 2009, Madera County area including Chowchilla has mid range (-1.99 to +1.99) conditions for all tree of the Palmer Indices, and the Standardized Precipitation Index shows very moist (+1.30 to +1.59) conditions for the 2 months of July-August 2009. (NCDC, Current Standardized Precipitation Index 2009b). This means the drought may not be extremely severe in Madera County. However, the effects of the current drought may be severe because Madera County and the City of Chowchilla receive water supplies from other parts of the state that are experiencing drier conditions. Based on previous events, the City of Chowchilla can expect to experience a drought every 4-10 years. Droughts in California tend to last for 2-5 years.

Vulnerability to drought

Drought is an unavoidable natural hardship and may be extremely severe in the Chowchilla area affecting existing landscapes and agricultural crops.

5.4.2.2 FLOODING

Nature

Floods are one of the most common hazards in the United States. Flood effects can be local, impacting a neighborhood or community, or very large, affecting entire river basins and multiple states.

However, all floods are not alike. Some floods develop slowly, sometimes over a period of days. But flash floods can develop quickly, sometimes in just a few minutes and without any visible signs of rain. Flash floods often have a dangerous wall of roaring water that carries rocks, mud, and other debris and can sweep away most things in its path. Overland flooding occurs outside a defined river or stream, such as when a levee is breached, but still can be destructive. Flooding can also occur when a dam breaks, producing effects similar to flash floods.

General Flooding types are: Riverine, coastal and urban flooding. Riverine flooding occurs when excess precipitation causes a river or stream to overflow its banks. Coastal flooding may be a result of storm surge, wind-driven waves and/or precipitation associated with a hurricane or tropical storm. Urban flooding may occur when manmade structures or developments have disrupted the natural flow of water and/or decreased the permeability of soil.

According to FEMA, floodplain areas are “lowlands, adjacent to rivers, lakes and oceans that are subject to recurring floods. FEMA has currently mapped most of the floodplains in the United States. These maps designate the 100-year flood zone, the Base Flood Elevation and Special Hazard Areas. A 100-year flood zone is an area that has a one percent chance of flooding in any given year. The base flood elevation relates to the 100-year flood zone and is the elevation of the water surface resulting from a 100-year flood.

In the Chowchilla area, the construction of Buchanan, Hidden and Friant Dams, as well as levee improvements along the sloughs and rivers, have eliminated the major flooding problems along the San Joaquin, Fresno, and Chowchilla Rivers whereby eliminating the risk of historical floods as were seen in the 1950’s in the County of Madera and Chowchilla Area. However, although the historical floods have been reduced, during winter storms and extreme cold, the heavy snowfall in the mountains above Chowchilla starts to melt. The lakes, dams, levees, sloughs and waterways become swollen and the Department of Engineering must release water down the Berenda and Ash Slough channels heading downstream to counties and cities which have flood prone areas.

In the City of Chowchilla, floods can be categorized into the following types of occurrences:

- River or stream flooding – includes channel or bank overflows, flash floods, obstruction floods, and dam overflows or failures.
- Local drainage – includes channel or bank overflows, flash floods, debris or obstruction floods, and ponding in natural or man-made depressions.
- Fluctuating lake, reservoir or pond levels – includes accumulations of water in lakes, reservoirs or ponds, as well as in natural or man-made depressions that are normally dry or hold insignificant volumes of water.

The City of Chowchilla is partially bordered by Ash Slough and Berenda Slough Channels. The FEMA 100-year floodplain for the City of Chowchilla totals .4 square miles. This is approximately 10% of the City’s land base. See Figure C-13 - Dam locations; C-14 - Dam failure inundation areas for state-jurisdictional and federal dams; and Figure C-15 - Levee flood protection zones.

Flooding from the Ash Slough & Berenda Slough Channels typically arises from increased flows from the Eastman Dam. The Army Corps regulates and controls mass storage and flows of prolonged periods of rainfall from the rivers and watersheds and creeks above the dam.

Local drainage flooding occurs primarily due to infrequent, high-intensity rainfall events, and swelling dams, reservoirs and rivers due to quick snow melts from the above mountain range.

Location

The magnitude of flood used as the standard for floodplain management in the U.S. is a flood having a probability of occurrence of one percent in any given year, also known as the 100-year

flood or base flood. The most readily available source of information regarding the 100-year flood is the system of Flood Insurance Rate Maps (FIRM's) prepared by FEMA. These maps are used to support the National Flood Insurance Program. The FIRM's show 100-year floodplain boundaries for identified flood hazards. These areas are also referred to as Special Flood Hazard Areas and are the basis for flood insurance and floodplain management requirements. The FIRM's also show floodplain boundaries for the 500-year flood, which is the flood level given a 0.2 percent chance of occurrence in any given year. FEMA prepared Digit FIRM, know as a DIRM, for the County of Madera (which Chowchilla area is included) in September 2008.

Figure C-14 shows the above mentioned high risk flood hazard areas for the County of Madera as summarized for the Chowchilla area below:

- Zone A, AI, AH and AO, which is the one percent annual chance of flood hazard area. These zones are located in the western portions of the county on land surrounded by the Fresno River and to the east of the San Joaquin River. Other small areas in the southern half of the county are also classified into one of these hazard zones.

Large portions of Madera County are classified as minimal risk areas or as areas with possible but undetermined flood hazards.

Waterways/Channel Overflows in the City of Chowchilla

In order to maintain a safe level of storage capacity behind the dam and prevent an overtopping event, regulators from the Bureau of Reclamation routinely increase flows either during or, usually, following a large, intense or prolonged rainfall in the watershed or when snowmelts occur. When these releases happen, the City of Chowchilla's most probable vulnerability to flooding and flood damage is along the natural Ash Slough Channel when the sandy drainage channel become stressed or cannot hold the water releases breaking away from the banks during period of high flow. Ash Slough is a distributary channel of the Chowchilla River that enters the Bypass system. The design capacity of Ash Slough at its confluence with the Eastside Bypass is 5,000 cfs based on O&M manuals described in the draft State Plan of Flood Control.

Localized flooding form high-intensity rainfall events, of which there can be a few a year, typically manifests as flooded ponding along some surface streets. Road closures are seldom and water levels recede quickly leaving only minor clean up of silt and debris.

The drainage channel for Ash Slough is "natural." This natural channel with increased vegetation can become clogged or obstructed. Moderate to high intensity rainfall may cause overflows.

History

TABLE 5-5

**HISTORICAL OCCURRENCES/FLOODING/WATERWAYS/ CHANNEL
OVERFLOWS**

Location	Date	Type	Mag	Death	Injury	Crop Damage
Chowchilla	11/18/1950	Rain	Historical			X
Chowchilla	12/26/1955	Ran	Historical	Livestock?		X
Chowchilla	01/26/1956	Rain	Significant			X
Chowchilla	Winter/1995	Rain	Significant			
Chowchilla	Wiinter/2006	Rain	Significant			
Chowchilla	Winter 2007	Rain	Significant			

Prior to the construction of Berenda Dam/Eastman Reservoir in 1962 (later renamed Berenda Reservoir), and Buchanan Dam/Eastman Lake in 1975, the City of Chowchilla experienced significant flooding back to 1950 documented in the Interior Central California Climate Calendar (National Weather Service in Hanford, CA) and the Chowchilla Historical Society. In 1950 and 1955, significant flooding caused rivers to swell and homes and businesses were inundated with water. In 1950, the rains brought more than fifteen inches of water in some high areas and snowpack melts resulted in historic flooding shown in this aerial photo taken in 1950.



Berenda Dam/Eastman Reservoir was constructed in 1962 as shown in photo taken after it was constructed. When the Buchanan Dam/Eastman Lake project was completed Berenda Dam/Eastman Reservoir was changed to Berenda Reservoir. (Photo to the right)



In 1975, Buchanan Dam/Eastman Lake was constructed authorized by the Flood Control Act of 1962. The total reservoir capacity is 150,000 (acre-feet) and flood storage capacity is 45,000 (acre-feet). (Photo to the right)



As long as the storage capacity of Eastman Lake and Berenda Reservoir hold the annual snow melt and rains, Chowchilla will see minimal flooding from winter/spring weather events along Chowchilla River and Ash Slough.

In the 1990's, there were a few events that were beyond normal. During wet seasons, the City experienced potential levee breaks on both side banks of the Chowchilla River and Ash Slough which runs alongside and through the City of Chowchilla. These facilities reduce flood risk to Chowchilla and agricultural land however the potential for a flood hazard is possible.

Localized flooding occurs every year causing very little damage and requirement of clean up and removal of silt and debris.

Extent and Probability of Future Events in Waterways/Channel Overflow in the City of Chowchilla

Floods and flooding are gauged by their size (width and depth of the affected areas) and the probability of occurrence. The size and depth of the floodplain area is computed using mathematical models of precipitation, slope, runoff, soil type, and cross-section. Flood depths are calculated at intervals along a stream or channel corridor and then mapped and interpolated between sections. This results in the floodplain map.

The probability of occurrences is expressed in a percentage of the chance of a flood of a specific extent occurring in any given year. The most widely adopted design and regulatory standard for floods in the United States is the one percent annual chance flood, and this is the standard formally adopted by FEMA. The one percent annual flood is also commonly referred to as the "100-year flood," leading to the misconception that it should occur only once every 100 years. In fact, a 100-year flood may occur in any year regardless of the time that has passed since the last one.

It is the probability that smaller floods occur more often than larger floods which compels the percentage.

Flood Probability Terms

<i>Flood Occurrence Intervals</i>	<i>Percent Chance of Occurrence Annually</i>
<i>10 years</i>	<i>10%</i>
<i>50 years</i>	<i>2 %</i>
<i>100 years</i>	<i>1.0%</i>
<i>500 years</i>	<i>0.2%</i>

About 10% of the City of Chowchilla is in the 100-year floodplains based on available data provided by the State Department of Water Resources for Madera County Area and FEMA effective floodplains. Most of the areas in the floodplains are in the areas adjacent to the Chowchilla River and Ash Slough (east to west).

Present and Future Mitigation Efforts for the Waterways/Channel Overflows in the City of Chowchilla

Localized flooding from high-intensity rainfall events, of which there are few each year, typically manifests as flooded ponding along some surface streets. During these times some lower land residential homes risk flood waters entering their home. Road closures are rare and water levels recede quickly leaving only minor clean up of silt and debris. The City ensures that new development does not encroach on the designated floodplain.

The City of Chowchilla offer sandbags and sand to the public during high rainfalls. The City also enforces building codes, the General Plan, and Zoning Ordinances which prevent or minimize damage to new residential and commercial structures from flooding. The City routinely inspects and maintains storm water inlets and outflows for debris and obstructions, sand and gravel build up, and structural damage and vandalism.

The City continues to review preparedness for emergency response actions city and county-wide and conducts annual emergency operation center drills to ensure efficiency of City staff and coordination of resources and information.

The City is working on updating the Storm Drain Master Plan to identify key projects needed to minimize flooding and their costs, identify regional detention policies and locations to minimize the impact of future development, and develop costs and possible funding strategies for the identified capital projects.

The City of Chowchilla successfully completed a FEMA/CalEMA Grant (FEMA 12-67-447-008 in 2009) to remove a massive Arundo Donax (Bamboo) weed from Ash Slough banks within the City limits of Chowchilla. The City is conducting a five-year maintenance plan to spray the regrowth. Chowchilla partnered with the County of Madera Department of Agriculture to continue the efforts to achieve 100% eradication of the non-native highly invasive weed (Arundo Donax).

Vulnerability of Waterways/Channel Overflows in the City of Chowchilla

The City of Chowchilla's most probable vulnerability to flooding and flood damage is along the natural Ash Slough Channel. Natural growth along this corridor, combined with a 100-year event in the watershed (Buchanan Dam) above a given location, would most likely cause localized flooding. A flooding scenario was run whereby Ash Slough running at peak became obstructed and banks were breached. This flood scenario covered approximately 10% of Chowchilla which is in the 100-year floodplain.

Mitigation efforts for Waterways/Channel Overflows in the City of Chowchilla

The City will strive to reduce deaths, injuries, structural damage and losses from floods as stated in Community Goals and Objectives (Section 8.6 of this plan).

To summarize the Community Goals:

- Enforce the Building Codes, the General Plan, and Zoning Ordinances of the City of Chowchilla, which will prevent or minimize damage to residential and commercial structures from flooding.
- Ensure that new development does not encroach on the designated floodplain.
- Reduce the possibility of localized flooding – Routinely inspect and maintain storm water inlets and outfalls for debris and obstructions, sand and gravel build-up, and structural damage or vandalism.
- Alleviate pre-existing flooding conditions that are a result of past practices and regulations, or lack of regulations. Update Storm Drain Master Plan, identify key projects needed to minimize flooding and their costs, identify regional detention policies and locations to minimize the impact of future development, and develop costs and possible funding strategies for the identified capital projects.

5.4.2.3 FOG

Nature

According to Wikipedia, the definition of fog is: Fog is a cloud bank that is in contact with the ground. Fog is usually the only clouds that touch the ground and it only differs slightly from other clouds in that it touches the surface of the earth. The same cloud that is not fog on lower ground may be fog where it contacts higher ground such as hilltops or mountain ridges. Fog is distinct from mist only in its density. Fog is defined as a cloud which reduces visibility to less than 1 kilometer, whereas mist is that which reduces visibility to more than two kilometers.

In California's Central Valley, a type of fog known as tule fog is common. Tule fog is defined by the National Weather Service (NWS) as "radiation fog in the Central Valley of California. It forms during the night and morning hours in late fall and early winter months following the first significant rainfall." Tule fog tends to form at night during California's rainy season, roughly between November 1 and March 31. The fog is formed when cold air from the Sierra Nevada Mountains flows into the Central Valley at night and is unable to escape the valley due to the Coastal Ranges to the west. High pressure air from above the mountaintops presses down on the colder, denser air, resulting in the fog.

The NWS also notes that tule fog is a leading cause of weather related-casualties in California. The fog can last for days or weeks and is dispersed by turbulent air. Visibility under tule fog can be reduced to zero. Tule fog may also cause a light drizzle; in cold months this drizzle might freeze, causing conditions to become even more dangerous on valley roadways.

History

Tule fog is known to occur throughout California's Central Valley and regularly occurs in the western portion of Madera County during the winter months.

According to data from the California Highway Patrol, 68 fog-related collisions occurred on Highway 99 in Madera County between 1997-2008, resulting in three casualties and three persons injured. (California Highway Patrol, 2008)

Location

The areas most susceptible to tule fog in the County of Madera and City of Chowchilla are the low elevation areas in the western portion of the state, specifically areas that are at 200 meters (656 feet) of elevation or lower, since tule fog only occurs in the Central Valley. Figure C-5 shows portions of the County of Madera where City of Chowchilla is located and the surrounding region. Chowchilla City is divided by two highways - Highway 99 and Highway 233.

Extent and Probability of Future Events

The City of Chowchilla is highly likely to experience tule fog which can reduce visibility up to ¼-mile. Tule fog is likely to occur annually during the winter months in low-lying regions of the County of Madera, including the City of Chowchilla.

Vulnerability to Fog

The City of Chowchilla is vulnerable to potential accidents from seasonal tule fog reducing visibility on streets, roads and SR 233/Robertson Boulevard.

5.4.2.4 EXTREME HEAT

According to FEMA, "Heat kills by pushing the human body beyond its limits. In extreme heat and high humidity, evaporation is slowed and the body must work extra hard to maintain a normal temperature."

Most heat disorders occur because the victim has been overexposed to heat or has over-exercised for his or her age and physical condition. Older adults, young children, and those who are sick or overweight are more likely to succumb to extreme heat.

Conditions that can induce heat-related illnesses include stagnant atmospheric conditions and poor air quality. Consequently, people living in urban areas may be at greater risk from the effects of a prolonged heat wave than those living in rural areas. Also, asphalt and concrete store

heat longer and gradually release heat at night, which can produce higher nighttime temperatures known as the "urban heat island effect."

Extreme Heat events may occur during the summer months of July and August.

Nature

According to the National Weather Service, extreme heat occurs when the temperature reaches high levels or when the combination of heat and humidity causes the air to become oppressive and stifling. Generally, extreme heat is considered to be 10 degrees Fahrenheit (F) above normal temperature over an extended period of time. However, extreme heat can manifest itself in several ways:

- A spell of sweltering humidity that reaches levels commonly associated with moist tropical regions. Stress on the body can be exacerbated when atmospheric conditions cause pollutants to be trapped near the ground.
- An excessively dry condition in which strong winds and blowing dust can worsen the situation.
- A rise in the heat index - the body's perception of the "apparent" temperature based on both the air's real temperature and the amount of moisture present in the air. Humidity and mugginess make the temperature seem higher than it actually is. In high humidity, an 85-degree F day may be perceived as having reached 95 degrees F.

During heat or extreme heat, the local National Weather Service office can issue heat-related messages as conditions warrant, including:

- Excessive Heat Outlook: When the potential exists for an excessive heat event in the next 3 to 7 days. This message provides an indication of areas where people and animals may need to take precautions against the heat.
- Excessive Heat Watch: When the conditions are favorable for an excessive heat event in the next 12-48 hours. The term 'watch' is used when the risk of a heat wave has increased, but its occurrence and timing is still uncertain.
- Excessive Heat Warning/Advisory: When an excessive heat event is expected in the next 36 hours. These warnings are issued when an excessive heat event is occurring, is imminent, or has a very high probability of occurrence and is issued when a heat index of at least 105 degrees F for more than 3 hours per day for 2 consecutive days is expected, or for a heat index of more than 115 degrees F for any period of time. These warnings are used for conditions posing a threat to life and property.

History

The highest recorded approximate temperature in the City of Chowchilla, CA is 113-116 degrees F, recorded in 1960 and respectfully in 2006 (during July 16 through July 26, 2006) during the record-breaking heat wave which affected much of the State of California. In other

months (June to September), high temperatures have reached 110 degrees F (according to the National Weather Service).

One of the most debilitating aspects of the July 2006 heat wave was its duration. At the California State University Sacramento observation station, the temperature reached 100 degrees F or greater for eleven consecutive days. Central Valley cities recorded temperatures that reached 100 degrees F or greater for twelve consecutive days which surpassed the old record of ten days set back in 1960.

As expected, with the record-breaking heat wave affecting California during July 2006, average maximum and average minimum temperatures for the entire month exhibited above normal conditions. And, as expected, the number of days with temperatures exceeding 90 degrees F and 100 degrees F during July 2006, varied by location with the greatest total over inland valleys and deserts as recorded at the weather station in Madera: 30 days over 90 degrees F, 23 days over 95 degrees F, and 15 days over 100 degrees F. Chowchilla is normally the same temperature as Madera varying 1-2 degrees on occasion. (Analysis & Summary Report by HAS Meteorologist, California Nevada River Forecast Center, Assisted by Research Climatologist, Western Regional Climate Center)

Location

When an excessive heat event occurs, it likely affects the low-lying portions of Madera County and the City of Chowchilla.

Extent and Probability of Future Events

The primary feature noted in most heat wave events is the development of strong high pressure aloft, generating large scale descending air and compressional heating.

In the City of Chowchilla, heat or extreme heat is generated in the summer months. Chowchilla can expect to experience temperatures equal to or greater than 90 degrees F about 106 days every year, generally between April and October. The hottest months are July and August; these months average 30 and 29 days per month, respectively, with temperatures equal to or greater than 90 degrees F.

Vulnerability to Extreme Heat

Chowchilla is vulnerable to extreme heat during heat wave events generated in the summer months.

Mitigation Efforts

The City has designated a Cooling Facility Monday through Friday during a regular work week from 8:30 a.m. to 2:00 p.m. to assist with the severe heat wave for targeted groups such as the

elderly, low-income, or special needs populations per FEMA. The City will assess each situation with the public on a case-by-case basis to determine if the cooling facility's hours should be extended if the need arises. The City will continue to provide public awareness of the risks during extreme heat events.

5.4.2.5 SEVERE WIND

Nature

Winds are horizontal flows of air that blow from areas of high pressure to areas of low pressure. Wind strength depends on the difference between the high and low pressure systems and the distance between them. A steep pressure gradient results from a large pressure difference or short distance between these systems and causes high winds to prevail. High winds are defined as those that last longer than one hour at greater than 39 miles per hour (mph) or for any length of time at greater than 57 mph.

History

In the City of Chowchilla high winds occur in the winter, generally from November through March, although high winds may also occur in other months. The NCDC has recorded eight thunderstorms and high wind events in the County of Madera (including Chowchilla) since 1957. The highest recorded wind speed was 63 knots, which is roughly equal to 72.5 miles per hour (mph); this storm was recorded in February 1998. Two storms recorded wind speeds of 50 knots, which is equal to 57.5 mph (NCDC, 2009a).

Location

The City of Chowchilla area is subject to strong winds associated with powerful winter cold fronts.

Recent NWS data (December 2008-October 2009) from the Hanford Forecast Office shows periods of peak gust speeds ranging from 29 mph to 47 mph (July – October 2009) for this surrounding area.

Extent of Probability of Future Events

High winds above 50 mph are very likely to occur throughout the county area including Chowchilla, but more likely to occur in the eastern portions of the county. Based on previous events, Chowchilla can expect to experience at least one winter windstorm annually and will likely experience numerous events per winter.

Vulnerability to Severe Wind

Chowchilla is vulnerable to high winds above 50 mph affecting streetscapes, landscapes, building structures and residents. (See Figure C-6 - Peak wind gusts greater than 50 mph)

5.4.2.6 TORNADO

According to FEMA, “Tornadoes are nature’s most violent storms. Spawned from powerful thunderstorms, tornadoes can cause fatalities and devastate a neighborhood in seconds. A tornado appears as a rotating, funnel-shaped cloud that extends from a thunderstorm to the ground with whirling winds that can reach 300 miles per hour. Damage paths can be in excess of one mile wide and 50 miles long. Every state is at some risk from this hazard.” Most of the damage is a result of the high wind velocity and wind-blown debris. Tornadoes can strike quickly with little to no warning.

According to NOAA - Since March of 1975, a total of 25 tornadoes have been documented in the central and southern San Joaquin Valley. Of these, 28 were likely classified as F0 on the Fujita scale, while the other seven were classified as F1 (F0 - less than weak, F1 - weak, F2 - medium). Tornadoes were reported in 1976, 1977, 1979, 1981, 1983, 1984, 1985, 1988, 1989, 1990, 1992, 1994, and 1998. February and March had the highest number of tornadoes.

History

On January 14, 1995, a F1 (weak) tornado touched down in the City of Chowchilla. Its path was approximately 1 mile long damaging three city park sites (uprooted trees, roof damage, etc.), the roof/interior of an elementary school, and portions of buildings and homes in the community.

Impacts to vulnerable locations involved private property structures, businesses, uprooted trees, government services, equipment disruptions including but not limited to facility damage, debris, and power outages resulting in evacuation of people in areas impacted in our community. During this hazard event there was no loss of life and this event was classified as a weak tornado, but our community sustained considerable property damage causing economic impacts to community members.

TABLE 5-6 HISTORICAL OCCURRENCES/TORNADOES

Location	Date	Time	Type	Magnitude	Death	Injury	Property Damage	Crop damage
Chowchilla	3/20/1991		Tornado	F0	0	0	0	0
Chowchilla	01/14/1995	9:00am	Tornado	F1 (weak)	0	0	Yes	Yes
Chowchilla	03/24/1998		Tornado	F0	0	0	0	0
Chowchilla	03/28/2008		Tornado	F0	0	0	Yes	0

During the 1995 F-1 tornado, the City spent thousands of dollars in debris removal, road system repairs and public building repairs. The Chowchilla School District, residential structures, and businesses also sustained damages. The City received FEMA funds to assist in the debris removal, response, and repairs to damage structures. Since this hazardous event we continue to review and update the city preparedness for emergency response actions (city and county-wide) and conduct annual emergency operation center drills to ensure efficiency and coordination of resources, information, and personnel.

Location and Extent and Probability of Future Events

Normally, Chowchilla will experience severe wind events annually, however experiencing a weak tornado has caused the city to be more proactive in identifying city facilities that may need seismic retrofit to sustain future events.

The City has also received FEMA funding to conduct a seismic retrofit of the old City Hall government structure which is currently being occupied by the Chowchilla District Chamber of Commerce and Madera County Social Services.

Vulnerability to a Tornado Hazard Event

Chowchilla would be vulnerable to a tornado hazard event. See Figure C-7 - Historical Tornadoes, 1958-2009.

5.4.2.7 SEVERE WINTER STORM

Nature

According to FEMA, “Heavy snowfall and extreme cold can immobilize an entire region. Even areas that normally experience mild winters can be hit with a major snowstorm or extreme cold. Winter storms can result in flooding, storm surge, closed highways, blocked roads, downed power lines and hypothermia.”

The climate in California’s Central Valley is hot Mediterranean, in which summers are hot and dry and winters are cool and damp. Mid-autumn to mid-spring will experience the rainy season. During these months, winter storms may occur.

Occasionally the state’s circulation pattern permits a series of storm centers to move into California from the southwest. This type of storm pattern is responsible for occasional heavy rains that may cause serious winter flooding.

In addition to the high winds and flooding, which are described above, winter storms may bring hail, heavy rains, and/or lightning.

History

Reviewing the results from the NCDC database reveals that eighteen storms causing hail have occurred in the County of Madera (where Chowchilla is located) since 1957, causing up to \$50,000 in property damage and up to \$7.8 million in crop damage (NCDC, 2009a). Storms causing hail have occurred about every 2-3 years since 1986 but sometimes occur more frequently. In years past, multiple storms have occurred between November-May. A recorded lightning event was recorded in Madera County.

TABLE 5-7 HISTORICAL OCCURRENCES/WINTER STORMS/EXTREME COLD

Location	Date	Type	Magnitude	Deaths	Injury	Property Damage	Crop Damage
Chowchilla	12/26/1955	Storm	Significant	0	0	0	X
Chowchilla	01/26/1956	Storm	Significant	0	0	0	X
Chowchilla	03/03/2006	Storm		0	0	0	
Chowchilla	12/12/1990- 01/02/1991	Severe Cold	Significant	0	0	0	X

TABLE 5-8 HISTORICAL OCCURRENCES/THUNDERSTORMS

Location	Date	Type	Magnitude	Death	Injury	Property Damage	Crop Damage
Chowchilla	03/05/1988	Winds	Significant	0	0	Aircraft/Airport structures	0
Chowchilla	02/14/1998	Winds	Strong	0	0	0	0

Location

Many events in the NCDC database are listed as “countywide” events and the entire county including the City of Chowchilla is susceptible to winter storms. However, only the higher elevation areas will experience high levels of snow and high winds while the lower elevation areas will experience heavy rains.

Chowchilla area and Madera County have experienced the effects of winter storms and extreme cold resulting in flooding in low lying areas, road blocks/closures (countywide & Chowchilla), storm surges, downed power lines and hypothermia/extreme cold. The City also identified strong winds and severe cold (freezes) and fog as most likely severe winter storms.

Extent and Probability of Future Events

Winter storms remain highly likely due to the City of Chowchilla’s location (Madera County) in California’s inland Central Valley. In these events, a storm can cause up to 1.5 inches of hail, up to an inch of rain in an hour, and winds up to 45 mph.

Vulnerability of Winter Storms and Extreme Cold

Chowchilla is likely to sustain rain, hail, and freezes during winter storms and extreme cold events in the winter months. It is rare for snowfall in the Chowchilla area (See Figure C-8 - average snowfall).

5.4.3 OTHER HAZARDS

5.4.3.1 DAM FAILURE/DAM OVERFLOWS

Nature

A dam failure is the structural collapse of a dam that releases the water stored in the reservoir behind a dam. A dam failure is usually the result of the age of the structure, inadequate spillway capacity, design failure, or structural damage caused by an earthquake, flood, or extreme rainfall.

The primary danger associated with a dam failure is the swift, unpredictable flooding of those people or structures immediately downstream of the dam. The sudden release of water has the potential to cause human and animal casualties, economic loss, and environmental damage. This type of disaster is dangerous because it can occur rapidly, providing little warning and evacuation time for people living downstream.

History

The City of Chowchilla would be affected by a structural failure of Buchanan Dam, located approximately 20 miles east of Chowchilla in Madera County. Buchanan Dam has a storage capacity of 150,000 acre feet of water. A failure of Buchanan Dam would release considerable floodwaters into the main channel of the Chowchilla River Basin to Berenda Reservoir which holds 1,780 acre feet. The drainage area is approximately 235 square miles and depending on the quantity released, the consequences could be catastrophic to Chowchilla. Hidden Dam (Hensley) is approximately 25-27 miles east of Chowchilla above Buchanan Dam and holds 90,000 acre feet. It is released into the Fresno River which could cause potential flooding countywide.

No dam failure events have been reported in or around the City of Chowchilla; the probability and potential occurrences are very low. Buchanan Dam and Berenda Reservoir are not part of the State Plan of Flood Control but the channel improvements downstream from Buchanan Dam on the Chowchilla River and tributaries are included in the SPFC.

No major dam failures have occurred in the City of Chowchilla or the County of Madera.

Extent and Probability of Future Events

Figure C-4 is a dam inundation map prepared for Buchanan, Hidden, Friant, and Pine Flat Dams. The dam inundation map shows the following:

- Failure of the Buchanan Dam would flood an area of 104 square miles that include the City of Chowchilla and a portion of Merced County.
- Failure of the Hidden Dam would flood the City and County of Madera.
- Failure of Friant Dam would flood an area of 736 square miles in Fresno, Madera and Merced Counties; the portion of Madera County that would flood is along the southern and western borders of the county.
- Failure of the Pine Flat Dam would cause the greatest area of flooding. This dam would flood an area of 1,818 square files extending from the dam location in Fresno County

south to the Central Valley in Kings County, and as far north as Stockton in San Joaquin County. However, only a small portion of western Madera County would be flooded in this case.

Thus, the dams with the potential to flood the largest area in Madera County due to potential dam failure are Buchanan and Hidden Dams located in the County of Madera. The dam with the most potential to flood the City of Chowchilla is Buchanan Dam.

As noted above, the collapse and structural failure of a dam may be caused by a severe winter storm, earthquake, design flaws, or internal erosion, known as piping. A dam failure may also be a result of the age of the structure or inadequate spillway capacity. As such, the probability of a future dam failure affecting the City of Chowchilla is unknown.

Vulnerability to Dam Failure

The City of Chowchilla area would be completely vulnerable to potential dam failure (Buchanan Dam).

5.4.3.2 WILDLAND FIRE

Nature

According to FEMA, “Each year, more than 4,000 Americans die and more than 25,000 are injured in fires, many of which could be prevented. Direct property loss due to fires is estimated at \$8.6 billion dollars annually.”

The threat of wildland fire for people living near wildland areas or using recreational facilities in wilderness areas is real. Dry conditions at various times of the year and in various parts of the United States greatly increase the potential for wildland fire events.

In areas where structures and other human development meet or intermingle with wildland or vegetative fuels (referred to as the “wildland urban interface”), wildfires can cause significant property damage and present extreme threats to public health and safety.

Wild fires are naturally occurring events in the Western U.S. and have been occurring for millennia. In fact, some ecological communities and plant species depend on wildfire. However, the practice of fire suppression often causes more intense fires to occur because the fuel load has increased greatly.

The following three factors contribute significantly to wildfire behavior and can be used to identify wildfire hazard areas:

- Topography: As the slope increases, the rate of wildfire spread increases. South-facing slopes are also subject to more solar radiation making them drier and thereby intensifying

wildfire behavior. Ridge points may mark the end of wildfire spread as fire spreads more slowly or may even be unable to spread downhill.

- **Fuel:** The type and condition of vegetation plays a significant role in the occurrence and spread of wildfires. Certain types of plants are more susceptible to burning or will burn with greater intensity and non-native plants may be more susceptible to burning than native species. Dense or overgrown vegetation increases the amount of combustible material available to fuel the fire (referred to as the “fuel load”). The ratio of living to dead plant matter is also important. The risk of fire increases significantly during periods of prolonged drought as the moisture content of both living and dead plant matter decreases, or when a disease or infestation has caused widespread damage. The fuel’s continuity, both horizontally and vertically, is also an important factor.
- **Weather:** The most variable factor affecting the behavior of wildfires is weather. Temperature, humidity, wind and lightning can affect chances for ignition and spread of fire. Extreme weather, such as high temperatures and low humidity, can lead to extreme wildfire activity.

Even small fires can threaten lives and community resources and destroy improved or existing properties. If not promptly controlled, wildfires may grow into an emergency or disaster situation. Wildfires can greatly affect the air quality of the surrounding areas.

History

Numerous wildfires have been recorded in the County of Madera (14 wildfires recorded, NCDC, 2009a). The majority of these recorded events involved property damage ranging up to \$4.1 million dollars.

Location

PRC 4201-4204 and Government Code 51175-89 directed CAL FIRE to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. The areas are divided into “local responsibility areas” and “state responsibility areas.” Local responsibility areas include incorporated cities, cultivated agricultural lands, and portions of the desert. Local responsibility area fire protection is typically provided by city fire departments, fire protection districts, counties, and by CAL FIRE under contract to local government. State responsibility area is a legal term defining the area where the state had financial responsibility for wildland fire protection. Incorporated cities and federal ownership are not included. The prevention and suppression of fires in all areas that are not state responsibility areas are primarily the responsibility of local and federal agencies.

The City of Chowchilla is located in the Central San Joaquin Valley which is mostly covered with grasses, brush, and trees making it prone to wildland urban fires. The climate in this area is generally referred to as “Mediterranean” described above under Severe Winter Events.

The City of Chowchilla has an effective “Weed Abatement Program.” Should an event occur, the entire populated residential and building structures where grass and brush are not removed would

be vulnerable during extreme heat conditions. Also vulnerable are properties, residential homes, businesses, structures, and city-owned buildings that are near Ash Slough Channel (dense vegetation along the banks) which is located along the city limits. Fires in these areas are typically man-made urban wildland fires. In the past, fires have threatened homes, businesses, and city-owned properties largely due to the dense vegetation of bamboo (*Arundo Donax*) which inhabits the banks of the slough. Chowchilla in years past had a number of wildland fires started along the Ash Slough banks in the massive bamboo (*Arundo Donax*) during the summer months as depicted in the photos below.



Extent and Probability of Future Events

Based on historical events, about two to three wildfires burn within Madera County each year on average, although none are recorded in the City of Chowchilla. However, wildland fires have occurred in Chowchilla along the Ash Slough banks that started in the massive bamboo (*Arundo Donax*).

Incidents within the past ten years that threatened residential structures locally as depicted in above photos allowed the city to receive a FEMA Grant to eradicate the *Arundo Donax* along the Ash Slough within the City limits. The City implemented the grant project in 2005 with completion in 2009. (Photos below show massive vegetation and the massive cleanup)



Since 2009, the City has implemented a Five (5)-Year Maintenance Program to apply foliar treatments to the regrowth of bamboo (*Arundo Donax*) in the project area. The City also partnered with Madera County Department of Agriculture to receive a WMA Grant for additional funds to conduct the maintenance efforts during the five-year program. This grant is a top priority project of the Sierra-San Joaquin Noxious Weed Alliance (WMA).



(Photo at right shows a bluish colorant in the approved herbicide spray used to treat re-growth.)

Since 2009, the number of fires has dropped dramatically. The City continues to educate the public about natural and man-made wildfire dangers and the prevention steps that can be taken.

Vulnerability of Wildland Fires

Chowchilla is not vulnerable to wildfires and has dramatically decreased the possibility of wildland urban fires along the banks of the Ash Slough Channel within the City limits largely due to a FEMA Hazard Mitigation Grant and maintenance efforts conducted by the City.

5.4.3.3 HAZARDOUS MATERIAL EVENT

Nature

According to FEMA, “Chemicals are found everywhere - they purify drinking water, increase crop production, and simplify household chores. But chemicals can also be hazardous to humans or the environment if used or released improperly. Hazards can occur during production, storage, transportation, use, or disposal. You and your community are at risk if a chemical is used unsafely or released in harmful amounts into the environment where you live, work, or play.”

“Hazardous materials in various forms can cause death, serious injury, long-lasting health effects, and damage to buildings, homes, and other property. Many products containing hazardous chemicals are used and stored in homes routinely. These products are also shipped daily on the nation's highways, railroads, waterways, and pipelines.”

“Chemical manufacturers are one source of hazardous materials, but there are many others, including service stations, hospitals, and hazardous materials waste sites.”

“Varying quantities of hazardous materials are manufactured, used, or stored at an estimated 4.5 million facilities in the United States--from major industrial plants to local dry cleaning establishments or gardening supply stores.”

“Hazardous materials come in the form of explosives, flammable and combustible substances, poisons, and radioactive materials. These substances are most often released as a result of transportation accidents or because of chemical accidents in plants.”

The toxicity of a specific substance is one important factor in deterring the risk it poses, but other factors can be just as important. Factors affecting the severity of an accidental release include:

- Toxicity
- Quantity
- Dispersal characteristics
- Location of release in relation to population and sensitive environmental areas
- Efficacy of response and recovery actions

Hazardous materials can be found almost everywhere. Paints, solvents, adhesives, gasoline, household cleaners, batteries, pesticides and herbicides, and even medicines are all potential sources of hazardous materials.

This plan does not focus on the hazards contained in everyday products, but rather on the hazards associated with potential releases of hazardous substances from transportation corridors and fixed facilities within the City.

Hazardous materials are generally classified by their primary health effects on humans. Some common types include the following:

- Anesthetics and narcotics which depress the central nervous system.
- Asphyxiants are substances that interfere with normal breathing and cause suffocation.
- Explosives are substances that pose a risk of exploding; fires and chemical effects may also be a danger.
- Flammable materials are substances that catch fire easily.
- Irritants cause burns or irritation to body tissues such as eyes, nose, throat, lungs, or skin.

5.4.3.3.1 *MOBILE INCIDENT*

Nature

Mobile incidents include those incidents that occur on the roadway as well as on the railway. Mobile incident-related releases are dangerous because they can occur anywhere including close to human populations, assets and utilities, or environmentally sensitive areas. Mobile incident-related releases can also be more difficult to mitigate because of the great area over which any given incident might occur and the potential distance of the incident site from response resources.

History

The National Response Center's internet-based query system of Non-privacy Act data shows that since 1998, eighteen roadway incidents were reported. Causes included equipment failure,

operator error, and transportation accidents. Half of these incidents occurred on or near Highway 99. Most of these events resulted in release of oil although each of the following materials was released previously: zinc sulfate, washing solvent, insecticide, and fertilizer. Additionally, during the same reporting period, nineteen railroad incidents were reported. In all cases except one, the cause was unknown or from other causes.

Table 5-9 Recent Mobile Incidents near Chowchilla

Year	Location	Incident Cause	Material
1995	SR Hwy 99 northbound, south of Ave 24	Unknown	Gasoline (Auto) unleaded
2004	SR Hwy southbound at Chowchilla off Ramp	Transport accident	Non-hazardous fertilizer
2004	(SR 233) Robertson Blvd. & SR Hwy 99	Equipment failure	Oil-Diesel

Location

In the City of Chowchilla and outlying area, a mobile hazardous event is most likely to occur along Highways 99, 152 and SR233 and along railroad tracks. Trucks and rail cars that use these transportation corridors commonly carry a variety of hazardous materials including gasoline, other petroleum products, and other chemicals known to cause human health problems.

Extent and Probability of Future Events

The Hazard Mitigation Planning Team could not locate comprehensive information on the probability and magnitude of a hazardous material event along transportation corridors. However, based on previous occurrences, the City of Chowchilla can expect minor hazardous material events every one to five years due to a truck accident and every one to three years due to a railroad accident. (See Figure C-16 - Hazardous material transportation corridor for the County of Madera which includes the City of Chowchilla.)

Vulnerability to a Hazardous Material Mobile Incident

Chowchilla is vulnerable to potential mobile incidents since the City limits are located on both sides of Highway 99 and the Southern Pacific Railroad. SR 233/Robertson Boulevard runs through the City of Chowchilla between Highway 99 and Highway 152. Figure C-16 shows the transportation corridors for Madera County which includes Chowchilla.

5.4.3.3.2 *FIXED INCIDENT*

Nature

Unless exempted, fixed facilities that use, manufacture, or store hazardous materials in the United States fall under the regulatory requirements of the Emergency Planning and Community Right to Know Act, and must report to the EPA.

Hazardous materials that pose the greatest risk for causing catastrophic emergencies as identified by the EPA are classified as extremely hazardous materials.

Release of hazardous substances from facilities can be caused by human error, acts of terrorism, or natural phenomena. Earthquakes pose a particular risk because they can damage or destroy facilities containing hazardous substances.

History

Fixed incidents comprise the highest number of incidents reported since 1998. These events are caused by dumping, equipment failure, natural phenomena, operator error, and other or unknown causes. By far, the most common material involved in these incidents is oil followed by polychlorinated biphenyls (PCBs).

Location

Fixed incidents are likely to occur at locations of chemical storage, handling, processing, or usage. These facilities can be numerous and include refineries, chemical plants, storage facilities, manufacturing facilities, warehouses, wastewater treatment plants, swimming pools, dry cleaners, automotive sales/repair, and gas stations. Figure C-17 shows identified facilities in Madera County regulated by the EPA for toxic release activities as well as those that are large quantity hazardous waste generators. Two facilities are depicted on C-17 near Chowchilla. However, only one facility currently exists - Certainteed Corporation. The other facility was Simplot Company (SR 233) which has not been in business for a couple of years.

Other fixed facilities that can cause a hazardous event in the City of Chowchilla would be from ruptured gas, petroleum, high voltage or fiber optic distribution or transmission lines that are owned by PG&E, Southern Pacific Railroad or Sprint. Lines mentioned in this paragraph run mainly adjacent to the Southern Pacific Railroad in the city limits. There is approximately fifty feet separation of the PG&E 36" high pressure distribution pipe from the petroleum and fiber optic lines that run adjacent to the railroad along Chowchilla Boulevard. In past years, a land owner ruptured the PG&E gas line. The City of Chowchilla is first responder in case of a fixed incident event.

Extent and Probability of Future Events

Comprehensive information on the probability and magnitude of a hazardous material event at fixed locations is not available. The likelihood of a release is based on factors such as equipment maintenance, operator training, and the potential of natural phenomena to disrupt handling and storage of materials. However, based on previous occurrences, the City of Chowchilla can expect a minor hazardous material event one to two times per year as a result of equipment failure, operator error, dumping, or natural phenomena. Incidents due to other or unknown causes have occurred on average of three to four times per year.

Vulnerability of a Hazardous Material Fixed Incident

Currently no EPA regulated facilities for toxic release are within the city limits. If the City annexes land into city limits in the future, there is a possibility that Certainteed Corporation may

be annexed into city limits. The City is vulnerable to a hazardous material fixed incident if the high pressure gas distribution line, petroleum line, fiber optic or high voltage transmission lines rupture in case of an accident or terrorism in the locations surrounding the path they run within the city limits or outlying area in the County of Madera. Any of these incidents may require our first responders to assist.

Smaller facilities within the city limits such as storage facilities, wastewater treatment plants, swimming pools, dry cleaners, automotive sales/repair and gas stations can pose a future hazardous material fixed incident.

6.0 VULNERABILITY ANALYSIS (RISK ASSESSMENT)

A vulnerability analysis predicts the extent of exposure that may result from a hazardous event of a given intensity in a given area. The analysis provides quantitative data that may be used to identify and prioritize potential mitigation measures by allowing communities to focus attention on areas with the greatest risk of damage.

The CLHMPT reviewed each hazard by type and the types of structures affected by a potential hazardous event. Structures include asset structures, infrastructure, critical facilities, structures that house elderly or disabled, and areas where low-income populations reside.

This plan includes a general description of the hazard's impact to the vulnerable structures which are located within a geographical area susceptible to a particular hazard, keeping in mind that certain hazards may affect the entire community or planning area.

The CLHMPT assessed each hazard vulnerability analysis consisting of the following:

- Asset Inventory
- Methodology
- Data Limitations
- Exposure Analysis
- RL Properties
- Summary of Impacts

The CLHMPT took into account the following areas during the analysis:

- Inventories of existing structures in hazard areas
- Potential impacts to future land development, including areas that may be annexed in the future
- Buildings and future new buildings that house special high-risk populations (i.e. elderly, low-income, and disabled)
- Current and future mitigation actions that will reduce overall vulnerability

6.1 ASSET INVENTORY

Assets that were included in the Chowchilla Local Hazard Mitigation Plan's (CLHMP's) vulnerability analysis for the area of the City of Chowchilla are as follows:

- Population (City population and CCWF and VSPW Prisons' annexed population)

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RISK ASSESSMENT-VULNERABILITY ANALYSIS

- Residential buildings (none)
- Critical facilities
- Government centers and departments
- Community services and parks facilities
- Public safety facilities
- Public works facilities
- City maintained bridges
- Evacuation routes
- School buildings and district offices
- RL properties (none)

The total City-owned assets inventoried were approximately fifteen structures as listed in Section E, Table E-1. Community schools which house the young populations are included in Appendix F (Table F-2) provided by the Madera County Office of Education for the Madera County Local Hazard Mitigation Plan Draft. We also included the location of other structures that house special populations such as the elderly and low income populations in our community.

There are numerous other residential buildings located within the City of Chowchilla which are listed under the Madera County Local Hazard Mitigation Draft Plan:

- Madera Department of Education- Chowchilla Elementary Schools- (Stephens, Fuller, Reagan and Wilson Schools)
- Madera Department of Education -Chowchilla Union High School (805 Humboldt Ave.)
- Madera Department of Education-Discovery Secondary School (1117 Alameda Ave.)
- Chowchilla Branch-Madera County Library (300 Kings Ave.)
- Public Safety Fire Station #2 (112 Trinity Ave.)

Other Madera County buildings located within the City of Chowchilla which were not identified in the Madera County Local Hazard Mitigation Draft Plan include:

- Madera County Department of Social Services-Chowchilla Office (125 S. Second Street)
- Madera County First Five Chowchilla Family Resource Center (405 Trinity Ave.)
- Madera County Health Department (immunizations 1-2 times weekly, and Women, Infants & Children “W.I.C.” (daily) utilize office space at Madera County First Five Chowchilla Family Resource Center to service the Chowchilla population (including Chowchilla residents that live outside of city limits) (405 Trinity Ave.)

6.2 METHODOLOGY

The CLHMPT assessed the risks associated with the identified hazards. This simplified assessment of the potential effects of the hazards shows values at risk without consideration of probability or level of damage.

FEMA requires that an estimation of loss be conducted for the identified hazards. Loss estimation is conducted on the *identified significant hazards* (refer to Table 7-3 below). FEMA requires the “Vulnerability Analysis” include the number of potential structures impacted by these hazards and the total potential costs.

Repetitive loss properties are those for which two or more losses of at least \$1,000 each have been paid under the National Flood Insurance Program (NFIP) within any ten-year period since 1978. After October 1, 2008, all Local Mitigation Plans approved by FEMA must address repetitive loss structures in the risk assessment by describing the types (residential, commercial, institutional, etc.) and estimate the number of repetitive loss properties located in identified flood hazard areas.

Recent disasters are an indication of hazards threatening our community and the impacts they have and may potentially have in the future. The historical occurrences for each hazard were taken directly from the National Climatic Data Center’s website and list the hazard events that were recorded between 01/01/1950 to 11/30/2008.

Another indication of the hazards threatening Chowchilla is the frequency with which properties are repeatedly damaged by disaster events.

There are homes located along the northwest portion of the City that suffer damage from time to time during winter storms and high water flows. Homes in flood prone areas suffer time to time during torrential rain storms in which our systems fail to keep up with the storm water run-off. The City works with the Chowchilla Water District to divert excessive water releases through the Ash Slough to re-channel these high flows to the Berenda Slough where overflows are in a more rural area. Madera County is following Chowchilla’s lead in the eradication of bamboo (*Arundo Donax*) in both the Ash and Berenda Sloughs to alleviate this problem. Unfortunately they are having difficulty obtaining adequate funding to accomplish mitigation efforts in case of potential future flooding.

6.3 DATA LIMITATIONS

The vulnerability estimates provided by the City of Chowchilla and the County of Madera used the best data currently available and the methodologies applied result is an approximation of risk. However, uncertainties are inherent in any loss estimation methodology, arising in part from incomplete scientific knowledge concerning hazards and their effects on the environment as well as the use of approximations and simplifications that are necessary for a comprehensive analysis.

The City of Chowchilla as well as the County of Madera Hazard Mitigation Planning Committee could not assess quantitative vulnerability, the herein results are limited to exposure of people, buildings, and assets to the identified hazards. Such impacts may be addressed with future updates of the CLHMP.

6.4 EXPOSURE ANALYSIS

The recommendations for identifying structures and estimating potential losses, as stipulated in DMA 2000 and its implementing regulations, are described below:

DMA 2000 REQUIREMENTS: RISK ASSESSMENTS

Assessing Vulnerability: Addressing Repetitive Loss Properties (RL)

Requirement §201.6(c) (2)(ii): [The risk assessment] must address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged by floods.

Element

- Does the new updated or updated plan describe vulnerability in terms of the types and numbers of existing buildings, infrastructure, and critical facilities located in the identified hazard area?
- Does the new or updated plan describe vulnerability in terms of the types and numbers of future buildings, infrastructure, and critical facilities located in the identified hazard area?
-

Source: FEMA 2008

There are no structures in the City of Chowchilla that are considered RL properties located within the 100-year floodplain (refer to Appendix E, Table E-2).

6.5 SUMMARY OF IMPACTS

The requirements of an overview of the vulnerability analysis, as stipulated in DMA 2000 and its implementing regulations, are described below:

DMA 2000 REQUIREMENTS: RISK ASSESSMENT

Assessing Vulnerability: Overview

Requirement §201.6(C)(2)(ii): [The risk assessment shall include] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.

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RISK ASSESSMENT-VULNERABILITY ANALYSIS

Element

- Does the new updated or updated plan describe vulnerability in terms of the types and numbers of existing buildings, infrastructure, and critical facilities located in the identified hazard area?
- Does the new or updated plan describe vulnerability in terms of the types and numbers of future buildings, infrastructure, and critical facilities located in the identified hazard area?

Source: FEMA 2008

The summary of impacts (i.e., percentage at risk) for the population, residential buildings, and critical facilities at risk to each identified hazard are shown in City of Chowchilla - total population, residential buildings, and facility assets (Appendix E Table E-1), evacuation routes (Appendix E Table E-2).

Appendix E, Table E-3 is the Vulnerability Analysis (Risk Assessment) for each hazard identified in this plan per location or residential building asset listed for the City of Chowchilla.

Appendix F, Tables F-1 & F-2 show the community's facilities that house the special populations in Chowchilla such as the young, elderly including the disabled, and the low income populations. F-2 also shows the emergency facility (Chowchilla Fairgrounds) used in case of a local emergency.

Most of the facilities that are listed are older and are wood structures. Some of the newer structures are metal structures with cement foundations. The City has limited data to identify existing and future structures, but plans to identify a future comprehensive plan through state agencies or Regional Planning Commissions regarding anticipated growth that may affect the community's vulnerability to hazards.

7.0 MITIGATION STRATEGY

This section outlines the four-step process for preparing a mitigation strategy as shown below. In addition it addresses the new National Flood Insurance Program (NFIP) requirement.

- Local hazard mitigation goals
- Identification and analysis of mitigation actions
- Implementation of mitigation actions
- Identification and analysis of mitigation actions for NFIP Compliance

7.1 MITIGATION GOALS

The requirement for developing local hazard mitigation goals as stipulated in DMA 2000 and its implementing regulations are described below:

DMA 2000 REQUIREMENTS: MITIGATION STRATEGY

Local Hazard Mitigation Goals

Requirement §201.6(c)(3)(i) [The hazard mitigation strategy shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to identified hazards.

Element

Does the new or updated plan include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards?

Source: FEMA 2008

Mitigation goals are identified as general guidelines that explain what a community wants to achieve in terms of hazard and loss prevention. Goal statements are typically long-range, policy-oriented statements representing community-wide vision. As shown in Table 7-1 below, there are three goals developed for the CLHMP to address each hazard including seismic hazards (earthquake/ground shaking), and other hazards (wildfire, dam failure, levee break, and hazardous material events).

TABLE 7-1 CLHMP MITIGATION GOALS

Goal Number	Goal Description
1	Reduce the possibility of damages and losses due to seismic hazards, including ground shaking/earthquakes
2	Reduce the possibility of damages and losses due to weather-related hazards, including drought, flood, fog, severe heat, severe wind, tornado and winter storm
3	Reduce the possibility of damages and losses due to other hazards, including wildland fire, dam failures, channel/waterway and levee breaks (within city limits) and hazardous materials

7.2 IDENTIFICATION AND ANALYSIS OF MITIGATION ACTIONS

The requirement for the identification and analysis of mitigation actions, as stipulated in DMA 2000 and its implementing regulations, are described below:

DMA 2000 REQUIREMENTS: MITIGATION STRATEGY

Identification and Analysis of Mitigation Actions

Requirement §201.6(c)(3)(ii): The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

Element

- Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each hazard?
- Do the identified actions and projects address reducing the effects of hazards on *new* buildings and infrastructure?
- Do the identified actions and projects address reducing the effects of hazards on *existing* buildings and infrastructure?
- Does the mitigation strategy identify actions related to the participation in and continued compliance with the NFIP?

Source: FEMA 2008

Mitigation actions are activities, measures, or projects that help achieve the goals of a mitigation plan. Mitigation actions are usually grouped into six broad categories: prevention, property protection, public education and awareness, natural resource protection, emergency services, and structural projects.

Potential mitigation actions were developed by members of the CLHMPT in participation and coordination with the Madera County Planning Committee to utilize the same county-wide goals in the City of Chowchilla area, using the following criteria:

- Eligible project criteria based on the 2009 HMA Unified Guidance
- 2005-2008 history of applicable PDM-funded projects
- FEMA's Mitigation Success Stories (best practices) (<http://www.fema.gov/mitigationbp/>)
- Jurisdiction-specific (City of Chowchilla) vulnerability analysis.

As shown in Table 7-2 for each potential mitigation action, the following information is listed: Mitigation action description, mitigation action category, hazard(s) addressed, type of development affected by mitigation action, and potential facilities to be mitigated.

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MITIGATION STRATEGY

Table 7-2 POTENTIAL MITIGATION ACTIONS

No.	Description	Mitigation Category	Hazard Addressed	New or Existing Construction
1	Create A GIS-based pre-application review for new construction and major remodels in hazard areas	Property Protection	All	New
2	Integrate the 2010 LHMP, hazard analysis and mitigation strategy sections into the City's General Plan's element update process including FEMA discovery activities and local stakeholders	Property Protection	All	New/Existing
3	Seismically retrofit or replace City maintained ramps and bridge that are categorized as structurally deficient by Caltrans and necessary for first responders to use during an emergency	Property Protection	Weather-Related Hazards (flood)	Existing identified by Caltrans as structurally deficient
4	Work with FEMA Region IX to address any floodplain management issues that may have arisen/arise from the City or Countywide DFIRM, Community Assessment visits and/or DWR.	All	Weather-Related Hazards (flood)	New/Existing properties within City of Chowchilla
5	Develop a drought contingency plan to provide an effective and systematic means of assessing drought conditions, develop mitigation actions and programs to reduce risk in advance of drought, and develop response options that minimize hardships during drought.	Prevention, Property Protection	Weather-Related Hazards (drought)	New/Existing
6	Manage vegetation in areas within and adjacent to right-of-ways and in close proximity to critical facilities in order to reduce the risk of tree failure and property damage. Avoid creation of wind acceleration corridors within vegetated areas.	Prevention, Property Protection, Natural Resource Protection	Weather-Related Hazards (severe wind)	Existing-critical facilities (41 days plus of peak wind gusts \geq 50 MPH)
7	Consideration of local programs options, such as annual tree chipping and tree pick-up day that encourages residents living in high wind prone hazard areas to manage trees and shrubs at risk of falling on overhead power lines.	Property Protection	Weather-Related Hazards (severe wind)	Existing-critical facilities (41 days plus of peak wind gusts \geq 50 MPH)
8	Bolt down the roofs of critical facilities in order to prevent wind damage	Property Protection	Weather-Related Hazards (severe wind)	Existing-critical facilities (41 days plus of peak wind gusts \geq 50 MPH)
9	Implement a fuel reduction program, such as the collection and disposal of dead fuel, within open spaces and around critical facilities and residential structures located within the SRA or LRA high or very high wildland fire zones, such as weed abatement programs and 5-year follow-up maintenance efforts to spray and remove bamboo (Arundo Donax) from Ash Slough Channel banks within city limits.	Prevention, Property Protection, Natural Resource Protection	Other Hazards (wildland fire)	Existing-Open Spaces including critical facilities in SRA or LRA zones
10	Create a vegetation management program that provides vegetation management services to elderly, disabled, or low-income property owners who lack the resources to remove flammable vegetation around their homes	Property Protection	Other Hazards (wildland fire)	Existing
11	Work with the County, DWR, Chowchilla Water District, and stakeholders to determine dam inundation areas of unmapped dams within the county that may affect the City of Chowchilla	Property Protection	Other Hazards (levee break)	New/Existing
12	Public Awareness/Education/Outreach-Wildand fires, flooding, drought, severe ground shaking, earthquakes, etc.	All	All	New/Existing
13	Provide seismic retrofitting to existing water tanks, systems or new engineered water distribution systems serving both fire suppression and domestic water needs. Manage vegetation in areas to access routes to water tanks and distribution systems within SRA areas.	Property Protection	Weather Related (flood)	Existing

SECTION SEVEN
MITIGATION STRATEGY

Table 7-2 POTENTIAL MITIGATION ACTIONS (Continued)

No.	Description	Mitigation Category	Hazard Addressed	New or Existing Construction
14	Purchase land and create a drainage basin for identified areas in the City Plan area for large number of expected homes in future identified flood prone areas.	Property Protection	Weather-Related Hazards (flood)	New
15	Provide stormwater drainage improvements to reduce frequent flooding, such as City downtown stormwater drains, basins (Truman Pond), trunk lines, auxiliary pipes, and interconnections.	Property Protection	Weather-Related Hazards (flood)	Existing
16	Using the LHMP's data and in cooperation with local agencies, the County of Madera, and including other state/federal agencies and organizations, help identify, produce, and disseminate a series of resource pamphlets throughout the City of Chowchilla that emphasize mitigation measures, resources, and contacts			N/A
17	Continue to work with weather forecasting and public safety agencies to provide warning and protective information to schools, residents, travelers, and visitors about the severe valley fog conditions.	Prevention	Weather Related (fog)	N/A
18	Continue to monitor the manufacturing, storage, and transport of hazardous materials by working with environmental health and public safety agencies to identify effective mitigation actions or requirements that will help reduce the risk of incidents, including the spread of released materials and bio-chemicals (such as Drive Thru Flu Shot Clinics).	Prevention	Other Hazards (hazardous materials events)	Existing
19	Collect and review PG&E comprehensive inspection and monitoring programs including provided data to ensure the safety of natural gas transmission pipeline segments located in the City to identify potential third party like dig-ins from construction, potential corrosion, and ground movements. Work with other agencies for petroleum and fiber optic lines running through the City.	All	Weather Related Hazards and Other Hazardous Materials events	Existing

The above potential mitigation actions were identified through a method of establishing a priority of mitigation activities by type, funding source/timeframe and objectives addressed shown in the Mitigation Action Plan Worksheet – City of Chowchilla Table 7-3 below. The Mitigation Action Plan Worksheet below lists a number of actions identified in addition to above Table 7-2.

7.3 IMPLEMENTATION OF MITIGATION ACTIONS

The requirement for the evaluation and prioritization of mitigation actions, as stipulated in DMA 2000 and its implementing regulations, are described below:

DMA 2000 REQUIREMENTS: MITIGATION STRATEGY

Implementation of Mitigation Actions

Requirement §201.6(c)(3)(iii): The mitigation strategy shall include an action plan describing how actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

Element

- Does the new or updated mitigation strategy include how the actions are prioritized? (For example, is there a discussion of the process and criteria used?)
- Does the new or updated mitigation strategy address how the actions will be implemented and administered? (For example, does it identify the responsible department, existing and potential resources, and timeframe?)
- Does the new or updated prioritization process include an emphasis on the use of a cost-benefit review to maximize benefits?

Source: FEMA 2008

After a list of potential mitigation actions had been developed, the Planning Team evaluated and prioritized each of the potential mitigation actions to determine which mitigation action would be included in our local specific mitigation action plan. Criteria considered for this evaluation process include:

1. Current or potential support from the local jurisdiction
2. Local jurisdiction department or lead agency champion
3. Ability to be implemented during the 5-year life span of the LHMP
4. Ability to reduce expected future damages and losses (cost-benefit)
5. Mitigates a high-risk hazard

SECTION SEVEN
MITIGATION STRATEGY

TABLE 7.3 MITIGATION ACTION PLAN WORKSHEET-CITY OF CHOWCHILLA

Following are proposed projects/programs/actions to be undertaken by the City of Chowchilla in an effort to achieve the goals and objectives identified throughout the LHMP:

(Abbreviation for "Type" is as follows: "PA" is Preventative Activities, "PP" is Property Protection Activities, "NR" is Natural and Beneficial Function/Resource Preservation Activities, "ES" is Emergency Services Activities, "SP" is Structural Projects Activities, and "PI" is Public Information Activities; "GIS" is Geographic Information Systems Activities.)

Type	Activity	Lead Agency	Funding Source Timeframe	Objectives Addressed	Priority (1 highest, 3 lowest)
PA	City adopted, and enforces the Uniform Building & California Fire Codes	Building & Code Enforcement	General Fund Ongoing	Minimize threat from hazards; educate community members; minimize vulnerability to homes, businesses; economic stability; protect quality of life.	1
PA	Continue to provide coordination of City's storm water management regulations	Public Works	General Fund Ongoing	Minimize threat from hazards; no disruption of community infrastructure and services; educate community members; improve hazard loss reduction programs; minimize vulnerability of homes, businesses; economic stability; quality of life.	1
PA	Continue enforcement of zoning regulations, Subdivision and Land Development Regulations	Planning	General Fund Ongoing	Minimize threat from hazards; no disruption of community infrastructure and services; educate community members; improve hazard loss reduction programs; minimize vulnerability of homes, businesses; economic stability; disaster resistant region; quality of life.	1
PA	Continue providing information to citizens regarding non structural mitigation actions	Emergency Preparedness	General Fund Ongoing	Minimize treat from hazards; educate community members; improve hazard loss reduction programs; minimize vulnerability of homes, businesses; economic stability; disaster resistant region; quality of life	2
PP	Promote standards for existing homes to be retrofitted that exceed minimal codes	Building & Code Enforcement	General Fund Pending	Minimize threat from hazards; no disruption of community infrastructure and services; educate community members; improve hazard loss reduction programs; minimize vulnerability of homes, businesses; economic stability; disaster resistant region; quality of life.	2
GIS	Develop and maintain storm drainage inventory maps and database	Public Work/Engineering	General Fund Storm Water Fee Funding Funding Pending	Minimize threat from hazards; emergency operations; no disruption of community infrastructure and services; improve hazard loss reduction programs; minimize vulnerability to homes; businesses; economic stability; disaster resistant region; quality of life.	2
ES	Continue Terrorists Response Training	Emergency Preparedness	Grant Funding Funding Pending	Minimize threat from hazards; no disruption of community infrastructure and services; educate community members; improve hazard loss reduction programs; minimize vulnerability of homes, businesses; economic stability; quality of life.	1
ES	Evaluate existing City-owned facilities for hazard resistance and retrofit facilities if needed where feasible	Public Building/ Project Planning & Engineering	General Fund Grant Bond Funding 1-15 years	Minimize treat from hazards; no disruption of community infrastructure and services; educate community members; improve hazard loss reduction programs; minimize vulnerability of homes, businesses; economic stability; quality of life	1
ES	Sponsor training programs for medical providers on topics of interest such as decontamination procedures, and dealing with individuals with disabilities and older adults	Emergency Preparedness	General Fund Grant Funding Pending	Minimize threat from hazards; emergency operations; no disruption of community infrastructure and services; educate community members; quality of life.	2

**SECTION SEVEN
MITIGATION STRATEGY**

Type	Activity	Lead Agency	Funding Source Timeframe	Objectives Addressed	Priority (1 highest, 3 lowest)
ES	Continue coordinating the Anti-Terrorism Task Force of special trained police, fire and EMS personnel to respond to terrorist acts	Emergency Preparedness	Grant Funding Pending	Minimize threat from hazards; emergency operations; no disruption of community infrastructure and services; educate community members; quality of life.	1
ES	Continue coordinating the integration of disability/older adult services with special trained volunteers, police, fire and EMS personnel to respond to disabled citizens and older adults during and after a hazard disaster	Emergency Preparedness	Grant Funding Pending	Minimize threat from hazards; emergency operations; no disruption of community infrastructure and services; educate community members; quality of life.	1
ES	Continue to promote interest in the Community Emergency Response Training (CERT) Program regarding first responders, volunteers and disability and older adult service systems	Emergency Preparedness	Grant Funding Pending	Minimize threat from hazards; emergency operations; no disruption of community infrastructure and services; educate community members; quality of life.	1
PA	Continue the maintenance period for spray/removal of bamboo (arundo donax) for 5-year period per Ash Slough Bamboo Removal Project HMGP 1267-447-008	Public Works	General Fund Grant Funding 5 yr. maint. program	Minimize threat from hazards; emergency operations; no disruption of community infrastructure and services; improve hazard loss reduction programs; minimize vulnerability to homes; businesses; economic stability; disaster resistant region; quality of life.	2
PA	Continue right of way and drainage easement permitting considering emergency vehicle access and flood zone related issues in permitting decisions	Public Works	General Fund Pending	Minimize threat from hazards; emergency operations; no disruption of community infrastructure and services; improve hazard loss reduction programs; minimize vulnerability to homes; businesses; economic stability; disaster resistant region; quality of life.	1
PA	Continue road repair/construction program, considering needs during evacuation and soil liquefaction potential in prioritization decisions.	Public Works	Grant Funding	Minimize threat from hazards; emergency operations; no disruption of community infrastructure and services; educate community members; improved hazard loss reduction programs; minimize vulnerability of homes, businesses; economic stability; quality of life.	
PI	Continue providing speakers to civic groups regarding hazard related activities	Emergency Preparedness	General Fund Ongoing	Minimize threat from hazards; emergency operations; no disruption of community infrastructure and services; educate community members; minimize vulnerability of homes, businesses; economic stability; quality of life.	1
PI	Conduct outreach initiatives to the small business community to encourage businesses to prepare for hazard events	Emergency Preparedness	Grant Funding In process Ongoing	Minimize treat from hazards; no disruption of community infrastructure and services; educate community members; improve hazard loss reduction programs; minimize vulnerability of homes, businesses; economic stability; quality of life	2
PI	Continue programs aimed towards providing resources to local schools to enhance their ability to educate students regarding hazard events and hazard event preparation.	Emergency Preparedness	Grant Funding Pending Funding	Minimize threat from hazards; emergency operations; no disruption of community infrastructure and services; educate community members; minimize vulnerability of homes, businesses; economic stability; quality of life.	1
PI	Develop Functional Assessment Service Team (FAST) to appropriately shelter and respond to the needs of people with disabilities and older adults	Emergency Preparedness	Grant Funding Pending Funding	Minimize threat from hazards; emergency operations; no disruption of community infrastructure and services; improve hazard loss reduction programs; minimize vulnerability to homes; businesses; economic stability; disaster resistant region; quality of life.	1

Each proposed mitigation action plan will fall under one or more of the following mitigation technique classification types. These classifications include a wide array of activities that can be considered to achieve the goals and objectives of the CLHMP.

Preservative Activities (PA)

Preventative activities are those activities that are intended to reduce a community's vulnerability to future hazard events. The following is a list of potential preventative activities and measures:

- 1.1 Planning and Zoning
- 1.2 Building codes
- 1.3 Floodplain regulations
- 1.4 Water Quality regulations
- 1.5 Fire Prevention codes
- 1.6 Drainage system maintenance
- 1.7 Capital improvement programming

Property Protection (PP)

Property protection activities are intended to protect existing structures by retrofitting, relocating, or modifying the structure to withstand a hazard event. The following is a list of potential property protection measures:

- 2.1 Property acquisition
- 2.2 Property relocation
- 2.3 Building elevation
- 2.4 Critical facilities protection
- 2.5 Retrofitting vulnerable properties
- 2.6 Participation in an insurance program
- 2.7 Development of safe rooms

Natural Resources Protection (NR)

Natural resources protection activities reduce the effects of a hazard event on the natural resources within a region by preserving and/or restoring natural areas along with their mitigation functions. The following is a list of natural resource protection activities:

- 2.8 Floodplain protection
- 2.9 Wetland preservation and restoration
- 2.10 Erosion and sediment control
- 2.11 Fire resistant landscape
- 2.12 Tree protection/Landscaping ordinances
- 2.13 Wastewater permitting
- 2.14 Open space preservation

Structural Projects (SP)

Structural mitigation activities reduce the impacts of a hazard event by modifying the physical environment to withstand the particular hazard. The following is a list of structural mitigation activities:

- 2.15 Creation of reservoirs
- 2.16 Levees/dikes/floodwalls
- 2.17 Diversion canals/detention areas/retention areas
- 2.18 Infrastructure construction/modifications/repairs
- 2.19 Storm sewers
- 2.20 Dam construction
- 2.21 Channel modification/dredging

Emergency Services (ES)

Emergency service measures minimize the impact of a hazard by preparing these services to respond efficiently and rapidly during and after a hazard event. The following is a list of potential emergency services activities:

- 2.22 Warning Systems
- 2.23 Emergency Alert Systems (EAS)
- 2.24 Evacuation planning and management
- 2.25 Sandbagging for flood protection
- 2.26 Emergency shelter preparation
- 2.27 Debris removal plan

Public Information and Awareness (PI)

Public information and awareness activities to advise residents, potential buyers and visitors about hazards, potentially hazardous areas and mitigation techniques. The following list of potential public information and awareness activities:

- 2.28 Outreach projects
- 2.29 Speaker series/press conferences/demonstration events
- 2.30 Hazard and flood map information
- 2.31 Real estate disclosure
- 2.32 Library materials/preprinted materials
- 2.33 Hazard expositions
- 2.34 Early Warning drills/test systems (including population with special needs)

Activity – This section should include a brief description of the project or program that the City would like to undertake.

Responsible Agency “Lead Agency”- It is important for the City to determine which agency or person has the expertise and responsibility to undertake each of the mitigation action plans. This will make implementation of a mitigation action plan efficient and effective.

Possible Funding Sources – This category will list possible funding sources that could be utilized to undertake or complete each particular action plan. It is important for each participating jurisdiction to determine any possible funding source, if excess funds or grants were to become available that could be used to achieve each mitigation action plan. This determination does not represent a commitment of these funds for a mitigation activity but offers an example of how the activity could be funded.

Timeframe – The City should determine whether each project is a short-term or long-term project and if they are ‘Pending’, ‘Ongoing’, ‘In Progress’, ‘Dated’, ‘Funding Needed’ or ‘Grant’. This will be important in the determination of funding and other resources.

Objectives Addressed – Each proposed mitigation action plan should work to achieve one or more of the objectives in the CLHMP. The number of each objective that an action plan could work to achieve should be placed in this category.

Priority – The City should rank each mitigation action plan with a high (1), moderate (2), or low (3) priority ranking. This ranking will show which action plans are the highest priority for completion and, therefore, which activities should be given a priority for funding. This ranking can be reviewed and modified after hazard events and during the three-year plan review and five-year FEMA resubmit plan approval process of the CLHMP.

7.4 IDENTIFICATION AND ANALYSIS OF MITIGATION ACTIONS: NFIP COMPLIANCE

The requirements for the identification and analysis of mitigation actions: NFIP compliance, as stipulated in DMA 2000 and its implementing regulations are described below:

DMA 2000 REQUIREMENTS: MITIGATION STRATEGY

Identification and Analysis of Mitigation Actions: NFIP Compliance

Requirement §201.6(c)(3)(ii): [The mitigation strategy] must address the jurisdiction’s participation in the National Flood Insurance Program (NFIP), and continued compliance with NFIP requirements, as appropriate.

Element

- Does the new or updated plan describe the jurisdiction(s) participation in the NFIP?
- Does the mitigation strategy identify, analyze, and prioritize actions related to continued compliance with the NFIP?

Source: FEMA 2008

SECTION SEVEN
MITIGATION STRATEGY

The City of Chowchilla (incorporated city located within the County of Madera) does not participate in the National Flood Insurance Program. However, the City understands it would be eligible for HMGP funding if Madera County declares local emergencies as a prelude to a federally qualifying disaster declaration.

8.0 PLAN MAINTENANCE

This section describes a formal plan maintenance process to ensure that the 2010 LHMP remains an active and applicable document. The Hazard Mitigation Plan is a living document that reflects the City's ongoing hazard mitigation activities. The process of monitoring, evaluating, and updating the plan will be critical as to the effectiveness of hazard mitigation.

The City's Emergency Services Coordinator in the Chowchilla Police Department will be responsible for maintaining, evaluating, and updating the plan. The City's LHMP Team (CLHMPT) will play a crucial role in providing direction, input, and guidance. The maintenance process will include an explanation of how the City of Chowchilla and Planning Team intend to organize their efforts to ensure that improvements and revisions to the 2010 LHMP occur in a well-managed, efficient manner. The plan will be reviewed at least every three years and updated at least every five years.

The following processing steps are addressed in detail throughout this section:

- Monitoring, evaluating, and updating the LHMP
- Implementation through existing planning mechanisms
- Continued public awareness, involvement, and education on hazards

8.1 MONITORING, EVALUATING, AND UPDATING THE PLAN

The requirements for monitoring, evaluating, and updating the 2010 LHMP as stipulated in the DMA 2000 and its implementing regulations are described below:

DMA 2000 REQUIREMENTS: PLAN MAINTENANCE PROCESS

Monitoring, Evaluating and Updating the Plan

Requirement §201.6(c)(4)(i): [The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

Element

- Does the new or updated plan describe the method and schedule for monitoring the plan? (For example, does it identify the party responsible for monitoring and include a schedule for reports, site visits, phone calls, and meetings?)
- Does the new or updated plan describe the method and schedule for evaluating the plan? (For example, does it identify the party responsible for evaluating the plan and include the criteria used to evaluate the plan?)
- Does the new or updated plan describe the method and schedule for updating the plan within the five-year cycle?

Source: FEMA 2008.

Recommendation for plan revisions will be based on the following criteria:

- Changes in federal or state laws
- Accomplishments of Actions, Objectives and Goals
- Advances in knowledge or understanding of hazards
- Changes in development, progress in local mitigation efforts
- Changes in priorities
- Additional hazard events, including federally declared disasters
- Changes in the City's risk to the identified and/or additional hazards
- Performance of mitigation projects during hazard events

Each review and update shall work to improve the effectiveness of the plan by incorporating more or updated data and research as it becomes available.

This plan is an ongoing process to avoid or mitigate disaster(s) in Chowchilla, California. The General Plan will reflect the commitment the City of Chowchilla has in making our community disaster-resistant.

Significant effort in developing the City's Disaster Preparedness and Safety Element of the General Plan will be addressed in other elements, including the Land Use, Environmental Management, Transportation and the Urban Design and Preservation Element.

The CHMP will be implemented by the delegation of assignment as designated in the Mitigation Action Plans for each jurisdiction. Each Mitigation Action Plan activity is assigned specific implementation measures and a "Response Agency." Each activity is also assigned a target completion date or "Timeframe." This date does not represent a required completion date; it represents the timeframe within which the jurisdiction would like to complete the activity if and when resources become available.

Three-Year Plan Review

During the three-year review, staff will consult with the participating agencies on the status of each Mitigation Action Plan activity and provide a status report to the Planning Team members. This report shall include an updated copy of each Mitigation Action Plan Worksheet, and evaluation of the effectiveness of each action plan activity and a recommendation for any required changes. It is the CLHMP Team's responsibility to determine whether or not the recommendations warrant modification to the plan. Amendments will be made to the plan as deemed necessary.

Plan Amendments

An amendment to the CHMP shall only be initiated by the Planning Team, either on their own initiative or upon the recommendation from another agency. After an amendment is initiated, staff shall contact all interested or affected parties and make them aware of the nature of the amendment. Members of the community are also encouraged to share input. Community

members are encouraged after an emergency or hazard event to give their input. These parties will be given thirty (30) days to comment on the amendment. At the end of this comment period, staff shall forward all comments to the Planning Committee members and participating jurisdictions shall be notified of each amendment that is passed by the Planning Committee.

Before and after the three-year plan review, staff will review and revise the plan and have it ready to resubmit for approval within five years in order to continue to be eligible for mitigation grant funding.

Five-Year Approval Period

The plan approval date begins the five-year approval period and sets the expiration date for the plan. The official approval date is indicated on the signed FEMA approval letter. As well as providing the approval date, it also indicates the expiration date of the plan. Plans must be reviewed, revised, and resubmitted for approval within five years in order to continue to be eligible for grant project funding (44 CFR §201.6(d)(3)).

If the plan is not adopted by a participating jurisdiction, that jurisdiction would not be eligible for project grants under the following hazard mitigation assistance programs: HMGP, PDM, FMA and SRI.

In Appendix D, Annual Review Questionnaire Worksheet (D-1) and Mitigation Project Status Report Worksheet are established and will be used during the annual review process.

8.2 IMPLEMENTATION THROUGH EXISTING PLANNING MECHANISMS

The requirement for implementation through existing planning mechanisms, as stipulated in the DMA 2000 and its implementing regulations are described below:

DMA 2000 REQUIREMENTS: PLAN MAINTENANCE PROCESS

Incorporation into Existing Planning Mechanisms

Requirement §201.6(c)(4)(ii): [The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

Element

- Does the new or updated plan identify other local planning mechanisms available for incorporating the requirements of the mitigation plan?
- Does the new or updated plan include a process by which the local government will incorporate the requirements in other plans, when appropriate?

Source: FEMA 2008

Once the Chowchilla Local Hazard Mitigation Plan is adopted, the Planning Team will ensure that the elements of the 2010 LHMP are incorporated into other existing planning mechanisms.

The adopted Local Hazard Mitigation Plan will be incorporated into all new and existing planning mechanisms. Such mechanisms are land use planning, capital improvements planning, building codes and fire codes, and to guide and regulate development. The Emergency Services Coordinator will ensure periodic reviews of the City's comprehensive plans and land use policies are conducted, analyze any plan amendments, and provide technical assistance to incorporate hazard mitigation strategies.

The Building Division is responsible for administering the building codes in the City. After adoption of the Hazard Mitigation Plan, they will continue to work with the State Building Code Office to ensure that the City adopts, and is enforcing, the minimum standards established in the New Building Code. Within two years the formal adoption of the Hazard Mitigation Plan and the mitigation strategy will be incorporated into existing planning mechanisms whenever feasible.

8.3 Continued Public Involvement

DMA 2000 REQUIREMENTS: PLAN MAINTENANCE PROCESS

Continued Public Involvement

Requirement §201.6(c)(4)(iii): [The plan shall include a] discussion on how the community will continue public participation in the plan maintenance process.

Element

- Does the new or updated plan explain how continued public participation will be obtained? (i.e., will there be public notices and ongoing mitigation plan committee meetings or annual review meetings with stakeholders?)

Source: FEMA 2008

The CLHMP will be reviewed annually encouraging community members to make suggestions at any time. The annual review will incorporate at least one public workshop to allow public involvement, input, and feedback about the plan. The CLHMPT will be responsible for publicizing the location of these copies at least thirty (30) days prior to the annual meeting to allow adequate time for public review and input. Public input will be included on the agenda of each annual meeting.

Copies of the plan will be kept at the Madera County Chowchilla Branch Library, the Chowchilla Fire Department, the Chowchilla Police Department, and on the City's website.

The City of Chowchilla Local Hazard Mitigation Planning Team will coordinate and integrate our LHMP update processes into the Madera County Local Multi-Jurisdictional Local Hazard Mitigation Plan.

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APPENDIX A – FEMA CROSSWALK

(TO BE INSERTED IN FINAL PLAN]

APPENDIX B – ADOPTION RESOLUTION

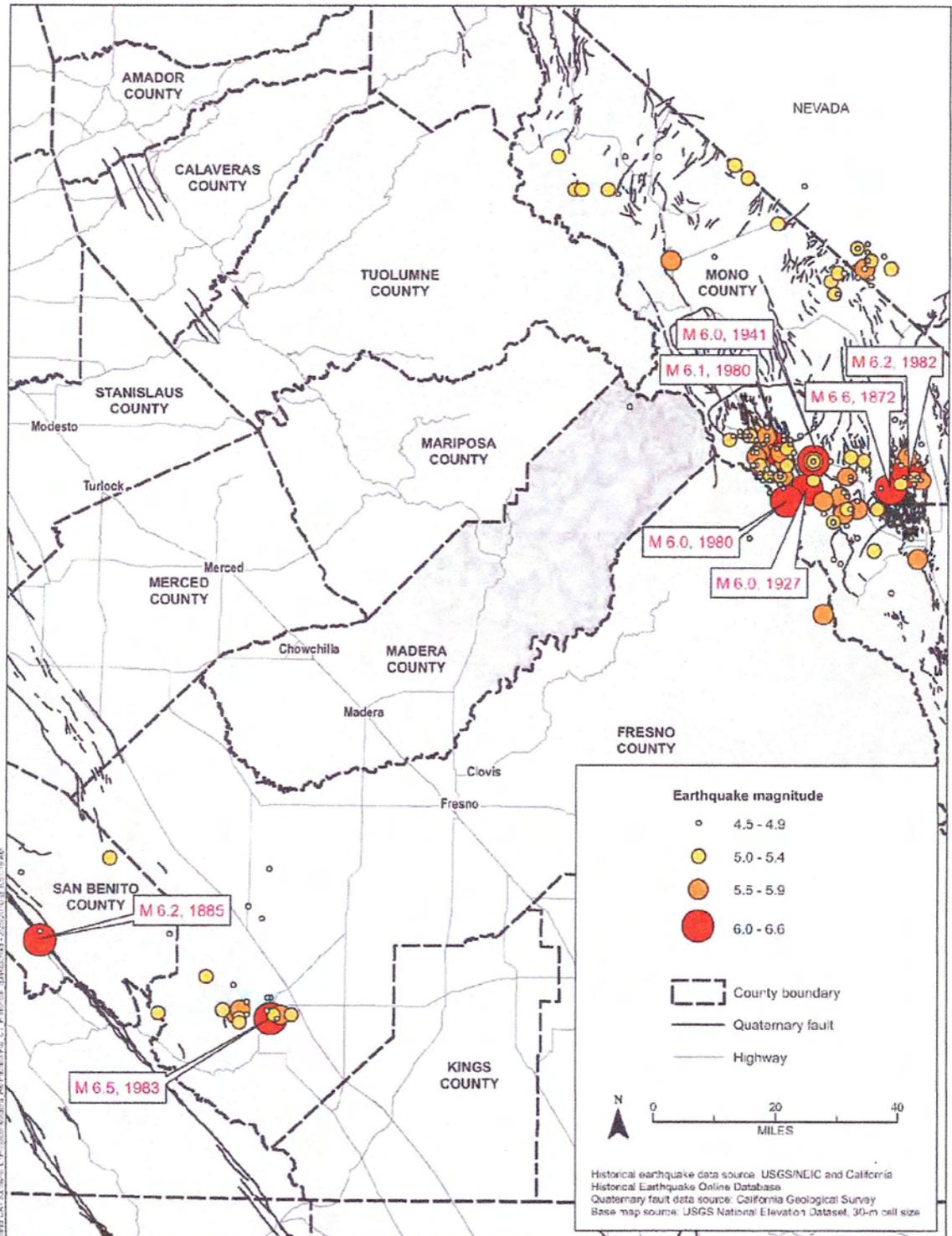
(TO BE INSERTED IN FINAL PLAN]

APPENDIX C

Appendix C– Madera County Hazard Figures

- Figure C-1 Regional historic earthquakes, magnitude ≥ 4.5 , 1972-2009**
- Figure C-2 Regional faults**
- Figure C-3 Probabilistic seismic hazard**
- Figure C-4 Special flood hazard area**
- Figure C-5 Potential fog area, elevation ≤ 656 feet**
- Figure C-6 Peak wind gusts, ≥ 50 miles per hour**
- Figure C-7 Historical tornadoes, 1958-2009**
- Figure C-8 Average snowfall**
- Figure C-9 Historical wildfire perimeters, 1950-2008**
- Figure C-10 Historical wildfires, $\geq 1,000$ acres, 1950-2008**
- Figure C-11 Fire hazard severity zones, local responsibility area**
- Figure C-12 Fire hazard severity zones, state responsibility area**
- Figure C-13 Dam locations, $\geq 5,000$ acre-feet**
- Figure C-14 Dam failure inundation areas for state-jurisdictional and federal dams**
- Figure C-15 Levee flood protection zones**
- Figure C-16 Hazardous material transportation corridors**
- Figure C-17 Hazardous material fixed facilities**

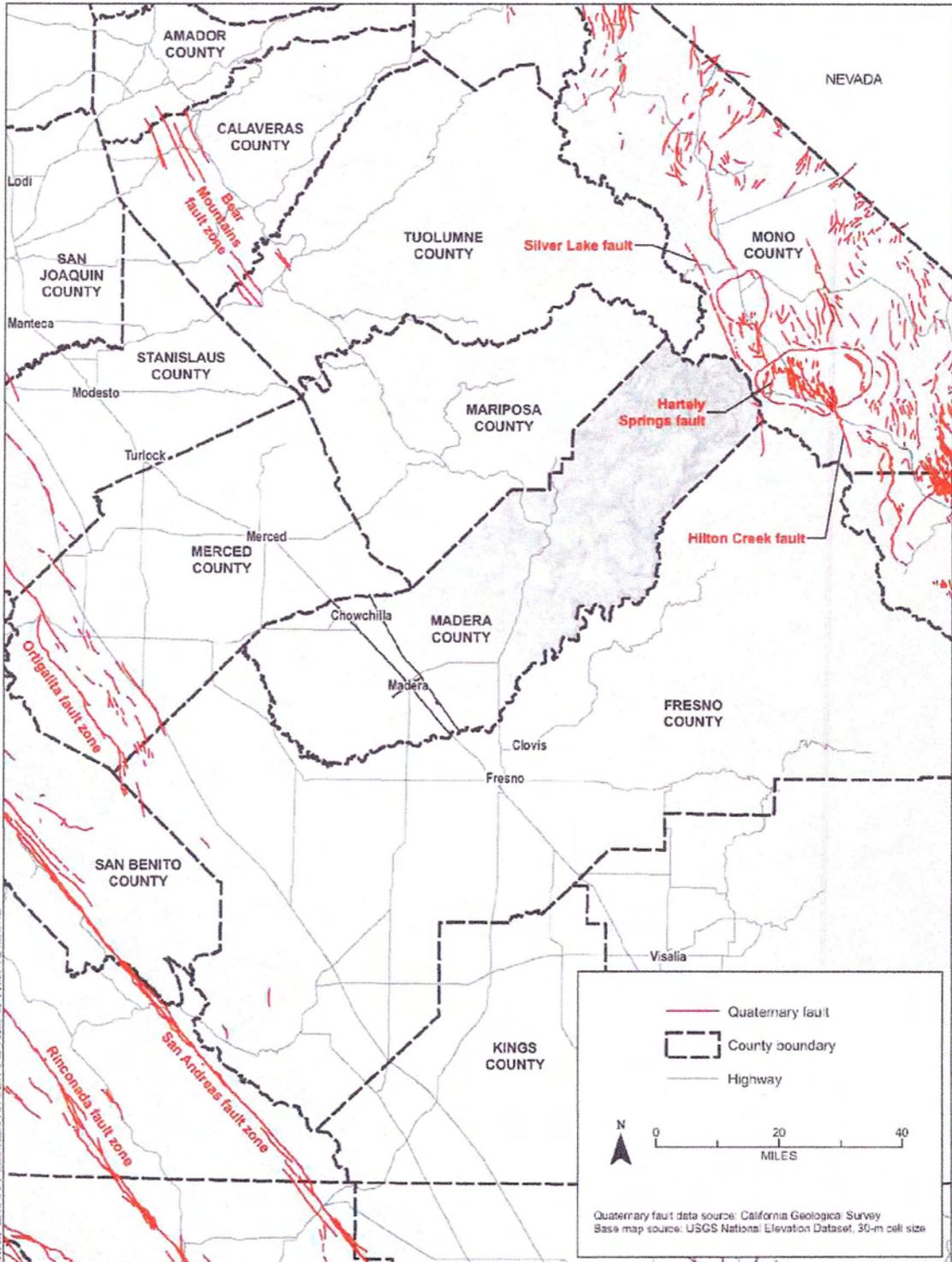
(Source: September 2010 Madera County Local Hazard Mitigation Draft Plan)



U.S. Dept. of Commerce, California State Office, 1500 Capitol Mall, Sacramento, CA 95833, 20090700, 8/10/09



Figure C-1 Regional historic earthquakes, magnitude ≥ 4.5, 1872-2009

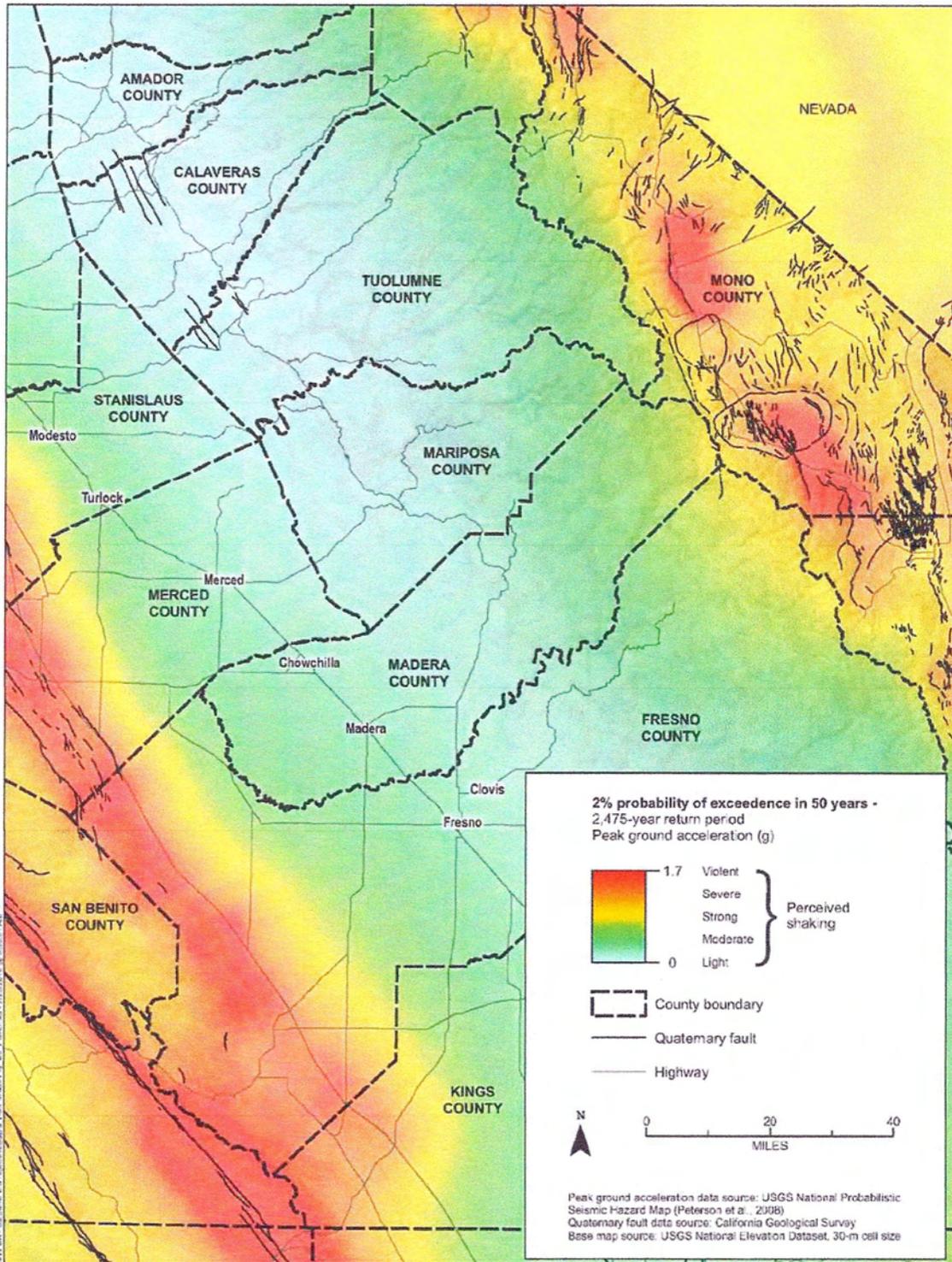


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Madera County Local Hazard Mitigation Plan

Figure C-2
Regional faults

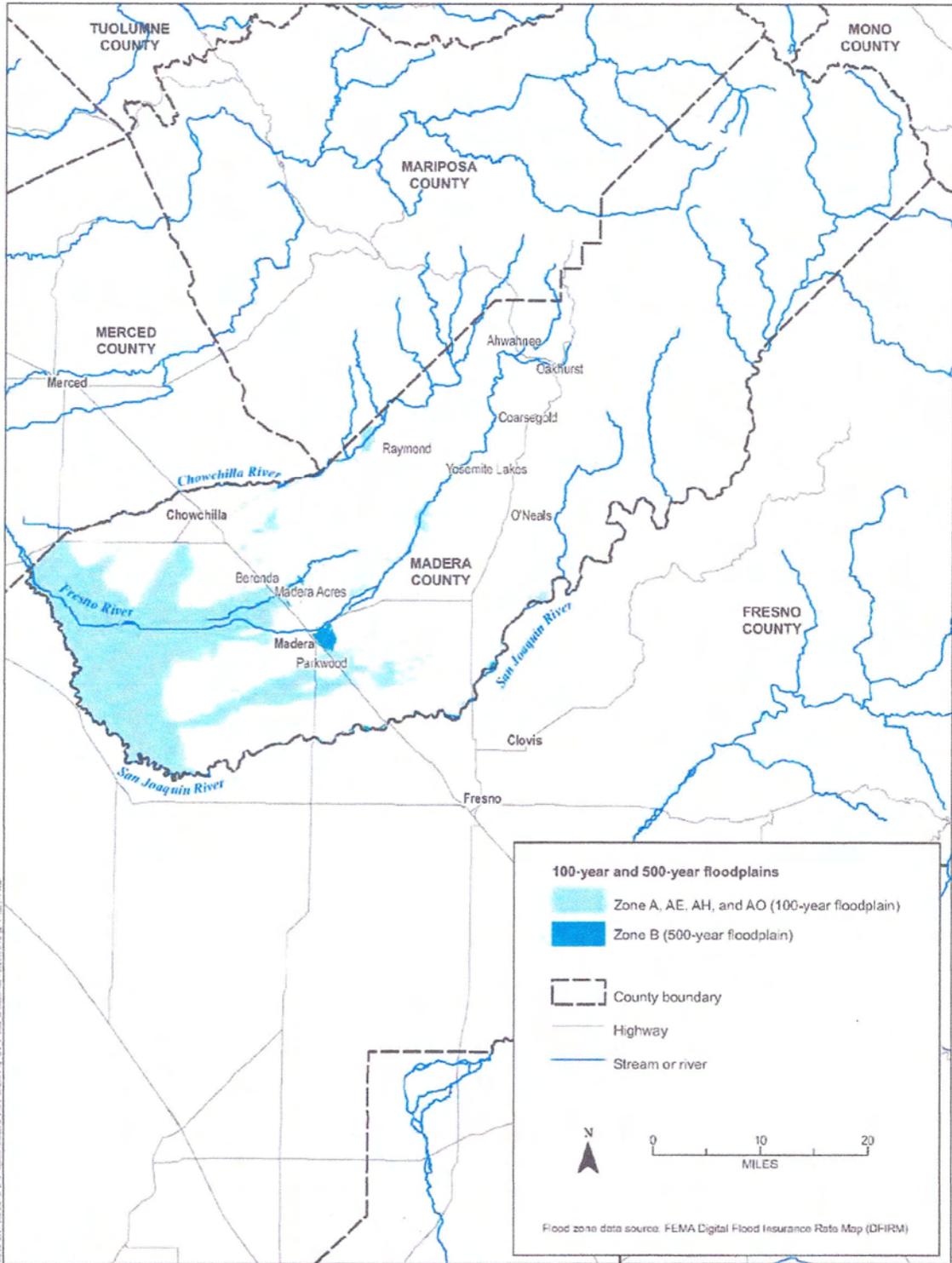


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Madera County Local Hazard Mitigation Plan

Figure C-3
Probabilistic seismic hazard

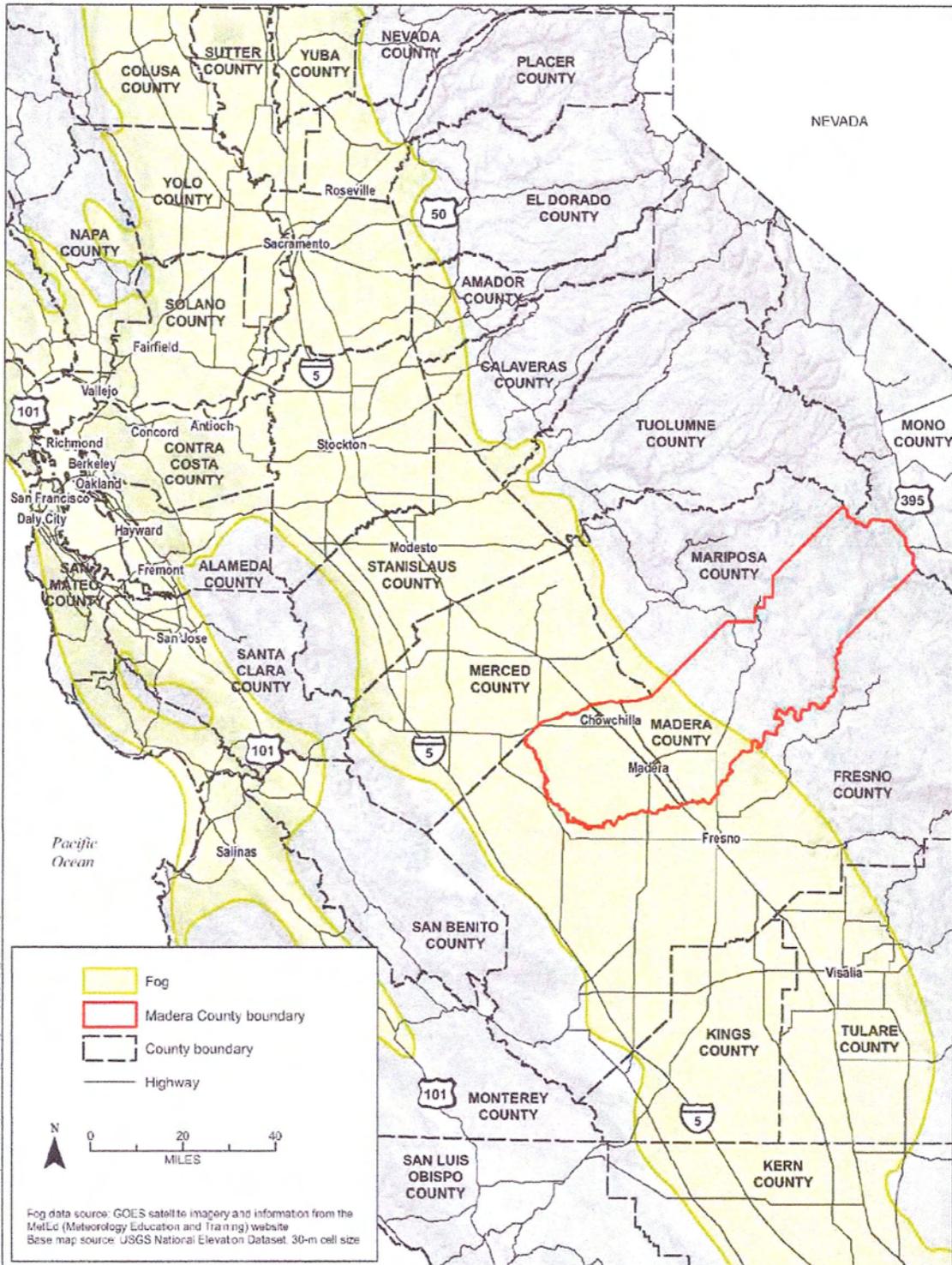


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Madera County Local Hazard Mitigation Plan

Figure C-4
Special flood hazard area

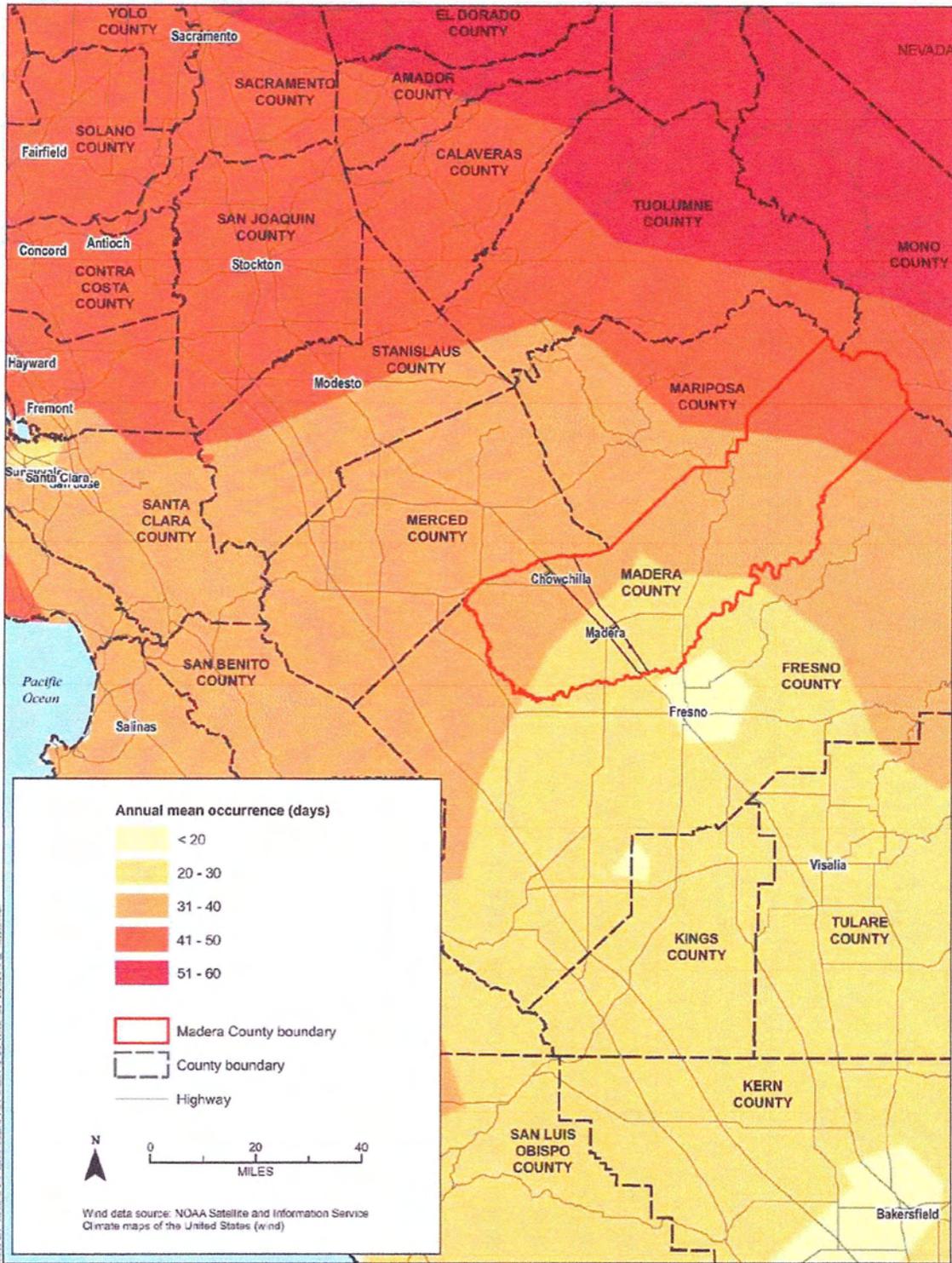


USGS Data - Oakland, CA; Jason L. Pollock/Madera MHP/Placer, CA; August 2012/2010/09/10/11/12/14/15



Madera County Local Hazard Mitigation Plan

Figure C-5
Potential fog area, elevation ≤ 656 feet

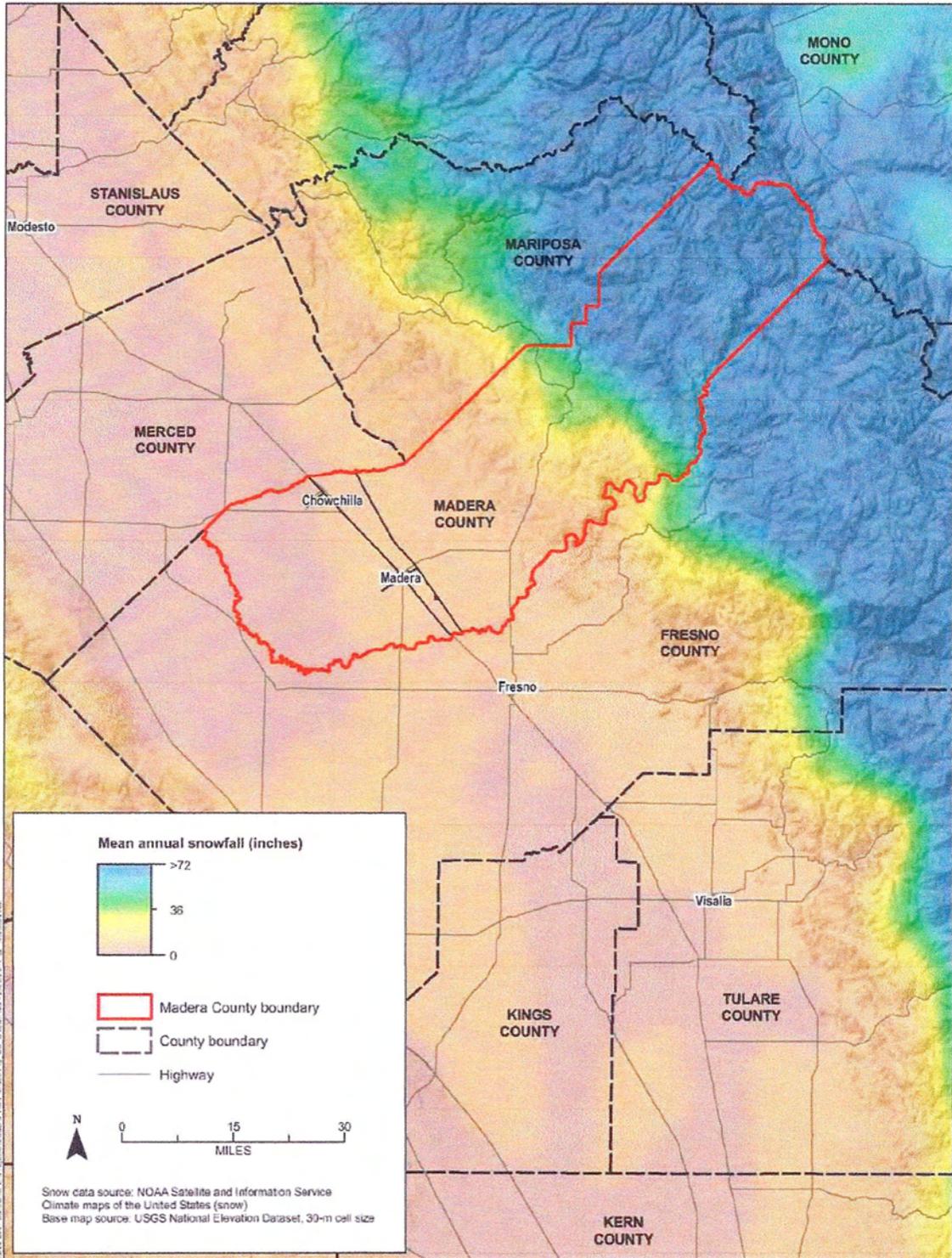


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Madera County Local
 Hazard Mitigation Plan

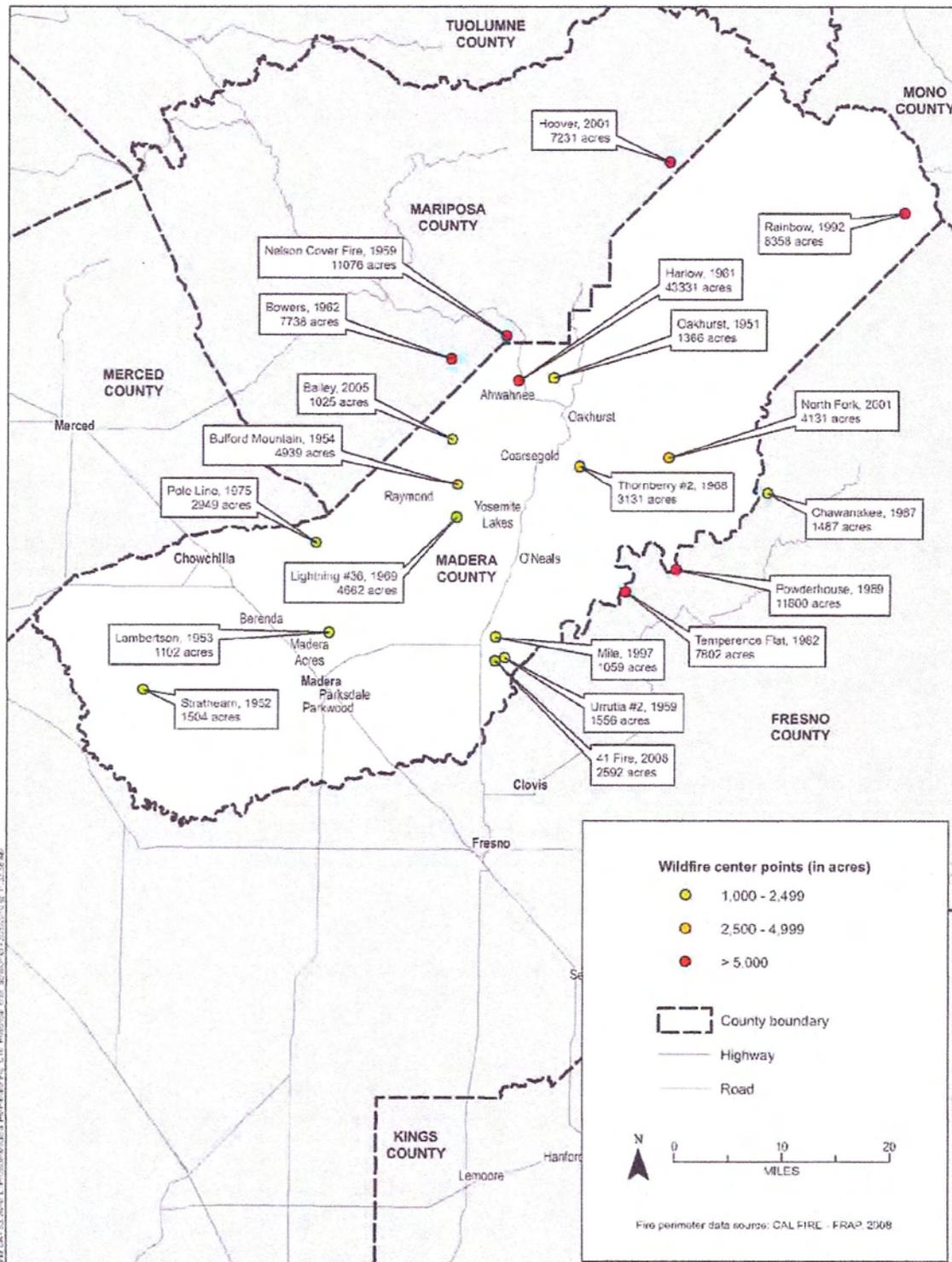
Figure C-6
 Peak wind gusts, ≥ 50 miles per hour



URS Corp - Oakland CA, S:\csm\1\Projects\Madera_HMP\MapFig_C8_Snow.mxd, 2/25/2015, 9:10:23 AM



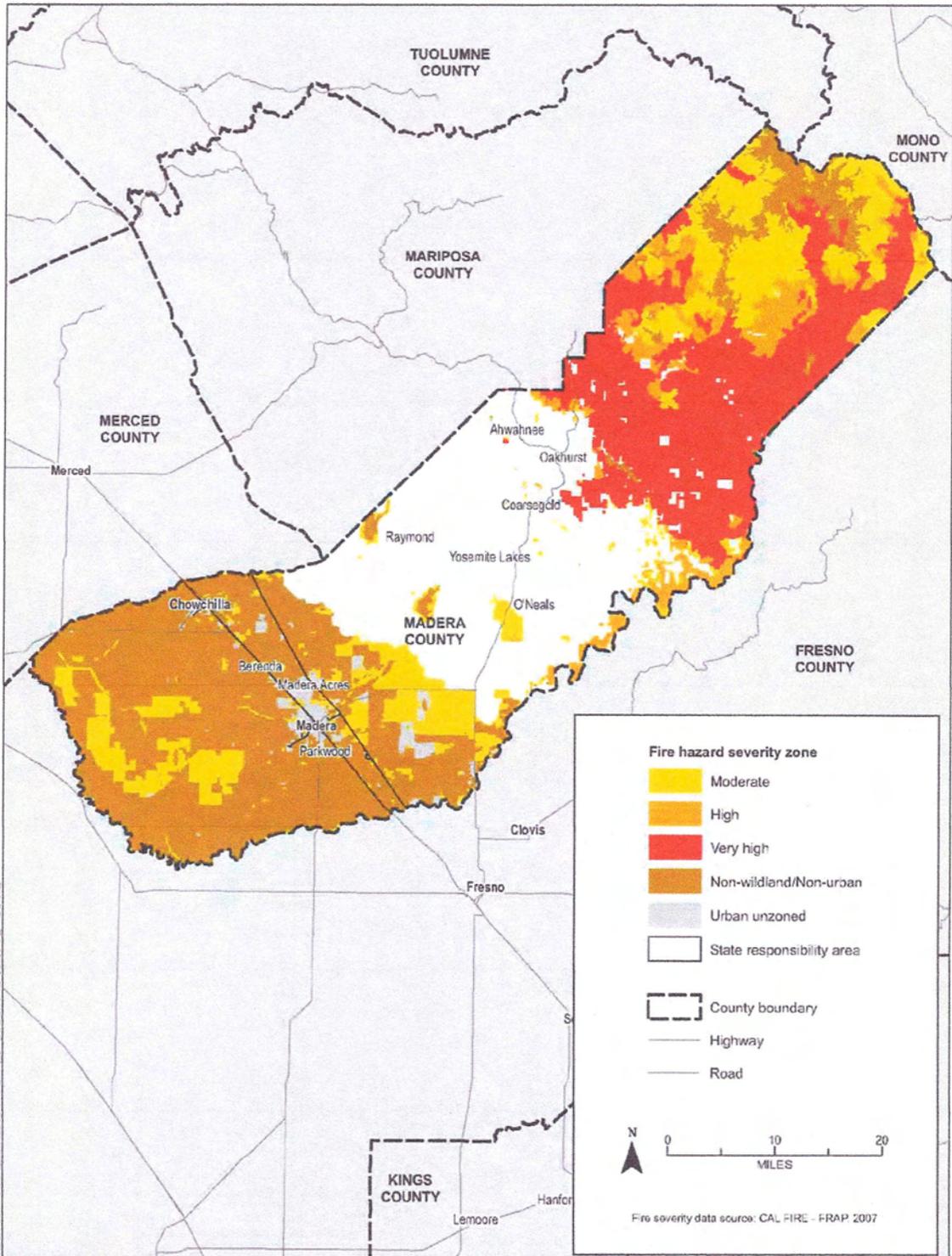
Figure C-8
Average snowfall



URS | 2700 Central Expressway, Suite 100 | Pleasanton, CA 94566 | Phone: 925.461.2700 | Fax: 925.461.2701



Figure C-10
Historical wildfires, ≥ 1,000 acres, 1950-2008

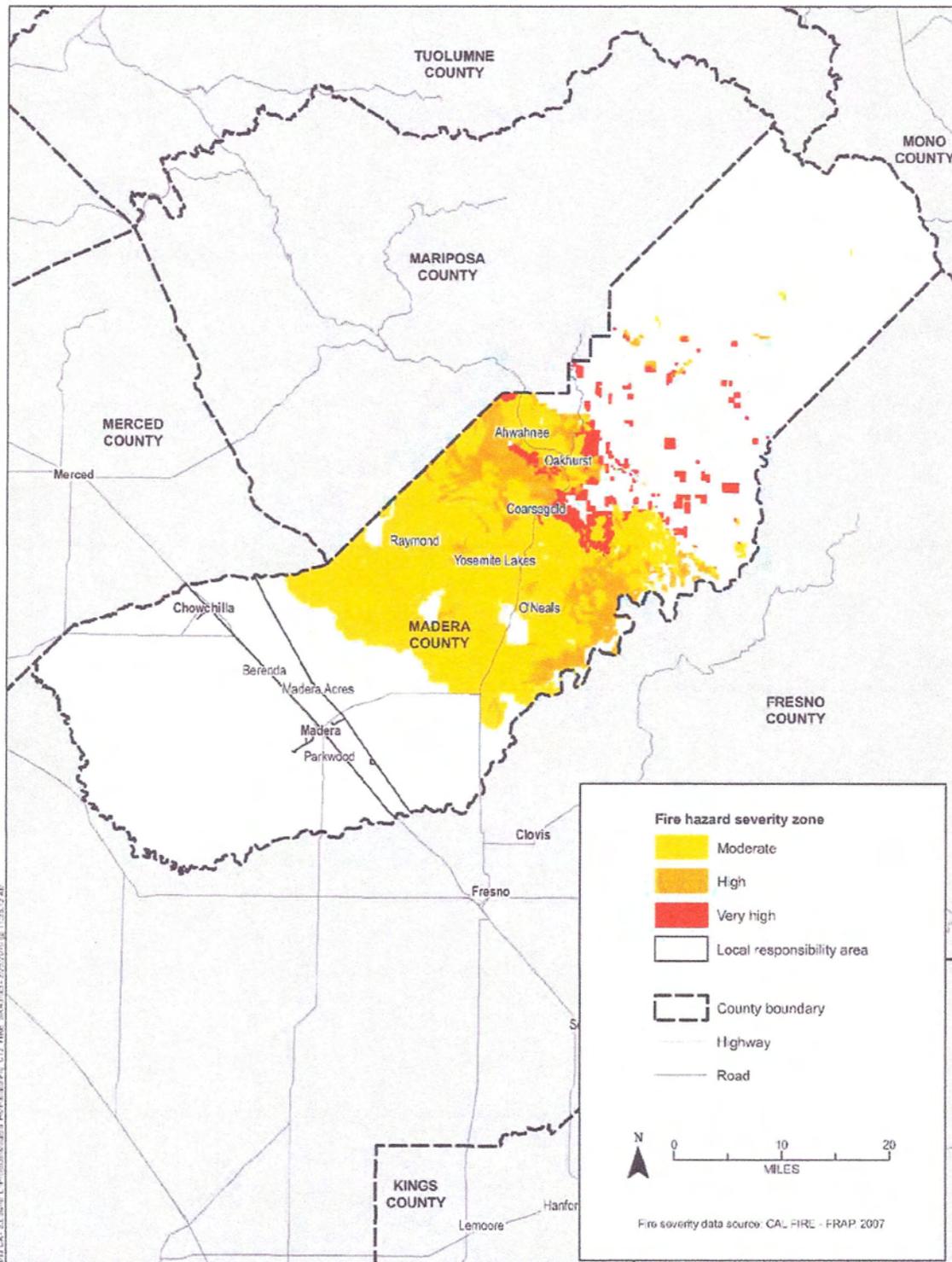


URS Corp., Oakland, CA; S. Lawrence L. Pappas/Madera; JWP/KP/PA/FA; C11; EIR/EIS; Madera; 2/25/2010; 11:58:13 AM



Madera County Local Hazard Mitigation Plan

Figure C-11
Fire hazard severity zones, local responsibility area

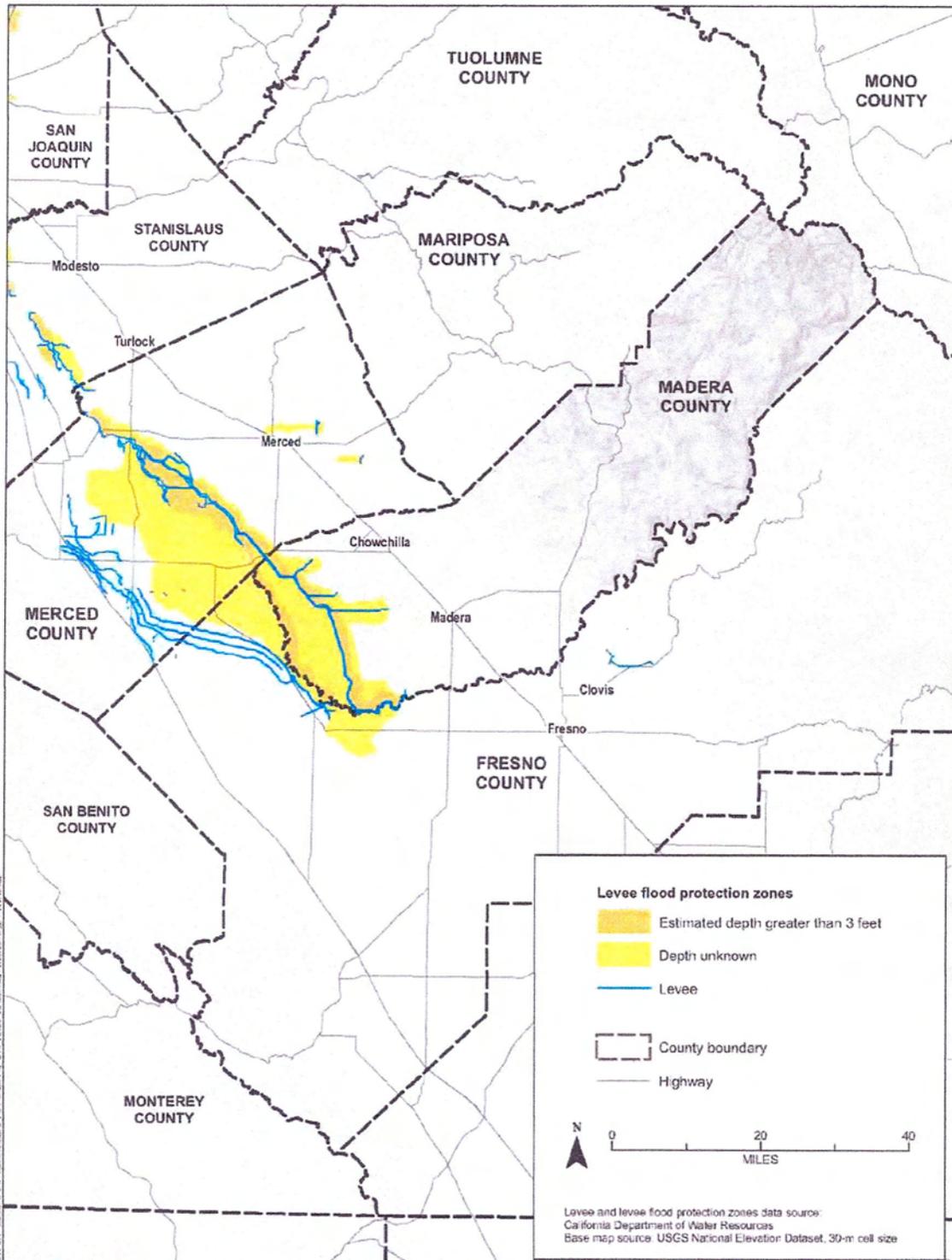


URS Corp., Oakland, CA; S. Anne L. Pimentel/Madera JMW/JRP/DF; C17. INR. S&A/06.2/25/2010 @ 11:33:12 AM



Madera County Local Hazard Mitigation Plan

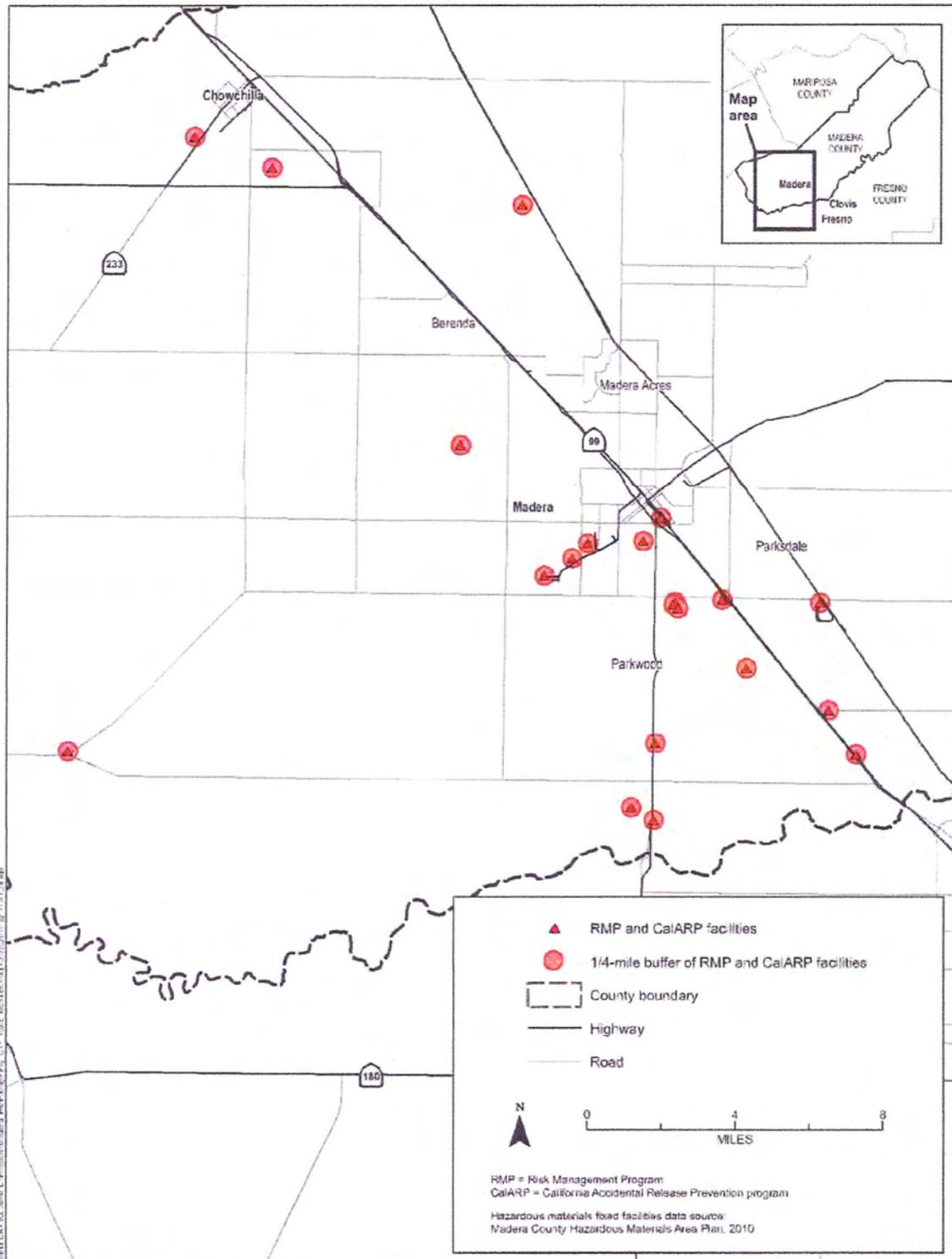
Figure C-12
Fire hazard severity zones, state responsibility area



URS Corp - Oakland CA, 51 Lewis LP/Project/Madera H/M/HazardMitg_015_Levee_zones.mxd - 2/20/2010 10:11:46 AM



Figure C-15
Levee flood protection zones



URS | 2011 | 10/11/11 | L. Williams | Madera, CA | Hazardous Materials Area Plan | 10/11/11 | 10/11/11



Figure C-17
Hazardous material fixed facilities

APPENDIX D – PLAN MAINTENANCE

WORKSHEETS

CHOWCHILLA LHMP ANNUAL REVIEW QUESTIONNAIRE WORKSHEET D-1

LHMP SECTION	QUESTIONS	YES	NO	COMMENTS
PLANNING PROCESS	Are there internal or external organizations and agencies that have been invaluable to the planning process?			
	Are there procedures, meetings, announcements, or plan updates that can be done differently?			
	Has the Planning Team undertaken any public outreach activities regarding the LHMP or a mitigation project?			
HAZARD ANALYSIS	Has a natural and/or human-caused disaster or hazardous event occurred in this reporting period?			
	Are there natural and/or human-caused hazards that have been addressed in this LHMP and should be?			
	Are there additional maps or new hazard studies available? If so, what are they and what have they revealed?			
VULNERABILITY ANALYSIS	Do any new assets need to be added to the jurisdiction or school district asset lists?			
	Have there been changes in development trends that could create additional risks?			
CAPABILITY ASSESSMENT	Are there different or additional resources such as financial, technical, and human which are now available for mitigation planning?			
MITIGATION STRATEGY	Should new mitigation actions be added? Should any existing mitigation actions be deleted?			

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MITIGATION PROJECT STATUS REPORT WORKSHEET D-2

Progress Reporting Period (Dates) For:	From (Date):	To (Date):
Project Title:		
Project ID:		
Project Description:		
Implementing Agency (if applicable):		
Support Agencies (if applicable):		
Project Manager or Contact:		
Contact Information (email, telephone):	E-mail:	Telephone:
Grant/Finance Administrator:		
Total Project Cost:		
Anticipated Cost Overruns/Underruns:		
Date of Project Approval:		
Project Start Date:		
Percentage of Project Completion:		
Anticipated Project Completion Date:		
Status Report (Summary of Progress) for period being reported:		
What are the accomplishments?		
Potential obstacles affecting completion?		
List any resolutions to obstacles?		

APPENDIX E
CITY OF CHOWCHILLA

Table E-1: Total Population, Residential Buildings, and Facility Assets

Table E-2: Total City Maintained Bridges, Evacuation Routes, and RL Properties

Table E-3: Hazard Vulnerability Analysis

Table E-4: Overall Summary of Total Population, and Facilities at Risk

Table E-5: Overall Summary of City Maintained Bridges, Evacuation Routes at Risk (No RL Properties)

Table E-6: Human & Technical Resources for Hazard Mitigation

**Table E-1
City of Chowchilla, Total Population, Residential Buildings, and Facility Assets**

Type	Facility	Address	Structural Value (\$)
Government Centers & Departments	Civic Center/City Hall	130 S. Second Street	\$5,500,000
Government Centers & Departments	Government Center	145 W. Robertson Blvd.	\$1,524,318
Government Centers & Departments	Senior Citizen Center	820 W. Robertson Blvd.	\$975,691
Public Safety	Police Department	122 Trinity Ave	\$2,936,878
Public Safety	Fire Station	240 N. First Street	\$1,188,259
Public Works	Corporation Yard Structures (office & storage building)	360 N First Street	\$1,747,417
Public Works	Waste Water Treatment Plant	15750 Ave 24 1/2	\$378,590
Community Services/ Parks	Chowchilla Municipal Airport (bank of hangars including connected office & two restrooms)	16487 Ave 25	\$900,000
Community Services/ Parks	Animal Shelter	15750 Ave 24 1/2	\$51,870
Community Services/ Parks	Sports & Leisure Community Center	625 N 15 th Street	\$653,892
Community Services/ Parks	Sports & Leisure ADA restroom and concession structure	625 N 15 th Street	\$206,640
Community Services/ Parks	Building (old County Library purchased by City)	621 W. Robertson Blvd.	\$1,000,000
Community Services/ Parks	Berenda Reservoir City structure (located in county)	20481 Ave 26	\$191,863
Community Services/ Parks	Veterans Memorial Park Facilities	600 W Robertson Blvd.	\$140,239
Community Services/ Parks	RC Wisener Park concession & restroom structure	200 Trinity Ave	\$432,833
Population*	19,051 which includes: 11,005 City population and 8,046 prison population annexed into city population (Source: January 2009 Dept. of Finance figures)		
Residential Buildings *	None		

*Population (including annexed prisons' population) and residential buildings in the incorporated area of the City of Chowchilla

**Table E-2
City of Chowchilla, Total City Maintained Bridges, Evacuation Routes, and RL Properties**

Type	Number (How Many)	Name/Location
City Maintained Bridges	1	Chowchilla Blvd. & Ash Slough (Bridge)
Evacuation Routes	CR,SR,CoR	SR233/Robertson Boulevard, SR 99, SR 152, CR: 5 th Street, CR & CoR: Road 16, CR: Kings Avenue, CR & CoR: Chowchilla Boulevard, CR: Howell Road, CR & CoR: Washington Road
RL Property	None	Not applicable

CR = City Maintained Roads, SR = State Routes, CoR=County Road

**Table E-3
City of Chowchilla
Hazard Vulnerability Analysis (shaking, flood, fog, wind, fire, dam failure, transportation corridor buffer)**

Facility	Structural Value (\$)	Hazard Area: Perceived Shaking	Special Flood Hazard Area	Hazard Area: Potential Fog Area (elevation ≤656 ft.)	Hazard Area: Peak Wind Gusts ≥50MPH, Annual Mean Occurrence (days)	Hazard Area: LRA Fire Hazard Severity Zone	Hazard Area: Federal & State Jurisdictional Dams Failure Inundation Area	Transportation Corridor (1/4-mile buffer)
Civic Center/City Hall	\$5,500,000	Light	None	Yes	30.5-40.4	Very Low	Buchanan	Yes
Government Center	\$1,524,318	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Senior Citizen Center	\$975,691	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Police Department	\$2,936,878	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Fire Station	\$1,188,259	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Corporation Yard Structures (office & storage building)	\$1,747,417	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Waste Water Treatment Plant	\$378,590	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Chowchilla Municipal Airport (bank of hangars including connected office & two restrooms)	\$900,000	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Animal Shelter	\$51,870	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Sports & Leisure Community Center	\$653,892	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Sports & Leisure ADA Restroom and Concession structure	206,640	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Building (old County Library purchased by City)	\$1,000,000	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Berenda Reservoir City structure (located in county)	\$191,863	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Veterans Memorial Park Facilities	\$140,239	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
RC Wisener Park concession & restroom structure	\$432,833	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes

Overall Summary: 15 locations with structures demonstrating the total assets at risk for dam failure, severe wind peak wind gusts ≥50 MPH, fog and transportation corridor related hazards estimated at \$17,828,490.00

**Table E-4
City of Chowchilla, Overall Summary of Total Population, and Facilities at Risk**

Hazard	Hazard Area	Population		Facilities	
		No.	Percent	No.	Percent
Seismic	Light	19,051	100	15	100
Flood	500-year SFHA	0	0		0
	100-year SFHA	0	0		0
Fog	Potential Fog Area (elevation ≤ 656 feet)	19,051	100	15	100
Severe Wind	Peak Wind Gusts ≥ 50 MPH, Annual Mean Occurrences (days): 19.5-30.4	19,051	100	1 or <	10
	Peak Wind Gusts ≥ 50 MPH, Annual Mean Occurrences (days): 30.5-40.4	19,051	100	2 or <	10
	Peak Wind Gusts ≥ 50 MPH, Annual Mean Occurrences (days): 40.5-50.0	0	0	0	0
Winter Storm	Mean Annual Snowfall (in.): Low (0.00-23.99)	190	<1	0	0
Wildland Fire	Local Responsibility Area - Low	190	<1	2 or <	<1
Dam Failure	Buchanan Dam	15,240	80	12	80
Levee Break	Ash Slough	190	<1	0	0
	Berenda Slough	190	<1	0	0
Hazardous Material Event	Transportation Corridor*	1,900	10 ?	11	5
	Fixed Facility *	190	<1	1 or <	<1

There are no residential buildings owned by the City of Chowchilla so they are eliminated in the above table.

- 100% Population includes City population (11,005) and prisons' population (8,046) annexed in city population.

**Table E-5
City of Chowchilla, Overall Summary of Total Maintained Bridges, Evacuation Routes at Risk**

Hazard	Hazard Area	City-Maintained Bridges		Evacuation Routes	
		No.	Percent	No.	Percent
Seismic	Light	1	100	9	100
Flood	500-year SFHA	0	0	0	0
	100-year SFHA	0	0	1	<1
Fog	Potential Fog Area (elevation ≤ 656 feet)	1	100	9	100
Severe Wind	Peak Wind Gusts ≥ 50 MPH, Annual Mean Occurrences (days): 19.5-30.4	1	100	9	100
	Peak Wind Gusts ≥ 50 MPH, Annual Mean Occurrences (days): 30.5-40.4	1	100	9	100
	Peak Wind Gusts ≥ 50 MPH, Annual Mean Occurrences (days): 40.5-50.0	0	100	1	1
Winter Storm	Mean Annual Snowfall (in.): Low (0.00-23.99)	0	<1	0	0
Wildland Fire	Local Responsibility Area - Low	0	<1	1 or <	<1
Dam Failure	Buchanan Dam	1	100	7	80
Levee Break	Ash Slough	0	0	1	1
	Levee Flood Protection Zone ≥ 3 feet	0	0	0	0
Hazardous Material Event	Transportation Corridor*	1	100	4	45
	Fixed Facility *	1	100	4	45

There are no RL Properties at risk in the City of Chowchilla so they are eliminated in the above table.

**Table E-6
City of Chowchilla, Human and Technical Resource for Hazard Mitigation**

Staff/Personnel Resources	Department or Agency	Principal Activities Related to Hazard Mitigation
<p>Technical staff with knowledge of land development, land management practices, and human-caused and natural hazards. Inspector/code enforcement and technical staff trained in construction requirements and practices related to existing and new buildings</p>	<p>Community Development Department</p>	<p>Department functions are to oversee and implement affordable housing programs, building and safety, business licenses, code and zone enforcement, engineering, permits, planning and redevelopment agency program assistance</p>
<p>Fire Prevention inspector and code enforcement staff and technical trained staff and volunteers</p>	<p>Fire Department for Fire Prevention and Development (Fire Chief is a city employee)</p>	<p>The department has 13 active volunteer members with years of service ranging from one year to over sixty years. Currently, the department has an ISO rating of 5. Regular technical training meetings are held every month and special training sessions are scheduled throughout the year.</p> <p>Fire Chief provides plan review and inspection services to the City in order to implement the fire and life savings and regulations and building standards established and adopted by the State Fire Marshal and County Fire Marshal.</p>
<p>Technical and trained staff to maintain and update Emergency Operation Plan for the City</p>	<p>Chowchilla Police Department</p>	<p>The Chowchilla Police Department and the Chowchilla Volunteer Fire Department work closely with the Madera County Office of Emergency Services in preparing for natural and man made disasters.</p> <p>In July 2004, selected staff participated in four days of disaster preparation training at the Federal Emergency Management Agency (FEMA) training site in Anniston, Alabama. This training was paid for through a FEMA grant funding opportunity that is made available to less than 12 counties nationwide each year. As a result of this training, ongoing quarterly meetings are held to address public health-related disaster preparation.</p> <p>The training was very beneficial in simulating the problems that can occur during a real disaster and in strengthening relationships between the various Madera County agencies represented at the training. Additionally, the training helped City staff familiarize themselves with the National Incident Management System (NIMS).</p> <p>Trained staff works closely with other city, state, and federal government departments, private organizations, service groups, and faith-based groups in an attempt to provide the highest quality police service for our community. Members strive to acquire and employ the latest technology available and are always searching for ways to provide the best service possible.</p>

APPENDIX F

Table F-1: Chowchilla Schools and Chowchilla School District
Offices Hazard Vulnerability Analysis

Table F-2: Chowchilla Community Critical Facilities (special
populations at risk including emergency facility)
Hazard Vulnerability Analysis

Table F-1
Chowchilla Schools and Chowchilla School District Offices
Hazard Vulnerability Analysis (shaking, flood, fog, wind, fire, dam failure, transportation corridor buffer)

School District	Facility	Structural Value (\$)	Hazard Area: Perceived Shaking	Special Flood Hazard Area	Hazard Area: Potential Fog Area (elevation ≤656 ft.)	Hazard Area: Peak Wind Gusts ≥50 MPH, Annual Mean Occurrence (days)	Hazard Area: LRA Fire Hazard Severity Zone	Hazard Area: Federal & State Jurisdictional Dams Failure Inundation Area	Transportation Corridor (1/4-mile buffer)
Chowchilla ESD	Fuller (Merle L.) Elementary School	6,308,257	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Chowchilla ESD	Ronald Reagan Elementary School	11,497,720	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Chowchilla ESD	Stephens Elementary School & District Office	3,982,820	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Chowchilla ESD	Wilson Elementary School	9,777,117	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Chowchilla Union HSD	Chowchilla Union High School	27,765,749	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Chowchilla Union HSD	Computer Tech Shop & Storage School	161,408	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Chowchilla Union HSD	Gateway Continuation School	319,304	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Chowchilla Union HSD	High School Farm School	67,292	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Madera County Office of Education	Chowchilla High School (2 buildings, new)	386,000	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Madera County Office of Education	Chowchilla High School (2 buildings, old)	123,750	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Madera County Office of Education	Fuller School (2 buildings)	116,832	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Madera County Office of Education	Ronald Reagan School (1 building)	108,560	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Madera County Office of Education	Wilson School (2 buildings)	112,248	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes

Source: Data provided by Madera County Office of Education which is incorporated in the Madera County Local Hazard Mitigation Draft Plan 2010 (Appendix J - Madera County Office of Education)

Overall Summary: 13 facilities of total assets at risk for dam failure, severe wind peak wind gusts ≥50 MPH, fog and transportation corridor related hazards is estimated at \$60,727,057

Table F-2
Chowchilla Community Critical Facilities (Special Populations at risk including emergency facility)
Hazard Vulnerability Analysis (shaking, flood, fog, wind, fire, dam failure, transportation corridor buffer)

Facilities for target population (Elderly or Disabled) and Critical Facility used in case of local emergency	Facility/Address	Structural Value (\$)	Hazard Area: Perceived Shaking	Special Flood Hazard Area	Hazard Area: Potential Fog Area (elevation ≤656 ft.)	Hazard Area: Peak Wind Gusts ≥50MPH, Annual Mean Occurrence (days)	Hazard Area: LRA Fire Hazard Severity Zone	Hazard Area: Federal & State Jurisdictional Dams Failure Inundation Area	Transportation Corridor (1/4-mile buffer)
Elderly/Disabled Population)	Chowchilla Skilled Nursing Facility (1104 Ventura Ave.)	Unknown	Light	None	Yes	30.5-40.4	Very Low	Buchanan	Yes
(Assisted care facility for Elderly/Disabled Population)	Avalon Care Center (1010 Ventura Ave.)	Unknown	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Elderly or Disabled Housing	Golden Acres Apartments	Unknown	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
(Assisted care facility for Elderly/Disabled Population)	Trinity Park (160 S. 13 th Street)	Unknown	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Residential housing identified for Low Income Population (all ages)	Washington Square Apartments (255 Washington Rd)	Unknown	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
	Garden Apartments (300 Myer Drive)	Unknown	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
	Shasta Villa Apartments (96 Shasta Court)	Unknown	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
	Village Apartments (297 Myer Drive)	Unknown	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
			Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
			Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
			Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
Critical Emergency Facility in case of local emergency	1000 S. Third Street (55 acres- 5 buildings)	Unknown	Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
			Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
			Light		Yes	30.5-40.4	Very Low	Buchanan	Yes
			Light		Yes	30.5-40.4	Very Low	Buchanan	Yes

Overall Summary: Approximately 69 units/structures are located within the City housing special populations: elderly, disabled, and low-income. Additionally the Chowchilla Fairgrounds has five structures located on 55 acres listed as a critical facility location at risk for dam failure, severe wind peak wind gusts ≥50 MPH, fog, and transportation corridor related hazards.