Yolo County, California

625 Court Street, Room 202, Woodland, CA 95695

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Acknowledgements

Yolo County would like to thank those Yolo County Operational Area collaborators and partners who participated in the planning and development of this document.

The official Yolo County Operational Area Hazard Mitigation Steering Committee provided the oversight and dedication to this project that was required and without their commitment; this project would not be possible.

As with any working plan, this document represents planning strategies and guidance as understood as of the date of this plan's release. This plan identifies natural hazards and risks and identifies the hazard mitigation strategy to reduce vulnerability and make the communities of Yolo County more disaster resistant and sustainable.

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Introduction

This Local Hazard Mitigation Planning document has been prepared with the intent of establishing an inter-jurisdictional process for the development and implementation of effective hazard mitigation strategies in association with identified hazards that pose real or potential threats to the Yolo Operational Area (YOA).

WHAT'S NEW FOR THE 2012 UPDATE?

Overview

This document is, in concept, a revision of the previous Local Hazard Mitigation Plan, composed and approved in 2005. This update represents a major refinement of the hazard mitigation planning process for Yolo County. This plan is also completely reorganized to meet FEMA's latest planning guidance the *Local Mitigation Plan Review Guide* released in 2011 and implemented in 2012.

The revision of the Yolo OA Multi Hazard Mitigation Plan (MHMP) has been a collaborative effort, involving various local and tribal government jurisdictions, public authorities, special districts, and selected community-based organizations that represent a broad composite of the operational area. Additionally, selected state agencies and organizations have also contributed to this planning effort, and are represented within the document by direct participation or supplemental reference.

The bulk of the revision was conducted as a collaborative partnership between several local and tribal government organizations, organized as the Hazard Mitigation Steering Committee, and coordinated and facilitated by the Yolo County Office of Emergency Services (OES). This was a major inter-organizational undertaking, requiring a commitment of staff time, organizational resources, ongoing communication, and data collection in an effort to achieve the desired hazard mitigation planning goals. The specific jurisdictions represented in the plan that will formally approve this document are as follows: Cities of Davis, Winters, West Sacramento and Woodland, the Yocha Dehe Wintun Nation, Yolo County Housing and Yolo County.

In addition to governmental efforts, community involvement was a major objective of the planning process, with significant online and participative outreach conducted at various stages within the planning process. Although not every aspect of the broader community was directly involved in the planning process, significant effort was made to ensure that the public and non-governmental entities had a voice in the plan's development.

Plan Revision Hazard Focus

This revised 2012 Mitigation Plan focuses only on natural hazards facing our community. The Steering Committee shifted focus towards the end of the planning process and decided to not include most of the prior technological or human caused hazards listed in the 2005 plan mostly in part because the profiles were emergency response related and did not describe the hazard to the current standard that FEMA expects.

Revision of the Risk Assessment

The risk assessment for each identified hazard was rewritten as determined by the steering committee. This included a reformulation of the hazard profile and additions of new hazard occurrences. The vulnerability analysis and updates to the vulnerability assessment were

completed based on more recent hazard data.

Progress on Local Mitigation Efforts

There was some success in the implementation of the mitigation actions as defined in the 2005 planning process, so the Steering Committee reassessed the need for those actions, looked at new actions and provided an explanation as to the methodology. A brief detail of the mitigation actions from the 2005 planning effort is described in the table in Element D.

There were several mitigation actions and strategies in the 2005 plan that were listed as "moderate and low risk" actions. Those actions were not included and were reviewed and revised to either be included in the 2012 planning effort or not used at all due to their project descriptions/content not being fully developed.

Continued Participation in the CRS Program

Yolo County has participated in CRS since 2012. The CRS program is designed to recognize floodplain management activities that go above and beyond the National Flood Insurance Program's (NFIP) minimum requirements. CRS is designed to reward a community for implementing public information, mapping, regulatory, loss reduction and/or flood preparedness activities. On a scale of 10 to 1, Yolo County is currently ranked Class 8. One of the overall priorities of Yolo County is to continue in this program.

Finally, the extent to which this revised plan will or will not be a success locally is dependent upon the commitment at all levels of the designated operational area, whether it be governmental or community-based, to monitor the progress of the identified mitigation strategies, and to ensure that appropriate projects are implemented in accordance with identified need, overriding policy, and funding availability.

PLAN PURPOSE

The purpose of this plan is to integrate hazard mitigation strategies into the activities and programs of the local jurisdictions and special districts and to the extent practical, into the activities of private sector organizations.

PLAN SCOPE

The plan identifies and evaluates specific local hazard mitigation strategies to be considered by the Yolo Operational Area and associated planning support for those strategies developed by its political subdivisions, agencies, special districts and organizations. The Plan describes strategies that government and private sector organizations may utilize as acceptable and effective mechanisms for mitigating those hazards, within the realistic constraints of capability and priority.

HAZARD MITIGATION PRINCIPLES

- *Hazard Mitigation* is any sustained action taken to eliminate or reduce long-term risk to human life, property, and the environment posed by a hazard.

- *Hazard Mitigation Planning* is the process of making any sustained plan or course of action taken to reduce or eliminate long-term risk to people and property from both natural hazards and their effects. The planning process includes establishing goals and recommendations for mitigation strategies.

- Hazard Mitigation may occur during any phase of a threat, emergency or disaster. Mitigation can and should take place during the preparedness (before), response (during), and recovery (after) phases.

- The process of hazard mitigation involves evaluating the hazard's impact and identification and implementation of actions to minimize the impact.

PLAN ORGANIZATION & STRUCTURE

The Plan has been developed using the latest guidance from the FEMA called the *Local Mitigation Plan Review Guide*, dated October 11, 2011 and is structured similar to their Plan Review Tool.

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Element A: Planning Process

Requirement §201.6(b) An open public involvement process is essential to the development of an effective plan.

More often than not, communities are faced with having to deal with the aftermath of an unwanted hazard that can devastate areas of a community. While we cannot prevent disasters from happening, their effects can be reduced or eliminated through hazard mitigation planning, but only if a local government has the foresight to assess likely hazards and craft preventative measures before the next hazard event occurs. This Chapter describes the background of hazard planning and why citizens and governments are becoming better prepared.

PARTICIPATION AND COLLABORATION

General

Revision of the Multi Hazard Mitigation Plan requires collaboration and partnering at a multitude of levels.

- Identifying the primary local stakeholders – Formation of inter-jurisdictional Hazard Mitigation Steering Committee
- Establishing project goals and objectives
- Organizing the project work plan based upon identified goals and objectives
- Establishment of jurisdiction-specific hazard mitigation work groups to facilitate internal planning activity
- Organizing jurisdiction/agency-specific Hazard Mitigation Working Groups
- Review of existing Local Hazard Mitigation Plan
- Identification and refined assessment of real or potential hazards and threat conditions
- Revision of jurisdictional demographic and organizational data, and reformatting of information presentation
- Development of prioritized hazard mitigation strategies and projects, keyed to identified hazards

PARTICIPATING JURISDICTIONS & ORGANIZATIONS

Lead Agency

The Yolo County Office of Emergency Services (OES) assumed the role of lead agency for the coordination and facilitation of the joint hazard mitigation plan revision project. OES functioned as the central point of contact for all partnering jurisdictions and organizations, as well as the liaison between the Yolo Operational Area and the State regarding plan revision. Finally, OES performed the bulk of actual plan format and development, in conjunction with the Steering Committee members.

Steering Committee Participants

The following identifies individuals who participated directly in the development of the Yolo County Multi Hazard Mitigation Plan revision, either as members of the inter-jurisdictional Steering Committee, as participants working within member organizations, or as supplemental contributors.

COUNTY OF YOLO

Rick Martinez	Interim Emergency Services Manager - Yolo County OES
Brenna Howell	Interim Emergency Services Coordinator – Yolo County OES
Bill Martin	Emergency Services Manager - Yolo County OES
Dana Carey	Health Program Manager - Yolo County Health Department
John Young	Director – Yolo County Agricultural Dept.
Jeff Anderson	Yolo County Planning & Public Works Dept.
Jeff Pinnow	Supervisor – Yolo County Environmental Health
Lonell Butler	Chief Building Official – Yolo Co Planning/Public Works
Marcus Neuvert	GIS Specialist – Yolo County Information Technology

CITY OF DAVIS

Bill Weisgerber	Interim Fire Chief -Davis Fire Dept.
Kathy Willhoff	Business Manager – Davis Fire Dept.
Joy Parker-Lee	Administrative Aide – Davis Fire Dept.
Ryan Crow	Firefighter – Davis Fire Dept.
Glenn Glasgow	Lieutenant – Davis Police Dept.
Juli Hawthorne	Assistant to Director – Community Services Dept.
Stacey Winton	Admin Analyst – Community Development Dept.
Samantha Wallace	Assistant to the Director –Community Services Dept.
Bruce Boyd	MIS Senior Systems Analyst/GIS Manager

CITY OF WEST SACRAMENTO

Bryan Jonson	Fire Captain – West Sacramento Fire Dept.
Gary Fredericksen	Division Chief – West Sacramento Fire Dept.

CITY OF WINTERS

Dan Maguire	Housing Programs Manager
John W. Donlevy Jr.	City Manager
Mary Jo Rodolfa	Executive Assistant to the City Manager
Dawn Van Dyke	Management Analyst
Scott Dozier	Winters Fire Department - Fire Chief
Brad Lopez	Winters Fire Department – Captain
Art Mendoza	Winters Fire Department – Captain
Bruce Muramoto	Police Chief – Winters Police Dept.
Sergio Gutierrez	Lieutenant - Winters Police Dept.
Nelia Dyer	Community Development Director
Eric Lucero	Operations and Maintenance Manager
Carol Scianna	Environmental Services Manager

Gene Ashdown	Building Official

CITY OF WOODLAND

Chief Dan Bellini	Police Chief – Woodland Police Department
Mark Brooks	Fire Captain – Woodland Fire
Derrick Kaff	Lieutenant – Woodland Police
Mark Cocke	Woodland Public Works
Tod Reddish	Fire Chief (retired) – Woodland Fire
Rick Sander	Deputy Chief – Woodland Fire

YOCHA DEHE WINTUN NATION

Gary Fredericksen	Fire Chief – Yocha Dehe Fire
Crystal Smyth	Business Analyst – Yocha Dehe Fire
Mike Chandler	Retired Fire Chief – Yocha Dehe Fire

YOLO COUNTY HOUSING

Lisa Baker	Executive Director – Yolo County Housing
Janis Holt	Resource Manager – Yolo County Housing

YOLO COUNTY OFFICE OF EDUCATION

Linda Legnitto	Assistant Superintendent -Yolo County Office of Education

UNIVERSITY OF CALIFORNIA - DAVIS

Nick Crossley	Emergency Services Manager

ELEMENT A.1. PLANNING PROCESS

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.

Hazard Mitigation Steering Committee

Specific tasks were identified for the Steering Committee in order to ensure that project goals for the MHMP revision were undertaken and completed. The following represents those primary Steering Committee tasks:

- Coordinate tasks and activities with the Office of Emergency Services to develop all-hazards disaster mitigation plan and oversee the planning process.
- Prioritize hazards vs. resources.
- Select highest and best mitigation recommendations and develop those recommendations for further action by the Yolo Operational Area.
- Review planning drafts, recommendations and updates.
- Develop and implement long and short term goals.

- Integrate the plan with all phases of Comprehensive Emergency Management Planning.

- Provide for the implementation of committee decisions.

- Encourage, coordinate and provide a methodology for the implementation of public input.

- Provide for the implementation of committee decisions.

- Establish Hazard Mitigation Steering Committee Tasks to Include but not be limited to the following:

    - Determine implementation ability and constraints for proposed Hazard Mitigation planning steps and development of strategies
    - Bring forward community concerns through private and public input
    - Identify implementation resources
    - Provide for the update of Comprehensive Emergency Management Plans on a scheduled basis
    - Evaluate and carry out mitigation activities
    - Assist in implementation of funding identification and procurement
- Ensure that adjacent jurisdictions, pertinent private entities and citizens are informed of the Yolo Operational Area Hazard Mitigation Planning Process and offer each the opportunity for input into the plan.

Steering Committee Hazard Mitigation Strategy Identification Activities
Beginning in late 2010 members of the Steering Committee agreed to a bi-weekly meeting schedule to identify hazard priorities and review local hazard mitigation strategy recommendations.

The Hazard Mitigation Steering Committee agreed to make and pass plan-based general policy recommendations by a vote of a simple majority of those members present.

Following a public meeting the Steering Committee again examined and prioritized the Hazard Mitigation Strategies. These strategies were incorporated into the Plan with the intent of providing guidance in the development of local mitigation policy. The Steering Committee worked to identify estimated time frames and implementation costs associated with prioritized mitigation strategy projects for future implementation.

Yolo Operational Area Hazard Mitigation Plan Steering Committee Future Tasks

- Define the mitigation constraints that the Yolo Operational Area is required to follow in implementing recommendations from the Hazard Mitigation Steering Committee.

    - Protection of sensitive information

  - Apply budget constraints to recommended hazard mitigation strategies
  - Apply state policy and legal constraints to mitigation strategies brought forward by the Steering Committee.

- Meet on an annual basis to review the work of and contribute to the Yolo Operational Area Hazard Mitigation Steering Committee activities.

- Bring forth the concerns and views of the community to the Steering Committee for consideration in the ongoing Hazard Mitigation planning process.

- Assist in informing the public and community of the Hazard Mitigation strategies recommended by both the Steering Committee and individual jurisdictional Steering Committees.

- Define the constraints for implementation of prioritized mitigation strategies within the authorities, laws, and regulations of the local and tribal government entities existing within the Yolo Operational Area.

- Carry out the goals and objectives of the Yolo Operational Area Multi Hazard Mitigation Plan.

- Support and review the input from meetings of the adjunct members with individuals, agencies and jurisdictions.

- Assure that the public is kept informed of changing strategies and implementation actions periodically.

ELEMENT A.2. COORDINATION WITH OTHER COMMUNITIES

Requirement §201.6(b)(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.

Since the inception of this planning process there have been two major forums for sharing this planning with adjacent jurisdictions. The first is the Mutual Aid Regional Advisory Committee for California Mutual Aid Region IV. Region IV's members are comprised of 11 counties within the Cal EMA Inland Region, located near the Greater Sacramento area. The value to this collaboration is that these counties share many of the same characteristics as Yolo County such as similar threats, politics, geography and culture. The second form and somewhat more specialized forum is the Region IV Medical and Health Mutual Aid Advisory Committee. This coordinated process has been made possible by the support of many federal grant programs. This has allowed a multi-county, multi-agency approach to both prevention and mitigation issues in public health and emergency medical services. Since many of the counties in Region IV have already gone through the hazard mitigation planning process, their experience and advice has proven invaluable to Yolo County. Each of these meetings includes a local roundtable discussion where we have been able to freely and collaboratively share our local hazard mitigation planning process. Additionally, due to the location and proximity to the Bay Area, Yolo County collaborates with counties that share a border within region's II and III with respect to many issues such as the Delta

Emergency Planning, Terrorism Planning, Earthquake Preparedness, Medical Countermeasure Distribution, and Mass Care coordination.

ELEMENT A.3. PUBLIC INVOLVEMENT

Requirement §201.6(b)(1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval; 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.

Public Meetings

The Steering Committee considered the options available regarding conducting public meetings for the purpose of revealing and gathering comment from the community relating to the Plan draft. After several discussions, three jurisdictions choose to participate in the open public outreach meetings: City of Winters, City of Woodland, and the County of Yolo. While all municipalities were involved in the decision process and encouraged to participate in individual local sessions, the result was two combined public presentations.

City of Woodland

A public meeting was held for the City of Woodland and unincorporated area of Yolo County at the Yolo County Health Department.

Jurisdiction representatives attended and were prepared to answer questions and record comments and input. Only one member of the public, from Woodland, attended.

Date/Time:	December 6, 2011 6:00 to 8:00 PM
Location:	Yolo County Health Department - Woodland
Facilitator:	Yolo County OES
Public Attendance:	(1) Member of the public (Woodland)
	(1) City of West Sacramento staff
	(1) Yolo County Health Department

City of Winters

The City of Winters held a public meeting at the Winters City Council Chambers. The following announcement was published:

Date/Time:	December 7, 2011 6:00 to 7:30 PM
Location:	City of Winters City Council Chambers
Facilitator:	Yolo County OES/City of Winters
Public Attendance:	(2) Members of the public (Davis)
	(4) City of Winters staff
	(1) City of West Sacramento staff
	(1) Local media

Jurisdiction representatives attended and were prepared to answer questions and record comments and input. No members of the public attended. Members of the Yocha Dehe Wintun Nation were encouraged to attend the public meeting in Winters and information was also available at the Yocha Dehe Fire Department.

Public Participation Survey

All jurisdictions conducted an aggressive drive to receive public input on the general perception of threats within their community, the importance of individual preparedness, and the level of hazard mitigation. In order to facilitate the use of new outreach technologies, the bulk of the survey was conducted using the Internet, with access provided through existing governmental websites.

The survey was also available in paper format at:

- Any branch of the Yolo County Library
- Woodland Library
- Any City Hall (Davis, West Sacramento, Winters, Woodland)
- Yolo County Administration Building
- Yolo County Housing Central Office
- Yocha Dehe Wintun Nation Fire Station

Yolo County, Cities of Davis and West Sacramento placed a letter to interested citizens introducing the attached questionnaire on their official web sites with an invitation to fill it out and return it. Davis had 32 responses, West Sacramento had 15 responses. The City of Woodland mailed a copy of the questionnaire with their utility bills and received 889 responses. The City of Winters received 102 responses to the same survey. The Yocha Dehe Wintun Nation received 2 responses to the survey.

Integration of Public Input

Information collected from questionnaires and through interaction with the community at the two public forums was analyzed by the Hazard Mitigation Steering Committee and County OES staff and used to help identify public concern and perceptions on identified threats.

As Plan stakeholders developed their individual hazard prioritization matrices, the information from their respective communities was also considered in formulating the hazard list and subsequent analysis of each of those hazards. The result was a listing of High, Moderate and Low Risk Priority natural, technological, and human-conflict hazards that can or could impact the Yolo Operational Area. Out of that general assessment, prioritized mitigation strategies, with identified implementation projects, and was developed by inter-jurisdictional consensus.

ELEMENT A.4. REVIEW AND INCORPORATION OF EXITING PLANS

Requirement §201.6(b)(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

The Yolo County Operational Area Multi-Jurisdictional Hazard Mitigation Plan will be used to focus project prioritization. Mitigation projects will be considered for funding through federal and state grant programs, and when other funds are made available through the County and or federal government. The Yolo County Operational Area Disaster Council will be the coordinating agency for project implementation. Individual jurisdictions have the capacity to organize resources, prepare grant applications, and oversee project implementation, monitoring, and evaluation. Coordinating organizations may include local,

county, or regional agencies that are capable of, or responsible for, implementing activities and programs. The Yolo County OES Operational Area Coordinator (County OES Manager) will be responsible for mitigation project administration with Yolo County and will assist each submitting jurisdiction named in this plan with their mitigation project administration.

A number of federal, state and local regulations and policies form the legal framework to implement Yolo County's and it's participating jurisdictions hazard mitigation goals and projects. A list of these regulations and plans is presented in the references list at the end of this section.

ELEMENT A.5. PLAN MAINTENANCE PROCESS

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

The process of hazard mitigation does not end with the completion, approval, and adoption of this plan. Within the lifespan of this document (5 years), participating local and tribal governments, in conjunction with community-based organizations, will ensure that the mitigation goals and strategies identified are monitored, that plan administration will continue under a collaborative and cooperative umbrella, and that the document itself will be properly maintained.

The Yolo County Office of Emergency Services, Emergency Planner, Dana Carey as lead coordination agency for hazard mitigation planning within the Yolo OA, will assist and support the ongoing collaborative efforts of local and tribal governments, through the established Hazard Mitigation Steering Committee.

Specific plan maintenance activities may include:

- Distribution of the Plan to all interested parties, including both written and digital formats.
- Facilitation of regular Hazard Mitigation Steering Committee Meetings.
- Monitoring of OA mitigation project activities and dissemination of status reports.
- Generation of reports relative to plan status, project management, and revision updates to executive leadership.
- Preparations for plan revision and updating.

ELEMENT A.6. CONTINUED PUBLIC INVOLVEMENT

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.

The Yolo Operational Area Hazard Mitigation Steering Committee has made the commitment to periodically bring this plan before the public through public meetings and community posting so that citizens may make input as strategies and implementation actions change. Each jurisdiction including the Cities of Davis, West Sacramento, Winters, Woodland and the Yocha Dehe Wintun Nation is responsible for assuring that their citizenry

are informed when deemed appropriate by the Steering Committee. The specific individuals responsible for monitoring, evaluating and updating the plan with the methods mentioned above are listed below.

County of Yolo
Dana Carey, OES Emergency Planner, Office of Emergency Services, County of Yolo

City of Davis
Danielle Foster, Grant Administrator, City Manager's Office, City of Davis

City of West Sacramento
Bryan Jonson, Fire Marshal, Fire Department, City of West Sacramento

City of Winters
Mary Jo Rodolfa, Executive Assistant, City Manager's Office, City of Winters

City of Woodland
Dan Bellini, Police Chief, Woodland Police Department, City of Woodland

Yocha Dehe Wintun Nation
Gary Fredericksen, Fire Chief, Yocha Dehe Fire Department, Yocha Dehe Wintun Nation

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Element B: Hazard Identification and Risk Assessment

Requirement §201.6(c)(2)(i) [The risk assessment shall include a] description of the type, location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

§201.6(c)(2)(ii) [The risk assessment shall include a] 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. All plans approved after October 1, 2008 must also address NFIP insured structures that have been repetitively damaged by floods. The plan should describe vulnerability in terms of:

§201.6(c)(2)(ii)(A) (A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;

§201.6(c)(2)(ii)(B) (B) An estimate of the potential dollar losses to vulnerable structures identified in ... this section and a description of the methodology used to prepare the estimate.

§201.6(c)(2)(ii)(C) Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

Yolo County is at risk from a variety of potential hazards: natural, technological and human conflict related. Many of these hazards, under the right circumstances, could result in a disastrous impact to the county.

Although an attempt has been made to identify all major hazards and their respective impacts, it must be remembered that we live in a time of emerging threats, and nature, coupled with humankind's ongoing development and tendencies toward violence ensures that the material contained within this document will surely require modification over time.

Risk to natural hazards is a combination of hazard, vulnerability and capability. This section of the MHMP will look at both hazards and vulnerability. The risk assessment process identifies and profiles relevant hazards and assesses the exposure to of lives property and infrastructure to these hazards. The goal of the risk assessment is to estimate the potential losses in Yolo County from a hazard event. This process also allows communities in Yolo County to better understand their potential risk to natural hazards and provides a framework for developing and prioritizing mitigation actions to reduce the risks from future hazard events in Yolo County.

HAZARD ANALYSIS PROCESS

Hazard Identification

The process of identifying hazards that do, or could potentially affect Yolo County at various levels was the first step in assessing overall risk. Recognizing the potential required an analysis of known, suspected, and emerging hazards existing within or directly affecting the Yolo OA. Some of the following questions were used during the analysis:

- What are the known hazards?
- What are the suspected hazards?
- What are the potentially emerging hazards?
- What are the elements of the hazard?
- What are the conditions associated with the occurrence of a hazardous event?
- What factors are required for an event to turn hazardous?

In the early meetings with Yolo County and the Steering Committee, data was reviewed from the following sources on hazards affecting the county, those sources were: the Federal and State Disaster Declaration History, the State of California Hazard Mitigation Plan (2010), the Safety Element of the participating jurisdictions, the 2005 Yolo County Hazard Mitigation Plan and many more documents as noted in the references section of this plan.

The Steering Committee came to agreement on significant hazards to Yolo County. The Steering Committee agreed not to address technological or human-caused hazards, which are addressed in emergency operations plans for the participating jurisdictions. The following natural hazards are detailed in this section:

- Dam Failure
- Drought
- Earthquakes
- Flooding
- Severe Weather
- Volcanic Activity
- Wildfire

The planning process used the available FEMA tools to evaluate all the possible threats faced. Through the threat analysis process the most probable threats, the most devastating threats and the most significant threats to Yolo County were identified. Other threats not identified in this plan are identified in other plans such as functional response plans and procedures that could potentially affect Yolo County.

Geographic Extent and Potential Magnitude
This section describes the potential severity of a disaster and any secondary events caused by the hazard and the extent or location of the hazard in the operational area. Magnitude is classified by the following:

- **Catastrophic:** More than 50 percent of the operational area affected
- **Critical:** Between 35-50 percent of the operational area affected
- **Limited:** 10-25 percent of the operational area affected
- **Negligible:** Less than 10 percent of the operational area affected

Previous Occurrences
This section includes information on historic incidents, including impacts, if known. A brainstorming session in the early Steering Committee meetings was used to capture information from participating jurisdictions on past occurrences.

Probability of Future Occurrences
The frequency of past events is used to gauge the likelihood of future occurrences. Based on

historical data, the probability of future occurrences is categorized into one of the following classifications:

- **Highly Likely:** Near 100 percent chance of occurrence next year or happens every year
- **Likely:** Between 10 percent and 100 percent chance of occurrence in next year or has a recurrence interval of 10 years or less
- **Occasional:** Between 1 percent and 10 percent chance of occurrence in the next year or has a recurrence interval of 11 to 100 years
- **Unlikely**: Less than 1 percent chance of occurrence in next 100 years or has a recurrence interval of greater than every 100 years

The probability, or chance of occurrence, was calculated where possible based on existing data. Probability was determined by dividing the number of events observed by the number of years and multiplying by 100. This gives the percent chance of the event happening in any given year. An example would be three droughts occurring over a 30-year period, which suggests a 10 percent chance of that hazard occurring in any given year.

Unincorporated Communities

In the process of conducting a risk assessment for areas of Yolo County, selected communities, town sites, settlements, and spatially connected neighborhoods and developments were evaluated. The focus was given to assessing risk to areas that were populated, developed, and otherwise potentially impacted by a hazardous event.

Community	Community Designators
Brooks	Town site and surrounding developed and undeveloped non-tribal lands
Capay	Town site and surrounding developed and undeveloped unincorporated lands
Clarksburg	Town site and surrounding developed and undeveloped unincorporated lands
Dunnigan	Town site and surrounding developed and undeveloped unincorporated lands
Elkhorn	Developed and undeveloped unincorporated lands along Old River Road
El Macero	Community development bordering Davis to the east
Esparto	Town site and surrounding developed and undeveloped unincorporated lands
Guinda	Town site and surrounding developed and undeveloped unincorporated lands
Knights Landing	Town site and surrounding developed and undeveloped unincorporated lands
Madison	Town site and surrounding developed and undeveloped unincorporated lands
Monument Hill	Developed unincorporated area that includes Wild Wings and the Woodland airport
Rumsey	Town site and surrounding developed and undeveloped unincorporated lands
West Plainfield	Developed and undeveloped unincorporated lands
Willow Oak	Developed and undeveloped unincorporated lands
Yolo	Town site and surrounding developed and undeveloped unincorporated lands
Zamora	Town site and surrounding developed and undeveloped unincorporated lands

The unincorporated communities designated within this plan represent primary townships and settlements that are represented as such within the Yolo County General Plan. Some latitude was used in designating all such locations, as the value of risk assessment is based upon impacts to concentrated settlements. Within a rural environment, the identification of each and every residential, agricultural, or commercial development is not feasible, as the population densities and potential impacts are hard to differentiate.

In assessing the primary unincorporated communities, the Steering Committee used the following location criteria:

- Is the location identified within the County General Plan?
- Does the location have an identified core, or a significant central point of activity (i.e. airport)
- Is the location part of a named residential or commercial development that contains a concentrated population or at-risk commercial/industrial complex?
- Is the location well separated from adjoining municipalities, or simply an unincorporated extension of that incorporated city?
- Does the location have a specific historical reference?
- Does the location function as a central service area for more disparate and rural settlements?

Additionally, the following Cities of Davis, West Sacramento, Winters and Woodland and the Yocha Dehe Wintun Nation are included in the following hazard identification and risk assessment.

Disaster Declaration History
One method to identify hazards is to look at the events that have triggered federal and/or state disaster declarations that included Yolo County. The following table lists the disaster declarations where Yolo County was designated federal and/or state disaster declarations since the last plan update (2005 to the present). The USDA Disasters below are the Primary designation for Yolo County. There were 27 Contiguous County designations received in Yolo County from 2005 to 2012.

Hazard Type	Disaster Number	Year	State Declaration	Federal Declaration
Drought	USDA	2012		☑
Freeze	USDA	2008		☑
Drought	USDA	2008		☑
Severe Weather, Wind		2008	☑	
Drought	USDA	2007		☑
Severe Storms, Flooding, Mudslides and Landslides	DR-1628	2006	☑	☑
Rainfall & Severe Weather	USDA	2006		☑
Severe Storms, Flooding, Mudslides & Landslides Pres.	USDA	2006		☑

Hazard Type	Disaster Number	Year	State Declaration	Federal Declaration
Fire	USDA	2006		☑
Hurricane Katrina Evacuations	EM-3248	2005		☑
Drought	USDA	2005		☑

ELEMENT B.1. HAZARD DESCRIPTIONS
ELEMENT B.2 PREVIOUS OCCURRENCES AND PROBABILITY OF FUTURE OCCURRENCES

The following hazard profiles cover all of the jurisdictions within this plan except where noted in their Community Profiles. The topography of Yolo County has only two general zones both are similar in their makeup. The Capay Valley is an open river valley consisting of alluvium soils and surrounded by low hills and represents approximately 30% of the landmass in Yolo County. The remaining 70% of the county is the western shoulder of the great alluvium valley known as the great central valley of California. This area is characterized by shared soils, similar elevation and matching microclimates. The main difference between this part of the county and the Capay Valley is the barrier hills are to the west and this area is open to the north, east and south and exposed to the weather conditions of the central valley.

DAM FAILURE

General

Dam failure is the uncontrolled release of impounded water from behind a dam. Flooding, earthquakes, blockages, landslides, lack of maintenance, improper operation, poor construction, vandalism, and terrorism can all cause a dam to fail. Dam failure causes downstream flooding that can affect life and property.

California has had about 45 failures of non-federal dams. The failures occurred for a variety of reasons, the most common being overtopping. Other reasons include specific shortcomings in the dams themselves or an inadequate assessment of surrounding geomorphologic characteristics.

California's first notable dam failure was in 1883 in Sierra County, while the most recent failure occurred in 1965. The most catastrophic event was the failure of William Mulholland's infamous St. Francis Dam, which failed in 1928 and killed an estimated 450 people, only slightly fewer than the 1906 San Francisco earthquake. The actual number of dead from the St. Francis Dam failure was likely substantially higher. San Francisquito Canyon, which was flooded in the event, was home to hundreds of transients and illegal immigrants who were never accounted for in the death totals.

Since 1929, the state has supervised all non-federal dams in California to prevent failure for the purpose of safeguarding life and protecting property. Supervision is carried out through the state's Dam Safety Program under the jurisdiction of DWR. The legislation requiring state supervision was passed in response to the St. Francis Dam failure and had concerns

about the potential risks to the general populace from a number of water storage dams. The law requires:

- Examination and approval or repair of dams completed prior to August 14, 1929, the effective date of the statute.

- Approval of plans and specifications for and supervision of construction of new dams and the enlargement, alteration, repair, or removal of existing dams.

- Supervision of maintenance and operation of all dams under the state's jurisdiction.

The 1963 failure of the Baldwin Hills Dam in Southern California led the Legislature to amend the California Water Code to include within state jurisdiction both new and existing off-stream storage facilities.

Dams and reservoirs subject to state supervision are defined in California Water Code §6002 through §6004, with exemptions defined in §6004 and §6025. In administering the Dam Safety Program, DWR must comply with the provisions of CEQA. As such, all formal dam approval and revocation actions must be preceded by appropriate environmental documentation.

In 1972, Congress moved to reduce the hazards from the 28,000 non-federal dams in the country by passing Public Law 92-367, the National Dam Inspection Act. With the passage of this law, Congress authorized the USACE to inventory dams located in the United States. The action was spurred by two disastrous earthen dam failures during the year, in West Virginia and South Dakota that caused a total of 300 deaths.

The Water Resources Development Act of 1986 (P.L 99-662) authorized USACE to maintain and periodically publish an updated National Inventory of Dams (NID). The Water Resources Development Act of 1996 (P.L. 104-303), Section 215, re-authorized periodic updates of the NID by USACE.

Geographic Extent and Potential Magnitude
Dam Failure was rated as **Critical**: Between 35-50 percent of the operational area affected.

In the area there are six dams, of various types of construction and the failure of any one would cause some degree of flooding in Yolo County. Failure of a dam structure may result due to impact from strong ground motion, such as following a major earthquake, those are:

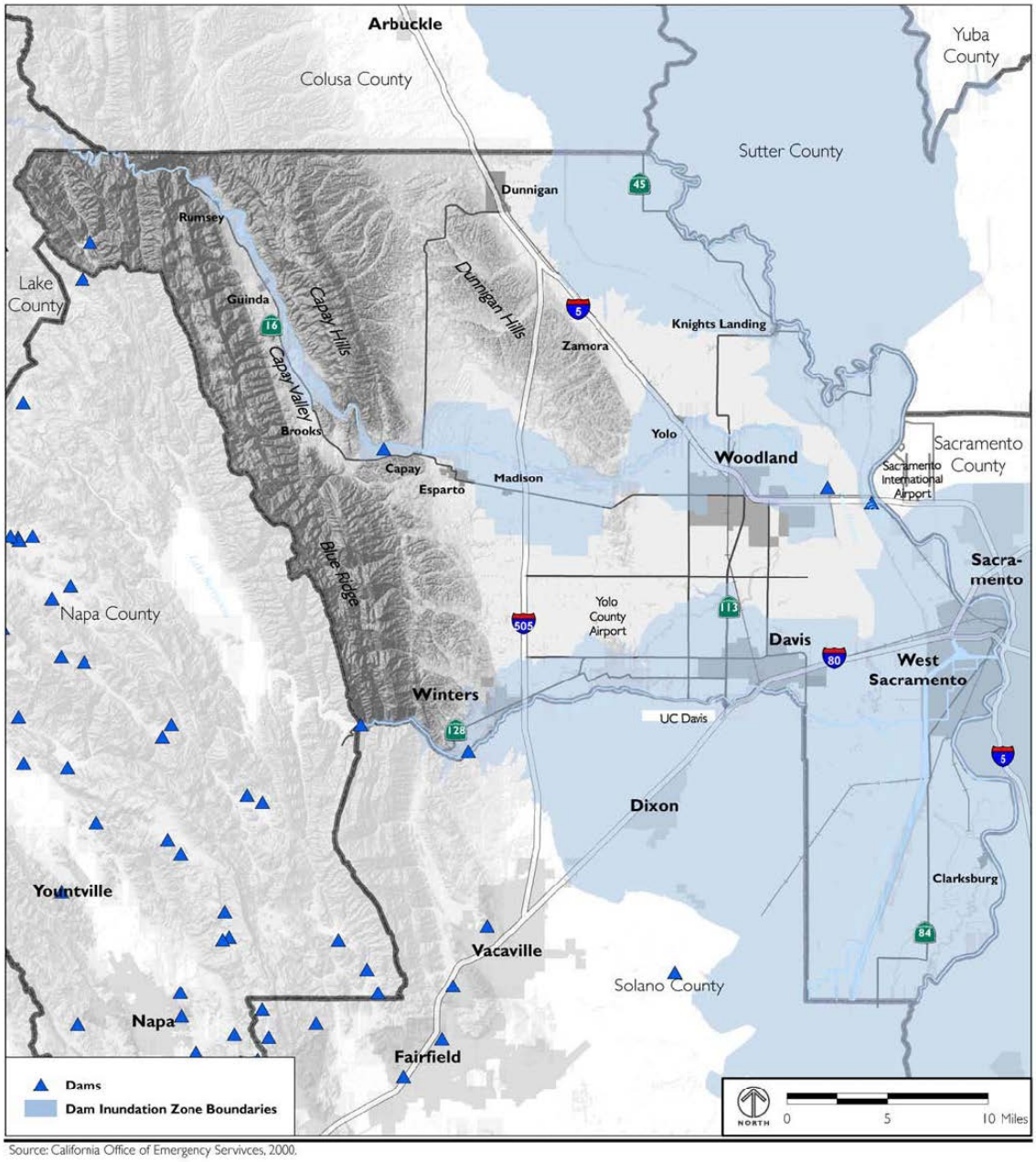
Monticello Dam	Putah Creek
Indian Valley Dam	Cache Creek
Shasta Dam	Sacramento River
Oroville Dam	Feather River
Folsom Dam	American River
Nimbus Dam	American River

Dam Inundation Zones
Portions of Yolo County are located downstream of several dams with large inundation areas. In the unlikely event that any of these dams were to fail, the inundation zones

indicate areas that could potentially be flooded. If the dams at Indian Valley Reservoir, Lake Berryessa or along the Sacramento, Feather or American rivers were to fail, the cities of West Sacramento, Winters and Davis would be entirely inundated by floodwaters, as would much of the city of Woodland. The unincorporated communities of Rumsey, Capay, Madison, Knights Landing and Clarksburg and parts of Guinda, Esparto, Monument Hills and Yolo are also located entirely within dam inundation zones.

Figure B-1 lists Dams in and around Yolo County and their inundation zones.

Figure B-1 Dam Inundation Zones in Yolo County



In the following information about the dams, the times and areas given for potential inundation are the best available estimates. Actual inundation times and areas may vary.

<u>Monticello Dam</u>
Monticello Dam is a thin arch concrete structure 270 feet high. It impounds a maximum of 1,602,300 acre-feet creating Lake Berryessa in Napa County, 10 miles west of Winters. In the event of failure, Monticello Dam presents a high hazard to downstream areas and extensive loss of life and property would likely occur.

Large uncontrolled water releases into Putah Creek could occur resulting from either a major or partial dam failure, or earthen slides into Lake Berryessa, which could cause overtopping of the dam.

Seismic evaluation of Monticello Dam indicates it could withstand an earthquake of Richter magnitude 6.5 with the epicenter located 0.5 miles from the dam. Thus, the dam is considered secure from such an occurrence. The topography of the lake relative to the size of potential slides makes the possibility of dam overtopping very unlikely. Any landslide that would move into the outlet works or spillway area would be especially dangerous to the dam.

The unstable area adjacent to the dam crest at its contact with the left abutment will be closely monitored by the dam tender during the raining season and after seismic activity. Landslides into the down stream channel could impound water but releases would be expected to be gradual as the new "dam" was eroded away. Severe storms are not expected to cause rapid rises in the water surface of Lake Berryessa.

Inhabited Areas of Potential Inundation

Monticello Dam		
Location	Time From Dam Break To Flooding	Response Actions
SR128 & CR87	0 hr. 20 min.	Evacuate, close roads
City of Winters	0 hr. 30 min	Evacuate, close roads
D.Q. University	1 hr. 45 min.	Evacuate campus
Fairfield School (CR98 & Russell Blvd)	2 hr. 30 min.	Evacuate school
City of Davis (west edge)	2 hr. 45 min.	Evacuate
Sutter- Davis Hospital	3 hr. 00 min.	Evacuate
City of Davis (downtown)	3 hr. 30 min.	Evacuate
El Macero (I-80 & Mace Blvd)	4 hr. 15 min	Evacuate, close roads
I-80 & CR105	4 hr. 30 min.	Close roads

Indian Valley Dam

Indian Valley Dam is an earth-filled dam producing a lake of 359,000 acre-feet storage capacity (maximum). The dam is located in Lake County, northwest of Yolo County, on the North Fork of Cache Creek. Depending upon the rate of discharge following dam failure the area of potential inundation extends along the Cache Creek all the way to the I-80 and the Yolo Bypass.

Inhabited Areas of Potential Inundation

Indian Valley Dam		
Location	Time From Dam Break To Flooding	Response Actions
Cache Creek along stream channel from dam to Rumsey	0 hr. 00 min to 1 hr. 59 min	Evacuate recreationists to high ground

Indian Valley Dam		
SR120 & Long Valley Rd (Lake County)	0 hr. 31 min.	Evacuate, close roads
SR16 where it parallels Cache Creek	1 hr. 34 min to 8+ hr. (depending on location)	Evacuate, close roads
Cache Creek Canyon Regional Park	1 hr. 40 min.	Evacuate recreationists to high ground
Camp Haswell (Boy Scouts of America)	1 hr. 52 min.	Evacuate to high ground
Rumsey	1 hr. 59 min.	Evacuate town to high ground
Guinda	2 hr. 24 min.	Evacuate town to high ground
Tancred	3 hr. 04 min.	Evacuate town to high ground
Brooks	3 hr. 25 min.	Evacuate town to high ground
Capay	4 hr. 00 min.	Evacuate town to high ground
Esparto	4 hr. 00 min.	Evacuate town to high ground
Madison	5 hr. 00 min.	Evacuate town to high ground
I-505	5 hr. 00 min.	Evacuate residents in the area to high ground, close road
CR94B	5 hr. 30 min.	Evacuate residents in the area to high ground, close road
I-5 at Yolo	7 hr. 00 min.	Evacuate town to high ground, close road
SR113 north of I-5	7 hr. 30 min.	Evacuate residents in the area to high ground, close road
SR113 south of I-5	8 hr. 00 min.	Evacuate residents in the area to high ground, close road
Woodland	8 hr. 00 min.	Evacuate north and west residents to the south
I-80 at Davis	9 hr. 00 min.	Evacuate east, north, and west residents to the south
I-80 at Yolo Bypass	10 hr. 48 min.	Evacuate, close road

Shasta Dam

Shasta Dam is a concrete gravity dam. The reservoir (Lake Shasta) has a maximum storage capacity of 4,552,000 acre-feet. The dam is located in Shasta County north of Summit City.

Dam failure would result in varying degrees of inundation to eastern and northeastern Yolo County.

Inhabited Areas of Potential Inundation

Shasta Dam		
Location	Time From Dam Break To Flooding	Response Actions
North County Line, with Colusa County	6 days 00 hr.	Evacuate to high ground, close roads
Knights Landing	7 days 22 hr.	Evacuate to high ground, close roads
City of West Sacramento	10 days 05 hr.	Evacuate entire city to high ground, close roads
Clarksburg	Not specified	Evacuate, close roads

Oroville Dam

Oroville Dam is an earth-filled dam. The reservoir (Oroville Lake) has a maximum storage capacity of 3,500,000 acre-feet. The dam is located in Butte County, northeast of Yolo County, above the Sacramento River.

Inhabited Areas of Potential Inundation

Oroville Dam		
Location	Time From Dam Break To Flooding	Response Actions
Knights Landing	16 hr. 00 min.	Evacuate and close roads
City of West Sacramento	23 hr. 15 min.	Evacuate to high ground and close roads
Clarksburg	27 hr. 30 min.	Evacuate and close roads

Folsom Dam

Folsom Dam is a concrete and earth dam. The lake has a maximum storage capacity of 977,000 acre-feet. The dam is located in Sacramento County, east of Yolo County on the American River.

Dam failure would result in some degree of inundation to areas of Yolo County bounded on the west by the west levee of the Yolo Bypass, on the north by a point on Old River Road one-half mile south of Kiesel Crossing and on the south by the county line.

Inhabited Areas of Potential Inundation

Folsom Dam		
Location	Time From Dam Break To Flooding	Response Actions
Bradshaw Road at the American River	2 hr. 05 min.	Not specified
Perkins	3 hr. 30 min.	Not specified
City of West Sacramento	5 hr. 00 min to 6 hr.	Warn, evacuate

	00 min.	
Borges Clarksburg Airstrip	8 hr. 30 min.	Warn, evacuate
South County Line	15 hr. 30 min.	Close roads

Nimbus Dam

Nimbus Dam is a concrete gravity dam. The reservoir (Lake Natoma) has a maximum storage capacity of 8,760 acre-feet. The dam is located in Sacramento County, east of Yolo County. All actions relating to a failure of Nimbus Dam would be identical to those required by a failure of Folsom Dam except the resulting inundation would be less severe.

Previous Occurrences

No previous occurrences have occurred in Yolo County, however there have been recent minor failures to a dam (Folsom Dam) located outside of Yolo County. Based on information from Sacramento County Hazard Mitigation Plan, there have been two dam failure incidents since 1994 that could have had the potential to affect Yolo County. However, these incidents were quite limited in scope and since the incidents occurred, improvements to the Folsom Dam system have been made.

July 17, 1995 – At the Folsom Dam, a spillway gate, gate #3 of Folsom Dam failed, increasing flows into the American River significantly. The spillway was repaired and the U.S. Bureau of Reclamation carried out an investigation of the water flow patterns around the spillway using numerical modeling. No flooding occurred as a result of the partial failure, but due to the location of the dam in proximity to the City of Folsom, possible flooding was a major concern.

May 15, 1997 – Cavitation damage to river outlet works occurred at Folsom Dam. Damage was discovered just downstream of gate #3. The damage consisted of a hole in the floor of the conduit measuring approximately 42 feet long, 15 feet wide, and 6 feet deep. Subsequent inspections of the other conduits revealed similar damage downstream of gate #4. Also, the beginning of cavitation damage was found downstream of gate #2. Minor damage was found in the other five conduits. No flooding was associated with this damage.

Probability of Future Occurrences

There are no specific local government mitigation actions relating to a possible failure of any of the dams affecting Yolo County. Dam safety is a comprehensive and long-term process that continues throughout the life span of any dam. Appropriate site maintenance, continuous inspection and monitoring, and implementation of periodic site improvements will improve the safety of most dam facilities.

From a local perspective, any mitigation efforts would be directly related to down stream flood plain management activities, which would include land use regulations, engineered flood control improvements, flow-monitoring devices, evacuation planning, and other activities not directly associated with the dam itself.

The probability of future occurrences based on history is **Unlikely:** less than 1 percent chance of occurrence in the next 100 years or has a recurrence interval of greater than every 100 years.

DROUGHT

General

Drought is a gradual phenomenon. Although droughts are sometimes characterized as emergencies, they differ from typical emergency events. Most natural disasters, such as floods or forest fires, occur relatively rapidly and afford little time for preparing for disaster response.

Droughts occur slowly, over a multi-year period, and it is often not obvious or easy to quantify when a drought begins and ends. Drought is a complex issue involving (many factors—it occurs when a normal amount of moisture is not available to satisfy an area's usual water-consuming activities.

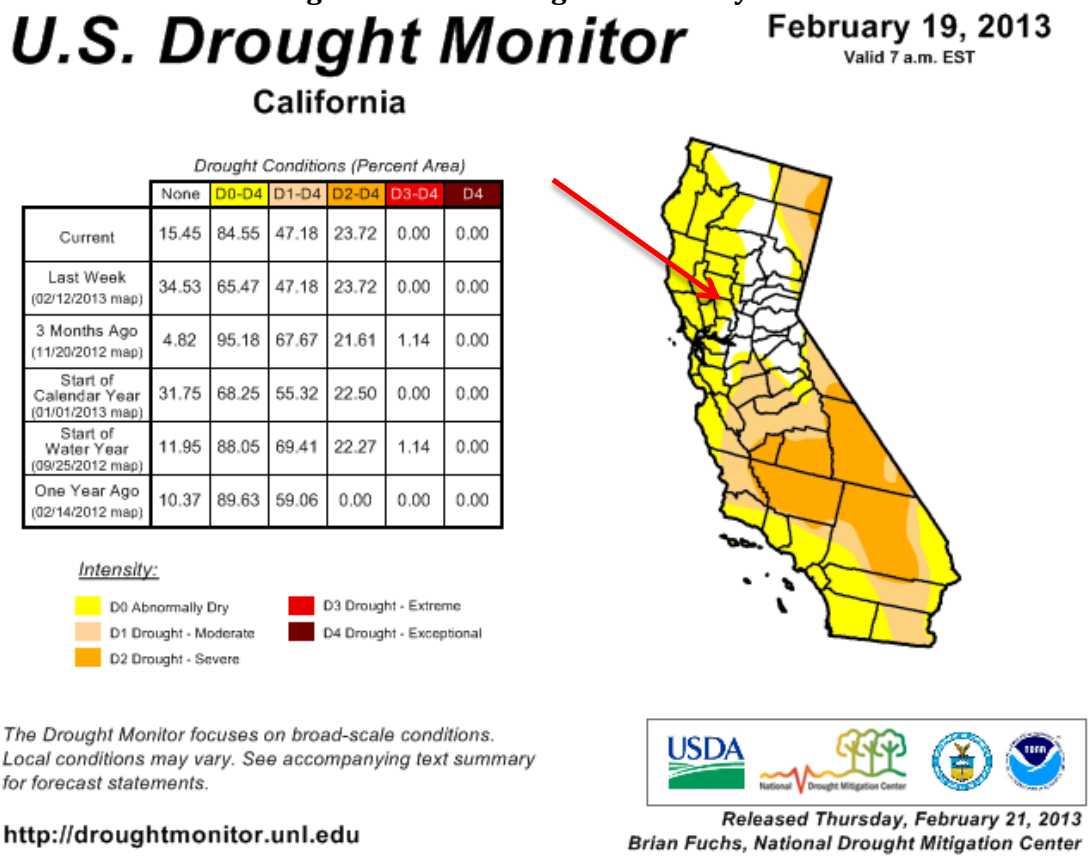
Drought can often be defined regionally based on its effects:

- Meteorological drought is usually defined by a period of below average water supply.
- Agricultural drought occurs when there is an inadequate water supply to meet the needs of the state's crops and other agricultural operations such as livestock.
- Hydrological drought is defined as deficiencies in surface and subsurface water supplies. It is generally measured as stream flow, snowpack, and as lake, reservoir, and groundwater levels.
- Socioeconomic drought occurs when a drought impacts health, well-being, and quality of life, or when a drought starts to have an adverse economic impact on a region.

Geographic Extent and Potential Magnitude

Drought in the United States is monitored by the National Integrated Drought Information System (NIDIS). A major component of this portal is the U.S. Drought Monitor. The Drought Monitor concept was developed jointly by the NOAA's Climate Prediction Center, the NDMC, and the USDA's Joint Agricultural Weather Facility in the late 1990s as a process that synthesizes multiple indices, outlooks and local impacts, into an assessment that best represents current drought conditions. The final outcome of each Drought Monitor is a consensus of federal, state, and academic scientists who are intimately familiar with the conditions in their respective regions. A snapshot of the drought conditions in California and in Yolo County can be found in Figure B-2.

Figure B-2 U.S. Drought Monitor by State



Source: http://droughtmonitor.unl.edu/DM_state.htm?CA,W

The California Department of Water Resources (DWR) says the following about drought:

> "One dry year does not normally constitute a drought in California. California's extensive system of water supply infrastructure—its reservoirs, groundwater basins, and inter-regional conveyance facilities—mitigates the effect of short-term dry periods for most water users. Defining when a drought begins is a function of drought impacts to water users. Hydrologic conditions constituting a drought for water users in one location may not constitute a drought for water users elsewhere, or for water users having a different water supply. Individual water suppliers may use criteria such as rainfall/runoff, amount of water in storage, or expected supply from a water wholesaler to define their water supply conditions."

The drought issue in California is further compounded by water rights. Water is a commodity possessed under a variety of legal doctrines. The prioritization of water rights between farming and federally protected fish habitats in California is part of this issue.

Drought impacts are wide-reaching and may be economic, environmental, and/or societal. The most significant impacts associated with drought in Yolo County are those related to water intensive activities such as agriculture, wildfire protection, municipal usage, commerce, tourism, recreation, and wildlife preservation. Also, during a drought, allocations go down, which results in reduced water availability. Voluntary conservation measures are typically implemented during extended droughts. A reduction of electric power generation

and water quality deterioration are also potential problems. Drought conditions can also cause soil to compact and not absorb water well, potentially making an area more susceptible to flooding.

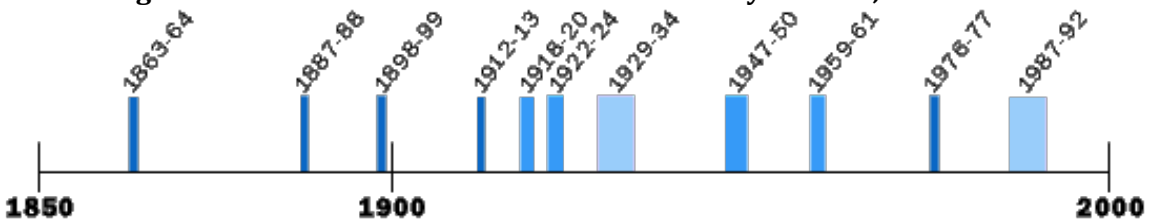
Historically, California has experienced multiple severe droughts. According to DWR, droughts exceeding three years are relatively rare in Northern California, the source of much of the State's developed water supply. The 1929-34 drought established the criteria commonly used in designing storage capacity and yield of large northern California reservoirs. Table B-3 compares the 1929-34 drought in the Sacramento and San Joaquin Valleys to the 1976-77, 1987- 92, and 2007-09 droughts (California's most recent multi-year drought). The driest single year of California's measured hydrologic record was 1977. Figure B-4 depicts California's Multi- Year Historical Dry Periods, 1850-2000.

Table B-3 Severity of Extreme Droughts in the Sacramento and San Joaquin Valleys

Drought Period	Sacramento Valley Runoff		San Joaquin Valley Runoff	
	(maf*/yr)	(percent Average 1901-96)	(maf*/yr)	(percent Average 1906-96)
1929-34	9.8	55	3.3	57
1976-77	6.6	37	1.5	26
1987-92	10.0	56	2.8	47
2007-09	11.2	64	3.7	3.

Source: California's Drought of 2007-2009, An Overview. State of California Natural Resources Agency, California Departmentof Water Resources. Available at: http://www.water.ca.gov/drought/docs/DroughtReport2010.pdf

Figure B-4 California's Multi- Year Historical Dry Periods, 1850-2000



Source: CA DWR, www.water.ca.gov

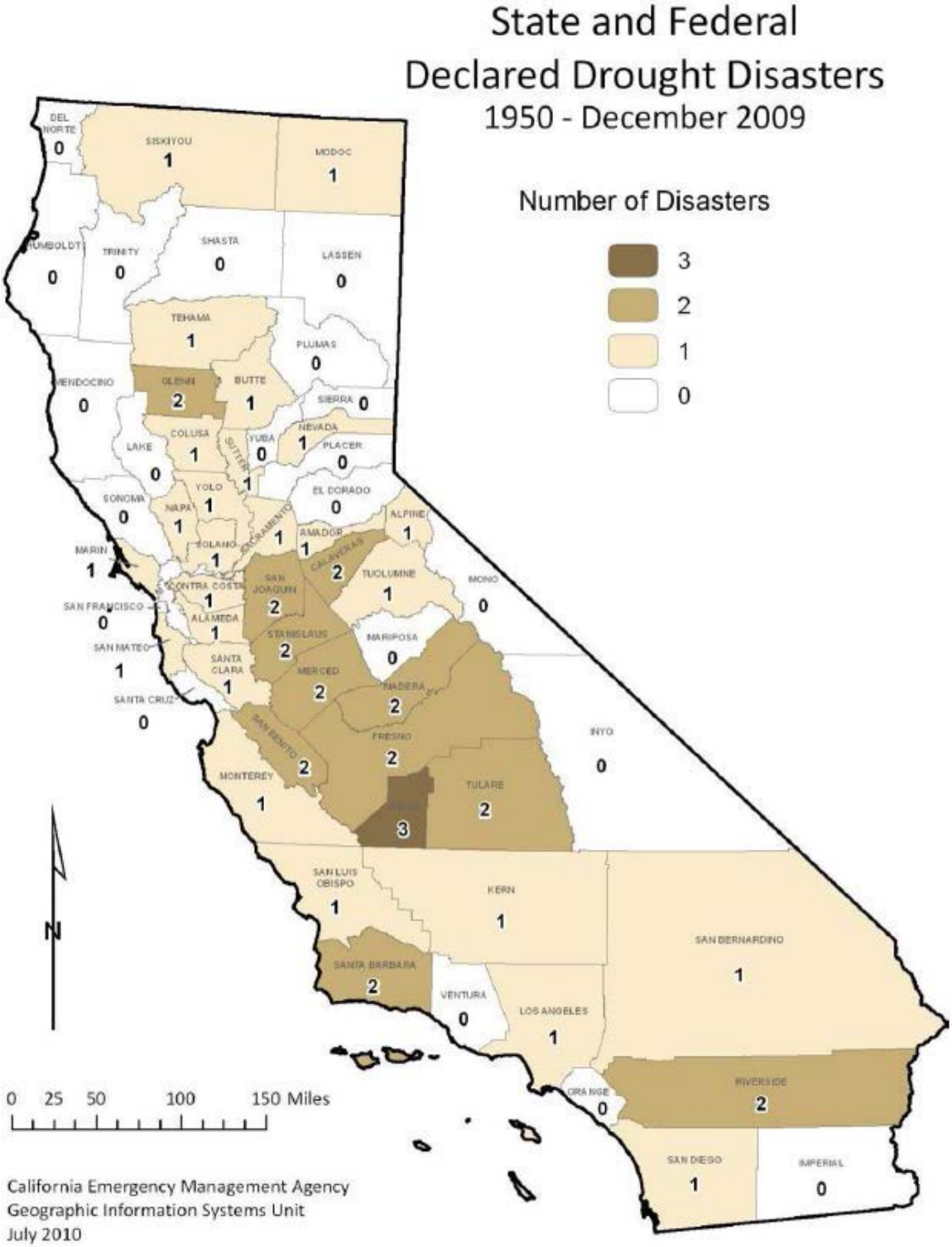
Previous Occurrences

According to the State of California Hazard Mitigation Plan, Yolo County has experienced one drought that resulted in a state disaster declaration. This can be seen in the State and Federal Declared Drought Disaster Figure B-5.

Probability of Future Occurrences

The probability of future occurrences are Likely - Between 10 percent and 100 percent chance of occurrence in next year or has a recurrence interval of 10 years or less.

Figure B-5 State and Federal Drought Declarations in California



Source California SHMP, 2010

EARTHQUAKE

General

Earthquake activity is characterized by a sudden, unpredictable movement in the earth's subsurface structure, usually associated with the shifting of tectonic plates that result in severe ground motion and surface deformation.

Geographic Extent and Potential Magnitude

Earthquake was rated as **Critical**: Between 35-50 percent of the operational area affected for each jurisdiction by the Hazard Mitigation Steering Committee.

There are two known faults in Yolo County, the Hunting Creek Fault and the Dunnigan Hills Fault, as shown in Figure B-6. The Dunnigan Hills Fault is not active and the Hunting Creek Fault is located within a sparsely populated area of the county. While Yolo County has a low probability for earthquake hazards compared to the rest of California, it is subject to seismic activity both within and near the County and thus, there is a risk of damage to structures and property as a result.

The Hunting Creek Fault is located in the far northwestern portion of the County, which is the only fault in the County subject to surface rupture. As shown in the map on the following page, only a small portion of the fault lies within Yolo County, and is in an area that is sparsely populated and not planned for any growth or development other than individual farm dwellings that might be built in the future. Development near a fault subject to surface rupture is regulated by the Alquist-Priolo Act. The Act requires a detailed fault-rupture hazard investigation and prohibits development directly over any traces of the active fault line.

The other active or potentially active fault is the Dunnigan Hills Fault, which extends west of Interstate 5 between the town of Dunnigan and northwest of the town of Yolo. This fault has been active in the last 10,000 years, but has not been active in historic times.

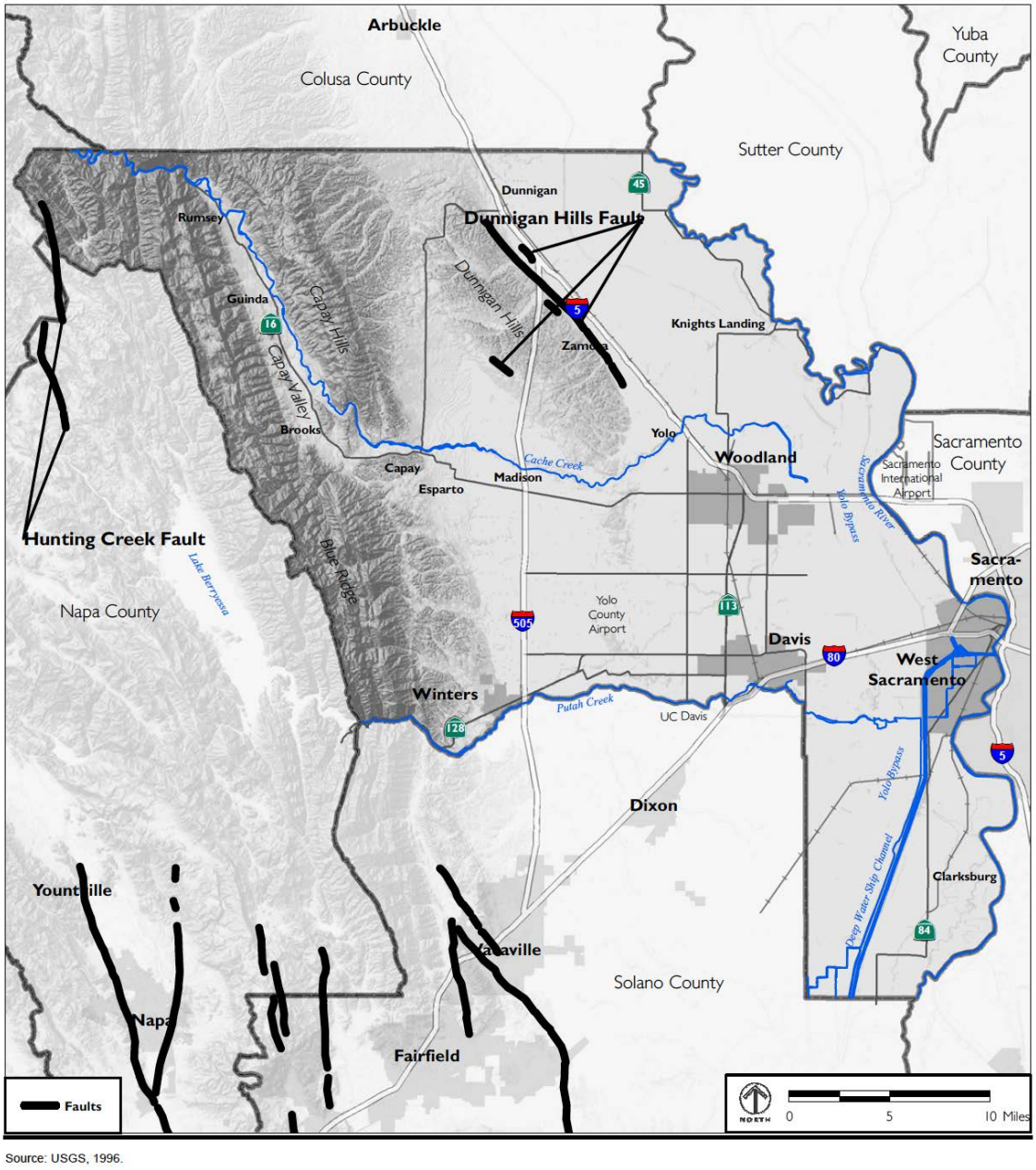
In addition to the Hunting Creek and Dunnigan Hills faults, major faults in the Coast Ranges and in the Sierra Nevada foothills are capable of producing groundshaking that could affect Yolo County residents.

Previous Occurrences

The April 1892 Vacaville-Winters earthquake that caused severe damage to Winters and lesser damage to Davis, Woodland, and other parts of the County, is believed to have originated from a segment of a complex zone of blind thrust faults that lie to the south in Solano County on the western side of the lower Sacramento Valley.

The effects of groundshaking during a maximum intensity earthquake is likely to involve structural damage to stucco, masonry walls and chimneys, which could expose people to falling objects and possible building collapse. The degree of such hazards is controlled by the nature of the underlying soil and rock materials, the magnitude of and distance from the quake, the duration of ground motion and the structural characteristics of the building.

Figure B-6 Known Faults in and Near Yolo County



Source: USGS, 1996.

Source: Yolo County General Plan, Safety Element

Another risk from seismic activity is liquefaction, which is the rapid transformation of saturated, loose, fine-grained sediment to a fluid-like state because of earthquake ground shaking. Liquefaction can result in substantial loss of life, injury, and damage to property. In addition, liquefaction increases the hazard of fires because of explosions induced when underground gas lines break, and because the breakage of water mains substantially reduces fire suppression capability.

Landslides are another risk associated with seismic activity. Landsliding is the natural process of relatively rapid downslope movement of soil, rock and rock debris as a mass. The rate of landsliding is affected by the type and extent of vegetation, slope angle, degree of

water saturation, strength of the rocks, and the mass and thickness of the deposit. Some of the natural causes of this instability are earthquakes, weak materials, stream and coastal erosion, and heavy rainfall. In addition, certain human activities tend to make the earth materials less stable and increase the chance of ground failure.

Activities contributing to instability include extensive irrigation, poor drainage or groundwater withdrawal, removal of stabilizing vegetation and over-steepening of slopes by undercutting them or overloading them with artificial fill. These activities cause slope failure, which normally produce landslides and differential settlement and are augmented during earthquakes by strong ground motion.

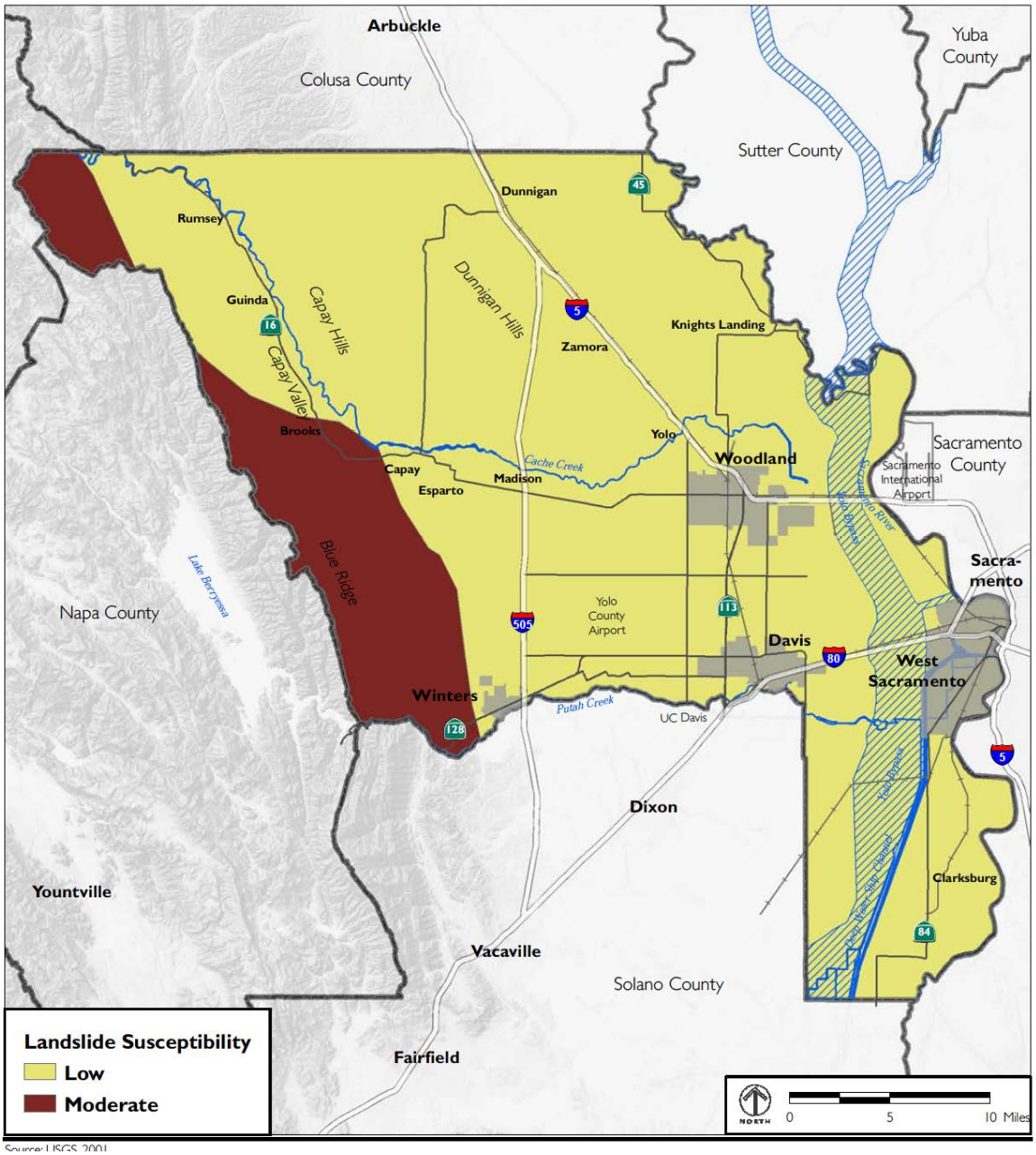
In Lake County, northwest of Yolo County, a landslide along the south bank of the North Fork of Cache Creek was discovered in 1998. This landslide is located approximately 1.5 miles downstream of the Indian Valley Dam. The landslide mostly affects Lake County. Also the Capay Valley area is particularly susceptible to landslides, as it is composed of poorly consolidated marine sediments, on either side of a rapidly moving watercourse (Cache Creek) with significant uncontrolled flood volumes. Elsewhere in the County however, landslides are generally not a significant hazard. Figure B-7 identifies areas with higher potential for landslides, based on soil stability characteristics.

Yolo County faces exposure to mudslides primarily along Cache Creek, in the same areas where landslides are a risk. At the Yolo County/Colusa County boundary, State Route 16 passes through the open preserve area of the Cache Creek Regional Park. For about a mile, the highway is bordered by Cache Creek on the west and canyon walls on the east. The canyon walls are subject to rock and mud slides during heavy winter rains. The rock and mudslides create traffic hazards by occasionally blocking the highway. A road closure gate is along that segment of the highway. This gate prohibits traffic from entering this segment when major rock and mudslides occur.

Areas of Yolo County also experience land subsidence. Subsidence, the decrease of ground elevation, has natural causes and human induced causes. Since the 1950's, the most common cause of subsidence in Yolo County has been groundwater withdrawal, which has resulted in as much as 4 feet of elevation change in some parts of the County. The East Yolo subbasin area has been affected most dramatically, with communities near Zamora, Knights Landing and Woodland having experienced damage and loss of structural integrity to highways, levees, wells and irrigation canals.

Some soils in Yolo County expand and contract depending on the level of moisture that they contact, impacting their suitability for safe development. These soils vary in distribution and degree of expansiveness. Yolo County soils are characterized by low, medium, high and very high expansiveness. Soils with "Low" expansiveness have the potential to change up to 3 percent in volume between the wet and dry state of the soil. Soils with "High" and "Very High" expansiveness require structural accommodations to mitigate 4 percent to 9.5 percent changes in soil volume. Contraction volumes greater than 4 percent directly impact soil suitability for roads, bridges, structures and other types of development. Figure B-8 identifies expansive soils in the County.

Figure B-7 Landslide Susceptibility in Yolo County

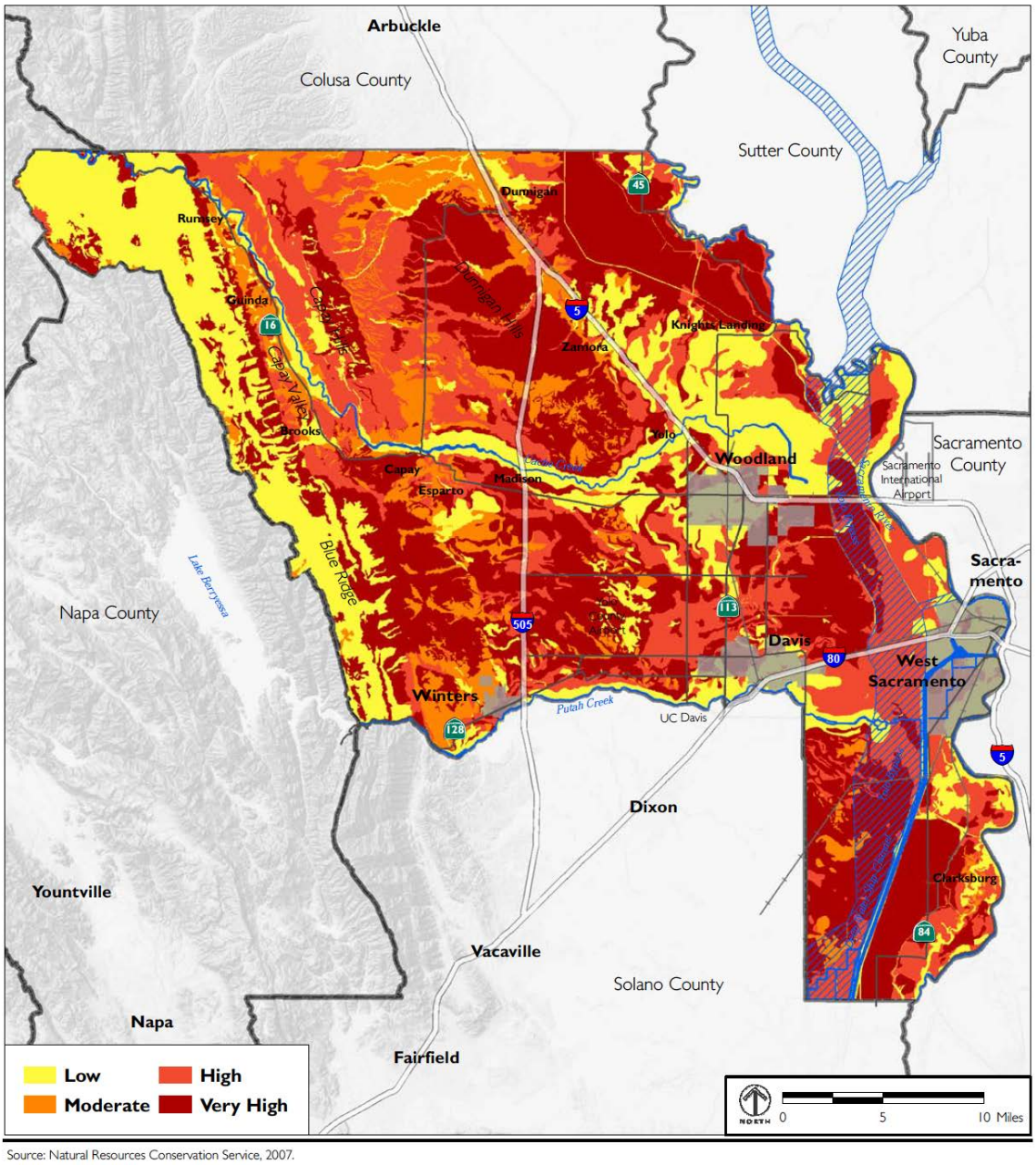


Source: Yolo County General Plan, Safety Element

Probability of Future Occurrences

Based on the earthquake shaking potential for Yolo County, the proximity to the Bay Area and the history of shaking the probability of damaging seismic ground shaking in Yolo County and its jurisdictions is **Occasional:** Between 1 percent and 10 percent chance of occurrence in the next year or has a recurrence interval of 11 to 100 years.

Figure B-8 Expansive Soils in Yolo County



Source: Yolo County General Plan, Safety Element

FLOOD

General

Flooding is the rising and overflowing of a body of water onto normally dry land. History clearly highlights floods as the most frequent natural hazard impacting Yolo County. Floods are among the most costly natural disasters in terms of human hardship and economic loss nationwide. Floods can cause substantial damage to structures, landscapes, and utilities as well as life safety issues. Floodwaters can transport large objects downstream, which can damage or remove stationary structures. Ground saturation can result in instability, collapse, or other damage. Objects can also be buried or destroyed through sediment deposition. Floodwaters can also break utilities lines and interrupt services. Standing water

can cause damage to crops, road, foundations, and electrical circuits. Certain health hazards are also common to flood events. Standing water can also cause septic tank failure and well contamination. Standing water and wet structures can become breeding grounds for microorganisms such as bacteria, mold, and viruses. This can cause disease, trigger allergic reactions, and damage materials long after the flood. When floodwaters contain sewage or decaying animal carcasses, infections become a concern. Direct impacts, such as drowning, can be limited with adequate warning and public education about what to do during floods. Where flooding occurs in populated areas, warning and evacuation will be of critical importance to reduce life and safety impacts from any type of flooding.

The area adjacent to a channel is the floodplain. Floodplains are illustrated on inundation maps, which show areas of potential flooding and water depths. In its common usage, the floodplain most often refers to that area that is inundated by the 100-year flood, the flood that has a one percent chance in any given year of being equaled or exceeded. The 100-year flood is the national minimum standard to which communities regulate their floodplains through the National Flood Insurance Program (NFIP). The 500-year flood is the flood that has a 0.2 percent chance of being equaled or exceeded in any given year. The potential for flooding can change and increase through various land use changes and changes to land surface, which result in a change to the floodplain. A change in environment can create localized flooding problems inside and outside of natural floodplains by altering or confining natural drainage channels. These changes are most often created by human activity.

In addition to those 100- and 500-year floodplains regulated under the NFIP, recent California legislation resulting from Senate Bill 5 (2007) requires cities and counties within the Sacramento-San-Joaquin Valley to address new flood protection standards of the 1-in 200-year (0.5 percent chance of being equaled or exceeded in any given year) flood when considering new development. These standards are under development and will become effective over the next several years as ongoing technical studies are performed.

According to the 2010 Flood Insurance Study for the County, flooding can occur in the Yolo County planning area anytime from October through April. Flooding results from prolonged heavy rainfall and is characterized by high peak flows of moderate duration and by a large volume of runoff. Flooding is more severe when antecedent rainfall has resulted in saturated ground conditions.

Cloudburst storms, sometimes lasting as long as three hours, occur over Yolo County anytime from late spring to early fall, and they may occur as an extremely severe sequence within a general winter rainstorm. Cloudbursts are high-intensity storms that can produce peak flow equal to or somewhat greater than those of general rainstorms in portions of the study area. Flooding from cloudbursts is characterized by high peak flow, short duration of floodflow, and small volume of runoff.

The Yolo County area is susceptible to various types of flood events: riverine, flash, and localized stormwater flooding. The area is also at risk to flooding resulting from levee failures and dam failures. Dam failure flooding is discussed separately in the beginning of this section. Regardless of the type of flood, the cause is often the result of severe weather and excessive rainfall, either in the flood area or upstream reach.

- Riverine flooding, is defined as when a watercourse exceeds its “bank-full” capacity,

generally occurs as a result of prolonged rainfall, or rainfall that is combined with snowmelt and/or already saturated soils from previous rain events. This type of flood occurs in river systems whose tributaries may drain large geographic areas and include one or more independent river basins. The onset and duration of riverine floods may vary from a few hours to many days and is often characterized by high peak flows combined with a large volume of runoff. Factors that directly affect the amount of flood runoff include precipitation amount, intensity and distribution, the amount of soil moisture, seasonal variation in vegetation, snow depth, and water-resistance of the surface due to urbanization. In Yolo County, riverine flooding can occur anytime from November through April and is largely caused by heavy and continued rains, sometimes combined with snowmelt, increased outflows from upstream dams, and heavy flow from tributary streams. These intense storms can overwhelm the local waterways as well as the integrity of flood control structures. Flooding is more severe when antecedent rainfall has resulted in saturated ground conditions. The warning time associated with slow rise riverine floods assists in life and property protection.

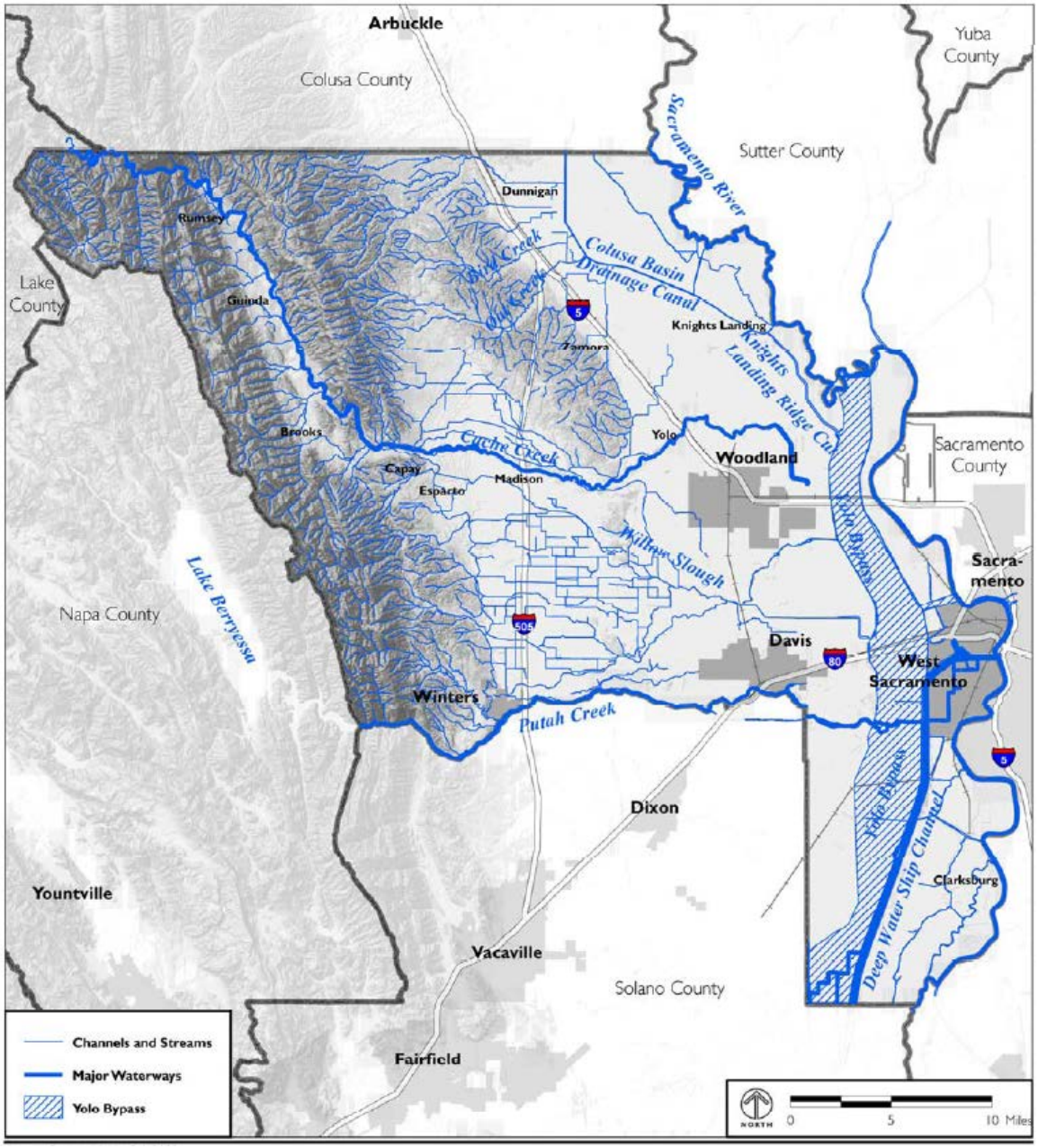
- Flash flooding describes localized floods of great volume and short duration. This type of flood usually results from a heavy rainfall on a relatively small drainage area. Precipitation of this sort usually occurs in the winter and spring. Flash floods often require immediate evacuation within the hour.
- Localized flooding is localized stormwater flooding problems are often caused by flash flooding, severe weather, or an unusual amount of rainfall. Flooding from these intense weather events usually occurs in areas experiencing an increase in runoff from impervious surfaces associated with development and urbanization as well as inadequate storm drainage systems.

Geographic Extent and Potential Magnitude
Flood was rated as a **Catastrophic**: more that 50 percent of the operational area affected for each jurisdiction by the Hazard Mitigation Steering Committee.

Located in a natural floodplain, Yolo County has five primary watersheds with the potential for flooding: Cache Creek Basin/Woodland; the Sacramento River corridor (including the Yolo Bypass, as well as Clarksburg and Knights Landing); Willow Slough, (including Madison and Esparto), Colusa Basin Drain (including Knights Landing) and Dry Slough (including Winters, DQ University, County Airport, and Davis). Each waterway area is discussed below and shown Figure B-9 Yolo County Waterways and Surface Waters.

- Cache Creek is the outfall of Clear Lake, which is located in Lake County 50 miles northwest of Yolo County. The north fork of Cache Creek includes the 300,000-acrefoot Indian Valley Reservoir, also located in Lake County.
- Putah Creek begins in Lake County, flows through Napa County and the Lake Berryessa Reservoir into southern Yolo County, and eventually into the Yolo Bypass.
- Sacramento River, a 447-mile-long river, begins in Shasta County and passes west of the City of Sacramento. Its tributaries include the Pit, Feather, McCloud and American rivers.
- The Yolo Bypass is a 41-mile-long, several-mile-wide levied floodplain that carries flood flows from the Sacramento River to the Sacramento Delta. Its tributaries include Cache Creek, Putah Creek, Willow Slough and the Knights Landing Ridge Cut.

Figure B-9 Yolo County Major Waterways and Surface Waters



Source: Yolo County GIS, 2009

In addition to these natural sources, an extensive network of sloughs, irrigation canals and drainage ditches are located within the county. The major slough and canal facilities include:

- Tehama-Colusa Canal – transports water south from Tehama County into Yolo County, terminating near Dunnigan.
- Colusa Basin Drain – begins at Glenn County, carrying drainage water from the western side of the valley, to the Sacramento River at Knight's Landing on through the Ridge Cut to the Yolo Bypass.
- Willow Slough – minor watercourse that drains much of the area between Cache and Putah Creeks.

- Winters Canal – primary source of irrigation for most of the County between Cache and Putah Creeks.
- West Adams Canal – carries water from Cache Creek north to Hungry Hollow and
- Yolo-Zamora area.
- Elk Slough – drains much of the area around Clarksburg.

Yolo County has no natural lakes. However, as a result of aggregate mining and reclamation activity along Cache Creek, several small reclaimed lakes will be created and eventually become a part of the future planned Cache Creek Parkway. The Cache Creek Area Plan contains policies and regulations addressing the management of these future resources.

All of the watersheds converge at the Sacramento River Delta, the flood issues in the Delta are of concern as the agricultural interests continue to farm the land, which is subsiding annually, making the levee systems more vulnerable to breaching.

When the Sacramento River reaches its peak capacity, the American River and other tributaries that flow into the Sacramento River, cannot flow at a normal rate. These conditions result in "backflows' which cause tributaries to overflow and flood local areas.

The Sacramento River is also affected by ocean tides that periodically raise and lower the water level. High tides that occur simultaneously with flooding conditions could increase the rate of flooding.

All surface water originating in or passing through Yolo County discharges to the ocean via the Sacramento and San Joaquin Rivers, which join at the head of Suisun Bay, the easternmost arm of San Francisco Bay. With a combined tributary drainage area of approximately 60,000 square miles, these rivers provide most of the freshwater inflow to San Francisco Bay.

The Delta

The Delta Region lies within a floodplain and is faced with a major flooding problem because of inadequate levee construction and maintenance, subsidence, seepage, erosion and seismicity.

Flood fighting has occurred in some part of the Delta on the average of once every four years. While most of the Delta levees in Yolo County have stood the test of time, they defy engineering logic. Their foundations are soft and uncertain, they have a great deal of vegetation including large trees, and they suffer erosion and sloughing due to river velocity and wind wave wash. Nevertheless, they have served the county very well over many years.

The Delta Islands are subsiding due to lower groundwater, aeration of peat soils, and loss of soil to wind. While some believe the rate has been curbed over the past years due to conservation protocols, the fact is that some islands are 15' below sea level. The levees work much harder than they did a hundred years ago.

Some of the Delta levees essentially serve as a dam repressing hydrostatic pressure everyday of the year. This leads some researchers to conclude that the potential for catastrophic failure of the Delta levees due to a seismic event has a concerning probability.

Responsibility for flood protection is distributed among many agencies at various levels of

government. At the federal level the three primary agencies are the Army Corps of Engineers, the FEMA, and the Bureau of Reclamation. At the state level the primary agencies are Department of Water Resources and the Central Valley Flood Protection Board. At the local level in Yolo County and the region these agencies include: the County of Yolo and each of its four cities; the Yolo County Flood Control and Conservation District, 15 local reclamation districts, the Knights Landing Ridge Drainage District, the Madison Esparto Regional County Service Area, the Snowball Levee County Service Area, other CSAs, various Community Service Districts and the Sacramento River West Side Levee District.

FEMA Floodplain Mapping
FEMA established standards for floodplain mapping studies as part of the National Flood Insurance Program (NFIP). The NFIP makes flood insurance available to property owners in participating communities adopting FEMA-approved local floodplain studies, maps, and regulations. Floodplain studies that may be approved by FEMA include federally funded studies; studies developed by state, city, and regional public agencies; and technical studies generated by private interests as part of property annexation and land development efforts. Such studies may include entire stream reaches or limited stream sections depending on the nature and scope of a study. A general overview of floodplain mapping and associated products is provided in the following paragraphs.

Flood Insurance Study (FIS)
The FIS develops flood-risk data for various areas of the community that will be used to establish flood insurance rates and to assist the community in its efforts to promote sound floodplain management. The current Yolo County FISs are dated June 18, 2010. The study covers the unincorporated County and the Cities of Davis, Winters, West Sacramento and Woodland.

Flood Insurance Rate Map (FIRM)
The FIRM is designed for flood insurance and floodplain management applications. For flood insurance, the FIRM designates flood insurance rate zones to assign premium rates for flood insurance policies. For floodplain management, the FIRM delineates 100- and 500-year floodplains, floodways, and the locations of selected cross sections used in the hydraulic analysis and local floodplain regulations. The County FIRMs are in the process of being replaced by new digital flood insurance rate maps (DFIRMs) as part of FEMA's Map Modernization program, which is discussed further below.

Digital Q3 Flood Data
Q3 flood data is a digital representation of certain features of FIRMs, intended for use with desktop mapping and GIS technology. This electronic data set is being replaced by the DFIRMs as described further below.

Letter of Map Revision (LOMR) and Map Amendment (LOMA)
LOMRs and LOMAs represent separate floodplain studies dealing with individual properties or limited stream segments that update the FIS and FIRM data between periodic FEMA publications of the FIS and FIRM.

Digital Flood Insurance Rate Maps (DFIRM)
As part of its Map Modernization program, FEMA is converting paper FIRMS to digital FIRMs, DFIRMS. These digital maps:

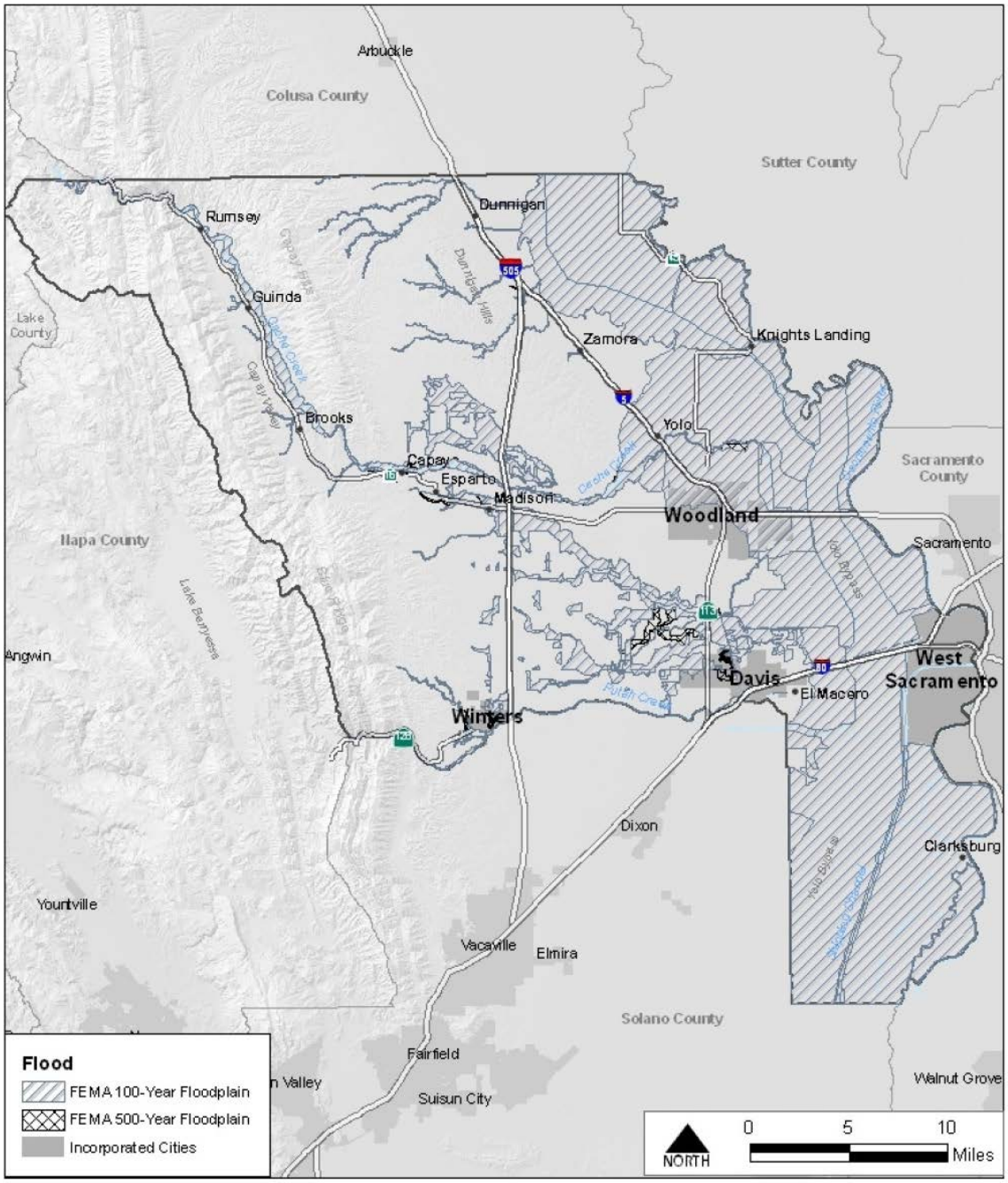
- Incorporate the latest updates (LOMRs and LOMAs);
- Utilize community supplied data;
- Verify the currency of the floodplains and refit them to community supplied basemaps;
- Upgrade the FIRMs to a GIS database format to set the stage for future updates and to enable support for GIS analyses and other digital applications; and
- Solicit community participation.

Draft DFIRMs, for Yolo County were not available to the Steering Committee during the development of this plan.

100- and 200-Year Floodplains

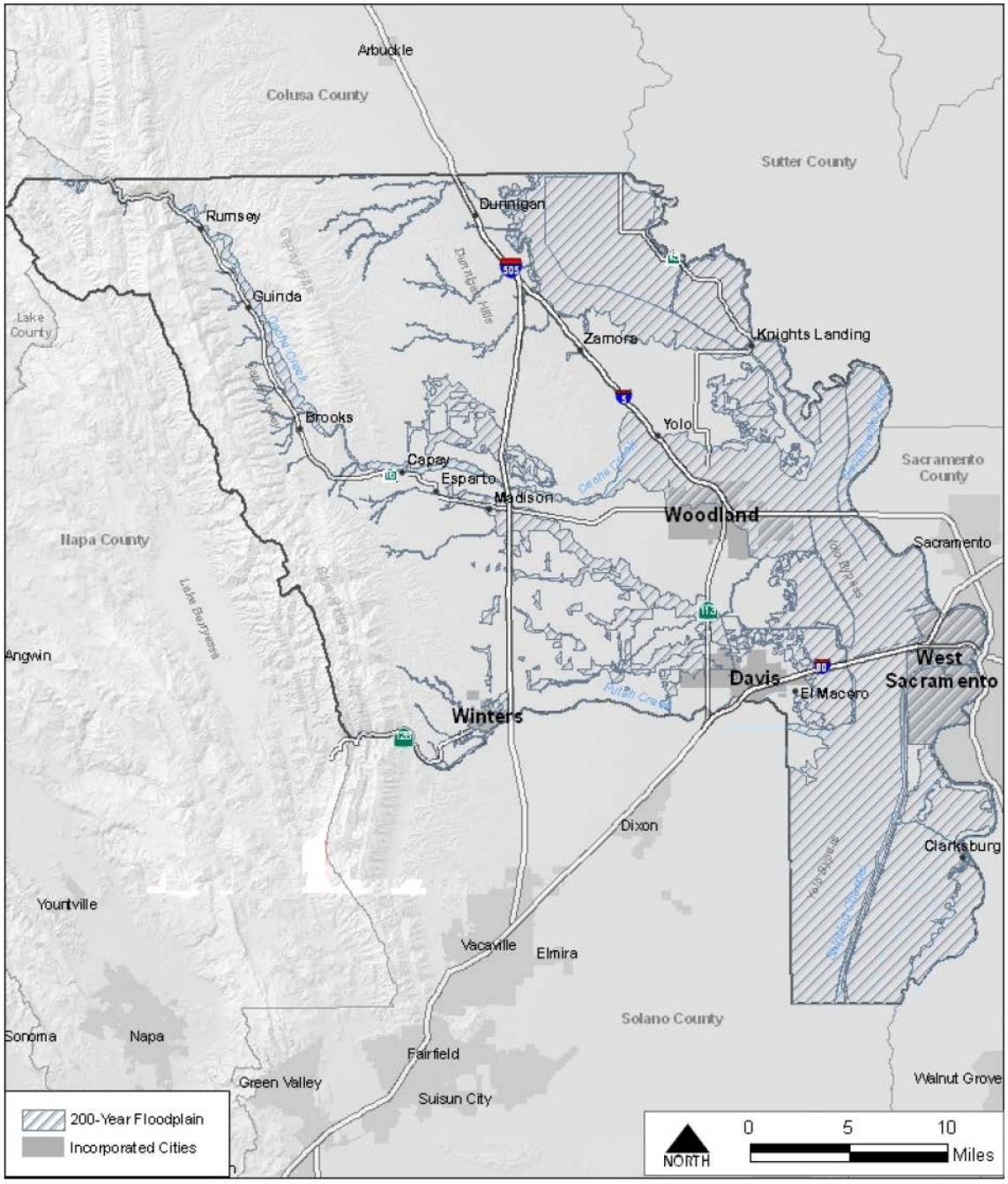
The threshold for unacceptable flood risk has traditionally been associated with the "100-year flood". The Federal Emergency Management Agency (FEMA) creates Flood Insurance Rate Maps (FIRMs) that designate 100-year floodplain zones. A 100-year floodplain zone is the area that has a one in one hundred (1 percent) chance of being flooded in any one year based on historical data. Figure B-10 identifies the existing 100-year floodplain contours as identified by FEMA for Yolo County. These maps reflect recent climate assumptions, as well as assumptions regarding the likelihood of flooding due to levee failure. State law requires that urban areas, defined as those exceeded a population of 10,000, shall provide 200-year flood protection. The FIRMs do not show the 200-year floodplain; however, maps have been created by the State Department of Water Resources (DWR) showing these areas. Figure B-11 identifies the existing 200-year floodplain contours as identified by DWR. Because of the generally flat terrain in Yolo County, and the relatively small difference between the volume of 100- and 200-year flood events, the two floodplains are very similar in extent. Affected communities include Clarksburg, Davis, Esparto, Knights Landing, Madison, West Sacramento, Woodland, and Yolo.

Figure B-10 FEMA 100 Year Floodplain Zone Map



Source: Yolo County General Plan, Health and Safety Element

Figure B-11 FEMA 200 Year Floodplain Zone Map



Source: Yolo County General Plan, Health and Safety Element

Levee Failure

Levee failure flooding can occur as the result of partial or complete collapse of an impoundment, and often results from prolonged rainfall and flooding. The primary danger associated with dam or levee failure is the high velocity flooding of those properties downstream of the breach. Table B-12 describes the levees and their location in Yolo County.

A levee failure can range from a small, uncontrolled release to a catastrophic failure. Vulnerability to levee failures is generally confined to the areas subject to inundation downstream of the facility. Secondary losses would include loss of the multi-use functions of the facility and associated revenues that accompany those functions.

Approximately 150 years ago, the levees of the Sacramento-San Joaquin Delta were raised to prevent flooding on what remains some of the most fertile farmland in the nation. While the peat soils were excellent for agriculture, they were not the best choice to create strong foundations for levee barriers meant to contain a constant flow of river water. Nevertheless, it was these native soils that were primarily used to create the levee system.

Levee failure flooding would vary in the County depending on which structure fails and the nature and extent of the failure and associated flooding. This flooding presents a threat to life and property, including buildings, their contents, and their use. Large flood events can affect lifeline utilities (e.g., water, sewerage, and power), transportation, jobs, tourism, the environment, agricultural industry, and the local and regional economies.

Lands within the Levee Flood Protection Zones may be subject to flooding due to various factors, including the failure or overtopping of project or non-project levees, flows that exceed the design capacity of project or non-project levees, and flows from water sources not specifically protected against by project levees. Lands not mapped within a Levee Flood Protection Zone are not invulnerable to flood risk, and some may also experience flooding from these or other related events.

The overall impact to the community from levee breach or failure includes:

- Injury and loss of life;
- Commercial and residential structural damage;
- Disruption of and damage to public infrastructure;
- Health hazards associated with mold and mildew;
- Damage to roads/bridges resulting in loss of mobility;
- Significant economic impact (jobs, sales, tax revenue) to the community;
- Negative impact on commercial and residential property values;
- Long dewatering periods;
- Significant disruption to students and teachers as temporary facilities and relocations would likely be needed.

California Levee Database

California has over 13,000 miles of levees that protect residential and agricultural lands. The levee failures resulting from hurricane Katrina prompted the State and the Department of Water Resources (DWR) to initiate development of a state-of-the-art California Levee Database (CLD) for the purpose of better understanding and managing levees in California.

The CLD is an efficient tool for assessing levee reliability risk factors using a GIS-enabled geospatial database.

Starting in 2005, partnering with the Federal Emergency Management Agency (FEMA) under the auspices of FEMA's Map Modernization Management Support program, the Department has started assembling critically needed levee information on ownership, location, and risk assessment factors for all the levees in California. Recognizing that other agencies are engaged in similar efforts, DWR is actively participating on national committees organized by FEMA and the U.S. Army Corps of Engineers (USACE) to ensure compatibility and coordination with other national efforts. Currently, the California Levee Database has location information for more than 10,000 miles of levees and flood control structures throughout California. In addition to the database above, the recent Yolo County Flood Insurance Study lists the levees in Yolo County, which are listed below.

Table B-12 Levees In Yolo County

Community	Flood Source	Levee Inventory Identification #	USACE Levee
Yolo County (Unincorporated Areas)	Buckeye Creek	**Not specified**	**No**
City of Woodland Yolo County (Unincorporated Areas)	Cache Creek	52, 53, 55, and 81	**Yes**
City of Woodland Yolo County (Unincorporated Areas)	Colusa Basin Drainage Canal	94, 95, and 163	**Yes**
Yolo County (Unincorporated Areas)	Knights Landing Ridge Cut	83, 84, 120, 121, and 162	**No**
City of Woodland Yolo County (Unincorporated Areas)	Old River	85, 118, and 119	**No**
City of West Sacramento Yolo County (Unincorporated Areas)	Sacramento River	11, 17, 86, 93, 122, 133 through 142, 147, 151, 152, 157, and 168 through 171	**Yes**
City of West Sacramento Yolo County (Unincorporated Areas)	Sacramento River Toe Drain	148 and 149	**Yes**
City of Davis Yolo County (Unincorporated Areas)	South Fork Putah Creek	29, 30, 105, and 106	**Yes**
Yolo County (Unincorporated	Unnamed Canal between	123 and 124	No

Community	Flood Source	Levee Inventory Identification #	USACE Levee
Areas)	Colusa Basin Drainage Canal and Sacramento River near El Dorado Bend		
Yolo County (Unincorporated Areas)	Willow Slough	**36**	**No**
City of Davis Yolo County (Unincorporated Areas)	Willow Slough Bypass	**34 and 35**	**Yes**
City of Davis Yolo County (Unincorporated Areas)	Yolo Bypass	28, 82, 116, 117, 128, and 132	**Yes**
Yolo County (Unincorporated Areas)	Yolo Bypass	**5**	**No**

Source: Yolo County Flood Insurance Study Report, 2010

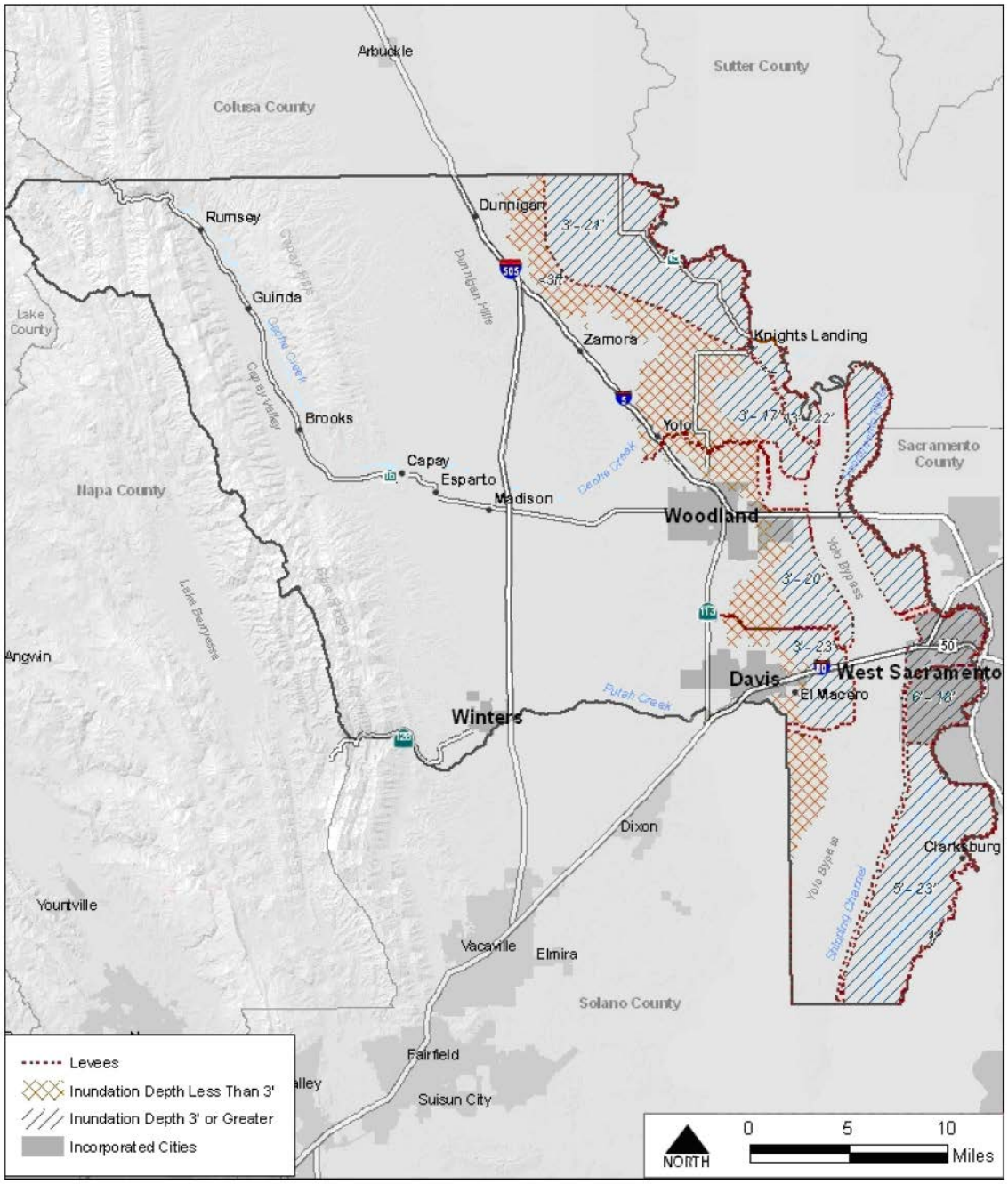
Levee Flood Protection Zones

Yolo County has approximately 215 miles of project levees, managed by various agencies, including the County, 13 reclamation districts, one levee district, one drainage district, and the California Department of Water Resources. These levees provide flood protection to West Sacramento, Woodland, Knights Landing, Clarksburg, Davis and important agricultural lands. In addition, the Yolo Bypass, the Sacramento Weir, and the Fremont Weir help protect Sacramento and other urban communities in the region from flooding by the Sacramento River. Some levees, particularly the project levees that protect parts of the City of Woodland and unincorporated Yolo County, the vicinity of Cache Creek and the town of Yolo, only provide a 10-year level of flood protection rather than the 100-year federal standard. Without work to improve these levees, additional development in Yolo County's floodplain could put more residents at risk of flooding hazards.

The local levees have been assumed to provide adequate protection since their acceptance into the Sacramento River Flood Control Project in 1918. Recently, where insufficient geotechnical information exists to evaluate the integrity of the levees, the State Department of Water Resources has taken the position, in conjunction with FEMA, that levees are not certified. DWR has completed geotechnical evaluations of the urban Sacramento River Flood Control Project levees within the county, and has proposed to do additional evaluations of non-urban levees in the coming years.

Figure B-13 shows the extent of those areas that are protected by decertified levees and are currently subject to flooding. This map uses the best available information to identify those areas where flooding would be more than three feet deep if a project levee were to fail, assuming maximum capacity flows. Not surprisingly, levee flood protection zones are concentrated in eastern Yolo County, in areas adjoining levees for lower Cache Creek, Putah Creek, the Colusa Basin Drain, the Yolo Bypass, and the Sacramento River. Affected communities include Clarksburg, Davis, Knights Landing, West Sacramento, Woodland, and Yolo.

Figure B-13 Levee Protection Zones



Source: Yolo County General Plan, Health and Safety Element

Previous Occurrences

Major flooding has occurred in the Yolo County study area in 1937-38, 1940, 1943, 1950, 1955, 1958, 1963, 1967, 1973, 1975, and 1986 (U.S. Department of Agriculture, 1969; State of California, 1964; State of California, 1969; FEMA, 1981; U.S. Department of Agriculture, 1976). Flooding generally occurs in the relatively flat agricultural lands within the eastern two-thirds of the county.

Since the completion of Monticello Dam on Putah Creek (Lake Berryessa) in Napa County, flooding from Putah Creek and Cache Creek (the two largest streams flowing from west to east across the county) occurs only from Cache Creek overflow in the Capay Valley and south of Cache Creek near the City of Woodland, where flooding occurred in 1958 (FEMA, 1981). Flooding also occurs north of Cache Creek in the lowlands of the Hungry Hollow watershed, which is a tributary of Cache Creek. The largest flood in the Cache Creek drainage in recent years occurred during February 1958 and was estimated to be a 4-percent annual chance event (State of California, 1969).

In the northern part of the county, flooding occurs along the Colusa Basin Drainage Canal. Flooding results when precipitation within the basin and runoff from the foothill region to the west combine to far exceed the channel capacity of the canal. The greatest flooding in recent years was in 1958, when flooding along the canal extended 70 miles upstream from Knights Landing (State of California, 1964). Flooding also occurs in the spring and is caused by irrigation practices in the rice fields. Damage can be greater during the spring runoff because it occurs during the growing season.

Flooding frequently occurs in the Cottonwood-Willow Slough watershed south of Cache Creek and in the Dry Slough/Davis watershed north of Putah Creek. The adjacent watersheds are part of the Yolo Creek System. Flows originating in the western part of the watersheds exceed the channel capacity of Dry and Willow Sloughs and their major tributaries, Chickahominy Slough and Lamb Valley Slough, and cause flooding in the relatively flat agricultural lands in the eastern part of the county. Flooding is increased at the eastern side of the county when Sacramento River flows are diverted into Yolo Bypass and gravity flow to the bypass is eliminated. Severe flooding occurred along the Sacramento River and Yolo Bypass in February 1986. Floodwaters pond behind the Yolo Bypass and Willow Slough Bypass levees until floodflows in the bypasses recede.

City of Davis

In the City of Davis, the Dry Slough-Davis watershed area, major flooding occurred in 1937-38, 1940, 1943, 1950, 1955, 1958, 1963, 1967, 1973, and 1975. The 1963 flood was estimated to be a 10-year event (U.S. Department of Agriculture, 1969), and the 1955 flood was a 20-year event (U.S. Department of Housing and Urban Development, unpublished). Flooding in the Davis area is a result of the relatively flat topography of the area and backwater from Willow Slough Bypass and Yolo Bypass to the east. Within the City of Davis, Covell Boulevard and the Southern Pacific railroad restrict the dispersion of local floodflows. Covell Drain will contain the estimated 10-percent annual chance (10-year) flood throughout the reach studied except at the F Street culvert, where overflow will occur to the area of the pump station near H Street and Covell Boulevard (H Street Pump). The base (1-percent annual chance) flow will exceed the capacity of Covell Drain at all road crossings, causing shallow flooding in overbank areas (Davis Drainage), primarily to the south of Covell Boulevard, terminating in a ponding area west of the Southern Pacific Railroad near the H Street Pump. The 24-hour runoff from the central Davis area in excess of the drainage system capacity will also pond in the same area as the Covell Drain overlow (VTN Corporation, 1975).

City of West Sacramento

During high floodflows, the City of West Sacramento is not protected from flooding by the levees along the Sacramento River and the Yolo Bypass. Yolo Bypass drains water from Cache Creek, Putah Creek and also receives flows from the Sacramento River over Fremont

Weir near Knights Landing, and over Sacramento Weir (Sacramento Bypass) when the capacity of the Sacramento River Channel is exceeded. Flows in Yolo Bypass return to the Sacramento River near Rio Vista. The Sacramento River is confined by Project Levees in the study area. Levees in Reclamation Districts (RDs) 811, 537, and 900 are not recognized as providing protection from the 1-percent annual chance flood.

Records indicate that there is a history of stability problems on the RD 900 (West Sacramento) levee between the Southern Pacific Railroad and the West Sacramento Deep Water Ship Channel. Slips or subsidence occurred on this reach in 1969, 1975, and 1983 (USACE, undated). Levees in RD 537 and RD 811 are affected by erosion. The soils under these levees consist of firm silty sand and sandy silt. This material provides a firm foundation but is erodible.

City of Winters

Flooding in the City of Winters since the completion of Monticello Dam on Putah Creek has been limited to that caused by overflow from Dry Creek, runoff from the Moody Slough watershed north and west of the City of Winters, and runoff from the business and residential area south of State Highway 128.

Approximately every 2 to 5 years, rains producing runoff have caused flooding along the western side of County Road 89 (Railroad Street), from Edwards Street in the City of Winters north to the Moody Slough crossing. Inadequate bridge and channel capacity causes water to overtop County Road 89. The water then continues eastward to Interstate Highway 505, flooding areas along Moody Slough, Willow Canal, and State Highway 128. The low-lying area west of Winters Cemetery is inundated by local runoff.

One of the most severe floods occurred on December 19-20, 1955, when 7.02 inches of rain were recorded in 48 hours. In the City of Winters several basements and businesses were flooded, as was much of the surrounding agricultural area. Traffic on County Road 89 was halted. This flood was approximately a 20-year event.

City of Woodland

Low-lying areas of the City of Woodland are subject to periodic flooding due to overflow from Cache Creek, from runoff originating in the western sector of the City, or from overland flow originating west of the City in a gently upward sloping area defined by the Maple Canal on the southwest and low divide on the north. Flooding from the creek results from heavy rain over the tributary drainage during the period from November through March. On rare occasions, melting snow in the high elevations of the basin could augment runoff from general rain.

Overland flow from the west would result from cloudburst-type storms that could be expected to occur anytime from early fall to late spring, but may occur as an extremely severe sequence in conjunction with general winter rainstorms. Most of the flooding within the City of Woodland occurs as sheet flow. The water-surface elevations of the flooding in these areas are variable and are affected principally by natural and manmade barriers in the flooded areas. Many road fills crossing floodplain areas alter the natural patterns of floodflow. Although the City of Woodland has no recorded history of flooding, four major flood periods have been documented for the Cache Creek basin during the last half of the 20th century, and 20 severe floods have occurred since 1900. The most severe floods of recent years in the Cache Creek basin downstream from Clear Lake occurred in 1955 and

1956, 1968, 1964, 1965, and 1970.

The west-to-east slope of the land and the series of swales west of the City of Woodland direct runoff from cloudburst storms toward the center of the city. I-5, completed through the City of Woodland area in 1973, forms a barrier to overland flow resulting from very large floods on Cache Creek and diverts such flow into the city.

There are a total of three stream gaging stations located within the restudy area: the Yolo gage, which is readable but not reliable; the Capay gage, located upstream of Capay Diverison Dam; and the Rumsey gage, upstream of the study area. The Capay gage is considered to be the best gage for the purpose of the restudy because of its proximity to the study area. However, the Capay gage was moved in 1984 and relocated farther downstream below Capay Diversion Dam so that the data at the gage after 1984 represent primarily regulated dam flows. Cache Creek exceeded its design channel capacity of 30,000 cubic feet per second (cfs) in 1955. In 1958 and 1983, Cache Creek rose to the top of both levees and overflowed its banks toward the Cities of Woodland and Davis. According to the USGS, the peak flow in 1983 at the Yolo gage was approximately 33,000 cfs, with an exceedence frequency of approximately a 20-year event. There was at least one levee break downstream from County Road 102. Federal, State, and local agencies patched levee boils at that time to prevent additional levee breaks along both sides of the Cache Creek levee system.

The observed peak flow at the Rumsey gage in March 1995 was approximately 52,000 cfs, with an exceedence frequency of approximately a 2-percent annual chance storm event. An observed peak flow for this event is not available for the Capay gage; however, high-water marks downstream of Capay Diversion Dam were observed. The City of Woodland observed and prepared a sketch of highwater marks in the vicinity of the City of Woodland for the March 1995 event. The observed flood boundaries were prepared for the flow that preceded the peak by 5 hours and do not provide the full extent of the flood boundary.

Probability of Future Occurrences
Although flooding incidents are generally of short duration, the need for ongoing response and long-term recovery operations cannot be underestimated. Moreover, loss of essential flood control structures, including levees and control devices may hinder recovery efforts and pose significant problems should additional flooding occur.

Based on historical data the probability of future occurrences for flood countywide is Likely: Between 10 percent and 100 percent chance of occurrence in next year or has a recurrence interval of 10 years or less.

SEVERE WEATHER

Severe weather is generally any destructive weather event, but usually occurs in Yolo County as localized storms that bring heavy rain, hail, lightning, and strong winds.

Geographic Extent and Potential Magnitude
Severe Weather was rated as **Critical**: between 35-50 percent of the operational area affected for each jurisdiction by the Hazard Mitigation Steering Committee.

All areas in Yolo County are visited by severe summer and winter storms that can produce heavy rains, cyclonic winds, hail storms, fog severe heat and other significant short-term weather phenomenon. Although usually of short duration, the intensity of these meteorological events can severely impact people and critical infrastructure, threatening public safety and interrupting the normal flow of daily life.

As weather patterns are only marginally predictable, and long-term forecasting is still only marginally effective for specific area forecasts, the frequency to which Yolo County might be impacted can only be speculated upon. There exists sufficient historical data to conclude that severe weather will be an ongoing, periodic challenge for the county.

Strong or long-duration storms may result in various disruptions. Widespread or long-term utility (telephone, power, sewage) outages may occur. Buildings may be damaged or destroyed due to storm impact, especially involving conditions of high wind or severe hail. Major areas of impact may include:

- Injury to individuals and livestock caught in severe storm conditions and lacking adequate shelter
- Interruption of critical infrastructure systems due to damage and impact
- Disruption of traffic flows due to reduced visibility or roadway debris
- Damage to crops under cultivation at key time periods
- Economic losses due to closed businesses, delayed arrival/shipment of products, and power outages

The National Oceanic and Atmospheric Administration's National Climatic Data Center (NCDC) has been tracking severe weather since 1950. Their Storm Events Database contains data on the following: all weather events from the database which currently contains data from 2000 to 2012, as entered by NOAA's National Weather Service (NWS).

Additionally, the Steering Committee supplemented NCDC data with data from SHELDUS (Spatial Hazard Events and Losses Database for the United States). SHELDUS is a county-level data set for the United States that tracks 18 types of natural hazard events along with associated property and crop losses, injuries, and fatalities for the period 1960-2008. Produced by the Hazards Research Lab at the University of South Carolina, this database combines information from several sources (including the NCDC).

Table B-14 summarizes severe weather events that occurred in Yolo County. Only a few of the events actually resulted in state and federal disaster declarations. It is interesting to note that different data sources capture different events during the same time period, and often display different information specific to the same events. The Steering Committee recognized these inconsistencies; they still thought the importance of the data is relevant as it provides supporting documentation of the hazard, its extent and magnitude.

Table B-14 Severe Weather for Yolo County from 2005 to Present

Type	Area	Date of Event	Deaths	Injuries	Property Damage*	Crop Damage*
Heavy Rain	Yolo County	11/30/2012	0	0	unk	unk
Heavy Rain	Knights Landing	3/3/09	0	0	$0	$0

Type	Area	Date of Event	Deaths	Injuries	Property Damage*	Crop Damage*
Thunderstorm Wind	Woodland	4/24/09	0	0	$7,000	$0
Heavy Wind	Yolo County	1/4/08			$4,869.57	$0
Winter Weather	Yolo County	1/14/07	0	0	$57,142.86	$0
Severe Storm/Thunderstorm-Wind	Yolo County	4/8/05	0	0	$15,000	$0
Tornado	Yolo County	2/21/05	0	0	$2,000	$0
Tornado	Yolo County	3/20/05	0	0	$1,000	$0

Source: NCDC and SHELDUS, Steering Committee *Losses are for all areas impacted by events

High Winds
Historical data indicates that there is no trend, or certain time period during a given year, for damaging high winds to occur in the State of California; however, high winds can accompany severe storms and thunderstorms in the State. For this reason, they are considered a risk factor.

Mobile homes, power lines, billboards, airplanes, vehicles, roofs and other structures have been damaged by severe winds. Due to the high incidence of damage to mobile homes, insurance companies have adopted policies, which require tie downs.

Previous Occurrences
4/8/2005
A strong wind gust associated with a passing thunderstorm caused damage to a residential roof, the doors to a barn, and a property fence within the City of Davis.

1/4/2008
A severe windstorm passed through much of Northern California bringing mass power outages, multiple downed trees and fences to the area. This storm resulted in the activation of the EOC in Yolo County. All of the cites and most unincorporated areas were impacted.

4/24/2009
Thunderstorms developed in the afternoon. One of these created a gustnado which passed through the Yolo County Fairgrounds and into a mobile home park, causing minor damage. No injuries were reported in spite of a large event going on at the fairgrounds when the storm passed through in the City of Woodland.

Extreme Heat
According to information provided by FEMA, extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks.

Heat kills by taxing the human body beyond its abilities. In a normal year, about 175 Americans succumb to the demands of summer heat. According to the National Weather Service (NWS), among natural hazards, only the cold of winter—not lightning, hurricanes, tornados, floods, or earthquakes—takes a greater toll. In the 40-year period from 1936

through 1975, nearly 20,000 people were killed in the United States by the effects of heat and solar radiation. In the heat wave of 1980, more than 1,250 people died.

Heat disorders generally have to do with a reduction or collapse of the body's ability to shed heat by circulatory changes and sweating or a chemical (salt) imbalance caused by too much sweating. When heat gain exceeds the level the body can remove, or when the body cannot compensate for fluids and salt lost through perspiration, the temperature of the body's inner core begins to rise and heat-related illness may develop. Elderly persons, small children, those on certain medications or drugs, and others with access and functional needs are particularly susceptible to heat reactions, especially during heat waves in areas where moderate climate usually prevails.

Heat emergencies are often slower to develop, taking several days of continuous, oppressive heat before a significant or quantifiable impact is seen. Heat waves do not strike victims immediately, but rather their cumulative effects slowly take the lives of vulnerable populations. Heat waves do not cause damage or elicit the immediate response of floods, fires, earthquakes, or other more "typical" disaster scenarios. While heat waves are obviously less dramatic, they are potentially more deadly. According to the 2010 California State Hazard Mitigation Plan, the worst single heat wave event in California occurred in Southern California in 1955, when an eight-day heat wave resulted in 946 deaths.

Previous Occurrences

7/29-31/2000

Excessive heat impacted the Sacramento and northern San Joaquin Valleys during the last few days of July. Temperatures reached and exceeded 100 degrees in many areas before peaking on the 31st at 104 degrees in Sacramento and Stockton and at 110 degrees in Redding. The Redding reading set a new daily maximum temperature record...breaking the previous mark of 108 degrees set in 1993.

9/20/2000

The daily high maximum temperature record was set in Sacramento when it reached 102 degrees...breaking the previous record of 101 degrees set in 1994.

7/1-31/2005

July 2005 set a new record for heat in Sacramento. The average temperature in Sacramento was 81.8 degrees for the month. This was the hottest average temperature ever recorded in Sacramento. The old record was 81.6 degrees set in July 2003. In addition, the average low temperature for the month of July was 65.2 degrees...breaking the old record of 65.1 degrees set in July 2003. However...the average high temperature record was not broken. The average for July 2005 was 98.4 degrees, which is well below the record average high of 99.6 degrees set in 1988.

8/12/2005

A new record was set for the most consecutive days above 60 degrees in Sacramento. The temperature dipped to 59 degrees in Downtown Sacramento on the morning of July 10th then remained above 60 degrees until the morning of August 13th when it dropped to 57 degrees. This is a new record of 33 consecutive days above 60 degrees. The old record was 29 consecutive days, set in July-August 2003.

Freeze
Extreme cold often accompanies a winter storm or is left in its wake. It is most likely to occur in the winter months of December, January, and February. Prolonged exposure to the cold can cause frostbite or hypothermia and can become life-threatening. Infants and the elderly are most susceptible. Pipes may freeze and burst in homes or buildings that are poorly insulated or without heat. Extreme cold can disrupt or impair communications facilities. Extreme cold can also affect the crops grown in Yolo County.

Previous Occurrences
8/30/2000
The daily low maximum temperature records were broken at Sacramento and Stockton. The Sacramento maximum temperature only reached 68 degrees which broke the previous record of 75 degrees set in 1966. The Stockton maximum temperature reached only 75 degrees which broke the previous record of 77 degrees, also set in 1966.

12/6/2005
Morning temperatures dropped into the 20s across the Sacramento and Northern San Joaquin Valleys. A new record low temperature was set in Stockton and the record low temperature was tied in Sacramento. The temperature at the Stockton Airport dropped to 26 degrees, which broke the old record of 29 degrees set in 1960. This also tied the record low recorded at the old Stockton City station which was set in 1912. The temperature at Sacramento Executive Airport (SAC) dropped to 28 degrees, which tied the record set in 1980. The temperature at the Downtown Sacramento station (DTS) was 34 degrees, which was not close to breaking the record of 29 degrees set in 1891.

Fog
Fog is a collection of water droplets or ice crystals suspended in the air at or near the Earth's surface. Fog results from air being cooled to the point where it can no longer hold all of the water vapor it contains. Fog can form in a number of ways, depending on how the cooling that caused the condensation occurred. The most common types in Sacramento County are radiation and advection fog.

Previous Occurrences
1/3/2001
Dense fog affected morning travel between the Central Sacramento Valley and the Northern San Joaquin Valley. The Delta was also affected. The California Highway Patrol escorted travelers through Sacramento and Yolo Counties where visibilities lowered to 200 feet. They also reported that the combination of high speeds and dense fog tripled the average amount of minor accidents during the morning commute. Nearly one-third of the commercial flights originating from the Sacramento International Airport were cancelled

Based on input from the Steering Committee, the occurrence of severe fog in Yolo County is seasonal.

Tornado
Tornadoes are another severe weather hazard that can affect the Yolo County area, primarily during the rainy season in the late fall and early spring. Tornadoes form when cool, dry air sits on top of warm, moist air. Tornadoes are rotating columns of air marked by a funnel-shaped downward extension of a cumulonimbus cloud whirling at destructive

speeds of up to 300 mph, usually accompanying a thunderstorm. Tornadoes are the most powerful storms that exist. They can have the same pressure differential across a path only 300 yards wide or less as 300 mile wide hurricanes.

Tornadoes can cause damage to property and loss of life. While most tornado damage is caused by violent winds, the majority of injuries and deaths generally result from flying debris. Property damage can include damage to buildings, fallen trees and power lines, broken gas lines, broken sewer and water mains, and the outbreak of fires. Agricultural crops and industries may also be damaged or destroyed. Access roads and streets may be blocked by debris, delaying necessary emergency response.

According to the National Weather Service, Sacramento Office, compared to the area east of the Rocky Mountains, tornado occurrence over the western United States is much less frequent. However, climatological studies reveal certain subregions throughout the west where there is a significant increase in tornado occurrence. Two of the regions are in California: the Los Angeles area, and the Central Valley of California comprising the Sacramento and San Joaquin Valleys.

Previous Occurrences
2/21/2005
Brief touchdown in the Southport neighborhood of West Sacramento. Primarily tree and fence damage, though other minor damage from flying debris was noted.

Brief funnel cloud noted by spotter in Zamora.

3/20/2005
Tornado traveled through an agricultural area. Damage was caused to a property fence and to a grove of almond trees in Dunnigan.

Severe Storms/Rain
Heavy rains and severe storms occur in Yolo County primarily during the late fall, winter, and spring (i.e., November through April). Damaging winds often accompany winter storm systems moving through the area. According to the Steering Committee, short-term, heavy storms can cause both widespread flooding as well as extensive localized drainage issues. In addition to the flooding that often occurs during these storms, strong winds, when combined with saturated ground conditions, can down very mature trees.

According to the Western Regional Climate Center, the highest average precipitation amount from 1906 to 2012 is 3.92 inches and usually occurs in January. This information was collected from the Woodland Weather Station for its location in the county.

Previous Occurrences
A series of powerful winter storms brought heavy rainfall and severe winter weather to Northern California during the following years since the last plan update, 2005, 2006, 2007, 2009 and 2012. The 2006 storm received a Presidential Disaster Declaration.

Probability of Future Occurrences
The probability of future severe weather events in Yolo County is **Highly Likely:** Near 100 percent chance of occurrence next year or happens every year.

VOLCANIC ACTIVITY

Geographic Extent and Potential Magnitude

Volcanic Activity was rated as Catastrophic: more than 50 percent of the operational area affected for each jurisdiction by the Hazard Mitigation Steering Committee.

Volcanic eruptions are characterized by a number of different behaviors. Some eruptions involve the slow and non-violent release of molten lava from fissures in the ground over a hot spot in the earth's mantle. Other eruptions are more radical, resulting in the explosive release of molten rock (tephra), ash, and toxic gases. Additional eruptive traits include area seismic activity, lava bombs, landslides, subsidence, peculiar localized weather phenomenon, and plume dominated columns that can project debris for hundreds of miles.

Previous Occurrences

There is a history of ancient volcanic action in the State of California; however, the risk is not considered significant within the State's geographic area. Volcanic activity surrounding the State of California could potentially cause some ash fall over portions of the State. However this is predicted to cause little or no damage or significant disruptions.

Certain areas of California are recognized as being at risk from potential volcanic eruptions. There are two such areas that could affect Yolo County. The closest is the Mt. Konocti/Clear Lake area. The second site is within the Mt. Shasta/Mt. Lassen/Medicine Lake areas, located several hundred miles north/northeast of Yolo County.

Although each of the aforementioned volcanic sites is considered dormant, each is capable of producing eruptive activity, including devastating explosive behavior. Historically, each of these volcanoes has been active within recorded human experience, with Lassen Peak being the most recent in the early 20th Century. Although volcanic activity is extraordinarily destructive and disruptive, methods exists for monitoring volcanic sites that provide adequate early warning of potential eruptions.

The following Forum Report was made available to the Hazard Mitigation Steering Committee on volcanic hazard risks in California from the California Bureau of Mines and Geology:

Volcanic Hazards

The most likely volcanic hazard for California is an eruption from the Mono Craters area near Mono Lake in Eastern California. Small eruptions from these volcanoes have sent ash into California as recently as about 260 years ago. Other volcanoes that could deposit ash in California include Mount Lassen, Mount Shasta and the Long Valley Caldera in California and volcanoes in the Cascade Mountains in Oregon.

The biggest threat for California from eruptions in California and Oregon is damage to flying aircraft. Ash from eruptions in California or Oregon is not likely to cause long-term problems in California, because the ash deposits are likely to be thin, typically only a few inches thick at most.

A massive eruption from the Long Valley Caldera near Mammoth Lakes, California over 700,000 years ago devastated a considerable area. Air-fall ash from these eruptions did collect as thick piles of ash in parts of California, and some of the ash may have been hot enough or thick enough to devastate the landscape locally. Scientists would expect to see

strong indications from seismographs before another eruption of this magnitude. The U.S. Geological Survey continues to monitor the area around Mammoth Lakes, and will issue warnings prior to any subsurface changes that could precede a major eruption.

Probability of Future Occurrences

Mt. Konocti

If an eruption involved Mt. Konocti, Yolo County could suffer from the release of large amounts of tephra (ash and larger particles). The tephra, even in depths of as little as 5 mm, could disrupt communications, transportation, and affect breathing. Clear Lake could also suffer from seiches, which could overflow down Cache Creek, resulting in flooding. Large areas downwind of the eruption would be disrupted for years to come.

Mt. Lassen/Mt. Shasta/Medicine Lake

It is more likely that an eruption could occur in the Mt. Lassen / Mt. Shasta / Medicine Lake area. Prevailing winds would tend to bring tephra down the Sacramento Valley to Yolo County. Pyroclastic and debris flows from Mt. Shasta could impact the Sacramento River, either through damming and/or melting of snow. This could result in the Sacramento River flowing outside its banks.

The probability of future occurrences is Unlikely: less than 1 percent chance of occurrence in next 100 years or has a recurrence interval of greater than every 100 years.

WILDFIRE

Fire is of concern to the county, not only for its destructive tendencies, but also because of the potentially dangerous smoke produced. Fires can occur as a result of system failure (downed power lines), human action (arson), natural occurrence (lightning strike), accidental (i.e. hazardous materials, motor vehicle accident, industrial explosion, etc.).

During the fire season, generally July through September, Yolo County and its municipalities are called upon to fight a large number of vegetation fires, especially along the major highways and railways that are interspersed throughout the county. Generally, most of the fires do not damage structures, however, fires that are fanned by hot north winds, during extremely low humidity and fed by brittle, dry grass and vegetation can quickly get out-of-hand and threaten nearby structures and facilities. The interface of residential and business development near highways that have dry, un-mowed vegetation along medians and shoulders are especially vulnerable.

Geographic Extent and Potential Magnitude

Fires were rated by the Hazard Mitigation Steering Committee as Critical: between 35-50 percent of the operational area affected for each jurisdiction by the Hazard Mitigation Steering Committee.

Wildland fire danger varies throughout Yolo County. The County is characterized by relatively level valley floor landscapes to the south and east; this lack of topography and complex fuels leads to very little severe fire behavior. In the increasingly hilly landscapes rising to the north and west, the rugged topography creates a landscape where fires can spread rapidly upslope and access for suppression equipment is limited.

To quantify the potential risk from wildland fires, the California Department of Forestry

(Cal Fire) has developed a Fire Hazard Severity Scale which uses three criteria in order to evaluate and designate potential fire hazards in wildland areas. The criteria are fuel loading (vegetation), fire weather (winds, temperatures, humidity levels and fuel moisture contents) and topography (degree of slope). According to Cal Fire maps for Yolo County, the western portion of the county, west of Esparto and Winters, is designated as a Very High Fire Severity Zone (VHFSZ), as shown in Figure B-15 and B-16. The VHFSZ in Yolo County is in a State Responsibility Area (SRA), meaning that fire suppression is under the control of the State Department of Forestry and Fire protection (Cal Fire).

The County and its municipalities do fight a large number of vegetation fires, particularly during the summer. These fires tend to occur along major highways and railroads, and usually do not damage structures. However, fires can be exacerbated by hot north winds during periods of extremely low humidity. In addition, if they are fed by dry grass and vegetation they can easily grow out of control. Wildland fires can damage structures and facilities, and the County must be prepared for protection from dangerous wildland fires, especially where urban and non-urban landscapes meet.

Yolo County is located in the Sonoma-Lake-Napa Unit (LNU) is one of twenty one (21) California Department of Forestry and Fire Protection (CAL FIRE) administrative units. The Unit was created in 1996 with a merger of the then Sonoma Ranger Unit, and the Lake-Napa Unit. It is comprised of the six counties of Sonoma, Lake, Napa, Yolo, Colusa, and Solano. LNU has primary responsibility for more than 2.3 million acres of CAL FIRE Direct Protection Area (DPA) lands, more than any other unit. It has the third largest population living within CAL FIRE DPA, and ranks the third in average number of annual fires.

The Unit is divided into four divisions and ten field battalions. The boundaries of Sonoma County define the West Division with four battalions. The South Division is defined by Napa County and has three battalions. The North Division encompasses Lake County and has two battalions. The East Division consists of Yolo, Solano, and Colusa Counties and has two battalions.

Fuels

There are a wide range of fuels in the East Division. Fuels range from agricultural farmland (wheat, safflower, cut stubble), annual grasses, oak woodland, 15 – 50 year old chaparral, large stands of decadent brush and timber in the higher elevations of the battalion. Due to aggressive fire suppression tactics and lack of aggressive wildland fuels management, both the vertical arrangement and horizontal continuity of fuels, have and will promote rapid fire growth. These same conditions will also hinder conventional fire suppression tactics. Critical concerns are when the chaparral dead-to-live ratio exceeds 50%, and live fuel moisture approaches 60% in late Summer and early Fall. 10 hour fuel moistures average from 4-7, dropping to 3 quite often.

Weather

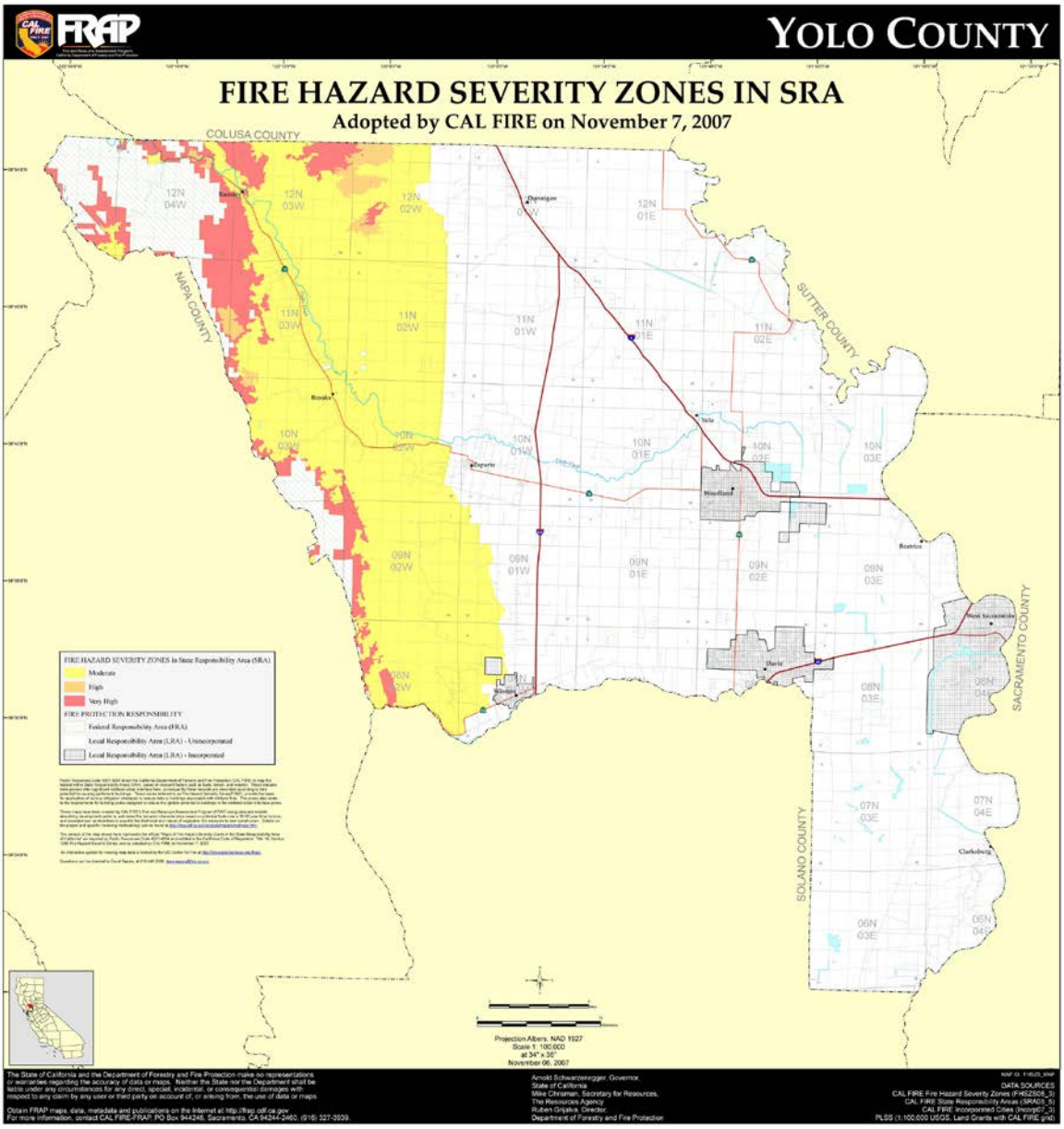
The weather is generally warm and dry during the day with a slight relative humidity recovery at night. If a critical weather pattern exists such as a Foehn North Wind, or a cold front passage, the daily diurnal weather variation will be subdued. If these critical weather patterns align with the topography, expect extreme rates of spread, especially along exposed ridges and through constricted areas. Peak summer day temperatures are generally 95°-105°F, cooling to 50°-60°F at night, with relative humidity ranging between 20% – 35% or less. Gradient winds are generally out of the N/NW 5-10 mph, strengthening

in the afternoon with a 10-15 mph wind in the late afternoon diminishing by dark. Strong evening (2100- 0200) winds do occur occasionally in the Capay Valley with normal winds (down slope/down valley) after dark as the flow reverses. There is a Remote Automated Weather Station (Brooks RAWS) located at Brooks Fire Station. The station gives a good indication of current weather conditions. It can be accessed at http://raws.wrh.noaa.gov/roman/.

Topography

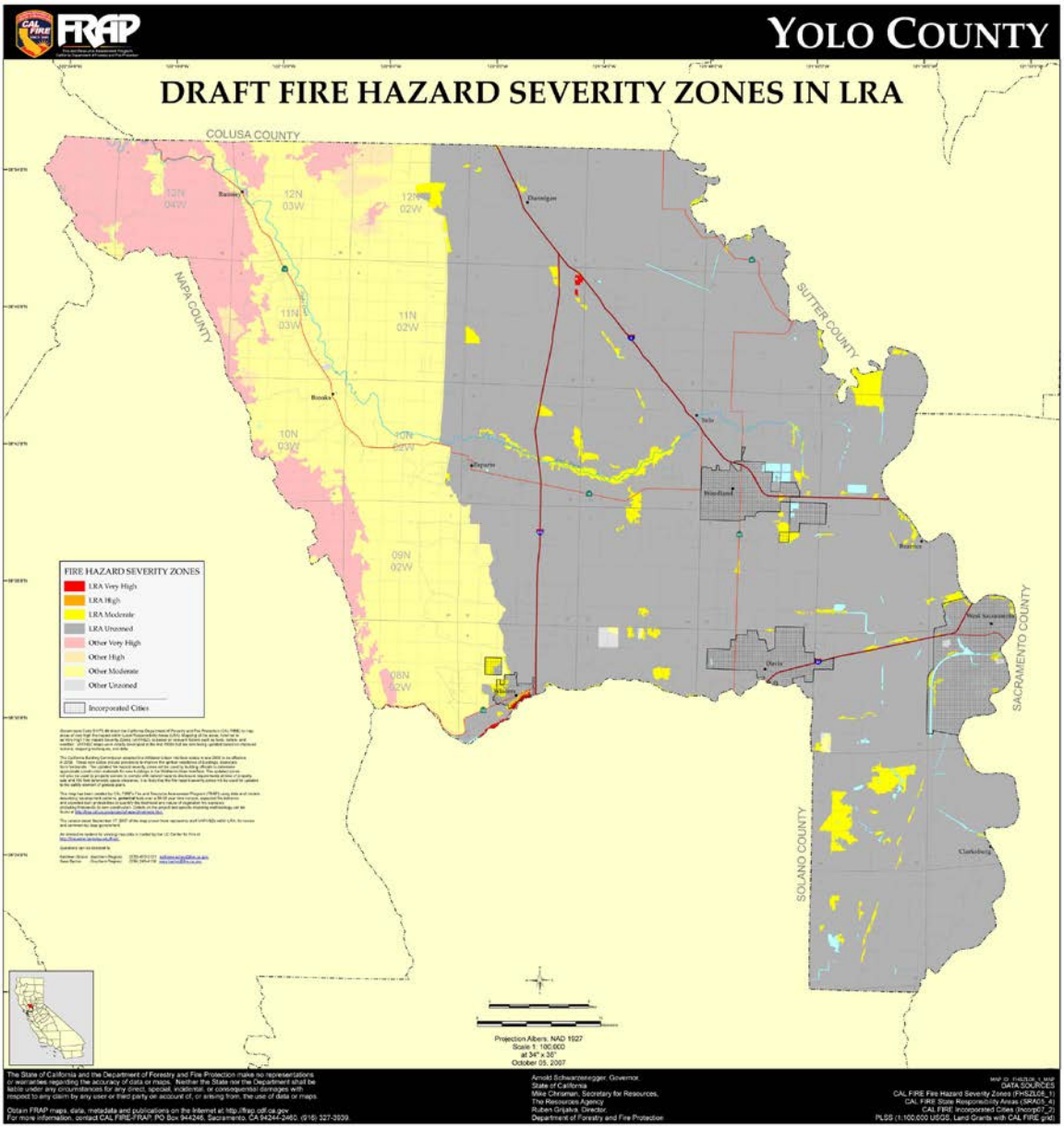
Elevation within the East Division ranges from 250' to 3000' with slopes ranging from 0 – 80%. There are two dominate North/South orientated ridges; Blue Ridge, running from the Yolo/Solano county line north to Rumsey Canyon and Walker Ridge, running from Hwy 20 to central Colusa county. These main ridges keep the coastal influence weather from being a factor. There are also two smaller ridges that can play a significant role to fire spread; Capay Hills and Cortina Ridge. Farmlands, ranches, rural and major roads along with other manmade features provide a network of barriers that will need to be connected to create an effective fire line. Capay Valley and Bear Valley are wide valleys that provide the opportunity for wind to be funneled even under local wind conditions; this situation will be compounded during critical weather conditions.

Figure B-15 Yolo County Cal Fire, Fire Severity Zone Map
State Responsibility Area (SRA)



Source: Cal Fire at http://www.fire.ca.gov/fire_prevention/fhsz_maps_yolo.php

Figure B-16 Yolo County Cal Fire, Fire Severity Zone Map
Local Responsibility Area (LRA)



Source: Cal Fire at http://www.fire.ca.gov/fire_prevention/fhsz_maps_yolo.php

Previous Occurrences

Most wildland fires in Yolo County are quickly contained due to rapid reporting and response, but if this first effort fails, a wild fire can get very big very fast. Such fires can require extensive firebreaks and/or a weather change for containment.

There have been many large and destructive fires in the past in the East Division. Many of the fires have occurred along the Highway 16 corridor through Rumsey Canyon two of which occurred as recent as the summer/fall of 2012. In recent years these fires have diminished due to local arson arrests. Because of poor access, steep slopes and strong North

winds, these fires have burned more than 40,000 acres. Large fires in Yolo County are listed in Table B-17.

Table B-17 Large Fires in Yolo County

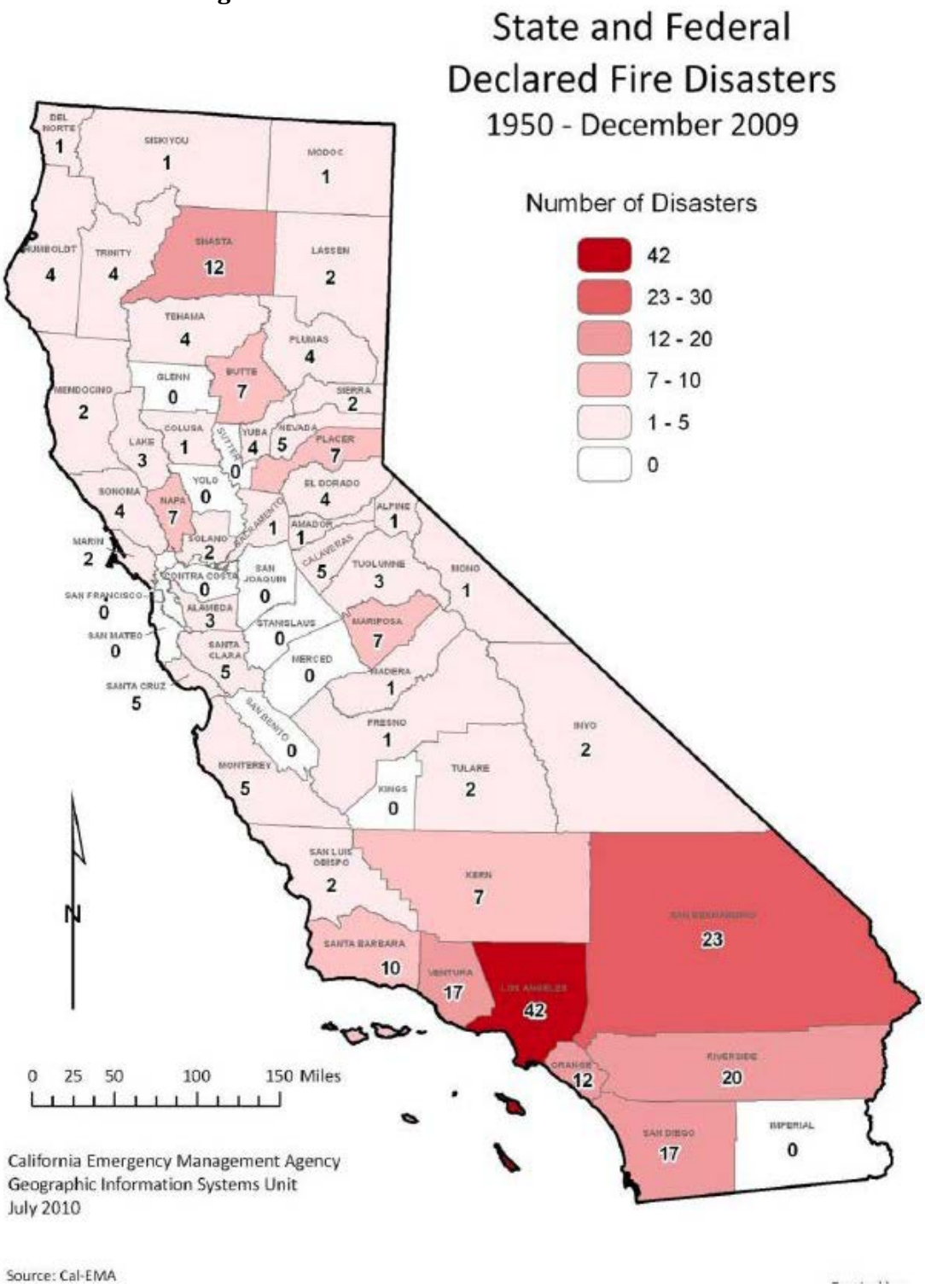
Large Fires in Yolo County Since 2005 (300 acres or greater)			
Fire Name	**Acres Burned**	**Date**	**Structures Destroyed**
Forest	520	7/24/12	unk
Sixteen Complex	17,944 (most of which was in Colusa County	9/4/12	
Rumsey	716	6/29/09	3
Six	1,235	10/1/09	0
Braye	450	5/18/07	0
Hwy 128	400	8/14/07	1
82	500	9/22/06	0
Rumsey Fire	39,138	6/6/05	5
Rumsey Series #3	301	10/11/05	0

Source: Cal Fire

The most notable recent fire in Yolo County was in October 2006 when 11,000 acres of rangeland, destroyed three houses and six vehicles, and damaged three to four houses plus 15 barns and outbuildings. More than 300 animals, mainly sheep, had to be put down as a result of injuries suffered when the fire roared across their pasture. The total animal death toll is estimated to top 500. No human lives were lost. High winds blew a fire west of Capay near County Road 82B and Highway 16 to about 1,000 acres before it was contained. There were two other fires, near Interstate 505 and County Roads 12A and 14, that merged together and grew to 10,000 acres before being contained to the south at Cache Creek.

Figure B-18 shows State and Federal Fire Disaster Declarations. There have been none in Yolo County from 1950 to 2009.

Figure B-18 Declared Fires and California



Probability of Future Occurrences

The probability of future wildland fires in Yolo County is **Highly Likely:** Near 100 percent chance of occurrence next year or happens every year**.** From May to October of each year,

Yolo County faces a wildfire threat. Fires will continue to occur on an annual basis in the County.

Hazard Profile Summary by Jurisdiction

Table B-19 below summarizes the results of the hazard identification and hazard profile for Yolo County based on the hazard identification data and input from the Steering Committee. For each hazard profiled in Element B, this table includes the probability of future occurrence and whether the hazard is considered a priority hazard for Yolo County.

Table B-19 Priority Natural Hazards in Yolo County

Hazard	Probability of Future Occurrence	Priority Hazard
Dam Failure	Unlikely	No
Drought	Likely	Yes
Earthquakes	Occasional	Yes
Flooding	Likely	Yes
Severe Weather	Highly Likely	Yes
Volcanic Activity	Unlikely	No
Wildfire	Highly Likely	Yes

Source: Hazard Mitigation Steering Committee

B.3. VULNERABILITY ASSESSMENT

§201.6(c)(2)(ii) [The risk assessment shall include a] 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. All plans approved after October 1, 2008 must also address NFIP insured structures that have been repetitively damaged by floods.

§201.6(c)(2)(ii)(A) (A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;

§201.6(c)(2)(ii)(B) (B) An estimate of the potential dollar losses to vulnerable structures identified in ... this section and a description of the methodology used to prepare the estimate.

§201.6(c)(2)(ii)(C) Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

Methodology

The vulnerability assessment further defines and quantifies populations, buildings, critical facilities, and other community assets at risk to natural hazards. The vulnerability assessment for this plan followed the methodology described in the FEMA 386-2, *Understanding Your Risks – Identifying Hazards and Estimating Losses* (2012).

The vulnerability assessment was conducted based on the best available data and the significance of the hazard. Data to support the vulnerability assessment was collected from the following sources:

- County and jurisdictional GIS data (hazards, base layers, and other government data)
- Statewide GIS datasets compiled by Cal EMA to support mitigation planning
- FEMA's HAZUS loss estimation software
- Written descriptions of assets and risks provided by participating jurisdictions
- Existing plans and reports
- Personal interviews with jurisdictional representatives and other stakeholders

The vulnerability assessment first describes the assets at risk in Yolo County, including the total exposure of people and property; critical facilities and infrastructure; natural, cultural, and historic resources; and economic assets.

Assets at Risk

This section assesses the population, structures, critical facilities and infrastructure, and other important assets in Yolo County at risk to natural hazards.

Total Exposure to Hazards

The following data from the Yolo County Assessor's Office is based on the secured roll data for 2012. This data should only be used as a guideline to overall values in the County, as the information has some limitations. The most significant limitation is created by Proposition 13. Instead of adjusting property values annually, the values are not adjusted or assessed at fair market value until a property transfer occurs. As a result, overall value information is

most likely low and does not reflect current market value of properties within the County.

Table B-20 shows the total population, number of structures, and assessed value of improvements to parcels by jurisdiction. Land values have been purposely excluded because land remains following disasters, and subsequent market devaluations are frequently short term and difficult to quantify. Additionally, state and federal disaster assistance programs generally do not address loss of land or its associated value.

The greatest exposure of people and property are concentrated in the incorporated cities, though significant population and structures are spread out in the unincorporated areas of the county.

Table B-20 Total Exposure to Hazards

Jurisdiction	Exposed Population	Buildings	
		Number	Value
Yolo County Unincorporated Areas	24,355	10,751 parcels	$1,383,763,564
City of Davis	65,622	16,298 parcels	$4,386,696,639
City of West Sacramento	48,744	16,444 parcels	$3,267,659,420
City of Winters	6,624	2,082 parcels	$287,379,763
City of Woodland	55,468	15,551 parcels	$3,218,266,476
Yocha Dehe Wintun Nation	36	9 parcels	$28,105,600
Total	200,849	61,135	$12,571,871,462

Source: Yolo County GIS, Assessor Roll

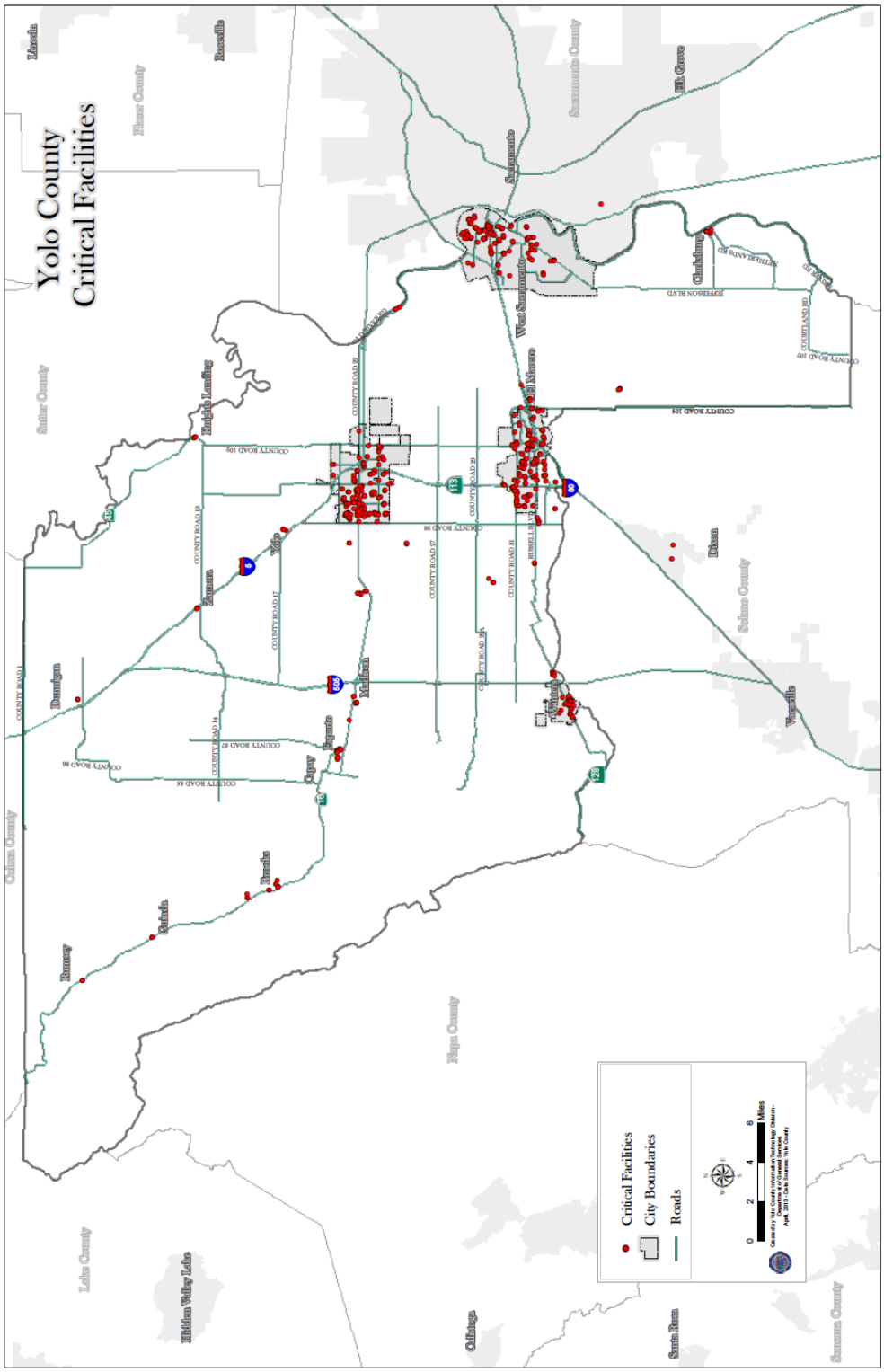
Critical Facilities and Infrastructure

A critical facility may be defined as one that is essential in providing utility or direction either during the response to an emergency or during the recovery operation. FEMA's HAZUS loss estimation software uses the following three categories of critical assets (Essential Facilities, High Potential Loss Facilities and Transportation and Lifelines). Essential facilities are those that if damaged would have devastating impacts on disaster response and/or recovery. High potential loss facilities are those that would have a high loss or impact on the community. Transportation and lifeline facilities are a third category of critical assets.

The Yolo County Office of Emergency Services maintains a listing of Critical Facilities in Yolo County (including the participating jurisdictions) and the list is categorized according to FEMA's critical facility definition. Additionally, the Community Profiles list the Critical Facilities specific to that jurisdiction. Figure B-21 shows the Essential Facilities in Yolo County.

Essential Facilities	High Potential Loss Facilities	Transportation and Lifelines
• Hospitals and other Medical Facilities • Police Stations • Fire Stations • Emergency Operation Centers	• Power Plants • Dams/levees • Military installations • Hazardous Material Sites • Schools • Shelters • Day Care Centers • Nursing Homes • Main Government Buildings	• Highways, Bridges and Tunnels • Railroads and Facilities • Bus Facilities • Airports • Water Treatment Facilities • Natural Gas Facilities and Pipelines • Oil Facilities and Pipelines

Figure B-21 Essential Facilities in Yolo County



HAZUS Building Inventory
In terms of building construction types found in the region, wood frame construction makes up 84% of the building inventory per the HAZUS analysis which is attached to this plan. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory
HAZUS breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 2 hospitals in the region with a total bed capacity of 151 beds. There are 83 schools, 20 fire stations, 5 police stations and 1 emergency operation facilities (0 listed in HAZUS run but we know the County EOC exists.) With respect to high potential loss facilities (HPL), there are 7 dams identified within the region. Of these, 2 of the dams are classified as 'high hazard'. The inventory also includes 24 hazardous material sites, 0 military installations and 0 nuclear power plants.

Transportation and Lifeline Inventory
Within HAZUS, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in tables B-22 and B-23.

The total value of the lifeline inventory is over 4,422.00 (millions of dollars). This inventory includes over 458 kilometers of highways, 253 bridges, 5,946 kilometers of pipes.

Other facilities in the county, such as locations that hold musical concerts, sporting events, and other events that attract large numbers of people, may also be at higher risk due to concentrations of population. These include, but are not limited to, the Yolo County Fairgrounds, the Cache Creek Casino and Resort, Raley Field, University of California, Davis, high school campuses and county or city parks. Other critical facilities unique to the county, tribe and cities are located in their respective Community Profile documents (attached).

More detailed information on damage and impact to the community as well as the overall summary of the community's vulnerability including the participating jurisdictions is located later in this section of the plan.

Figure B-22 HAZUS Transportation System Lifeline Inventory

System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	253	827.90
	Segments	206	2,571.70
	Tunnels	0	0.00
		Subtotal	**3,399.60**
Railways	Bridges	8	0.80
	Facilities	5	13.30
	Segments	49	125.50
	Tunnels	0	0.00
		Subtotal	**139.60**
Light Rail	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	Tunnels	0	0.00
		Subtotal	**0.00**
Bus	Facilities	6	7.70
		Subtotal	**7.70**
Ferry	Facilities	0	0.00
		Subtotal	**0.00**
Port	Facilities	14	28.00
		Subtotal	**28.00**
Airport	Facilities	4	42.60
	Runways	4	151.90
		Subtotal	**194.50**
		Total	**3,769.40**

SOURCE HAZUS, 2012

Figure B-23 HAZUS Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	59.50
	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	59.50
Waste Water	Distribution Lines	NA	35.70
	Facilities	5	392.90
	Pipelines	0	0.00
		Subtotal	428.60
Natural Gas	Distribution Lines	NA	23.80
	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	23.80
Oil Systems	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	0.00
Electrical Power	Facilities	2	259.60
		Subtotal	259.60
Communication	Facilities	7	0.80
		Subtotal	0.80
		Total	772.30

SOURCE: HAZUS, 2012

Natural, Historical and Cultural Resources

Assessing Yolo County's vulnerability to disaster also involves inventorying the natural, historical, and cultural assets of the area. This step is important for the following reasons:

- The community may decide that these types of resources warrant a greater degree of protection due to their unique and irreplaceable nature and contribution to the overall economy.

- In the event of a disaster, an accurate inventory of natural, historical and cultural resources allows for more prudent care in the disaster's immediate aftermath when the potential for additional impacts is higher.

- The rules for reconstruction, restoration, rehabilitation, and/or replacement are often different for these types of designated resources.

- Natural resources can have beneficial functions that reduce the impacts of natural hazards, for example, wetlands and riparian habitat which help absorb and attenuate floodwaters and thus support overall mitigation objectives.

Natural Resources

The Yolo Bypass Wildlife Area (Wildlife Area) is 16,770 acres of managed wildlife habitat and agricultural land located within the southern floodway of the Yolo Bypass. A portion of the Wildlife Area spans Interstate 80 adjacent to the Yolo Causeway, between the cities of Davis and West Sacramento. The Wildlife Area is a public and private restoration project managed by the California Department of Fish and Game (DFG) in consultation with the Yolo Basin Foundation. In 1997, the U.S. Army Corps of Engineers restored wetlands and associated habitats within the Wildlife Area. This project, originally named the Yolo Basin Wetlands, was renamed the Vic Fazio Yolo Wildlife Area. The entire wildlife area, however, is officially named the Yolo Bypass Wildlife Area.

The Blue Ridge Berryessa area consists of 785,000 acres along the spine of the western Blue Ridge Mountains in the northwestern part of Yolo County, and includes portions of Colusa, Solano, Napa and Lake Counties. The area remains primarily in private ownership and is not subject to State or federal management. The Blue Ridge Berryessa Natural Area Conservation Partnership (BRBNACP) is a collaboration involving various private land owners; businesses; local, state, and federal agencies; non-profit organizations; and supporters working to protect and enhance the 600,000 acre BRNBA. To date, 50,000 acres have been conserved through easements and purchases.

The lower Cache Creek planning area includes over 28,000 acres of land with state designated mineral resources, which includes about 18,250 acres of known "significant" deposits (designated on the Land Use Map with the MRZ Overlay). Within the Cache Creek planning area the County has designated an Open Space area of about 5,000 primarily privately owned acres which fall under the management guidance and regulation of the Cache Creek Resources Management Plan (CCRMP). As a by-product of permitted aggregate mining within the Cache Creek planning area there is an increasing acreage of dedicated land transferring into public ownership. Public access to these areas is anticipated to increase over time pursuant to the CCRMP. The CCRMP is a component of the Cache Creek Area Plan (CCAP), which is an adopted part of the county's General Plan. The focus of the CCAP is groundwater protection, agricultural preservation, restoration of Cache Creek, and limitation and regulation of mining.

The Cache Creek Wild and Scenic River Area includes 31 miles of upper Cache Creek in Lake and Yolo counties that were added to the State Wild and Scenic Rivers System in 2005. Designation of the upper reaches of the Creek as "wild and scenic" supports the creek's scenic, recreational, wildlife, and fishery values and precludes new dams and water diversions.

The federal government owns 30,225 acres and the State of California owns 17,257 acres of land in unincorporated Yolo County managed for open space purposes. Each of the four Yolo County cities also own public open space, mostly in the form of parkland within their boundaries. Notably, the City of Davis has acquired open space lands in a number of locations around its edge, and a number of open space areas are owned and managed by the University of California.

While nearly entirely altered from its native condition, agricultural lands in Yolo County continue to represent an important landscape for numerous wildlife species. Raptors, waterfowl and other water birds, a variety of songbirds, and small mammals use agricultural fields for nesting and foraging; but to large extent, the enhanced value of agricultural habitats in Yolo County is due to the integration of natural communities within the agricultural landscape. Adjacent riparian corridors, roadside trees, windbreaks, woodlots, isolated trees, and field borders provide important nesting, roosting, and cover habitat for many local and migratory species that also use the agricultural fields as foraging habitat. The retention of these adjacent habitats has greatly enhanced the wildlife value of agricultural habitats in Yolo County and their continued retention and restoration is essential in maintaining this value over time.

Approximately 21 percent of the county can be defined as natural lands. These include native oak woodlands, prairie grasslands, and chaparral communities in the western mountains and foothills, riparian woodlands, native and restored wetland communities, and remnant valley oak groves and valley oak trees on the valley floor.

Wetlands

Wetlands include permanent marsh communities that are inundated all or most of the year, and seasonal wetlands that are inundated only a part of the year, typically during winter and spring. Native seasonal wetlands are uncommon in Yolo County and include several remaining patches of alkali sink between Davis and Woodland, and vernal pools associated with the prairie grasslands near Winters. Most seasonal wetlands in Yolo County are restored and managed to provide habitat for wintering waterfowl. Significant areas of seasonal wetland and marsh communities are found primarily in the Yolo Basin, including the Yolo Bypass Wildlife Area, private lands in the southern panhandle, the Conaway Ranch north of Interstate 80, and the City of Davis Wetlands. Additional wetland habitats are found at the recently restored Roosevelt Ranch Preserve east of Zamora and in several other isolated locations throughout the central and eastern portions of the county.

Wetlands are among the most productive wildlife habitats, supporting many species of birds, mammals, reptiles, and amphibians. The presence of wetlands also enhances the biological value of the surrounding landscape because many species that find nesting and cover habitat in wetlands may forage more widely in agricultural or grassland habitats. Marsh communities, including non-tidal freshwater emergent wetland, tidal freshwater emergent wetland, and tidal perennial aquatic wetland provide nesting and cover habitat for many wetland- and aquatic-associated species. Seasonal wetlands provide important habitat for wintering waterfowl and other water birds; and during the dry summer and fall, seasonal wetlands are used by numerous raptor and songbird species.

Riparian

Riparian refers to streamside vegetation that occurs along rivers, creeks, and sloughs. In Yolo County, riparian woodland and shrub communities occur along several natural rivers, creeks, and sloughs and constructed water delivery canals in the county, including Sacramento River, Putah Creek, Cache Creek, Oat Creek, Bird Creek, Buckeye Creek, Willow Slough, Dry Slough, Elk Slough, Sutter Slough, Tule Canal, Deep Water Ship Channel, and the Knights Landing Ridge Cut. Most of the creeks in the county drain the Interior Coast Ranges and flow west to east toward the Sacramento River basin. The sloughs are backwater drainages of the Sacramento River; and the canals were constructed for water delivery or transport purposes. The most significant riparian communities occur along Putah Creek and

Cache Creek. Both support relatively dense valley oak/cottonwood riparian forest and are significant wildlife movement corridors between the Interior Coast Ranges on the west and the Sacramento River basin on the east. Smaller creeks and sloughs also support significant remaining riparian corridors that interconnect the mountainous landscape on the west with the valley floor or extend north-south through the lower elevation agricultural landscape.

Riparian vegetation is also essential in maintaining the quality of in-stream habitat by providing shade, food, and nutrients. Downed trees, willow mats, and other vegetation scour pools, form logjams and dams, and provide important habitats for fish, aquatic reptiles and amphibians, and aquatic insects, those are listed below.

- Oak Woodlands/Chaparral
- Grassland Prairies/Valley Oak Savannah
- Remnant Oak Trees, Groves, and Tree Rows

Special-Status Species
Many special-status species (including state and federal threatened and endangered species, state species of special concern and fully protected species, and plants listed by the California Native Plant Society) occur or have potential to occur in Yolo County. These species are listed in Figure B-24. Special-status species occur throughout the county in all of the vegetation communities and habitats described above. However, while several species such as bald eagle, golden eagle, and Cooper's hawk are known to occur primarily in the mountainous regions on the western edge of the county, most are known to occur in the more disturbed agricultural landscape of the Central Valley.

As noted above, in many cases the retention of natural features within this landscape greatly enhances habitat conditions for species, such as the Swainson's hawk, that have successfully adapted to an agricultural landscape. Others continue to persist in smaller patches of suitable habitat, such as the state-threatened black rail, which has been detected in the wetlands on the Yolo Bypass Wildlife Area; and the western burrowing owl, which uses remaining grasslands, roadside edges, artificial berms, and some agricultural habitats. Some species have not been detected in the county for many years, such as the western yellow-billed cuckoo, due to limited habitat availability and quality. Preservation and restoration of suitable habitats for these species is key to their continued occurrence or reestablishment in Yolo County.

Figure B-24 Special Status Species in Yolo County

Species Common Name	Federal Listed	State Listed
PLANTS		
Palmate-bracted birdsbeak	E	E
Colusa grass	T	E
Crampton's tuctoria	E	E
CRUSTACEANS		
Conservancy fairy shrimp	E	-
Vernal pool fairy shrimp	T	-
Vernal pool tadpole shrimp	E	-
INSECTS		
Valley elderberry longhorn beetle	T	-
AMPHIBIANS		
California tiger salamander	E	SSC
Foothill yellow-legged frog	-	SSC
Western spadefoot	-	SSC
REPTILES		
Giant garter snake	T	T
Western pond turtle	-	SSC
BIRDS		
Bald eagle	T	E
Golden eagle	-	SSC
Swainson's hawk	-	T
White-tailed kite	-	FP
Northern harrier	-	SSC
Cooper's hawk	-	SSC
American peregrine falcon	-	E
Prairie falcon	-	SSC
California black rail	-	T
Greater sandhill crane	SC	T
Western snowy plover	T	SSC
Western yellow-billed cuckoo	SC	E
Black tern	-	SSC
Short-eared owl	-	SSC
Western burrowing owl	-	SSC
Loggerhead shike	-	SSC
Bank swallow	-	T

Source: Yolo County General Plan, Conservation and Open Space Element

Figure B-24 Special Status Species in Yolo County, Cont'd.

Species Common Name	Federal Listed	State Listed
Purple martin	-	SSC
Tricolored blackbird	-	SSC
MAMMALS		
Western red bat		SSC
Townsend's western big-eared bat		SSC
Pallid bat		SSC
FISH		
Sacramento River Winter-run Chinook salmon	E	E
Delta smelt	T	T
Central Valley spring–run Chinook salmon	T	T
Central Valley steelhead	T	-

Notes: – = no listing.
Federal-Listed
E = listed as endangered under the federal Endangered Species Act.
T = listed as threatened under the federal Endangered Species Act.
SC = species of concern; species for which existing information indicates it may warrant listing but for which substantial biological information to support a proposed rule is lacking.
State-Listed
E = listed as endangered under the California Endangered Species Act.
T = listed as threatened under the California Endangered Species Act.
SSC = species of special concern in California.
FP = fully protected.

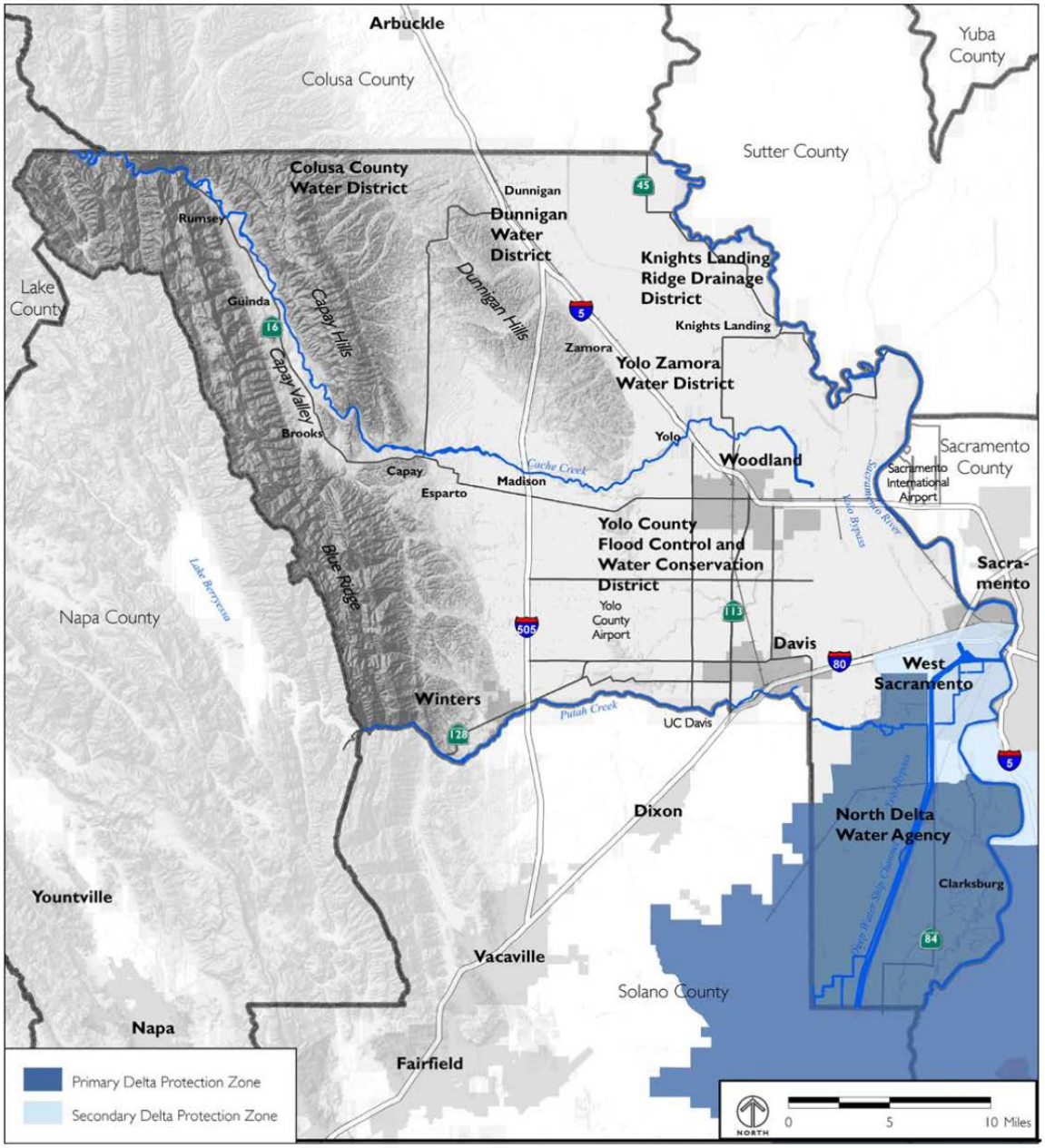
Source: Yolo County General Plan, Conservation and Open Space Element

The Delta Region

In the past several years, the Delta has become an area of intense interest, with numerous planning and legislative efforts looking to redefine the policy and regulatory landscape. Those areas of the Yolo Bypass, the City of West Sacramento, and the unincorporated area that lie south of Interstate 80 are located within the Primary and Secondary Zones of the Sacramento-San Joaquin Delta (see Delta Protection Zones Figure B-25). Land use in these areas must be consistent with the Yolo County General Plan with the Land Use and Resource Management Plan (LURMP), as adopted by the Delta Protection Commission (DPC). The DPC is currently in the process of updating the LURMP, to address a wide range of issues, including recent court decisions related to water export, studies that indicate serious problems with the health of the Delta ecosystem, concerns about the ability of levees to withstand significant flood and/or seismic events, and the effects of future global climate change. This review may include areas outside of the Delta as currently defined.

In 2006, the Governor issued an Executive Order creating the Delta Vision process. The Delta Vision Blue Ribbon Task Force (DVBRTF) is a group of public officials, experts, and stakeholders, charged with developing recommendations on the overall management and governance of the Delta, including goals related to improving safety, ensuring water supply and water quality, expanding recreation, coordinating emergency response, and protecting infrastructure and public safety.

Figure B-25 Delta Protection Zones in Yolo County



Source: Yolo County General Plan Conservation Element; Delta Protection Commission

Historical Resources

Individuals, various community groups and local organizations throughout Yolo County preserve historical resources. These groups include the County Planning Commission/Historic Preservation Commission and various volunteer historical societies. The Planning Commission serves as the Historic Preservation Commission which is tasked with establishing criteria, guidelines and standards to pursue the goals outlined in the County's Historic Preservation Ordinance. The Commission is responsible for maintaining an inventory of all historical landmarks and districts within Yolo County and recommending future historic designations to the Board of Supervisors.

The Planning Commission decides permits for demolition and for alterations to historic structures. There are a number of repositories of historical artifacts and information in Yolo County, including the Yolo County Historical Museum, the Yolo County Archives and Record Center and the Hattie Weber Museum. The Yolo County Historical Museum is located in Woodland. The museum provides tours of the architecturally historic building and displays furnishings and artifacts from Yolo County's past, specifically between 1850 and 1930, and includes outbuildings that feature artifacts associated with the agricultural industry and farming lifestyle.

The Yolo County Archives and Record Center maintains a comprehensive archive of historical materials dating back from the County's beginnings in 1850. A broad range of materials are stored at the Archive and Record Center, including County documents, original tax records, old newspapers, probates, wills, civil and criminal cases, original maps of Mexican land grants, personal scrapbooks, video reels and a complete set of meeting notes from every meeting of the Yolo County Board of Supervisors.

Yolo County maintains its own list of local historical landmarks. There are also county listings on the National Register of Historic Places, the list of California State Historical Landmarks, and the list of California Points of Historical Interest. The lists are noted in Figures B-26, B-27 in the following pages.

Figure B- 26 County-Recognized Historical Resources in Unincorporated Yolo

Common Name	Address
Yolo Library	37750 Sacramento Street, Yolo, CA
James Borach House	419 Sacramento Street, Yolo, CA 95697
Yolo Town Hall	37735 Sacramento Street, Yolo, CA
Joseph T. Cooper House	CR 16a (between CR 98a and CR 98e) Box 545, Yolo, CA
Samuel Carpenter Cottage	CR 87e W of the end, Winters, CA95694
William L. Seawright House	SH 128 (North Side E Of CR 87d) Winters, CA95694
Adolph Oeste House	SE Corner Patwin Rd/ Russell Blvd, Davis, CA 95616
French Residence	37858 Russell Blvd, Davis, CA 95616
Hext Brothers Farmhouse	Box 2080, Rd. 97D and State Route 128, Davis, CA 95616
Gotfried Schmiser House	CR 31 and CR 96 Box 2560 Davis, CA 95616
"Yolanda"	CR 99, Box 70, at NW Corner Cr 25a, Woodland, CA 95695
William Marcus Jackson House	20123 East Street, Woodland, CA 95695
Frank N. Bullard House	CR 99, Box 150 (N of CR 27) Woodland, CA
Lorenz Heinz Ranch	38331-35 CR 29, Davis, CA
B. F. Conaway Ranch House	CR 103, Box 158 (N of CR 27), Woodland, CA 95695
Nelson Bump House (Aka "Lydia" House)	South River Road next to County Line, Clarksburg, CA
Hamilton S. Connor House	CR 144, Box 283, Clarksburg, CA
Holland Land Company Headquarters	Netherlands Road at Central Ave., Clarksburg, CA
Lawlor & Cosby General Merchandise	South River Road (corner of Netherlands Ave.) Clarksburg, CA
Husick Hardware	South River Road (S of Netherlands Ave) Clarksburg, CA
St. Joseph's Church And Rectory	South River Road, Box 52, Clarksburg, CA
Brown/Munk House	54080 South River Road, Clarksburg, CA
Gordon Cemetery	CR 20 E of CR 92C, Yolo, CA 95697
Robert Baur House	CR 23, Box 516 East of CR 86a Madison, CA 95653
Esparto Railroad Station	16770 CR 87, Esparto, CA
Fred Wyatt House	924 and 928 Grafton, Esparto, CA 95627
Clarence Johnson Home & Shop	26621 Capay Street, Esparto, CA
Ioof Building, Esparto	16651-63 Yolo Avenue Esparto, CA
Henry Mefford House	County Road 25 near County Road 86A Madison, CA 95653
Haines Store	1110 Main Street, Madison, CA 95653

Source: Yolo County General Plan, Conservation and Open Space Element

Figure B-26 County-Recognized Historical Resources in Unincorporated Yolo County Cont'd.

Common Name	Address
Union Church Of Dunnigan	3615 County Road 89A, Dunnigan, CA 95937
St. Agnes Church	SE Corner Main and Second Streets, Zamora, CA 95698
John Snowball Mansion	613 Front Street, Knights Landing, CA
Silas/ Edson House	509 3rd Street, Knights Landing, CA
Leithold's Drug Store, Knights Landing	223 Mill Street. Knights Landing, CA
First National & Home Savings Bank	225 Mill Street. Knights Landing, CA
Masonic Lodge, Knights Landing	414 3rd Street., Knights Landing, CA
Hanney/La Due House	602 Mill Street, Knights Landing, CA
Guinda Corner Store	Sate Route 16 and County Road 53, SW corner, Guinda, CA
Rumsey Town Hall	State Route 16 and Laurel Street, NE corner, Rumsey, CA
James Carey Montgomery House	Rt, 1, Box 1140, Davis, CA 95616

Source: Yolo County General Plan, Conservation and Open Space Element

Figure B-27 Nationally- and State-Recognized Historical Resources in Unincorporated Yolo County

Place Type	Location
National Register of Historic Places	
Yolo Branch Library	200 Sacramento Street, Yolo
Union Church of Dunnigan	3615 County Road 89A, Dunnigan
Rumsey Town Hall	State Route 16 at Manzanita Street, Rumsey
Nelson Ranch	41070 County Road 18C, Woodland
William B Gibson House	512 Gibson Road, Woodland
Canon School	0.5 mi. N of Brooks, Brooks
California State Historical Landmarks	
None in Unincorporated Yolo County	
California State Points of Historical Interest	
Russell Boulevard	Between Highway 113 and Road 98, Davis
Mary's Chapel	Intersection of County Roads 15 and 98
St. Agnes Church	County Road 98, Zamora
Capay School	State Route 16, Capay
Leonidas Taylor Monument	West bank of the Sacramento River, northwest of Sacramento
Yolo County Courthouse	725 Court Street, Woodland
Yolo County Historical Museum	512 Gibson Road, Woodland

Source: National Register of Historic Places, the list of California State Historical Landmarks, and the list of California Points of Historical Interest, 2008.

Source: Yolo County General Plan, Conservation and Open Space Element

Cultural Resources
There are two tribes with registered traditional land in Yolo County, the Cortina Band of Indians and the Rumsey Band of Wintun Indians. The Cortina band is not known to currently own property nor be active within the County. The Rumsey Tribe is very active in the County. They are a significant landowner and employer as the operators of the Cache Creek Casino Resort in Brooks.

The Rumsey Band of Wintun Indians is a recognized sovereign nation. As such, the Department of the Interior, Bureau of Indian Affairs, holds approximately 267 acres in trust for the Rumsey Tribe (the Tribe). One site contains houses for the tribal members, a community center, and the Yocha-De-He Preparatory School. The other site is home to the Cache Creek Casino Resort. As sovereign lands, these areas are not a part of the County's General Plan. The Tribe also owns several thousand acres in and around the trust lands. More information on the Rumsey Band of Wintun Indians can be found in their Community Profile.

A countywide record search was conducted at the Northwest Information Center (NWIC) of California Historical Resources Information System at Sonoma State University, and additional sources were also used, to generate a list of over 1,200 recorded cultural resources within Yolo County. Of these, 270 are archeological resources. The locations of these resources have been kept confidential.

Economic Assets
Yolo County has many existing characteristics that make it a competitive business environment within the Sacramento region. The County's several significant assets include the following:

- Access to regional job centers
- Visibility and easy access to Interstates 80, 5 and 505
- Airport and transit connections
- Affordable housing
- Affordable land
- Food and fiber business synergy

Economic assets at risk may include major employers or primary economic sectors, such as, agriculture, whose losses or inoperability would have severe impacts on the community and its ability to recover from disaster. After a disaster, economic vitality is the engine that drives recovery. Every community has a specific set of economic drivers, which are important to understand when planning ahead to reduce disaster impacts to the economy. When major employers are unable to return to normal operations, impacts ripple throughout the community. Table B-28 shows the top employers Yolo County as provided by the Yolo County website at www.yolocounty.org/about us.

Table B-28 Top Employers in Yolo County

Company	Number of Employees
UC Davis	11,704 (plus 1,289 seasonal employees)
Cache Creek Casino Resort	2,400

Company	Number of Employees
State of California	2,214 (includes 117 intermittent employees)
U.S. Postal Service	1,794
Walgreen's	1,700
Yolo County	1,245
Woodland Healthcare	994
Woodland Joint Unified School District	976
Raley's Family of Fine Stores	831
Davis Joint Unified School District	792
Target Corp	782
Pacific Gas & Electric Co.	623
UPS	500-999
Nugget Market Inc.	500
City of Davis	430
Coventry Health Care	400
City of West Sacramento	340
City of Woodland	281
Sutter Davis Hospital	270
Winters Joint Unified School District	220
NOR-CAL Beverage Co. Inc	200-250
Clark Pacific Corp	185
Vertis, Inc.	175
Wells Fargo & Co	99 (plus 27 part-time employees)
Kaiser Permanente	75
Woodland Community College	74 (plus 73 part-time employees)
Wallace-Kuhl Associates, Inc.	58 (plus 12 temporary employees

Source: www.yolocounty.org/about us

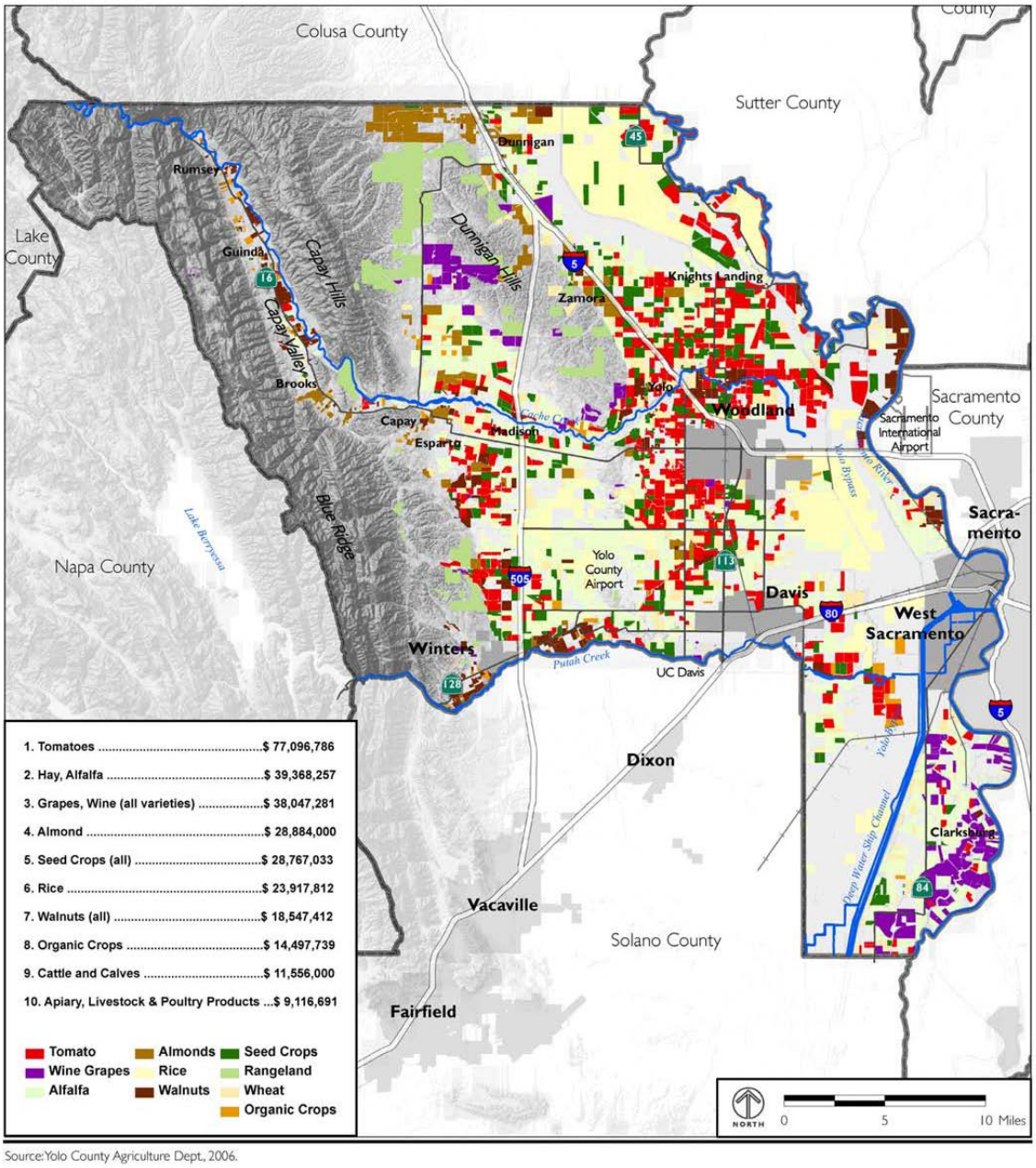
Agriculture has been at the heart of Yolo County's identity, character, economy and way of life since the County's founding in 1850. Today, over 85 percent of county land is used for agriculture. Traditional growers on large-scale farms share the land with a growing number of diversified small farms (e.g. truck farms), as well as thriving livestock operations. Additionally, many farmers are implementing innovative new models for farm operation, crop choice and mix and marketing. Important contributors to the strength and success of agriculture in Yolo County include the County's longstanding commitment to agricultural preservation, its focus on directing growth into the existing cities and towns and the presence of UC Davis, which is an international leader in agricultural research and education.

The gross value of Yolo County's agricultural production for 2011 was $549,249,669, an all time high, and an increase of 23.8% from 2010. This increase reflects overall higher price per unit for commodities and increases in acreage.

Processing tomatoes remain Yolo County's leading commodity with a gross value of $106,792,881, up from $87,920,291 in 2010. This is due to a slightly increased price per unit, but mainly to a 21.7% increase in acreage in 2011 as the county rebounded from decreased acreage in 2010.

Rice, wine grapes, hay, and walnuts round out the top five, with the only change from 2010 the switch of walnuts to number five in gross value and organic production to number six. These changes reflect an increase in bearing acreage for walnut orchards, as well as a 28.7% price increase per unit from the previous year. Almonds, field corn, wheat and sunflower seed round out the top ten commodities for 2011 and are shown in Figure B-29. At the time of the development of this plan, there was no available data on the crop losses in Yolo County.

Figure B-29 Top 10 Agricultural Commodities

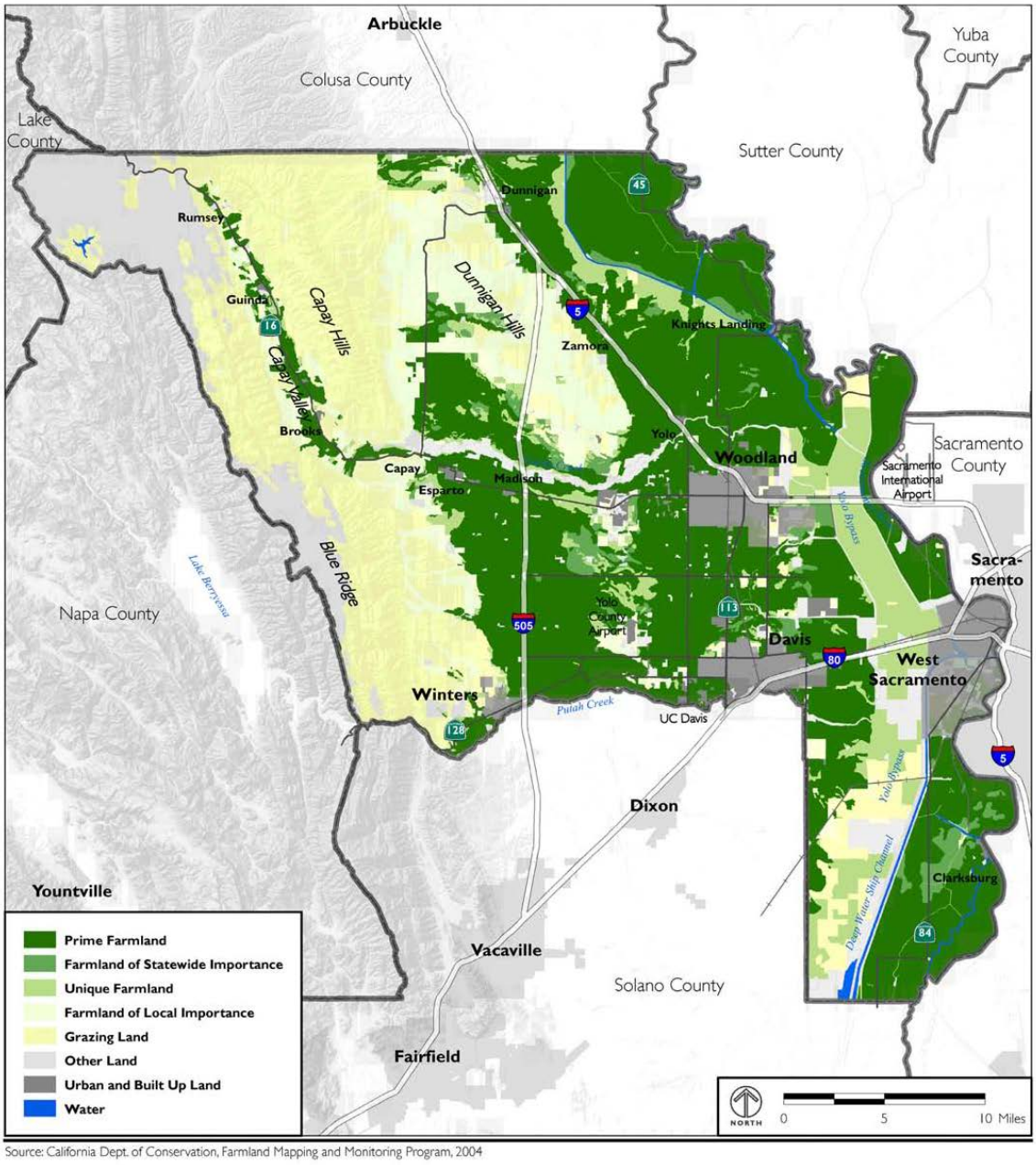


Source: Yolo County General Plan, Agriculture and Economic Development Element

Important Farmland

Important farmlands in Yolo County are presented on the Important Farmlands Figure B-30. The majority of the County's farmland is Prime Farmland, particularly in flat areas. Most of the County's cities and unincorporated communities are surrounded by Prime Farmland. The western foothills are predominantly classified as Grazing Land.

Figure B-30 Important Farmland in Yolo County

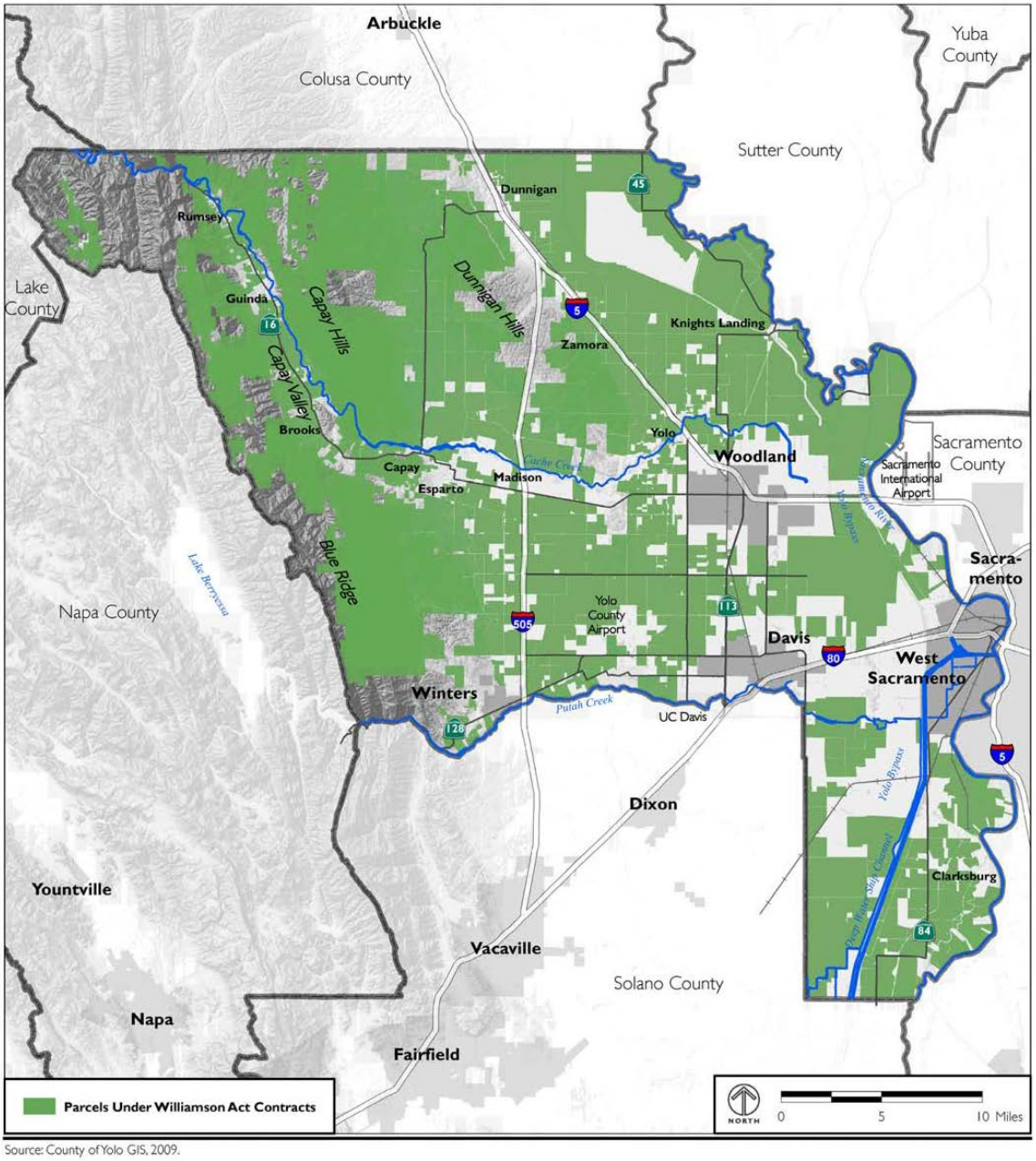


Source: Yolo County General Plan, Agriculture and Economic Development Element

Williamson Act

The California Land Conservation Act, better known as the Williamson Act, has been a cornerstone of the County's agricultural preservation program. As in Figure B-31, 410,659 acres or 67 percent of Yolo County's total land area is in Williamson Act contracts. In 2005, the State honored Yolo County with an agricultural stewardship award in recognition of the County's work to preserve agricultural land through the Williamson Act. Subventions (reimbursements for lost property tax revenue resulting from Williamson Act contracts) have repeatedly been proposed for reduction or elimination by the State in recent years in order to balance the State budget. This would have a significant and adverse effect on both farmers and the County.

Figure B-31 Williamson Act Contracts



Source: Yolo County General Plan, Agriculture and Economic Development Element

Climate Change

A balance of naturally occurring greenhouse gases (GHGs) in the earth's atmosphere is responsible for maintaining a habitable climate. Emissions from human activities, such as electrical production, motor vehicle use, and some forms of agriculture are elevating the concentrations of greenhouse gases in the atmosphere, and have led to increasing instability in the earth's climate. This is known as climate change.

The County's General Plan establishes the land use pattern that will accommodate the residents, businesses, and attendant infrastructure planned through 2030 in Yolo County. Decisions about the location of commercial, residential and civic buildings, roads and transit systems, water supply, building design, natural resources, open space, agriculture, and energy infrastructure determine the level of GHG emissions in the County.

Yolo County has undertaken several actions to date to reduce greenhouse gases as related to County operations and programs:

- Climate Change Working Group. Yolo County has created a climate change team through the County Administrator's Office and has organized a climate change working group that includes the cities and various districts, to coordinate countywide climate change efforts.
- Cool Counties. The County has committed to the Cool Counties Climate Stabilization Declaration, a pledge to reduce greenhouse gas emissions from County operations by 80 percent by 2050.
- California Climate Action Registry. The County has prepared a baseline audit energy usage associated with County operations. This baseline will be used to measure energy usage over time. Through the registry the County will use a common GHG emission reporting system and will receive credit for reductions in emissions.
- UC Davis Partnership. The County has engaged civil and environmental engineering students to assist in studying its carbon generation from county operations, and develop policies and strategies to reduce emissions.
- Increasing Energy Efficiency. The County has taken steps to increase the energy efficiency of county operations including replacement of incandescent lights with compact fluorescent bulbs, retrofit of infrastructure in County buildings, installation of computerized climate control in all major county buildings, installation of cogeneration capacity at the Monroe Detention Facility, development of a building closure program to retire less energy-efficient buildings, and a countywide appliance replacement program for Energy Star appliances. The County has a goal of ten percent annual reduction in energy usage through 2013.
- Full-Scale Landfill Bioreactor. The County recovers methane gas, a potent greenhouse gas, from the Central Landfill to generate electricity.
- LEED. The County has adopted Leadership in Energy and Environmental Design (LEED) standards for new county buildings.
- Recycling. All County buildings recycle paper, cardboard, cans, bottles, fluorescent tubes, oil, computers, rigid plastics, agricultural plastics, PVC pipe, toner cartridges, cell phones, batteries, and electronic waste. The County has a goal of 50 percent recycling of all sorted material at the landfill. The County also has a Construction and Demolition Recycling Ordinance that requires diversion and recycling of construction and demolition debris.
- Agricultural Marketing. The Agriculture Commissioner has initiated an agricultural

marketing program to reduce "food miles," and therefore result in reductions in carbon dioxide emissions.
- Transportation and Fleet Vehicles. The County has installed charging stations for electric vehicles and uses electric vehicles for commuting between local facilities.
- Personnel Training. County staff attends classes on the California Environmental Quality Act (CEQA) and on climate change issues.
- Tree Planting. The County operates a small nursery that provides tree planting for County facilities.
- Research. The County is involved in a variety of research projects related to energy conservation and control of GHG emissions.

The County also requires energy efficient project design and landscaping design as a part of the development review process. Additionally, the Cache Creek Area Plan establishes monetary and regulatory incentives to encourage recycling of aggregate products.

Future Development Trends

As part of the planning process, the Steering Committee looked at changes in growth and development and examined these changes in the context of hazard areas and how the changes in growth and development affect loss estimates and vulnerability.

Yolo County has been steadily growing over the last several decades. Long-term forecasts by the California Department of Finance project population growth in Yolo County continuing through 2060, adding 52% to the 2010 county population by the year 2060. The population projections are for the County as a whole and are shown in Table B-32.

Table B-32 Population Projections in Yolo County 2010 to 2060

Jurisdiction	2010 Population	2060 Population	2010-2060 Growth	Total Growth
Yolo County	201,311	305,711	+104,400	52%

Source: California Department of Finance, http://www.dof.ca.gov/research/demographic/reports/projections/P-1/

Employment

According to the Housing Element of the General Plan, the County projects an average annual employment growth rate of 1.5 percent between 2005 and 2013 in the unincorporated County. In comparison, SACOG expects employment in Yolo County overall, including the incorporated cities, to grow at an average rate of 2.6 percent per year. Employment projections are shown in Figure B-33.

Figure B-33 Employment Projections in Yolo County

	2005	2010	2013[a]	2015	Projected Average Annual Change 2005-2013
Total Project Employment					
Yolo County Total	109,855	127,233	135,270	140,628	2.6%
Davis	16,378	19,045	19,211	19,322	2.0%
Winters	1,774	2,138	2,360	2,508	3.6%
Woodland	24,634	28,235	30,450	31,926	2.7%
West Sacramento	41,282	50,004	54,209	57,012	3.5%
Unincorporated Yolo County	25,787	27,811	29,040	29,860	1.5%
Clarksburg	207	252	267	277	3.2%
Dunnigan	85	93	143	177	6.8%
Esparto	261	299	324	341	2.7%
Knights Landing	106	125	114	107	0.9%
Madison	68	72	76	79	1.4%
Rest of Unincorp. County[b]	25,060	26,970	28,115	28,879	1.4%
Projected Retail Employment					
Yolo County Total	14,370	17,548	18,572	19,255	3.3%
Davis	4,585	5,153	5,214	5,254	1.6%
Winters	532	659	747	805	4.3%
Woodland	5,361	5,854	6,098	6,260	1.6%
West Sacramento	3,527	5,513	6,144	6,564	7.2%
Unincorporated Yolo County	365	369	371	372	0.2%
Clarksburg	12	12	12	12	0.0%
Dunnigan	17	17	17	17	0.0%
Esparto	62	66	68	69	1.1%
Knights Landing	32	32	32	32	0.0%
Madison	27	27	27	27	0.0%
Rest of Unincorp. County[b]	215	215	215	215	0.0%
Projected Office Employment					
Yolo County Total	23,937	29,660	32,692	34,714	4.0%
Davis	4,538	5,388	5,482	5,544	2.4%
Winters	236	295	335	361	4.5%
Woodland	4,161	5,338	6,220	6,808	5.2%
West Sacramento	14,787	18,422	20,435	21,777	4.1%
Unincorporated Yolo County	215	217	221	224	0.4%
Clarksburg	5	7	8	9	6.4%
Dunnigan	10	10	10	10	0.0%

Source: Yolo County General Plan, Housing Element

Yolo County seeks to preserve agriculture while also diversifying, and is allowing measured, appropriate residential and economic development, focused within existing communities. Upward trends in population growth and development in Yolo County increase vulnerability to hazards, including, flooding, wildfire, and drought. Modern, well-constructed buildings built to code are more resistant to earthquake shaking. However, new

buildings can be severely damaged if built upon areas susceptible to soil liquefaction. The risk of flooding in future development should be minimized by the floodplain management programs of the county and its jurisdictions, if properly enforced. Vulnerability to wildfire will increase with more development in north western part of the county and will increase the fire protection challenges in the area. Lastly, as the population grows, so do the water needs for household, commercial, industrial, recreational, and agricultural uses. Vulnerability to drought will increase with these growing water needs.

B.3. Estimating Potential Losses

The Steering Committee ranked the significance of identified hazards for each jurisdiction. Significance is measured in general, qualitative terms and is a summary of the potential impact of the hazard based on the geographical area affected, history of past occurrences, potential magnitude, probability of the event, and damage and casualty potential. Significance is classified as the following:

High: Widespread potential impact. This ranking carries the highest threat to the general population and/or built environment. Hazards in this category may have already occurred in the past.

Medium: Moderate potential impact. This ranking carries a moderate threat level to the general population and/or built environment. The potential of occurrence may be the same as the high ranking, but the potential damage is more isolated and less costly than a more widespread disaster.

Low: Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal.

This section assesses vulnerability to those specific hazards ranked of medium or high significance. The Steering Committee identified four hazards within the entire county area where specific geographical hazards are defined: dam Failure, earthquake, flooding, and wildfire. Critical facilities and other assets in these areas were assessed and are described below. The vulnerability to other medium to high significance hazards that do not have specific mapped areas, such as drought and severe weather are discussed in more general terms at the end of this section. The planning significance of different hazards depends upon their location in the county.

It is also important to be aware that hazard events that happen outside of the county boundaries also can have direct and indirect impacts to Yolo County. For instance, dam failures, volcanic eruptions and wildfires in watersheds outside the county that drain into it can result in flooding and other impacts related to watershed health. An earthquake or flood as far away as the San Francisco Bay Region could disrupt the county from issues such as power outages, water supply, and even mass influxes of populations evacuating those areas.

Dam Failure Vulnerability Assessment

Probability of Future Occurrences:	Unlikely
Vulnerability:	Medium

Dam failure flooding can occur as the result of partial or complete collapse of an impoundment. Dam failures often result from prolonged rainfall and flooding. The primary danger associated with dam failure is the high velocity flooding of those properties downstream of the dam.

A dam failure can range from a small, uncontrolled release to a catastrophic failure. Vulnerability to dam failures is confined to the areas subject to inundation downstream of the facility. Secondary losses would include loss of the multi-use functions of the facility and associated revenues that accompany those functions. Dam failure flooding would vary by community depending on which dam fails and the nature and extent of the dam failure and associated flooding. Based on the risk assessment, it is apparent that a major dam failure could have an impact on some areas of Yolo County. Dam failure flooding presents a threat to life and property, including buildings, their contents, and their use. Large flood events can affect crops and livestock as well as lifeline utilities (e.g., water, sewerage, and power), transportation, jobs, tourism, the environment, and the local and regional economies.

According to the Yolo County General Plan, Safety Element and the Yolo County Emergency Operations Plan there are six dams that could affect Yolo County. Those are the following:

- Monticello Dam — Putah Creek
- Indian Valley Dam — Cache Creek
- Shasta Dam — Sacramento River
- Oroville Dam — Feather River
- Folsom Dam — American River
- Nimbus Dam — American River

The extent of local damage and destruction associated with failure of a major dam will range from catastrophic to marginal. The sudden failure of an earthen or concrete dam of any significant size would result in the release of hundreds of thousands of acre-feet of water, depending upon the level of impoundment at the time of failure. It would be anticipated that areas directly downstream from the face of a failed dam would be immediately inundated and that devastation would be substantial. The further a location is from the dam would result in a reduced impact over time, although geography and the placement of diversionary facilities and other improvements would play a part in how floodwaters would be channeled.

Table B-34 Parcel Count and Structure Value Vulnerability within Inundation Zones

Dam Inundation Zone	Parcel Count	Structure Value	Areas Affected by Dam (Inundation Area)
Folsom Dam	16,250	$3,195,682,113	25,655 Acres
Monticello	21,347	$5,128,545,854	111,530 Acres
Indian Valley	8,238	$1,901,870,208	92,087 Acres
Shasta Dam	930	$63,035,925	71,775 Acres
Oroville	No information available		

Dam Inundation Zone	Parcel Count	Structure Value	Areas Affected by Dam (Inundation Area)
Nimbus	No information available		

Source: Yolo County GIS, Assessor Rolls

Summary of Potential Impacts

- Potential for injuries and or death
- Structure damage in the inundation zones
- Loss of utilities such as water, power, communications, major roadways
- Economic impacts to the County and participating jurisdictions
- Decline in property values

Flooding Vulnerability Assessment

Probability of Future Occurrences:	Likely
Vulnerability:	High

Historically, Yolo County has always been vulnerable to flooding because of its relatively flat terrain and the number of water courses that traverse the County. Flood zones in Yolo County are quite extensive. High water levels are a common occurrence in winter and spring months due to increased flow from stormwater runoff and snowmelt.

Several areas of the County are subject to flooding by the overtopping of rivers and creeks, levee failures, and the failure of urban drainage systems that cannot accommodate large volumes of water during severe rainstorms.

River flooding is the most significant natural hazard that Yolo County faces. The Yolo County area has a good working knowledge of the 100-year flood, however, the statistical outlier flood is not well quantified. Yolo County is not just at high risk of flooding, but is at low risk of catastrophic flooding. When the 100-year event is exceeded, the consequences could be great as flood depths behind levees can range up to many feet deep in some urban areas. In addition to the major rivers, there are many streams, channels, canals, and creeks that serve the drainage needs of the County. There is significant threat of flooding in areas of the county from several of these streams. Many of these streams are prone to rapid flooding with little notice.

Flood Losses

Based on FEMA guidance, contents value is estimated at 50 percent of the improved value. Estimated losses assume that a flood is unlikely to cause total destruction. Losses are related to a variety of factors, including flood depth, flood velocity, building type and construction. Using FEMA's recommendations, average damage is estimated to be 20 percent of the total building value.

The loss estimates for this assessment should be used for flood risk mitigation, emergency preparedness, and response and recovery only. Uncertainties are inherent in any loss estimation methodology and losses will vary depending on the magnitude of the flood event. Other limitations may include incomplete or inaccurate inventories of the built

environment. The assessed values, for example, are well below the actual market values; thus, the actual value of assets at risk may be significantly higher than those included therein. Also, this loss estimation assumes no mitigation and does not account for buildings that may have been elevated above the 1% annual chance event according to local floodplain management regulations.

Table B-35 Yolo County Flood Loss Estimates
Unincorporated Yolo County

Flood Event	Parcel Count	Structure Value	Est. Contents Value	Total Value	Loss Estimate
100-Year Flood	5,086	$576,148,561	$288,074,281	$864,222,842	$172,844,568

Source: Yolo County GIS, Yolo County Assessor Tax Roll

Table B-36 Yolo County Flood Loss Estimates
Yolo County by Jurisdiction; 100-Year Flood

Jurisdiction	Parcel Count	Structure Value	Est. Contents Value	Total Value	Loss Estimate
Davis	1,050	$551,081,152	$275,540,576	$826,621,728	$165,324,346
West Sacramento	16,444	$3,267,659,420	$1,633,829,710	$4,901489130	4980,297,826
Winters	181	$30,379,717	$15,189,859	$45,569,576	$9,113,915
Woodland	907	$623,011,224	$311,505,612	$934,516836	$186,903367
Yocha Dehe Wintun Nation	5	$14,454,667	$7,227,334	$21,682,001	$4,336,400

Source: Yolo County GIS, Yolo County Assessor Tax Roll, City Planning Teams

Summary of Potential Impacts

Most of the flooding in Yolo County Flooding can be characterized as riverine, possible levee failure, stream and waterway overflow and urban drainage events. These types of flooding often result in property damage, road washouts, and transportation disruptions. Other general impacts of these events may include the following:

- Potential for injury and loss of life
- Commercial and residential structural damage
- Loss of water, power, roads, phones, and transportation, which can be particularly dangerous for those with certain medical conditions
- Economic impacts (jobs, sales, tax revenue) due to loss of commercial structures
- Decline in commercial and residential property values

Earthquake Vulnerability Assessment

Probability of Future Occurrences:	Occasional
Vulnerability:	Medium

Earthquake vulnerability is based primarily upon population and the built environment. To mitigate this hazard, building codes in California have been steadily improved over the past 80 years as understanding of seismic shaking has improved. Current California building codes include provisions for considering the potential shaking from earthquakes, including stronger shaking near faults and amplification by soft soils. The building code has been the main mitigation tool for seismic shaking in most buildings, although hospitals, schools, and other critical facilities are subject to additional mitigation measures (Cal EMA Hazard Mitigation Plan 2010).

HAZUS Modeling For Yolo County

The HAZUS modeling conducted to illustrate estimated potential losses to Yolo County demonstrated the vulnerability of the county and it's participating jurisdictions. The HAZUS scenario uses a 5.5 magnitude to define the earthquake parameters used for the earthquake loss estimate. This data was the best available data at the time of the development of this planning document.

HAZUS estimates that about 2,900 buildings will be at least moderately damaged. This is over 5.00 % of the buildings in the region. There are an estimated 33 buildings that will be damaged beyond repair. Figure B-37 summarizes the expected damage by general occupancy for the buildings in the region and the expected damage by general building type. The HAZUS scenario uses a 5.5 magnitude to define the earthquake parameters used for the earthquake loss estimate.

Figure B- 37 Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	259	0.62	62	0.67	31	1.23	6	1.99	1	2.09
Commercial	2,001	4.82	392	4.26	218	8.52	40	13.25	4	11.11
Education	103	0.25	20	0.22	10	0.40	2	0.63	0	0.49
Government	79	0.19	15	0.16	8	0.30	1	0.47	0	0.39
Industrial	492	1.19	105	1.14	64	2.49	12	4.07	1	3.52
Other Residential	7,406	17.85	1,928	20.93	942	36.76	182	59.72	15	45.42
Religion	179	0.43	35	0.38	17	0.66	3	1.01	0	0.87
Single Family	30,972	74.65	6,656	72.25	1,272	49.64	58	18.86	12	36.09
Total	**41,491**		**9,212**		**2,562**		**306**		**33**	

Figure B-38 Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	35,725	86.10	7707	83.66	1,458	56.89	61	19.93	14	41.38
Steel	823	1.98	185	2.01	135	5.26	29	9.41	3	9.94
Concrete	880	2.12	182	1.98	89	3.48	18	6.04	1	2.98
Precast	555	1.34	121	1.32	91	3.57	20	6.52	2	5.46
RM	1,403	3.38	184	1.99	128	4.99	26	8.63	1	2.10
URM	210	0.51	71	0.77	48	1.86	13	4.33	2	6.98
MH	1,893	4.56	761	8.27	614	23.95	138	45.14	10	31.16
Total	**41,491**		**9,212**		**2,562**		**306**		**33**	

Note: RM=Reinforced Masonry
URM=Unreinforced Masonry
MH=Mobile Home

Before the earthquake, the region had 151 hospital beds available for use. On the day of the earthquake, the model estimates that only 135 hospital beds (89.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 98.00% of the beds will be back in service. By 30 days, 100.00% will be operational.

Figure B-39 Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	2	0	0	2
Schools	83	0	0	83
EOCs	0	0	0	0
PoliceStations	5	0	0	5
FireStations	20	0	0	20

Source: HAZUS, 2012

Fire Following Earthquake

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. HAZUS uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 0 ignitions that will burn about 0.00 sq. mi 0.00 % of the region's total area.) The model also estimates that the fires will displace about 0 people and burn about 0 (millions of dollars) of building value.

Debris Generation

HAZUS estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced

Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris. The model estimates that a total of 0.06 million tons of debris will be generated. Of the total amount, Brick/Wood comprises 42.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 2,320 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

Shelter Requirement
HAZUS estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 132 households to be displaced due to the earthquake. Of these, 106 people (out of a total population of 168,660) will seek temporary shelter in public shelters.

The total economic loss estimated for the earthquake is 328.00 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The entire HAZUS Report is attached to this document and provides more detailed information about these losses.

The HAZUS earthquake model applies to census tract level data and does not allow for the quantification of risk by jurisdiction. Based on the fault locations in the hazard profiles section, the western portion of the county is likely to experience stronger ground shaking than the rest of the county.

Older construction and unreinforced masonry buildings are more vulnerable to shaking during earthquakes. Historic buildings can be more susceptible because they have weakened with age and were built before the use of building codes. Most unreinforced masonry (URM) buildings in Yolo County are in Winters, Woodland and some of the unincorporated areas of the county where it is estimated there are approximately 200 URM buildings.

Seismic evaluation of Monticello Dam indicates it could withstand an earthquake of Richter magnitude 6.5 with the epicenter located 0.5 miles from the dam. Thus, the dam is considered secure from such an occurrence.

Summary of Potential Impacts
According to the HAZUS model, Yolo County is susceptible to serious earthquake losses in the millions of dollars. The overall impact of earthquakes to Yolo County includes:

- Potential for injury and loss of life
- Widespread structural damage, particularly in manufactured housing
- Loss of water, power, roads, phones, and transportation, which can be particularly dangerous for those with certain medical conditions
- Power loss complicating response and recovery efforts
- Business interruption losses
- Agricultural impacts such as field disturbances and damage to irrigation systems

- Damage to oil and gas facilities and pipelines
- Liquefaction in the Delta
- Potential Levee Failures

Wildfire Vulnerability Assessment

Probability of Future Occurrences:	Highly Likely
Vulnerability:	Medium

To assess the property at risk in very high fire threat areas, Yolo County used CDF's fire threat data and the County's GIS parcel layer linked to the assessor's data to determine the vulnerability. Figure B-40 shows the results of this analysis by structure number and value for each jurisdiction. Only in Winters and in the unincorporated areas in the western part of the county are there structures located in very high fire threat areas.

Figure B-40 Parcel Count and Structure Value Vulnerability within Very High Fire Threat Zones

Fire Severity Zone	Parcel Count	Structure Value	Loss Estimate
Unincorporated County	511	$17,955,511	$3,591,102
Davis	N/A		
West Sacramento	N/A		
Winters	491	$67,245,584	$13,449,117
Woodland	N/A		
Yocha Dehe Wintun Nation	N/A		

Source: Cal Fire, Yolo County GIS, Yolo County Assessor Tax Roll

Summary of Potential Impacts

The overall potential impacts from wildfire include:

- Potential for injury and loss of life
- Commercial and residential structural damage
- Impacts to water quality and watershed health
- Impacts to natural resource habitats and other resources, such as agriculture
- Loss of water, power, roads, phones, and transportation
- Significant economic impacts (jobs, sales, tax revenue) with the loss of commercial structures
- Decline in commercial and residential property values

Large, past burn areas are located in high fire threat areas mapped along the west side of the County along Highway 16. There are no known critical facilities in very high to extreme fire threat areas.

Drought Vulnerability Assessment

Probability of Future Occurrences:	Likely
Vulnerability:	Medium

The most significant impacts associated with drought in Yolo County are those related to water intensive activities such as agriculture, wildfire protection, municipal usage, commerce, tourism, recreation, and wildlife preservation. Voluntary conservation measures are typically implemented during extended droughts. A reduction of electric power generation and water quality deterioration are also potential problems. Drought conditions can also cause soil to compact and not absorb water well, potentially making an area more susceptible to flooding.

Summary of Potential Impacts

- Impacts to natural resource habitats and other resources, such as agriculture
- Water for Wildfire protection, municipal usage, commerce, tourism, recreation, and wildlife preservation
- Loss of power which could affect people with disabilities and the elderly as well as people with access and functional needs
- Soil compaction

Severe Weather Vulnerability Assessment

Probability of Future Occurrences:	Highly Likely
Vulnerability:	High

According to historical hazard data, severe weather is an annual occurrence in Yolo County. Damage and disaster declarations related to severe weather have occurred and will continue to occur in the future. Heavy rain and thunderstorms are the most frequent type of severe weather occurrences in the County. Wind and lightning often accompany these storms and have caused damage in the past. However, actual damage associated with the primary effects of severe weather has been limited. It is the secondary hazards caused by weather, such as floods, fire, and agricultural losses that have had the greatest impact on the County. The risk and vulnerability associated with these secondary hazards are discussed in previous sections.

Summary of Potential Impacts

As discussed the results of severe weather can produce other hazards such as flooding, agricultural losses, and even fires which can result in property damage, road washouts, and transportation disruptions. Other general impacts of these events may include the following:

- Potential for injury and loss of life
- Commercial and residential structural damage
- Loss of water, power, roads, phones, and transportation, which can be particularly dangerous for those with certain medical conditions
- Economic impacts (jobs, sales, tax revenue) due to loss of commercial structures

- Decline in commercial and residential property values

B.4. Repetitive Loss and Severe Repetitive Loss Properties

§201.6(c)(2)(ii) [The risk assessment shall include a] 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. All plans approved after October 1, 2008 must also address NFIP insured structures that have been repetitively damaged by floods.

According to FEMA records as of July 16, 2012. Figure B-41 on the following page represents the Repetitive Loss Properties in Yolo County including the cities. There are a total of **32** properties and of these properties countywide, all are residential.

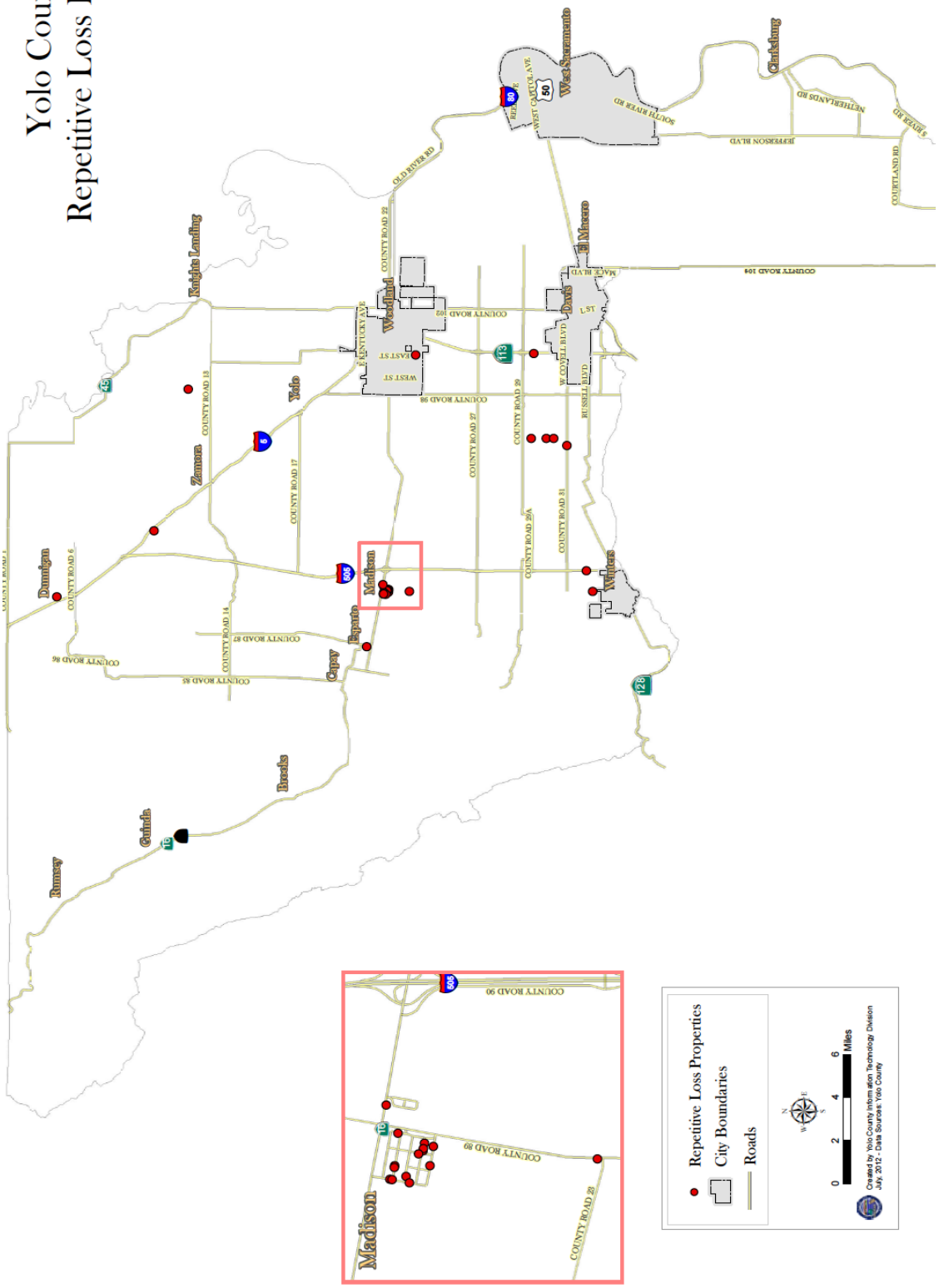


Figure B-41 Repetitive Loss Properties

Element C: Mitigation Strategy

Requirement §201.6(c)(3) [The plan shall include the following:] A mitigation strategy hat provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs, and resources, and its ability to expand on and improve these existing tools.

IDENTIFICATION & PRIORITIZATION OF MITIGATION ACTIONS

Mitigation actions that address the goals and objectives developed in the previous step were identified, evaluated, and prioritized. These actions form the core of the mitigation plan. Jurisdictions conducted a capabilities assessment, reviewing existing local plans, policies, and regulations for any other capabilities relevant to hazard mitigation planning. An analysis of their capability to carry out these implementation measures with an eye toward hazard and loss prevention was conducted.

The capabilities assessment required an inventory of each jurisdiction's legal, administrative, fiscal and technical capacities to support hazard mitigation planning. After completion of the capabilities assessment, each jurisdiction evaluated and prioritized their proposed mitigations. Each jurisdiction considered the social, technical, administrative, political, legal, economic, and environmental opportunities and constraints of implementing a particular mitigation action. This step resulted in a list of acceptable and realistic actions that address the hazards identified in each jurisdiction.

A full suite of goals, objectives and action items for each jurisdiction is presented in this Plan. Each jurisdiction then identified and prioritized actions with the highest short to medium term priorities. An implementation, schedule, funding source and coordinating individual or agency is identified for each prioritized action item.

Constraints to Strategy Implementation

The Steering Committee considered a list of issues existing in Yolo County that can be considered constraints to mitigation planning strategy implementation: (from the perspective of the participating steering committee members).

- Legal constraints (lawful prohibition, voter rejection)
- Community perception, preference, and resistance
- Economic constraint (fee based agencies may be restrained from participating in the planning process due to lack of funds to pay for their involvement.)
- Budgetary and funding constraints
- Staffing constraints
- Land ownership constraints
- State and federal influences or restrictions
- Sensitivity of information needed to complete the Plan.
- Building code restrictions
- Cultural demands, barriers, and expectations

- Interpretation of law (court decisions)
- Identified conflicts with organizational policy or strategic vision

ELEMENT C.1. EXISTING AUTHORITIES, POLICIES, PROGRAMS AND RESOURCES

Requirement §201.6(c)(3) [The plan shall include the following:] A mitigation strategy hat provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs, and resources, and its ability to expand on and improve these existing tools.

Yolo County and its jurisdictions each has an Emergency Operations Plan, a General Plan, which includes a Safety Element, an Emergency Services Ordinance that clearly defines roles and responsibilities in accordance with state and federal guidelines. The County CAO and jurisdictions noted in this document serve as the Directors of Emergency Services for their respective areas by law and ordinance. The Board of Supervisors, City Councils or Councils (tribal, Housing, etc.) serves as the administering agency and the promulgation authority for all plans, policies and procedures within Yolo County and its member jurisdictions. The county and participating jurisdictions recognizes the enhanced Hazard Mitigation Plan of the State of California, the California Emergency Services Act, and the appropriate Federal Regulations including 44 CFR 201. Yolo County is subject to the State of California Uniformed Building Code (UBC), which dictates standards on all current and future construction within Yolo County.

2030 General Plan

The 2030 General Plan provides comprehensive and long-term policies for the physical development of the county and is often referred to as "the constitution" for local government. This is only the third time in the county's history that the General Plan has been comprehensively updated, and the first time since 1983. While the funda
goals of promoting agriculture, enhancing open space, and creating sustainable communities are the same as they have been over the past 50 years, the circumstances facing the county have changed. Issues such as the global economy, climate change, and the role of local government create new challenges to maintaining the county's historic vision. The 2030 General Plan charts a course for the county over the next twenty years that will achieve its goals and address these concerns. The General Pl
separate action items that will implement the variety of programs needed to realize the county's vision, this plan works in coordination with the 2012 revision of the Operational Area Multi-jurisdictional Hazard Mitigation Plan.

Climate Change Action Plan

The Climate Action Plan represents a significant milestone for Yolo County, which has a long history of being in the forefront of the green movement with land use policies that emphasize growth management, open space preservation and agricultural protection. In 1982, Yolo County adopted an Energy Plan, which was one of the first of its kind. In 1985, the county landfill completed a gas-to-energy facility, which generates 20,000 kilowatt hours per year and captures 90% of methane emissions.

In 2007, Yolo County became one of 12 charter members from throughout the country to sponsor the Cool Counties Initiative, which pledges each county collectively to reduce greenhouse gas emissions by 80% by 2050. That same year, the county organized local

cities, special districts and UC Davis to form the Yolo County Climate Change Compact, providing an ongoing forum for exchanging information on how best to analyze and address greenhouse gas emissions.

In 2009, Yolo County adopted its 2030 General Plan, which contains more than 350 policies that deal with climate change, including the requirement to develop a Climate Action Plan. In addition to implementing General Plan policy, the Climate Action Plan also fulfills the requirements of state legislation, including Assembly Bill 32, Senate Bills 97 and 375, and Executive Order S-3-05.

The Climate Action Plan estimates that in 2008, the unincorporated area (excluding UC Davis, the Yocha Dehe Wintun Nation and special districts) produced 651,470 metric tons of carbon dioxide equivalents, or greenhouse gasses. Approximately 48% of those emissions are created by agriculture. Transportation and energy account for an additional 47%, with the remainder made up by such sectors as the landfill, wastewater treatment, construction, mining and stationary sources.

A target is established in the Climate Action Plan to reduce the 2008 emissions back to the levels estimated for 1990, or 613,651 metric tons. To achieve this target, 15 programs are proposed, including such measures as increasing renewable energy production, enhancing energy and water conservation, expanding alternative transportation, planting trees and reducing fertilizer application. In order to meet the reductions envisioned in the Cool Counties Initiative and state legislation, the Climate Action Plan also includes voluntary goals to reduce greenhouse emissions to 447,965 metric tons by 2030, and 122,730 metric tons by 2050.

Yolo OA Hazard Mitigation Plan Steering Committee

The core membership of the Steering Committee assembled to coordinate plan revision will constitute the Yolo Operational Area Hazard Mitigation Plan Steering Committee as it relates to future mitigation coordination. The Hazard Mitigation Plan Steering Committee will periodically meet and review the mitigation recommendations and strategies identified within this plan.

- This Committee will support the recommendations adopted by each jurisdiction for implementation and coordination on a state and regional basis.

- Each jurisdiction will review and adopt, as necessary, the work of the Hazard Mitigation Steering Committee on an annual basis.

- The Committee will review the quarterly progress reports on the implementation of the adopted hazard mitigation strategies brought forth by participating local and tribal government entities within the Yolo Operational Area.

- As required under prevailing state and federal requirements, this plan will be reviewed and updated on a five-year cycle. The strategies may be updated based on changing priorities and relieved constraints as identified below.

Hazard Mitigation Steering Committee Process
The Yolo Operational Area Hazard Mitigation Steering Committee will meet on an annual basis to review the progress made on the identified local hazard mitigation strategies. The Committee will also seek input on future hazard mitigation programs and strategies from the local hazard mitigation Steering Committee or representative from each of the participating jurisdictions.

- Contact and work with each Hazard Mitigation Strategy's Lead Agency for an annual progress report on funding and implementation of the program recommended.

- Receive an annual report from each jurisdiction on the status of the strategies adopted and implemented.
- Meet annually, with each political subdivision, to identify new hazard mitigation strategies to be pursued on a state and regional basis, and review the progress and implementation of those programs already identified.

- Meet annually to review the progress of the Hazard Mitigation program and bring forth community input on new strategies.

- Coordinate with and support the efforts of the Yolo County Office of Emergency Services to promote and identify resources and grant money for implementation of recommended hazard mitigation Strategies within local jurisdictions and participating public agencies.

Local Hazard Mitigation Steering Committee
Each participating local jurisdiction will establish a mechanism for the development and implementation of jurisdictional mitigation projects, as identified within this plan and associated locally-specific supporting documents. As deemed necessary and appropriate, participating jurisdictions will organize local mitigation Steering Committees or other groups to facilitate and administer internal activities.

Typically, the local Steering Committee may consist of representatives from any of the following agencies or groups:

- Administrative departments and offices
- Public works departments
- Community planning and development departments
- Facility management agencies
- Fire departments
- Finance departments
- Public utility agencies
- Business development agencies
- Community service/Public service agencies

When constituted and organized, local hazard mitigation Steering Committees or entities may perform the following mitigation functions to meet local goals and objectives:

- Continue to review and assess local hazard mitigation needs and capacities in conjunction with this plan and other supporting documents and information
- Revise key local mitigation data and information
- Receive and process supplemental and supporting hazard mitigation reference information and guidance as released by the state and/or FEMA
- Provide guidance to local emergency management in the integration of adopted risk information and adjustments to local mitigation activities
- Provide local hazard mitigation information and guidance to resident populations, inquiring organizations, vendors, and other interested parties
- Provide information and guidance to the local governing body relative to hazard mitigation issues, needs, gaps, and project activities

ELEMENT C.2. PARTICIPATION IN THE NATIONAL FLOOD INSURANCE PROGRAM (NFIP)

§201.6(c)(3)(ii) [The hazard 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. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.

Despite the construction of massive and relatively effective flood control projects, California remains vulnerable to flooding. A rise in population and development contribute to increased flood risk throughout the state. Yolo County and the cities of Davis, Winters, West Sacramento and Woodland participate in the program. Yolo County has 434 square miles, 256,571 acres and 5,423 individual parcels of floodplain defined by the Federal Emergency Management Agency (FEMA) and the County of Yolo. The regulated floodplain areas are subject to flooding during severe storms. The Yolo County Flood Insurance Rate Maps (FIRM) was first published in 1980 and has been revised over time, mapping Special Flood Hazard Areas (SFHA). Yolo County also has an adopted comprehensive Floodplain Management Program. The jurisdictions participation in the NFIP program is shown in Table C-1.

To address participation and continued compliance with the NFIP the participating jurisdictions will continue to enforce and adopt floodplain management requirements, regulate new construction in special flood hazard areas, update maps for better identification of floodplains and floodplain management programs and activities.

Table C-1 Yolo County Jurisdictional Participation in the NFIP

CID #	Community Name	FHBM Identified	FIRM Identified	Current Effective Map Date	Reg-Emer Date	Tribal
060424	City of Davis	11/08/77	11/15/79	06/08/10	11/15/79	No
060728	City of West Sacramento		03/05/90	01/19/95	03/13/90	No
060425	City of Winters	01/23/74	12/01/78	06/18/10	12/01/78	No
060426	City of Woodland	02/01/74	10/16/79	05/16/12	10/16/70	No
060423	Yolo County	10/18/77	12/16/80	05/16/12	12/16/80	No

Data obtained from the FEMA Community Status Book Report, http://www.fema.gov/fema/csb.shtm

Given the flood hazard throughout Yolo County, an emphasis will be placed on continued compliance with the National Flood Insurance Program (NFIP) and participation by Yolo County and the City of West Sacramento in the Community Rating System. Other cities are encouraged to begin participating in the CRS. Detailed below is a description of the County's flood management program to ensure continued compliance with the NFIP. Also to be considered are the numerous flood mitigation actions contained in this plan that support the ongoing efforts by the county and the cities to minimize the risk and vulnerability of the community to the flood hazard and to enhance their overall floodplain management programs.

Yolo County's Flood Management Program

Yolo County has participated in the NFIP since December 16, 1980. Since then, the County has administered floodplain management regulations that meet the minimum requirements of the NFIP. Under that arrangement, residents and businesses paid the same flood insurance premium rates as most other communities in the country. In compliance with the NFIP, Yolo County adopted a Floodplain Management Ordinance (Title 8 Land Development & Zoning, Chapter 3 Flood Damage Prevention). Yolo County has participated in CRS since 2012. The activities credited by the CRS provide direct benefits to Yolo County and its residents, including:

- Enhanced public safety
- A reduction in damage to property and public infrastructure
- Avoidance of economic disruption and losses
- Reduction of human suffering
- Protection of the environment

Contained in Table C-2 is the NFIP policy and claims statistics for Yolo County as of March 2013. The NFIP claims statistics are historical back to 1982/1983 when NFIP started collecting this data.

Table C-2 NFIP Policy and Claims Statistics

Community	Total Premium	Current Policies	Total Coverage	Flood Losses	Dollars Paid Historical
Davis	$234,692	304	$94,104	11	$189,021
West Sacramento	$1,125,568	2,117	$678,840	35	$28,179
Winters	$27,315	26	$7,891	5	$8,844
Woodland	$1,412,284	1,233	$346,208	5	$67,520
Unincorporated Areas	$966,689	1,112	$273,037	194	$2,275,154
Totals	**$3,766,548**	**4,792**	**$1,400,080**	**250**	**$2,568,718**

Source: FEMA Region XI, NFIP Program

City of Davis

In compliance with the NFIP, the City of Davis adopted Article 8.05 FLOOD PREVENTION of the City of Davis Municipal Code. An emphasis in future planning and mitigation actions will be placed on continued compliance with the National Flood Insurance Program.

City of West Sacramento

The City of West Sacramento has been in the National Flood Insurance Program since the City incorporated in 1987, and prior to incorporation was in the National Flood Insurance

Program as part of Yolo County. The City began participation in the Community Rating System in 2010, receiving a Class 8 rating in 2011. The City maintains the Class 8 rating today. An emphasis in future planning and mitigation actions will be placed on continued compliance with the National Flood Insurance Program as well as the Community Rating System.

City of Winters

The City of Winters participates in the National Flood Insurance Program that was created through the National Flood Insurance Act passed by Congress in 1968. The intent of the program is to reduce future flood losses through local floodplain management and to provide protection for property owners against potential losses through flood insurance. As part of the agreement for making flood insurance available in the community, the National Flood Insurance Program required the City of Winters to adopt a floodplain management ordinance containing certain minimum requirements intended to reduce future flood losses.

On March 1, 1994, the City Council of the City of Winters adopted Ordinance 94-04, which included floodplain management regulations. Specifically, the purpose of the ordinance was to promote the public health, safety, and general welfare, and to minimize public and private losses to flood conditions in specific areas of the City.

On September 28, 2009, Winters city staff met with a representative from the Federal Emergency Management Agency (FEMA) for a "Community Assistance Visit." The purpose of the meeting was to provide City staff with the most current information on the National Flood Insurance Program (NFIP), give staff an opportunity to discuss concerns regarding floodplain management, and assess the City's enforcement of the local floodplain management ordinance that was adopted to meet the requirements of the NFIP.

The FEMA visit resulted in the determination that it was necessary to amend the City's Flood Damage Protection chapter of the municipal code to reflect changes to the NFIP and to clarify some of the requirements. To bring the City into compliance with the NFIP the City Council of the City of Winters adopted Ordinance 2010-03 on March 31, 2010 amending Chapter 15.64 of the Winters Municipal Code regarding flood damage protection.

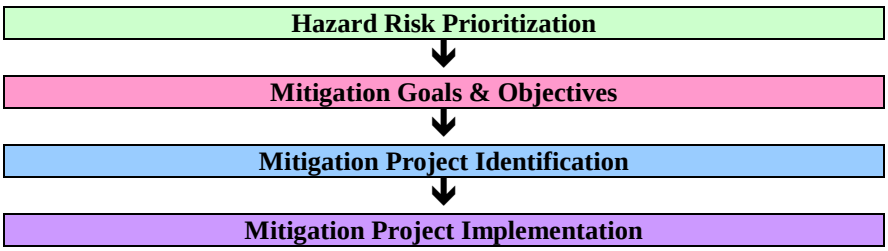
City of Woodland

The City of Woodland continues to enforce the compliance with the NFIP through their Flood Plain Management Ordinance. However, as in much of California, FEMA is working with local governments to refine and remap the floodplains. These changes to flood mapping and zoning in Woodland may result in additional properties needing to be insured and evaluated in future plans.

ELEMENT C.3. MITIGATION GOALS

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

The information developed for the risk assessment was used as the primary basis for developing mitigation goals and objectives. Mitigation goals are defined as general guidelines explaining what each jurisdiction wants to achieve in terms of hazard and loss prevention.



Goal statements are typically long-range, policy-oriented statements representing jurisdiction-wide visions. Objectives are statements that detail how each jurisdiction's goals will be achieved, and typically define strategies or implementation steps to attain identified goals. Other important inputs to the development of jurisdiction-level goals and objectives include performing reviews of existing local plans, policy documents, and regulations for consistency and complementary goals, as well as soliciting input from the public.

Strategic Planning Goals

The following represents overarching strategic goals associated with the identification and eventual implementation of appropriate and meaningful hazard mitigation efforts in relation to prioritized hazards and threats confronting the Yolo Operational Area. These goals form the basis for specific supporting process objectives and are shown from the highest priority, at the top of the list, to those of lesser importance.

The establishment of hazard mitigation goals represents both individual and collective strategies that have been mutually agreed upon by the Steering Committee, which represents the local and tribal jurisdictions, and major special public agencies within the Yolo Operational Area. Eventually, these goals will be adopted by each participating jurisdiction and public agency as the guiding policy behind local hazard mitigation efforts, in conjunction with other associated principles.

Goal 1:	Protection of life during and after the occurrence of disasters from identified hazards;
Goal 2:	Preventing loss of life and reducing the impact of damage where problems cannot be eliminated
Goal 3:	Protection of emergency response capability

Goal 4:	Protection of developed property, homes and businesses, industry, educational opportunities and the cultural fabric by combining hazard loss reduction with the community's environmental, social and economic needs
Goal 5:	Promoting public awareness of community hazards and mitigation measures and encouraging public participation in the planning objectives
Goal 6:	Preserving or restoring natural mitigation values such as flood plains.
Goal 7:	Protection of natural resources and the environment.

Planning Process Objectives

The following objectives are meant to serve as a metric upon which the Yolo Operational Area Hazard Mitigation Plan can be evaluated. Meeting these objectives assures the Multi Hazard Mitigation Plan as a functional document that identifies short-and long-term strategies, and describes each measure including:

Objective 1:	Identification of individuals, agencies or organizations responsible for project implementation.
Objective 2:	Projecting a realistic and doable time frame for project implementation.
Objective 3:	Explanation of how the project will be financed including the conditions for financing and implementation as information is available.
Objective 4:	Identification of alternative measures, should financing not be available.
Objective 5:	Maintain consistent support for the implementation of existing hazard mitigation planning goals and objectives for the operational area.
Objective 6:	Base mitigation strategies on hazards as identified within the Yolo OA Risk Assessment.
Objective 7:	Provide significant potential for the effective reduction of damage to public and/or private property, or to costs associated with local, state, and federal recovery from future potential impacts.
Objective 8:	Establish and maintain a benchmark for identifying the most practical, cost effective, socially acceptable, and environmentally sound mitigation solution after consideration of available alternatives.
Objective 9:	Address a repetitive problem, or one that has the potential to have a major impact on an area, reducing the potential for loss of life, loss of essential services and personal property, damage to critical facilities, economic loss, hardship or human

	suffering.

Objective 10:	Meet applicable permit requirements.

Objective 11:	Develop mitigation standards for development in hazardous areas.

Objective 12:	Contribute to both the short-and long-term solution to the hazard vulnerability risk problem.

Objective 13:	Assuring the benefits of a mitigation measure is equal to or exceeds the cost of implementation.

Objective 14:	Have manageable maintenance and modification costs.

Objective 15:	When feasible, be designed to accomplish multiple objectives including improvement of life safety, damage reduction, restoration of essential services, protection of critical infrastructure, security of economic development, recovery, and environmental sustainability.

Objective 16:	Whenever feasible, use existing resources, agencies and programs to implement the project.

Objective 17:	Include regional hazard mitigation concerns and strategies

ELEMENT C.4. MITIGATION ACTIONS AND PROJECTS

§201.6(c)(3)(ii) [The hazard 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. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.

§201.6(c)(3)(iv) For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

In order to identify and select mitigation actions to support the mitigation goals, each hazard was identified in Element B. Only those hazards that were determined to be a priority hazard were considered in the development of hazard-specific mitigation actions. These priority hazards (in alphabetical order) are:

- Drought
- Earthquake
- Flood
- Severe Weather

- Wildfire

The Steering Committee eliminated the hazards identified below from further consideration in the development of mitigation actions because the risk of a hazard event in the County is unlikely or nonexistent, the vulnerability of the County is low, or capabilities are already in place to mitigate negative impacts. The eliminated hazards are:

- Dam Failure
- Volcano

It is important to note, however, that all the hazards addressed in this plan are included in the countywide multi-hazard public awareness mitigation action as well as in other multi-hazard, emergency management actions.

The Steering Committee developed 16 mitigation actions, which are listed in Table C-3. At their meeting, the Steering Committee came to consensus on the person and department responsible for completing a mitigation action worksheet for the county/participating jurisdictions for each identified mitigation action. The worksheet includes information on the background issues, possible alternatives, responsible office, cost estimate, benefits, potential funding, and ideas for implementation for each action.

Full descriptions of each mitigation action for this plan are provided in each community profile annex and a summary is provided on the following page.

Table C-3 Summary of New/Continued Mitigation Actions

SUMMARY OF NEW/CONTINUED MITIGATION ACTIONS					
Mitigation Action	**Jurisdiction**	**New Action/2005 Action**	**Address Current/Future (new and Existing buildings) Development**	**Cont'd Compliance w/ NFIP**	**Comments**
DROUGHT, EARTHQUAKE, FLOODING, SEVERE WEATHER, AND WILDFIRE HAZARDS ACTIONS					
All Hazards Public Awareness and Disaster Preparedness to include the following hazards**: Drought, Earthquake, Flooding, Severe Weather, and Wildfire**	Yolo County and the Cities of Davis, West Sacramento, Winters, Woodland, Yolo County Housing and Yocha Dehe Wintun Nation	2005	Yes	Yes	Important element of CRS program
Convene Local/Tribal Disaster Councils	Yolo County and the Cities of Davis, West Sacramento, Winters, Woodland, Yolo County Housing and Yocha Dehe Wintun Nation	NEW	Yes		
Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	Yolo County and the Cities of Davis, West Sacramento, Winters, Woodland,	NEW	Yes		
Community Warning System	Yolo County and the Cities of Davis, West Sacramento, Winters, Woodland, Yolo County Housing and Yocha	2005	Yes	Yes	These systems are continually updated due to changing technology

SUMMARY OF NEW/CONTINUED MITIGATION ACTIONS					
Mitigation Action	**Jurisdiction**	**New Action/2005 Action**	**Address Current/Future (new and Existing buildings) Development**	**Cont'd Compliance w/ NFIP**	**Comments**
	Dehe Wintun Nation				
Care and Shelter Planning to include People with Disabilities, the Elderly, Access and Functional Needs, and Animals	Yolo County and the Cities of Davis, West Sacramento, Winters, Woodland, Yolo County Housing and Yocha Dehe Wintun Nation	NEW	Yes		Rapidly changing planning effort due to evolving best practices
Community Emergency Response Training	Cities of Davis and West Sacramento	NEW			Basic level of preparedness for families and neighborhoods
Develop Public Health and Mass Care Tiered Response System Countywide	Yolo County and the Cities of Davis, West Sacramento, Winters, Woodland, Yolo County Housing and Yocha Dehe Wintun Nation	NEW			Major advance in capability within medical and human services communities to meet needs of Yolo County residents
DROUGHT ACTIONS					
Drought Contingency Plan	Yolo County and the Cities of Davis, West Sacramento, Winters, Woodland, Yolo County Housing and Yocha Dehe Wintun Nation	NEW	Yes		

SUMMARY OF NEW/CONTINUED MITIGATION ACTIONS					
Mitigation Action	**Jurisdiction**	**New Action/2005 Action**	**Address Current/Future (new and Existing buildings) Development**	**Cont'd Compliance w/ NFIP**	**Comments**
EARTHQUAKE ACTIONS					
Non-Structural Mitigation Outreach Program	Yolo County and the Cities of Davis, West Sacramento, Winters, Woodland, Yolo County Housing and Yocha Dehe Wintun Nation	NEW			
FLOOD ACTIONS					
Cache Creek Flooding	Woodland, Yolo County	2005	Yes	Yes	
Flood Response Planning Project to Include GIS Mapping	Yolo County, West Sacramento	NEW	Yes	Yes	
Levee Improvements	West Sacramento	2005	Yes	Yes	
Promote Flood Insurance (Cont'd participation in the NFIP)	Yolo County and the Cities of Davis, West Sacramento, Winters, Woodland	NEW	Yes	Yes	
SEVERE WEATHER ACTIONS					
Emergency Power	Yolo County and the Cities of Davis, West Sacramento, Winters, Woodland	2005	Yes		
Winter Weather Preparedness Campaign	Yolo County and the Cities of Davis, West	NEW	Yes	Yes	

SUMMARY OF NEW/CONTINUED MITIGATION ACTIONS					
Mitigation Action	**Jurisdiction**	**New Action/2005 Action**	**Address Current/Future (new and Existing buildings) Development**	**Cont'd Compliance w/ NFIP**	**Comments**
	Sacramento, Winters, Woodland, Yolo County Housing and Yocha Dehe Wintun Nation				
WILDFIRE ACTIONS					
Fuel Reduction in Local Responsibility Areas	Yolo County and the Cities of Davis, West Sacramento, Winters, Woodland, Yolo County Housing and Yocha Dehe Wintun Nation	NEW	Yes		

ELEMENT C.5. MITIGATION STRATEGY ACTION PLAN

§201.6(c)(3)(iii) [The hazard mitigation strategy shall include an] action plan, describing how the action identified in paragraph (c)(3)(ii) of this section 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. §201.6(c)(3)(iv) For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

Tables were developed to rank the mitigation projects using the following criteria; each project was assigned a priority rank, an approximate cost, a time horizon, whether the project requires Board of Supervisors regulatory action, and an assumption as to whether or not the project would be subject to CEQA or federal EIR requirements. Those highest priority projects for the county and the participating jurisdictions are on the following pages.

The cost benefit review process will be completed for each project that will be submitted during a given fiscal year. The general priorities of the cost benefit risk analysis will focus on projects that are lifesaving, life safety, property protection and lastly environmental protection. A ratio of at least three dollars of benefit for each dollar invested will be considered the minimum cost benefit ratio for any projects submitted within Yolo County and its participating jurisdictions.

ELEMENT C.6. PROJECT IMPLEMENTATION

§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 improvements, when appropriate.

The Yolo County Office of Emergency Services will be the central coordination point for maintaining this plan and will serve as a lead staff for grant project applications on the countywide projects selected for application under the PDM grant program. Additionally, each jurisdiction applying for grant funds on their own will serve as lead staff for project implementation with assistance from the county and participating Steering Committee members as requested.

An important implementation mechanism that is highly effective and low-cost is incorporation of the hazard mitigation plan recommendations and their underlying principles into other county and city plans and mechanisms. Where possible, plan participants will use existing plans and/or programs to implement hazard mitigation actions. Mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and development. As described in this plan's capability assessment, the County and participating jurisdictions already implement policies and programs to reduce losses to life and property from hazards. This plan builds upon the momentum developed through previous and related planning efforts and mitigation programs and recommends implementing actions, where possible, through these other program mechanisms. These existing mechanisms include:

- County and City general and master plans
- County and City Emergency Operations Plans
- County and City ordinances
- Flood/storm water management/master plans
- Community Wildfire Protection plans
- Capital improvement plans and budgets
- Other plans and policies outlined in the capability assessments in the jurisdictional annexes
- Other plans, regulations, and practices with a mitigation focus

Steering Committee members involved in these other planning mechanisms will be responsible for integrating the findings and recommendations of this plan with these other plans, programs, etc., as appropriate. Implementation and incorporation into existing planning mechanisms will be done through the routine actions of:

- Monitoring other planning/program agendas
- Attending other planning/program meetings
- Participating in other planning processes
- Monitoring community budget meetings for other community program opportunities

The successful implementation of this mitigation strategy will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. A few examples of incorporation of the Local Hazard Mitigation Plan into existing planning mechanisms include:

1) As recommended by Assembly Bill 2140, each community should adopt (by reference or incorporation) this LHMP into the Safety Element of their General Plans. Evidence of adoption (by formal, certified resolution) shall be provided to CalEMA and FEMA

2) Integration of flood actions identified in this mitigation strategy with the actions and implementation priorities established in existing Flood Management Programs

3) Using the risk assessment information to update the hazards section in the County, Cities, Housing and Tribal Emergency Operations Plans

Efforts should continuously be made to monitor the progress of mitigation actions implemented through these other planning mechanisms and, where appropriate, their priority actions should be incorporated into updates of this hazard mitigation plan.

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Element D: Plan Review, Evaluation and Implementation

§201.6(d)(3) A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit if for approval within 5 years in order to continue to be eligible for mitigation project grant funding.

Element D.1. Changes in Development

§201.6(d)(3) A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit if for approval within 5 years in order to continue to be eligible for mitigation project grant funding.

Lying directly between the rapidly growing regions of Sacramento and the Bay Area, Yolo County has experienced and will continue to experience tremendous pressures for added residential, commercial and industrial development. The access provided by the Sacramento International Airport and the railroad, the West Sacramento Deep Water Channel, Interstates 5, 80 and 505, have created constant growth pressures in the county.

Yolo County at the time of the 2005 plan was in a period where many plans were being developed and executed to expand in the areas of residential housing, commercial and retail establishments. Since that time, the populations have increased, many new residential, commercial and retail developments were constructed and occupied. During the economic downturn, those same developments were either vacant and or foreclosed upon. Now, due to development changes and future development plans for the participating jurisdictions, the mitigation strategies contained in the 2005 plan were updated and revised to reflect what was happening countywide with development, current and projected population increases, risk, vacant structures and climate change. Also, due to the changes in development the mitigation efforts needed to be updated to align with the goals and objectives noted in this planning update.

Despite the growth spurt and then the market downturn the net result was slow growth for Yolo County. This plan was revised reflecting this process and anticipating a continued slow growth pattern which induces changes to our planning approach.

Element D.2. Progress in Local Mitigation Efforts

§201.6(d)(3) A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit if for approval within 5 years in order to continue to be eligible for mitigation project grant funding.

This plan has been created as a "living" document with input from the population and professionals within Yolo County. Based on the planning meetings and the progress monitored by the steering committee members several mitigation actions were accomplished since the last planning cycle. Table D-1 on the following pages provide a brief description of the progress made in the local mitigation efforts and the plan for those mitigation actions that were not completed or are ongoing.

Table D-1 Progress in 2005 Local Mitigation Projects

Progress in 2005 Plan Local Mitigation Projects					
Jurisdiction/2005 Action	**Complete**	**Ongoing**	**Not Started**	**2012 Project**	**Comments**
Community Warning System Project – West Sacramento			X		Project not completed due to funding
Joint Davis/UC Davis Alerting System	X				Project was completed and fully implemented
Continue enforcement of County Codes and ordinances (Flood Damage Prevention) - County	X	X			Project is ongoing day to day work for county staff and will not be included in 2012 projects
Cache Creek Flooding		X		X	Project ongoing
All-Hazards Public Education – All Jurisdictions			X	X	Not completed or implemented will be carried over to a 2012 Project
Flood Response Plan-West Sacramento			X	X	Currently actively searching for grant money to complete this project
Develop Relationships with Partners – All Jurisdictions		X			Project is ongoing and will not be included in 2012 projects
Flood Warning System – Woodland			X		Project not completed due to funding and will be revised and added to new 2012 project
Levee Improvement Projects – West Sacramento		X		X	Project is ongoing and will carry over to 2012 projects
Terrorism Information Collection – All Jurisdictions	X	X			Project is ongoing for county/city and will not be included in 2012 projects; this will be addressed in specific response plans
Weed Abatement – All	X	X			Project is ongoing

Progress in 2005 Plan Local Mitigation Projects					
Jurisdictions					day to day work for county/city staff and will not be included in 2012 projects
Emergency Power – All Jurisdictions		X			Project is ongoing and will carry over to 2012 projects
Plant/Food/Animal Public Education Program			X		Project not completed due to funding; project will not carry over to 2012 plan
Continue Code Enforcement of Existing and Future Buildings	X	X			Project is ongoing and will not be included in 2012 projects as presented in 2005 plan

ELEMENT D.3. CHANGES IN PRIORITIES

§201.6(d)(3) A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit if for approval within 5 years in order to continue to be eligible for mitigation project grant funding.

The overall priorities in Yolo County and the participating jurisdictions in this plan update have changed since the 2005 Mitigation Plan. Additionally, the strategies in which to support the overall county priorities have changed and are reflected in Element C. There were many projects that were either ongoing day-to-day business activities or were response related that were deleted from the 2005 project list and not carried over to this plan update. Several actions were completed and new projects were added to coincide with the changes in priorities, progress in local mitigation efforts and changes in development.

Politically the county has maintained is financially conservative nature in expending available funds and its overall desire to stay true to itself in remaining focused on agricultural preservation. With the lack of disasters and the decline of available funding, the mitigation strategies needed to be revised to fit the overall county priorities and be developed so that most could be started or accomplished for this next 5-year plan cycle.

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Element E: Plan Adoption

Requirement §201.6(c)(5) [The plan shall include...] Documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County commissioner, Tribal Council).

ELEMENT E.1. FORMAL ADOPTION DOCUMENTATION

ELEMENT E.2. YOLO COUNTY OPERATIONAL AREA HAZARD MITIGATION PLAN

Requirement §201.6(c)(5) [The plan shall include...] Documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County commissioner, Tribal Council).

The strategies presented are deemed appropriate and effective by recommendation of the Yolo Operational Area Hazard Mitigation Steering Committee, senior management of local and tribal governments and public agencies, and individual organizations and groups that have participate in its creation, or reviewed the end product.

Upon submission to the California Emergency Management Agency (Cal EMA) for review, and subsequent approval by the Federal Emergency Management Agency (FEMA), the approved plan will be presented to local and tribal governments, and public agency executive governance and leadership for formal adoption. As appropriate, adopted plans will then be incorporated into local general plans for integration into organizational policy.

Implementation

Upon approval and adoption by participating local and tribal government entities within the Yolo Operational Area, the prioritized mitigation strategies will be further developed for funding and implementation by the lead agencies. The plan describes the potential sources of Hazard Mitigation Strategy funding, and general procedures to obtain that funding.

The mitigation strategies represented and adopted within this plan are recommendations only, and must be approved and funded in order to be implemented as official mitigation solutions. Ultimately, it is the responsibility of jurisdictional and agency officials within the Yolo Operational Area to undertake project implementation based upon identified mitigation strategies, funding availability, and local need.

Plan Maintenance

The process of hazard mitigation does not end with the completion, approval, and adoption of this plan. Within the lifespan of this document (5 years), participating local and tribal governments, in conjunction with community-based organizations, will ensure that the mitigation goals and strategies identified are monitored, that plan administration will continue under a collaborative and cooperative umbrella, and that the document itself will be properly maintained.

The Yolo County Office of Emergency Services, as lead coordination agency for hazard mitigation planning within the Yolo OA, and will assist and support the ongoing collaborative efforts of local and tribal governments, through the established Hazard Mitigation Steering Committee.

Specific plan maintenance activities may include:

- Distribution of the Plan to all interested parties, including both written and digital formats
- Facilitation of regular Hazard Mitigation Steering Committee Meetings
- Monitoring of OA mitigation project activities and dissemination of status reports
- Generation of reports relative to plan status, project management, and revision updates to executive leadership
- Preparations for plan eventual revision and updating

References

State of California Hazard Mitigation Plan (2010)

Yolo County General Plan (2030)

Yolo County Emergency Operations Plan (2007)

Yocha Dehe Wintun Nation Emergency Operations Plan (2010)

City of West Sacramento Critical Facilities List

City of West Sacramento Strategic Plan

City of West Sacramento 2011 – 2012 Operations Budget

City of West Sacramento Organizational Chart

City of West Sacramento Guide to City Services

City of West Sacramento General Plan

City of West Sacramento Emergency Operations Plan

City of West Sacramento Flood Plain Management Plan

City of Winters Emergency Operations Plan – 2010

City of Winters General Plan – 1992

City of Woodland Emergency Operations Plan – 2010

City of Woodland General Plan – 2002

City of Woodland Economic Development Strategic Plan Update – 2002
City of Davis Emergency Operations Plan

City of Davis General Plan – 2007

City of Davis Climate Action Adaptation Plan (CAAP) 2010

County of Yolo – FY 2011-12 Budget

Department of Finance Data, Yolo County 2012

California Fire Plan 2003

U.S. Geological Survey (USGS) *Summary of Floods and Droughts in the Southwestern States* (2004)

Origins and Development: A Chronology of Disasters in California, California Governor's office of Emergency Services

City-Data.com

Local Mitigation Plan Review Guide, Federal Emergency Management Agency, (2011)

Multi-Hazard Mitigation Planning Guidance under the Disaster Mitigation Act of 2000

FEMA How To Guide #1, Getting Starting: Building Support for Mitigation Planning

FEMA How-To Guide #2, Understanding Your Risks: Identifying Hazards and Estimating Losses

FEMA How-To Guide #3, Developing the Mitigation Plan: Identifying Mitigation Actions and Implementation Strategies

FEMA How-To Guide #4, Bringing the Plan To Life: Implementing the Hazard Mitigation Plan

FEMA How-To Guide #5, Using Benefit-Cost Review in Mitigation Planning

FEMA How-To Guide #6, Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning

FEMA How-To Guide #7, Integrating Manmade Hazards into Mitigation Planning

FEMA How-To Guide #8, Multi-Jurisdictional Mitigation Planning

FEMA How-To Guide #9, Using the Hazard Mitigation Plan to Prepare Successful Mitigation Projects

Disaster Recovery and Mitigation Handbook, California Emergency Management Agency

Characterization of Potential Seismic Sources in the Sacramento-San Joaquin Delta, California, FINAL TECHNICAL REPORT, U. S. Geological Survey, National Earthquake Hazards Reduction Program, 2009

County of Yolo National Flood Insurance Study

Legal Authorities

Federal Laws

- "The Federal Civil Defense Act of 1950"
- Public Law 96-342 "The Improved Civil Defense Act of 1980"
- Public Law 91-606 "Disaster Relief Act"
- Public Law 93-288 "The Robert T. Stafford Disaster Relief Act of 1974"
- Section 322, Mitigation Planning of the Robert T. Stafford Disaster Relief and Emergency Assistance Act
- Public Law 106-390 enacted by Section 104 of the Disaster Mitigation Act of 2000 (DMA)
- Interim Final Rule for DMA 2002 as published in the February 26,2002, at 44 CFR Part 201

State Laws & Plans

California Government Code, Section 3100, Title 1, Division 4, Chapter 4.
States those public employees are disaster service workers, subject to such disaster service activities as may be assigned to them by their superiors or by law. The term "public employees" includes all persons employed by the state or any county, city, city and county, state agency or public district, excluding aliens legally employed.

The law applies when:

- A local emergency has been proclaimed.
- A state of emergency has been proclaimed.
- A federal disaster declaration has been made.

This Section: Provides the basic authorities for conducting emergency operations following a proclamation of *Local Emergency*, *State of Emergency*, or *State of War Emergency*, by the Governor and/or appropriate local authorities, consistent with the provisions of this Act.

The California Emergency Plan - Revised

Promulgated by the Governor, and published in accordance with the Emergency Services Act, the Plan provides overall statewide authorities and responsibilities, and describes the functions and operations of government at all levels during extraordinary emergencies, including wartime. Section 8568 of the Act states, in part, that "...the State Emergency Plan shall be in effect in each political subdivision of the state, and the governing body of each political subdivision shall take such action as may be necessary to carry out the provisions thereof." Local emergency plans are, therefore, considered to be extensions of the California Emergency Plan.

California Civil Code, Chapter 9, Section 1799.102

This section of the California Civil Code provides for "Good Samaritan Liability" for those providing emergency care at the scene of an emergency. Specifically: "No person, who, in good faith and not for compensation, renders emergency care at the scene of an emergency, shall be liable for any civil damages resulting from any act or omission. The scene of an emergency shall not include emergency departments and other places where medical care is usually offered."

State Hazard Mitigation Plan (SHMP) - 2010
The State Hazard Mitigation Plan (SHMP) identifies policy, establishes goals, and stipulates actions associated with the implementation of enhanced hazard mitigation strategies for California. The SHMP is foundational for local government hazard mitigation planning efforts, and provides inter-organizational guidance and direction based upon established state agency actions and principles.

Operational Area Governmental Authorities & Plans
Local Codes and Ordinances
Local and tribal government codes, ordinances, and executive policies are identified within individual community information profiles, located in Section 2 of this plan.

Yolo Operational Emergency Plans
Local and tribal government emergency management plans and documents associated with hazard mitigation are identified in Section 2 of this plan.

Appendices

Community Profile Information
Documentation of the Planning Process
HAZUS Modeling
Formal Adoption Documents