

APPENDIX A

ADDITIONAL FEDERAL AND STATE REQUIREMENTS

Environmental compliance and historic preservation are essential components of the mitigation project planning, approval and implementation process. The following is a listing of some federal laws, state laws and executive orders that may apply to the proposed or future mitigation actions in this HMP.

California Environmental Quality Act (CEQA)
 Clean Water Act (Section 401)
 Clean Water Act (Section 404)
 Endangered Species Act
 Executive Order 1190 Wetland Protection
 Executive Order 11988 Floodplain Management
 Executive Order 12898 Environmental Justice
 National Environmental Policy Act (NEPA)
 National Historic Preservation Act
 Wild and Scenic Rivers Act

Federal and State Requirements Resources

Institution, Organization, or Agency Website	Website
Federal Emergency Management Agency	www.fema.gov
Environmental Protection Agency	www.epa.gov
U.S. Fire Administration	www.usfa.fema.gov
National Fire Protection Association	www.nfpa.org
U.S. Army Corps of Engineers	www.usace.army.mil
U.S. Geological Survey	www.usgs.gov
U.S. Department of Agriculture Natural Resources Conservation Service	www.nrcs.usda.gov
ESRI/FEMA Hazards Awareness Site	www.esri.com/hazards
California Department of Fish and Game	www.dfg.ca.gov
California Law	www.leginfo.ca.gov
California Governor's Office of Planning and Research	www.opr.ca.gov
California Governor's Office of Emergency Services	www.oes.ca.gov
California Department of Water Resources	www.dwr.ca.gov
California Department of Forestry-Fire and Resource Assessment Program	http://frap.cdf.ca.gov

APPENDIX B - REFERENCES

1. American Red Cross, "Disaster Response Plan, Shasta, Trinity, Lassen, Tehama, and Modoc Counties, Shasta Area Chapter" June 2004
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4. California Department of Forestry and Fire Protection, Wildland Fire Threat Locations, 2003
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<http://www.conservation.ca.gov/CGS/rghm/psha/Pages/Index.aspx>
6. California State Governor's Office of Emergency Services, Historical Fire Locations, 1997
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9. City of Shasta Lake, Areas of Repetitive Flooding Outlined on a Base Map, August 2004
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13. Federal Emergency Management Agency, Critical Facility and Road Base Information, HAZUS 99, 1999
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15. Federal Register Notices, Vol. 66, No. 3, Thursday, January 4, 2001
16. National Drought Mitigation Center, University of Nebraska, Lincoln, Nebraska, 2004
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20. Shasta County Environmental Health Hazardous Materials Management, "Hazardous Materials Business Plan for City of Shasta Lake Corporate Yard and Central Valley Substation," April 27, 2004
21. Shasta County Environmental Health Hazardous Materials Management, "Hazardous Materials Business Plan for City of Shasta Lake Wastewater Treatment Plant," April 27, 2004
22. Shasta County Environmental Health Hazardous Materials Management, "Hazardous Materials Business Plan for City of Shasta Lake Knauf Substation," April 27, 2004
23. Shasta County Environmental Health Hazardous Materials Management, "Hazardous Materials Business Plan for City of Shasta Lake Flanagan Substation," April 27, 2004
24. Shasta County Environmental Health Hazardous Materials Management, "Hazardous Materials Business Plan for City of Shasta Lake Sewer Pump Station No. 4," April 27, 2004

25. Shasta County Environmental Health Hazardous Materials Management, "Hazardous Materials Business Plan for City of Shasta Lake Sewer Pump Station No. 3," April 27, 2004
26. Shasta County Environmental Health Hazardous Materials Management, "Hazardous Materials Business Plan for City of Shasta Lake Relief Pump Station," April 27, 2004
27. Shasta Lake Municipal Code, Floodplain Management Ordinance, Chapter 15, Article I-VI
28. State Emergency Management System Guidelines, OES website, 1994
<http://www.oes.ca.gov>
29. U.S. Census Bureau, Population Density Data, 2000
30. U.S. Census Bureau, Residential Density Data, 2000
31. U.S. Geological Survey, "An Assessment of Volcanic Threat and Monitoring Capabilities in the United States: Framework for a National Volcano Early Warning System," April 2005
32. U.S. Geological Survey, "Historic Volcanic Eruptions in the United States, Volcano Hazards Program," 2004 <http://volcanoes.usgs.gov>
33. U.S. Geological Survey, West Nile Virus Maps, 2004
<http://westnilemaps.usgs.gov/index.html>
34. PG&E presented before the Public Utilities Commission of the State of California, "Interim Opinion on Storm and Reliability Issues," 2004
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36. California Emergency Medical Services Authority, "State of California Mass Prophylaxis Planning Guide," 2003
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38. FEMA Local Mitigation Plan Review Guide – October 2011
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41. CAL FIRE Top 20 Most Damaging California Wildfires – September 2015 retrieved from http://www.fire.ca.gov/communications/downloads/fact_sheets/Top20_Damaging.pdf
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45. Shasta County Crop and Livestock Report 2014
46. California Department of Water Resources retrieved from <http://www.water.ca.gov/waterconditions/declaration.cfm>
<http://www.water.ca.gov/climatechange>
47. Retrieved from U.S. Census Bureau - <http://www.census.gov>
48. Retrieved from FEMA <https://www.fema.gov/hazard-mitigation-planning>

Shasta County Hazard Mitigation Plan
Steering Committee Meeting Agenda
April 1, 2010
Redding Library community room A, 10am-12pm

Introductions (Shasta Co)

Authorities and references (CalEMA)

Benefits of developing the Hazard Mitigation Plan (CalEMA)

Role of the Steering Committee (Shasta co)

 Planning elements (Shasta/Steinmetz Assoc)
 Volcano, flood, fire, etc.

 Hazard identification and risk assessment (Steinmetz Assoc)
 Existing plans, HAZUZ-MH run

 Goals and objectives of the plan (Shasta/Steinmetz Assoc)

Next Steps - Project work plan and schedule (Steinmetz Assoc)

Review process (Shasta Co/CalEMA)

- Board of Supervisors Public comment
- State (Cal EMA) review begins
- FEMA review begins
- Board of Supervisors public comment document adoption

Next steering committee meetings (Shasta Co)

- May 6
- June 3

Questions:

 Public meetings?
 Website?
 How many meetings of steering committee?

HMP Steering Committee meeting notes

April 1, 2010

This first meeting of the steering committee began with introductions! We were fortunate to have Jami Childress-Byers from CalEMA in attendance to discuss FEMA requirements of a plan.

Jami went over the requirement to have a hazard mitigation plan (HMP) and the benefits of it. She said to put all your projects in the plan, but you can amend them into it at a later date. She said that with a HMP you can get 100% of the 25% FEMA normally pays for emergency and other projects.

Jan mentioned that the steering committee, made up of different disciplines in the county, has been assembled to assure that all the needs, concerns, and actions taken are heard, accurate, and included in the plan.

Pat went over the hazards considered in this analysis and the need to identify which are particular to this region and the need to assess the inherent risk of each. This can be accomplished by utilizing existing plans and the HAZUS-MH program. Pat also discussed the goals and objectives of the plan using a powerpoint he prepared.

Several tidbits of info came up: land use and development plans, questionnaire for business impact analysis in mid April, EAP's for small dam owners, DWR maps, building codes. Pat ended the session with a request for comments on the goals and objectives.

Pat and Jami talked about the review process, Jami emphasizing the need to allow time for review and to definitely get the Board of Supervisors resolution adopting the document when it is complete.

The next steps will be to prepare a current schedule and work plan. Next meeting dates are tentatively May 6 and June 3.

Hazard Mitigation Plan Steering Committee

April 1, 2010

NAME	INITIAL	AGENCY	PHONE NUMBER	EMAIL ADDRESS
David Dean		Shasta County Sheriff Department		ddean@co.shasta.ca.us
Pat Mintum	Troy	Shasta County Department of Public Works	225-5410	pmintum@co.shasta.ca.us
Jim Whittle		Shasta County Environmental Health	225-5787	jwhittle@co.shasta.ca.us
Dave Maron		Shasta County Public Health	225-5593	dmaron@co.shasta.ca.us
Brian Babbini		Pit River	335-1118	prttrans@frontiernet.net
Jeremy Strait		U.S. Forest Service	226-2524	@fs.fed.us
Capt. Jerry Flavin		Bureau of Land Management (BLM)	224-2100	jeremy_strait@blm.gov
Lance Brown		CHP-Commander Redding Area Patrol	225-2745944 4741	jflavin@chp.ca.gov
Curtis Anderson		Caltrans		lance_brown@dot.ca.gov
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Jami Childress-Byers		CalFire	225-2401	fred_tulley@fire.ca.gov
Jeff Kiser		CalEMA	916-845-8161	jami.childress-byers@calema.ca.gov
Julie Hope		City of Anderson	378-6640	dshigley@ci.anderson.ca.us
Michelle Clark		shasta co CAO office	225-5260	jhope@co.shasta.ca.us
Dave Demar		Western Shasta Resource Conservation District	365-7332	michelle@westernshastarc.d.org
Ron Kingsley		Western Shasta Resource Conservation District	365-7332	dave@westernshastarc.d.org
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Pat Steinmeiz *PS*
Todd Goringa JB
K. Eric Westlake

Table 4: Eligible Activities by Program

Eligible Activities	HMGP	PDM	FMA	RFC	SRL
1. Mitigation Projects	√	√	√	√	√
Property Acquisition and Structure Demolition	√	√	√	√	√
Property Acquisition and Structure Relocation	√	√	√	√	√
Structure Elevation	√	√	√	√	√
Mitigation Reconstruction					√
Dry Floodproofing of Historic Residential Structures	√	√	√	√	√
Dry Floodproofing of Non-residential Structures	√	√	√	√	
Minor Localized Flood Reduction Projects	√	√	√	√	√
Structural Retrofitting of Existing Buildings	√	√			
Non-structural Retrofitting of Existing Buildings and Facilities	√	√			
Safe Room Construction	√	√			
Infrastructure Retrofit	√	√			
Soil Stabilization	√	√			
Wildfire Mitigation	√	√			
Post-Disaster Code Enforcement	√				
5% Initiative Projects	√				
2. Hazard Mitigation Planning	√	√	√		
3. Management Costs	√	√	√	√	√

Additional information regarding eligible projects for HMGP is included in Part VIII A.8 and A.9; for FMA, see Part VIII C.3; for RFC, see Part VIII D.1; and for SRL, see Part VIII E.1.

Costs for eligible activities must be necessary and reasonable as required by 2 CFR Part 225, Cost Principles for State, Local, and Indian Tribal Governments, 44 CFR Part 13.22, applicable program regulations, and this guidance.

The following activities are not eligible as stand-alone activities but are eligible only when included as a functional component of eligible mitigation activities:

- ◆ For **HMGP** and **PDM** generators and/or related equipment purchases (e.g., generator hook-ups) when the generator directly relates to the hazards being mitigated and is part of a project (the 5% initiative allows for the stand-alone purchase of generators);
- ◆ Real property or easements purchases required for the completion of an eligible mitigation project. For safe room projects, no real property or easement purchase is eligible; and
- ◆ Studies that are integral to the development and implementation of a mitigation project, including hydrologic and hydraulic, engineering, or drainage studies.

D.1.1 Mitigation Projects

This section briefly describes the mitigation projects eligible under one or more of the five HMA programs. Table 4 summarizes the eligibility of the following project types for each program:

Sample



RESOLUTION 2005-87

**RESOLUTION ADOPTION OF
LOCAL HAZARD MITIGATION PLAN**

WHEREAS, the City of Redding having developed a Local Hazard Mitigation Plan meeting the requirements of Section 409 of the Robert T. Stanford Disaster Relief and Emergency Assistance Act of 1988, and Section 322 of the Disaster Mitigation Act of 2000; and

WHEREAS, the City of Redding recognizes the consequences of disasters and the need to reduce impacts of natural and human caused hazards; and

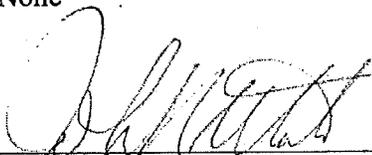
WHEREAS, the toll on families, individuals and businesses can be immense after a disaster, both emotionally and economically; and

WHEREAS, time, money and the emotional effort to respond and recover from these disasters diverting public resources and attention from other important programs and problems;

NOW, THEREFORE, IT IS RESOLVED the City of Redding does hereby adopt the Local Hazard Mitigation Plan.

I HEREBY CERTIFY that the foregoing resolution was introduced, read and adopted at a regular meeting of the City Council on the 19th day of July, 2005, by the following vote:

AYES:	COUNCIL MEMBERS:	Dickerson, Murray, Pohlmeier, Stegall, and Mathena
NOES:	COUNCIL MEMBERS:	None
ABSENT:	COUNCIL MEMBERS:	None
ABSTAIN:	COUNCIL MEMBERS:	None



 JOHN R. MATHENA, Mayor

ATTEST:

APPROVED AS TO FORM:



 CONNIE STROHMAYER, City Clerk



 RICHARD A. DUVERNAY, City Attorney

Draft Work Plan

Hazard Identification, Analysis and Risk Assessment (June '02 – October '02)

- Project Initiation Meeting
- Public Meeting #1
- Hazard Identification
- Hazard Events Profile
- Community Asset Inventory
- Risk Assessment/Loss Estimation
- Progress and Coordination Meetings

Capability Assessment (June '02 – October '02)

- Plans, Policies, and Programs Examination
- Assessment of Previous Mitigation Activities
- Identification of Resources
- Public Meeting #2
- Progress and Coordination Meetings

Assessment of Alternative Hazard Mitigation Measures and Needs (November '02 – January '03)

- Develop Goals and Objectives
- Research of Mitigation Alternatives
- Progress and Coordination Meeting
- Evaluate the Mitigation Measures
- Mitigation Recommendations
- Public Meeting #3

Development of Implementation Strategy (February '03 – May '03)

- Progress and Coordination Meetings
- Mitigation Action Plan
- Public Meeting #4
- Public Hearing: present the draft Hazard Mitigation Plan
- Final Presentation: elected and appointed officials or other designated forum

Production of Final Plan (March '03 – May '03)

- Draft Plan
- Final Plan
- Adoption of plan by Planning Committee and City Council

Ongoing Activities (ongoing from June '03)

- Plan Evaluation
- Plan Updates
- Incorporate changes into plan

Sample



2.0 ACKNOWLEDGMENTS

Mayor and City Council

John Mathena, Mayor
Dick Dickerson
Ken Murray
Michael Pohlmeyer
Mary Stegall

Hazard Mitigation Project Team

Bruce Becker, Deputy Fire Chief
Lily Toy, Senior Planner
Jim Coats, GIS Manager
Ben Reed, Police Lieutenant
John Duffy, County of Shasta Public Health
Disaster Response Coordinator
Ray Duryee, Public Works Manager
Steve Hiner, Plan Check Engineer
Ray Johnson, Battalion Fire Chief
John Ostrowski, Police Sergeant

City of Redding Staff

Mike Warren, City Manager

Airports

Rod Dinger, Airports Manager
Barry Bratton, Assistant Airports Manager

Development Services Department

Jim Hamilton, Director
Kevin Burke, GIS Analyst
Terri Thesken, Senior Planner

Municipal Utilities

Steve Craig, W/W Utility Manager
Mike Robertson, Water Utility Manager

Redding Electric Utility

Paul Cummings, Electric Program Supervisor
Brian King, Electric Program Manager
Steve Wood, System Analyst/Programmer

Other Contributors

American Red Cross - Shasta Area Chapter

Goals, Objectives and Actions

- *Goals* ID and define the hazards and consequences of those hazards that Shasta County will strive to prevent or lessen – Long range
- *Objectives* define the strategies that will be employed to achieve goals – Realistic, achievable and measurable.
- *Actions* define and specify the means and methods that will be employed in carrying out objectives.
- Capabilities Assessment.

Goals & Objectives

- GOAL #1 - PROMOTE DISASTER RESISTANT FUTURE DEVELOPMENT.

- Obj - Facilitate the development or updating of the County General Plan & EOP and zoning ordinances to limit/ensure safe development in hazard areas.
- Obj - Facilitate the adoption of building codes that protect existing assets and restrict new development in hazard areas.

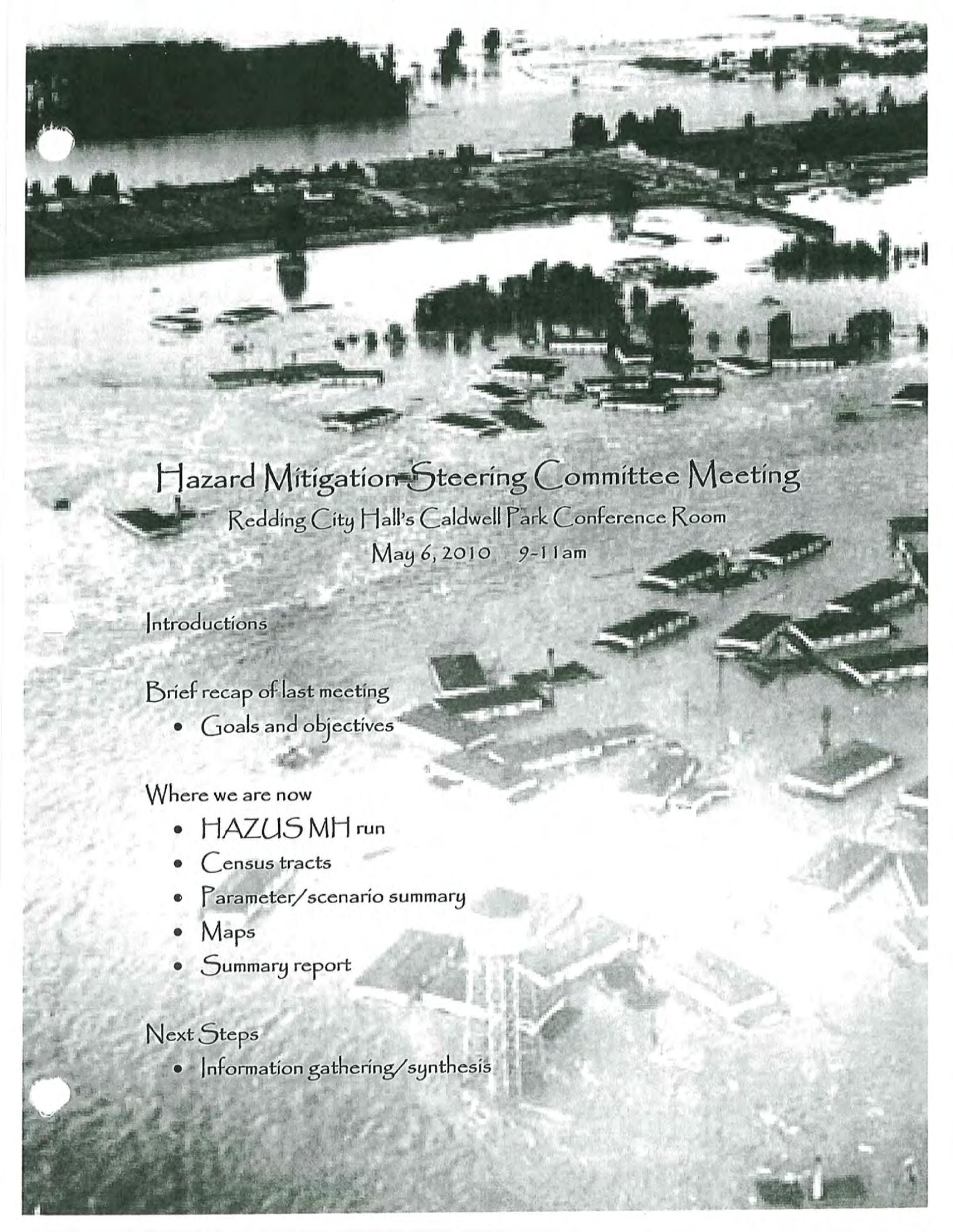
● GOAL #2 - BUILD AND SUPPORT CAPACITY AND COMMITMENT TO BECOME LESS VULNERABLE TO HAZARDS.

- Obj - Address identified data limitations regarding the lack of information about new development and build-out potential in hazard areas.
- Obj - Address data limitations identified in Hazard Profiling and Risk Assessment.

● GOAL #3 - REDUCE THE POTENTIAL FOR DAMAGE AND LOSS TO CITIZENRY, PROPERTY, CRITICAL FACILITIES AND ASSETS, ASSOCIATED WITH IDENTIFIED HAZARDS.

- Obj - Decrease the vulnerability of infrastructure.
- Obj - Minimize repetitive losses caused by flooding.
- Obj - Strengthen existing development standards in high fire threat areas.
- Obj - Coordinate with and support existing efforts to mitigate dam failure.

- Obj - Provide dam inundation mapping as information only layer on FEMA DFIRMs and advise developers of lands in inundation areas.
- Obj - Protect floodplains from inappropriate development.



Hazard Mitigation Steering Committee Meeting

Redding City Hall's Caldwell Park Conference Room

May 6, 2010 9-11am

Introductions

Brief recap of last meeting

- Goals and objectives

Where we are now

- HAZUS MH run
- Census tracts
- Parameter/scenario summary
- Maps
- Summary report

Next Steps

- Information gathering/synthesis

May 6?

HMP Steering Committee meeting notes

May 12, 2010

The meeting began with introductions and a recap of our last meeting, which was the first and basically a discussion of member roles and introduction to hazard mitigation planning. Jami from CalEMA was also in attendance at the last meeting and discussed FEMA requirements of a plan.

ENPLAN went over the mapping an analysis of the HAZUS-MH program provided by FEMA. Clay and Todd introduced the concept of census tracts in the analysis of land use, flooding, and other hazards. They handed out a typical Event Report, this one for earthquakes.

Some detail on flooding was discussed, particularly regarding Shasta Dam. Apparently there is some dispute among experts and mapping as to the time period to flood certain areas in the county, ie. 12 minutes to Diesthorst bridge according to Pat's information.

A good point was made that we should include hazards outside Shasta County, ie. Siskiyou. Also, Dave Demar mentioned a fuel breaks needs analysis, prevailing wind drift is also an issue. (I don't know if I got this right, but the issues are there).

Also, the FEMA flood maps are generated by new software. Ref. Julia Hayes FEMA rep in region 9, 510-627-7211.

Next steps to be taken include information gathering for the HAZUS run and synthesis of the information. This information will be relayed to the committee at the next meeting.

Pat's Presentation May 6 Steering Committee

I. Review ID'd hazards – Ask for additions and deletions, if none, consider these hazards finalized

- Flood
- Fire
- Earthquake
- HazMat
- Severe Storm
- Utility Disruption
- Drought
- CBRNE *Chem bio rad nuclear explosion*
- Volcanic
- MCI
- Dam Failure
- Pandemic/epidemic

II. Report on progress of hazard identification and data collection.

III. Review goals and objectives, request additional goals and objectives, if none offered, consider these finalized.

Goal #1 - Promote Disaster resistant future development.

- Obj - Facilitate the development or updating of the County General Plan & EOP and zoning ordinances to limit/ensure safe development in hazard areas.
- Obj - Facilitate the adoption of building codes that protect existing assets and restrict new development in hazard areas.

GOAL #2 - Build and support capacity and commitment to become less vulnerable to hazards.

- Obj - Address identified data limitations regarding the lack of information about new development and build-out potential in hazard areas.
- Obj - Address data limitations identified in Hazard Profiling and Risk Assessment.

GOAL #3 - Reduce the potential for damage and loss to citizenry, property, critical facilities and assets, associated with identified hazards.

- Obj - Decrease the vulnerability of infrastructure.
- Obj - Minimize repetitive losses caused by flooding.
- Obj - Strengthen existing development standards in high fire threat areas.

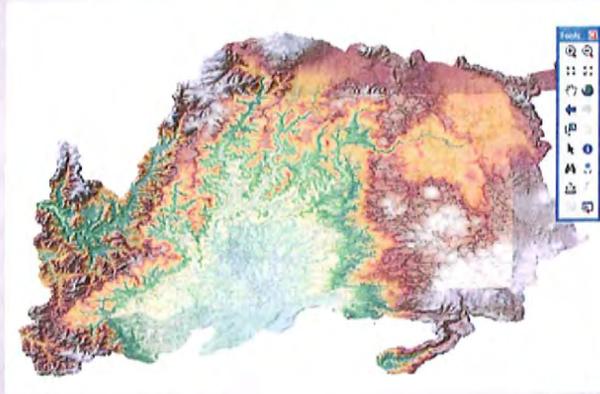
- Obj - Coordinate with and support existing efforts to mitigate dam failure.
- Obj - Protect floodplains from inappropriate development.

IV. Explain that the building and critical facilities inventory in HAZUS will be useful for planning purposes relative to hazards that HAZUS does not provide analyses for.

V. Turn it over to Clay and Todd who will explain progress and details of the HAZUS run thus far, discuss the HAZUS summary, and solicit input from the steering committee regarding earthquake, fire and flood events.

Shasta County Hazard Mitigation Plan

Mapping Analysis & Production



Clay Gurtner, GIS Project Manager
Ricki Burdakov, Municipal GIS Manager

HAZUS-MH Mapping

- **HAZUS-MH**
 - HAZUS-MH is a nationally applicable software program and standardized methodology for estimating potential losses from earthquake, flood, and hurricane hazards; the program was developed by FEMA and the National Institute of Building Sciences.
 - Various earthquake and flood hazard scenarios were run through HAZUS-MH for Shasta County (hurricane hazards do not apply).

HAZUS-MH Mapping (cont.)

- **How it Works**

- Two distinct phases for HAZUS-MH
 1. Develop the hazard scenario (i.e., 100-year flood or 500-year flood, earthquake magnitude and epicenter, etc.). HAZUS-MH will then run the scenario, based upon the parameters entered.
 2. After the scenario has been run, there are literally hundreds of choices of what results HAZUS-MH can estimate based upon that specific hazard scenario (i.e., different categories of damage for medical facilities, functionality of those facilities, utility system damage, etc.). An extensive summary of the results of each event is also produced.
- The team's role in developing the scenarios
 - ENPLAN is utilizing input provided from Pat to define the hazard scenarios. Pat is either providing scenario parameters he feels will be most beneficial to Plan development, or obtaining information from a specialist. For example, Pat is working with a USGS seismologist to obtain specific earthquake parameters representative of our area (i.e., fault type, rupture orientation, epicenter, magnitude, etc.).

HAZUS-MH Mapping (cont.)

- **Steering Committee Involvement**

- The second phase of analysis in the HAZUS-MH process is where we feel input from the committee is instrumental.
- We feel the best way to receive the committee's input is to review the results we've generated, the parameters utilized to generate the results, and then allow the committee to collectively present input.
- We'd like to receive specific input on the parameters related to roads, utilities, and essential facilities.
 - HAZUS-MH generally defines Essential Facilities as police, fire, emergency operations facilities, schools, and medical facilities. *roads & utilities*

HAZUS-MH Mapping (cont.)

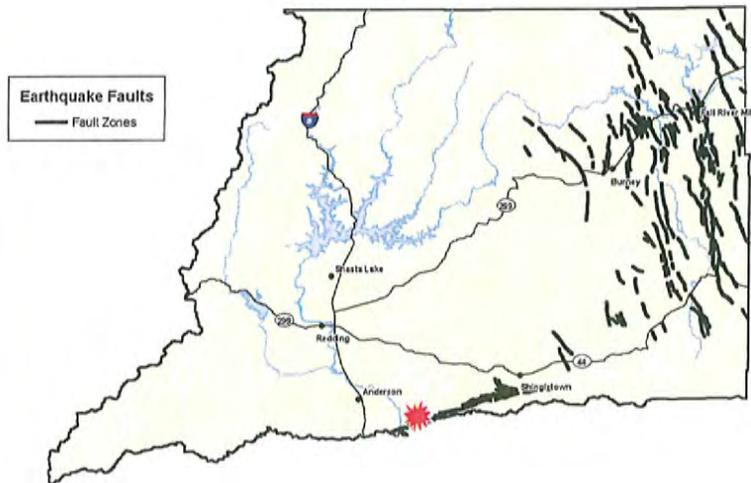
- **Earthquake Scenario Parameters:**

Earthquake Scenario

HAZUS uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.

Scenario Name	M 6.5 Battle Creek Fault
Type of Earthquake	Arbitrary
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	NA
Longitude of Epicenter	-122.00
Latitude of Epicenter	40.43
Earthquake Magnitude	6.50
Depth (Km)	10.00
Rupture Length (Km)	18.20
Rupture Orientation (degrees)	0.00
Attenuation Function	WUS Shallow Crustal Event - Extensional

Earthquake



Damage Analysis

- **Types of features that can be analyzed**

- Essential Facilities
 - Medical Care
 - Police Stations
 - Fire Stations
 - Emergency Response
 - Schools
- Transportation Systems**
 - Highways
 - Railways
 - Light Rail
 - Bus System
 - Port and Harbor
 - Ferry System
 - Airport Transportation
- Utility Systems
 - Potable Water
 - Waste Water
 - Oil
 - Natural Gas
 - Electric Power
 - Communication

Damage Analysis

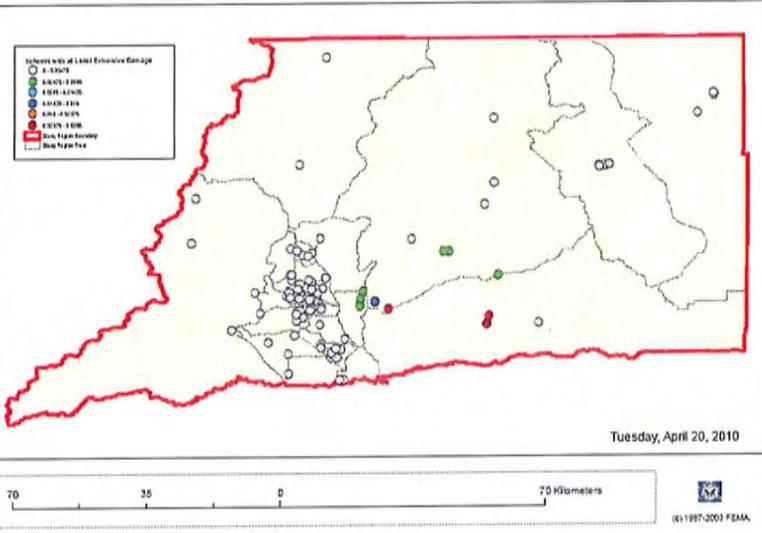
- **For each feature, we can visualize structural damage estimates and estimates of impaired functionality**

*Struct dam
facility loss
economic loss*

Sample Earthquake Result (Schools with Extensive Damage):

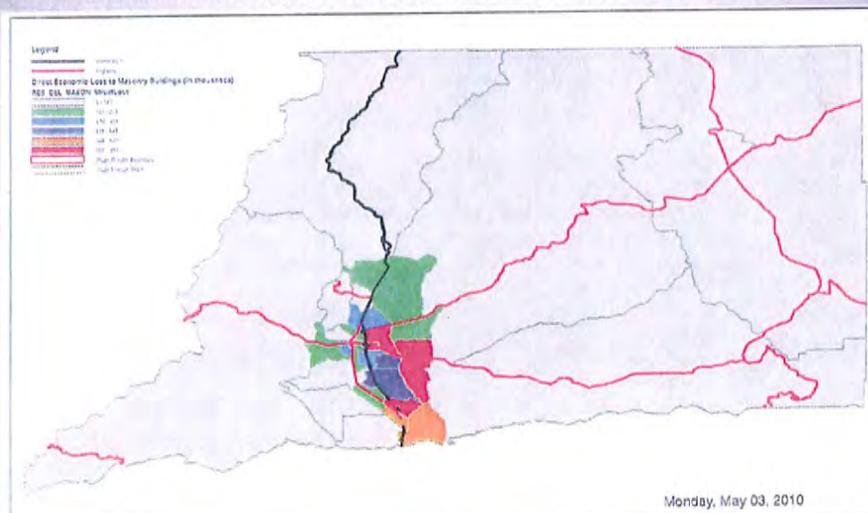
Study Region new : Shasta County Earthquake

Hazard Scenario : M 6.5 Battle Creek Fault



Census Tracts

- Loss estimations can be symbolized by census tracts.



Event Summaries

- HAZUS produces extensive summary reports of the effects of both flood and earthquake events.

Example global summary data from earthquake scenario

Building Damage

Building Damage

HAZUS estimates that about 2,837 buildings will be at least moderately damaged. This is over 4.00 % of the total number of buildings in the region. There are an estimated 10 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the HAZUS technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 summarizes the expected damage by general building type.

Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	237	0.40	33	0.44	19	0.75	4	1.31	0	2.17
Commercial	2,658	4.46	409	5.52	235	9.29	45	15.21	3	25.12
Education	108	0.18	12	0.16	7	0.27	1	0.41	0	0.75
Government	143	0.24	21	0.28	12	0.49	2	0.62	0	1.39
Industrial	771	1.29	129	1.74	82	3.25	17	5.83	1	8.45
Other Residential	13,015	21.82	2,392	32.25	1,390	54.89	170	57.83	6	59.96
Religion	205	0.34	28	0.38	15	0.61	2	0.78	0	1.72
Single Family	42,507	71.27	4,393	59.23	771	30.47	53	18.01	0	0.44
Total	59,642		7,417		2,532		295		11	

Example global summary data from earthquake scenario

Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	47,865	80.25	5012	67.58	857	33.87	55	16.79	0	1.16
Steel	1,014	1.70	178	2.40	132	5.22	21	7.18	2	20.35
Concrete	1,030	1.73	174	2.35	93	3.67	12	4.14	1	4.98
Precast	744	1.25	114	1.54	105	4.20	30	10.28	1	7.52
RM	1,824	2.72	152	2.05	116	4.59	23	7.68	0	2.47
URM	359	0.60	74	0.99	42	1.65	10	3.35	2	14.41
MH	7,008	11.75	1712	23.08	1,185	46.80	143	48.57	5	49.11
Total	69,642		7,417		2,532		295		11	

*Note:

RM Reinforced Masonry
URM Unreinforced Masonry
MH Manufactured Housing

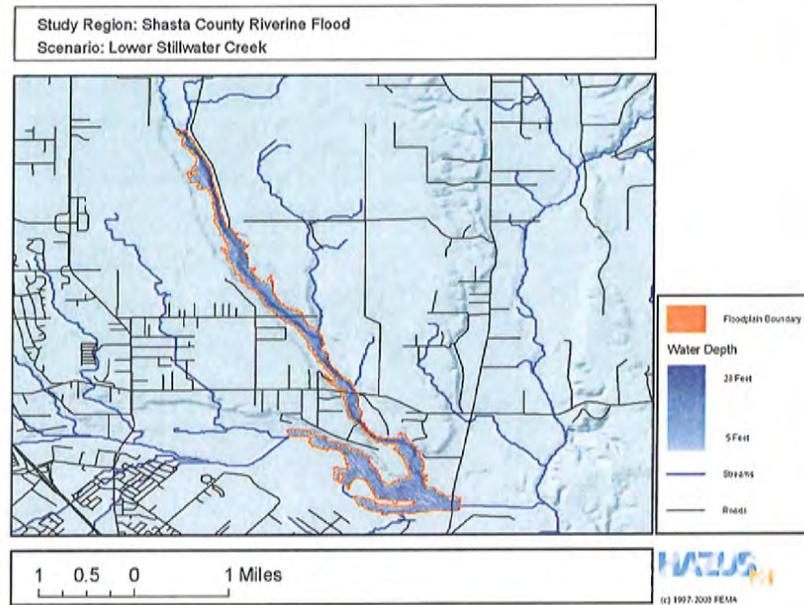
Flood Hazard

- Flood Scenario Parameters:**

HAZUS used the following set of information to define the flood parameters for the flood loss estimate provided in this report.

Study Region Name: Shoata County Riverine Flood
 Scenario Name: Lwr Stillwater Cr
 Return Period Analyzed: 100
 Analysis Options Analyzed: No What-ifs

Example Flood Scenario: 100-year event along Stillwater Creek



Desired Results

- **Input from the Committee is requested for the generation of Road, Essential Facility, and Utility outputs.**

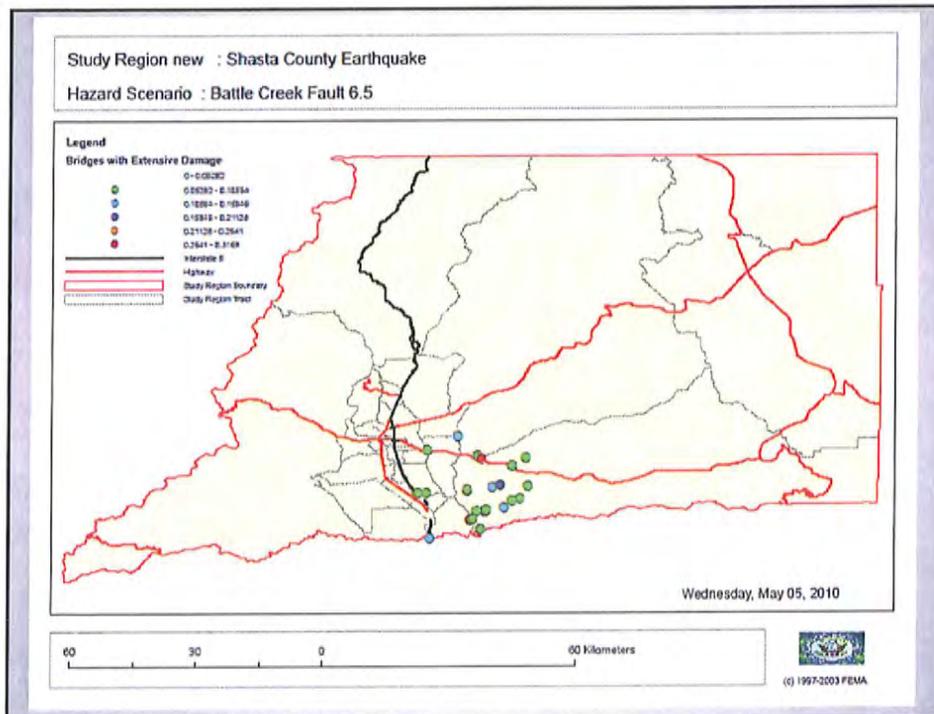
Transportation System Results

Highway | Railway | Light Rail | Bus | Port | Ferry | Airport

Table type: Bridge Damage

ID Number	Name	None	Slight	Moderate	Extensive	Complete	At Least Slight	At Least Moderate	At Least Extensive
CA001519	ROCK CR RD	0.999	0.000	0.000	0.000	0.000	0.001	0.001	0.000
CA001520	PONDEROSA RD	0.963	0.030	0.004	0.002	0.001	0.007	0.007	0.001
CA001521	WILDCAT RD	0.649	0.206	0.063	0.054	0.028	0.352	0.146	0.082
CA001522	NORTH BONNYVIEW RD	0.996	0.000	0.002	0.001	0.000	0.004	0.004	0.001
CA001523	CANYON RD	0.978	0.014	0.005	0.003	0.001	0.022	0.008	0.003
CA001524	DOTY ROAD	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CA001525	CASSEL ROAD	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CA001526	LONG HAY FLAT RD	0.999	0.000	0.000	0.000	0.000	0.001	0.001	0.000
CA001527	ASH CR RD	0.764	0.090	0.056	0.057	0.024	0.236	0.139	0.063
CA001528	ASH CR RD	0.951	0.239	0.093	0.078	0.049	0.449	0.210	0.127
CA001529	ASH CR RD	0.595	0.225	0.074	0.067	0.033	0.495	0.196	0.106
CA001530	LOCUST RD	0.947	0.014	0.019	0.015	0.014	0.053	0.030	0.019
CA001531	WITHROW RD	0.991	0.005	0.002	0.001	0.000	0.009	0.004	0.002
CA001532	OLD 44 CR	0.926	0.040	0.018	0.014	0.004	0.074	0.059	0.017
CA001533	COLLEGE VIEW DR	0.507	0.002	0.002	0.002	0.000	0.013	0.009	0.002
CA001534	CO RD 34902	0.943	0.005	0.002	0.001	0.000	0.007	0.003	0.001
CA001535	SWIDE CREEK RD	0.924	0.030	0.019	0.015	0.004	0.076	0.030	0.019
CA001536	BEAR HT RD	0.991	0.006	0.002	0.001	0.000	0.009	0.003	0.001
CA001537	BERNARD WAY	0.995	0.004	0.001	0.001	0.000	0.007	0.002	0.001
CA001538	HIDDEN LAKE	0.543	0.020	0.015	0.011	0.003	0.057	0.029	0.014
CA001539	DEVEL DR	0.930	0.010	0.020	0.024	0.007	0.070	0.060	0.031
CA001540	20GG MINE RD	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CA001541	OLD OREGON TRAIL	0.907	0.003	0.006	0.004	0.001	0.013	0.011	0.005
CA001542	BUCKEYE ST	0.930	0.001	0.000	0.000	0.000	0.002	0.001	0.000
CA001543	BOULDER RD	0.995	0.002	0.001	0.000	0.000	0.005	0.002	0.001

Close Map Print



Desired Results

- Available outputs include structural damage and functionality loss data for the following features-

- Essential Facilities
 - Medical Care
 - Police Stations
 - Fire Stations
 - Emergency Response
 - Schools
- Transportation Systems**
 - Highways
 - Railways
 - Light Rail
 - Bus System
 - Port and Harbor
 - Ferry System
 - Airport Transportation
- Utility Systems
 - Potable Water
 - Waste Water
 - Oil
 - Natural Gas
 - Electric Power
 - Communication

Thank You

- Thanks to all for attending and continuing to provide input as we proceed with Plan development.
 - Jan Bulinski (Shasta County), 245-6821
jbulinski@co.shasta.ca.us
 - Patrick Steinmetz (Steinmetz Associates), 273-1065
steinmetzassoc@cebridge.net
 - Clay Guzi (ENPLAN), 221-0440 x 115
cguzi@enplan.com
 - Todd Burciaga (ENPLAN), 221-0440 x 118
tburciaga@enplan.com

Shasta County Hazard Mitigation Plan Steering Committee

August 12, 2010 9am-12pm
Caldwell Park Conference Room
Redding City Hall, 777 Cypress St

- 9 am Introductions
- 9:10 Recap of last meeting
- 9:20 Screen and Rank Hazards
 - *highest probability of occurrence (or repetitive occurrence)
 - *greatest impact on life and facilities
 - *probability of future occurrence
- 10:00 Vulnerabilities related to the Hazards
 - *critical facilities (types and numbers)
 - *repetitive loss
 - *potential loss (dollar)
- 10:45 Identify additional information needed and from whom
- 11:00 Progress on HAZUS scenarios/modeling
- 11:30 Discuss community meeting, survey, and crosswalk
- 11:45 Next Steps and agenda items

**Shasta County Hazard Mitigation Plan
Steering Committee Meeting
Thursday, August 12, 2010
City of Redding Conference Room
9:00 AM to 10:30 AM**

In attendance:

Chair, Jan Bulinski, Shasta County Public Works

Jan opened the meeting with introductions and a review of the previous meeting accomplishments.

Dave DeMar, WSRCD

Dave reviewed all hazards chosen for review and the initial decision that flood and fire are the top hazards. He reviewed the Risk Assessment requirements: identification, profile, identifying assets, value of structures and landmarks, assess vulnerabilities, analysis of development trends to determine future threats.

Dave presented a powerpoint presentation with various maps showing potential hazards for wildfire, volcano, and flood.

Todd Burciaga (Clay Guzi also present), Enplan

Todd handed out data about 100 year and 500 year flood scenarios.

Dave DeMar, WSRCD

Dave reviewed the tables that will be completed and why each hazard was included and the justification.

A map of earthquake faults showed hazards were predominantly in the eastern part of the county. There have been three earthquakes greater than a Level 5 magnitude, in 1920, 1950 and 1998. For ground shaking there is very low potential in most of the county, but higher in the Fall River Mills area. For Drought, it also is very low except in the eastern hedge of the county.

Dave suggested grouping drought, utility failure, and storms into one category called Extreme Weather. Everyone agreed, since land use planning will not help much in extreme weather situations.

Questions raised:

(Jim Diehl from CalFire; Al Cathey from Public Works/Subdivision Engineer)

- * Is Whiskeytown dam designed to meet severe earthquake potential?
- * Under earthquake, should sewage treatment plants be included in the discussion?
- * Under terrorism, should manually started wildfires be included?
- * Is drought really a hazard? Check the frequency and severity levels.

Jami Byers, CAL EMA

Jami clarified that we can wait on getting the plan adopted until we receive a letter from CAL EMA that it meets the requirements. We have one year from meeting requirements to get the Shasta County Board of Supervisors adoption. When we submit the document for review, we should submit a note to show adoption is on the board's agenda at a point in the future.

Jami suggested getting the information out about the plan at as many community meetings as possible and contact the colleges, Boy Scouts, Red Cross, and all agencies in the area.

Next meeting in one month.

Agenda items: populate the tables.

Aug 12, 2010

Name	Agency
Todd Burclaga	ENPLAN
David DeMar	WSRCD
Jan Bulinski	Shasta Co.
Clay Guzi	ENPLAN
JAMI CHILDRESS-BYERS	CAL EMA
Ron Kingsley	Reclamation
Traci Niemela	Shasta Co. Public Health
JIM DIEHL	CAL FIRE SCFD
AL CATHEY	SHASTA CO. DPW
? Sean Tiedgen Tiedgen	Shasta County
✓ Lee Delaney	WSRCD
✓ Leslie Bryan	WSRCD
✓ Mary Mitchell	WSRCD

The meeting began with introductions and a recap of our last meeting, which went over the maps that ENPLAN is creating, HAZUS runs for the flooding hazard, and discussion regarding ETA for water from a potential Shasta Dam failure and conflicting information on different maps.

Dave presented a discussion on screening and ranking hazards through powerpoint presentation. He handed out hazard-related documents with tables 4.2-1 through 4.3-4. He emphasized that data and maps would be helpful from the different representatives in the group. He will be contacting them shortly.

FIRE – various maps in the powerpoint related to the fire hazard were discussed. Of particular interest are the fuel reduction areas. CalFire has fuel breaks proposed throughout the county.

FLOOD – According to the map, the Redding and Anderson areas, Hat Creek, Burney and Fall River Mills are the most vulnerable to flooding. The HAZUS analysis looked at the 100 and 500 year floods

An earthquake analysis is underway, it is anticipated that USGS will provide more definitive information for the analysis. Jim Diehl from CalFire asked how the hazards are defined. For instance, Mass Casualty, as defined by his colleagues, means more casualties than responders to the incident. Dave said that he was requesting that information of the members of the committee and appreciated the input. It was suggested that we define the hazards and then begin ranking their importance. Severity and frequency would determine the importance of a hazard in terms of its threat to the county.

Jim suggests that weather be placed in a higher rank than flood for our area. Weather, Dave said, really should be a compilation of all the weather-related hazards including: Severe storm, drought and extreme heat. Al Cathey brought up Whiskeytown dam, and whether its vulnerability had been assessed. Would it survive a quake? It is an earthen dam, and it is commonly known that they have a severe vulnerability to earthquake failure.

Hazardous spills are a significant threat in this area as interstate 5 runs through it, as well as the railroad. Past spills were considered and the group thought that hazardous spills should be ranked higher than earthquake as a risk. Finally it was decided that the ranking would be as follows: 1) Wildfire, (2) Extreme Weather, (3) Flood, (4) Haz Mat, (5) Earthquake, (6) Volcano, CBRNE, Pandemic/epidemic, Mass casualty, and Dam failure. It was agreed that hazards 5-10 are of less utility and much less time will be spent analyzing their impact.

Mary discussed community meetings as a requirement of the public participation element of the plan and the importance of public outreach. Jami said to take advantage of other venues for distribution of information regarding the plan such as the boy scouts and local college.

Mary handed out the “crosswalk” created by FEMA for use in grading the plans that are received. It must be accurate and include all components of the plan or FEMA will return the submittal.

Next steps to be taken include filling in tables 4.3-5 and 4.3-6 of the handouts, and running scenarios for the hazards.

Table 4.2-1
Summary of Hazard Identification Results

Hazard	Representative Data Collected for Hazard Identification	Justification for Inclusion
Flood	<ul style="list-style-type: none"> * FEMA FIRM Maps * FEMA Flood Hazard Layer * Topography * FEMA Base Flood Elevations * Historical flood records * FEMA Hazard website * OES 	<ul style="list-style-type: none"> * Areas are located within the 100-year floodplain * Flash floods and other flood events occur during heavy rainstorms due to terrain * There have been several State of Emergency Proclamations between 1950-2004 as a result of flooding in Shasta County
Wildfire	<ul style="list-style-type: none"> * CDF-FRAP * USFS * CDFG * Topography * County Fire/OES * Historical fire records * FEMA Hazards website 	<ul style="list-style-type: none"> * Shasta County experiences wildfires on a regular basis * Terrain and Mediterranean climate * Seasonal winds
Earthquake	<ul style="list-style-type: none"> * USGS * CGS * CIGN * FEMA- HAZUS * FEMA Hazards website 	<ul style="list-style-type: none"> * Several fault zones occur in the county * Historical records * The area is subject to low and moderate ground shaking
HazMat	<ul style="list-style-type: none"> * USGS * Shasta County Hazardous Materials Business Plan * EPA 	<ul style="list-style-type: none"> * I-5 is a major transportation route for hazardous materials * Southern Pacific Railroad runs north south through the county * Several hazardous spills have occurred
Severe Storm	<ul style="list-style-type: none"> * OES * NOAA 	<ul style="list-style-type: none"> * Periodic severe winter snow storms * Periodic severe summer storms with lightning

Hazard	Representative Data Collected for Hazard Identification	Justification for Inclusion
Utility Disruption	<ul style="list-style-type: none"> * PG&E * CA Public Utilities Commission * CA Energy Commission * WAPA 	<ul style="list-style-type: none"> * Extreme heat of 120 degrees occasionally occurs * Heavy snow storms have occurred * High wind storms have occurred
Drought	<ul style="list-style-type: none"> * USDA * Shasta County Board of Supervisors records * NOAA * Redding Basin Water Management 	<ul style="list-style-type: none"> * There have been State of Emergency Proclamations for drought * 2009 * 2008 Keswick Water Shortage Emergency * Concern about reliable water supplies * Concern about feed for livestock and water for agriculture
CBRNE (chemical, biological, radiological, nuclear, explosive)	<ul style="list-style-type: none"> * Shasta County Public Health General Plan * Healthy Shasta 2008 Report * CA Emergency Medical Services Authority * CA Dept. Health Services 	Some probability, but low.
Volcanic	<ul style="list-style-type: none"> * USGS * Cal EMA 	<ul style="list-style-type: none"> * Mt. Shasta and Mt. Lassen volcanoes are considered "very high threat volcanoes" by USGS.
MCI (mass casualty incident)	<ul style="list-style-type: none"> * Shasta County Public Health General Plan * Healthy Shasta 2008 Report * CA Emergency Medical Services Authority * CA Dept. Health Services 	Some probability, but low.
Dam Failure	<ul style="list-style-type: none"> * FEMA-HAZUS * Dam Inundation Data (CA OES) * FEMA FIRM maps * FEMA Hazards website * ACOE 2005 Survey 	<ul style="list-style-type: none"> * Potential for uncontrolled releases from Shasta and Whiskeytown Dams flooding inundation zone * Potential threat to fish and wildlife in the Sacramento River * Several dams exist throughout Shasta County * Many dams are over 30 years old * Downstream development
Pandemic/epidemic	<ul style="list-style-type: none"> * Shasta County Public Health General Plan * Healthy Shasta 2008 Report * CA Emergency Medical Services Authority * CA Dept. Health Services 	<ul style="list-style-type: none"> * Cases of West Nile Virus in Shasta County * Cases of swine flu in Shasta County

Table 4.2-3
Hazard Ranking and Planning Consideration

Hazard Type and Ranking	Planning Consideration Based on Hazard Level
1. Wildfire (xx)	Significant
2. Flood (xx)	Significant
3. Severe Storm (xx)	Significant
4. Drought (xx)	Significant
5. Utility Disruption (xx)	Moderate
6. Earthquake (xx)	Moderate
7. Haz Mat (xx)	Moderate
8. Volcano (xx)	Moderate
9. CBRNE – Chemical, Biological, (xx)	Limited
10. Pandemic/epidemic (xx)	Limited
11. MCI – Mass casualty (xx)	Limited
12. Dam Failure (xx)	Limited
13. Extreme Heat (xx)	Limited

Table 4.2-3
Hazard Ranking and Planning Consideration

*based
severity & frequency*

Hazard Type and Ranking		Planning Consideration Based on Hazard Level
1. Wildfire (xx)	Utility Disruption (xx)	Significant
2. Flood (xx)		Significant
3. Extreme Weather (xx)		Significant
3a. Severe Storm (xx)		
3b. Drought (xx)		
3c. Extreme Heat (xx)		
4. Earthquake (xx)		Moderate
5. Haz Mat (xx)		Moderate
6. Volcano (xx)		Moderate
7. CBRNE – Chemical, Biological, (xx)		Limited
8. Pandemic/epidemic (xx)		Limited
9. MCI – Mass casualty (xx)		Limited
10. Dam Failure (xx)		Limited

less utility 5-10

**Table 4.3-4
Abbreviations and Costs Used for Critical Facilities and Infrastructure**

Abbr.	Name	Building Type (where applicable)	Average Replacement Cost (x\$1,000)
AIR	Airport facilities		
BRDG	Bridges		
BUS	Bus facilities		
COM	Communication Facilities and Utilities		
DAM	State-sized Dams		
ELEC	Electric Power Facility		
EMER	Emergency Centers, Fire Stations and Police Stations		
GOVT	Government Offices and Civic Center		
HOSP	Hospitals/Care Facilities		
INFR	Infrastructure includes: Oil/Gas Pipelines		
	Railroad Tracks		
	Highway		
POT	Portable and Waste Water Facilities		
RAIL	Rail Facilities		
SCH	Schools		

Table 4.3-5**Population Exposure and Potential Loss Estimates from 100-Year Flood Hazard by Jurisdiction**

Jurisdiction	Exposed Population	Residential Building Count	Residential Est. Building and Content Loss (x\$1000)	Commercial Building Count	Commercial Est. Building and Content Lost (x\$1,000)
Shasta County, unincorporated					
City of Anderson					
City of Redding					
City of Shasta Lake					
Total					

Note: Commercial loss estimates include Industrial and Agricultural buildings and contents

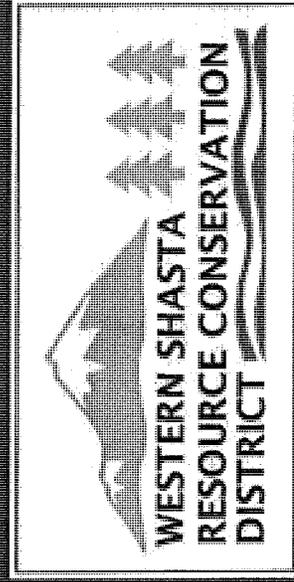
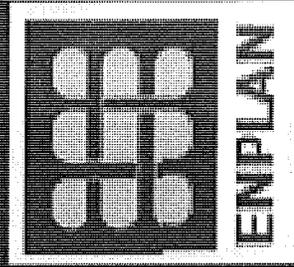
Table 4.3-6**Potential Exposure to Critical Facilities and Infrastructure from 100-Year Flood Hazard by Jurisdiction**

Jurisdiction	Data	AIR	BRDG	BUS	COM	EMER	HOSP	INFR	Rail Fac	Rail Length	SCH	Total
Shasta County, unincorporated	Number Exposure (x\$1000)											
City of Anderson												
City of Redding												
City of Shasta Lake												
Total Number												
Total Exposure (x\$1000)												

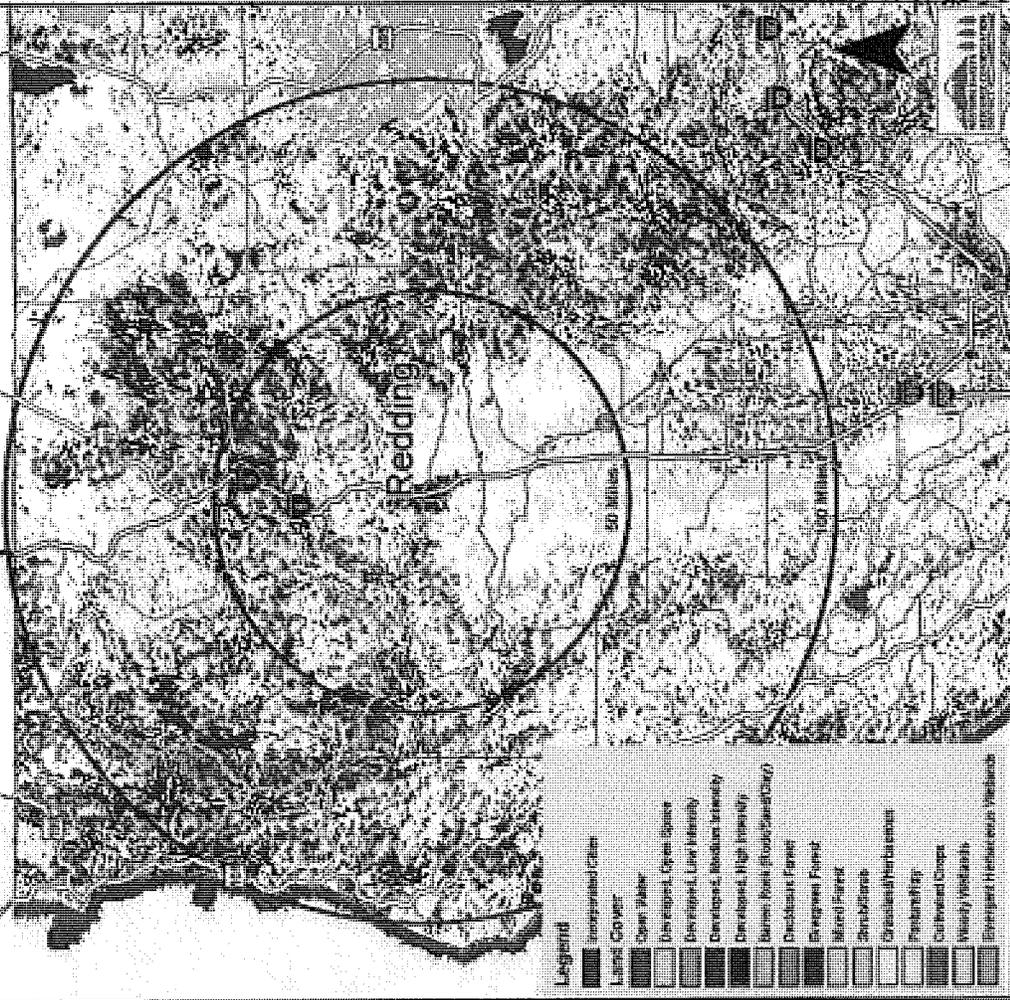
Note: Dollar amounts in this table are total exposure to 100 year flood (assumes worse case scenario) as opposed to loss estimation that was conducted for Residential and Commercial property above.

Shasta County Hazard Mitigation Plan

Steering Committee Meeting
Thursday, August 12, 2010



100 Mile Radius - Land Cover Data National Land Cover Data Classification



0 10 20 30 40 50
KILOMETERS

Identified Hazards

Flood

Fire

Severe Storm

Earthquake

Hazardous Materials

MCI – Mass Casualty Incidents

CBRNE – Chemical Biological

Volcanic

Drought

Utility Disruption

Dam Failure

Pandemic / Epidemic

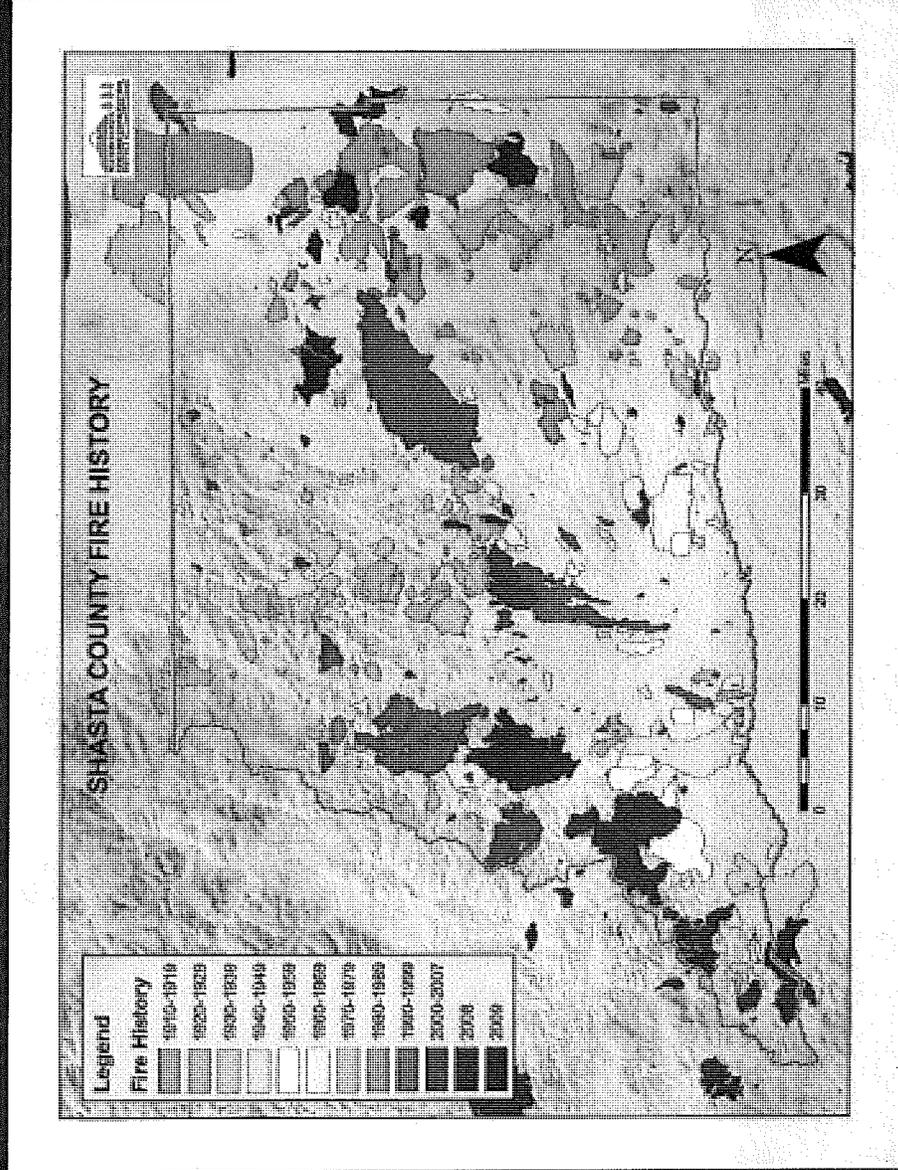
Risk Assessment

- 1) identifying hazards, which involves determining those hazards posing a threat to a study area,
- 2) profiling hazards, which involves mapping identified hazards and their geographic extent,
- 3) identifying assets, which assigns value to structures and landmarks in the identified hazard areas,

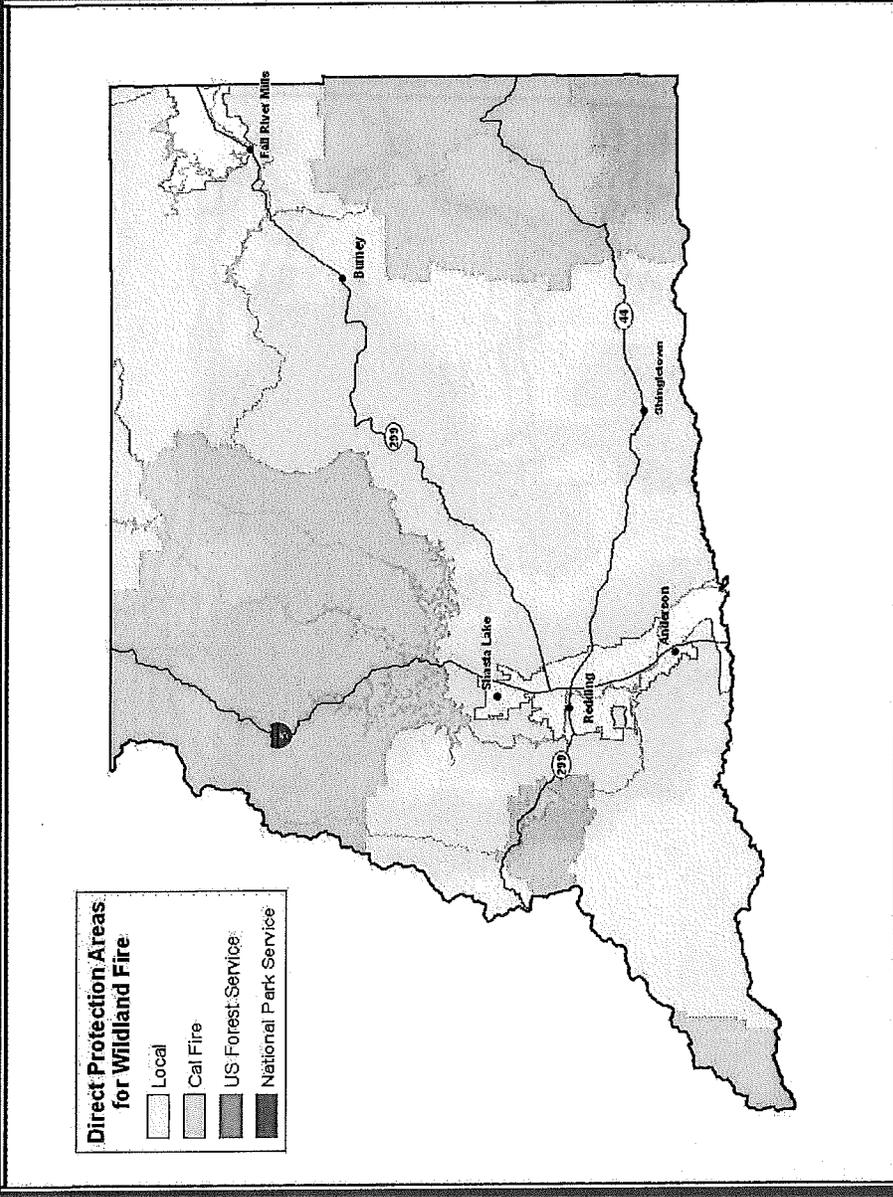
Risk Assessment

- 4) assessing vulnerability, which involves predicting the extent of damage to assets, and
- 5) analyzing development trends, which assesses future development and population growth to determine potential future threat from hazards.

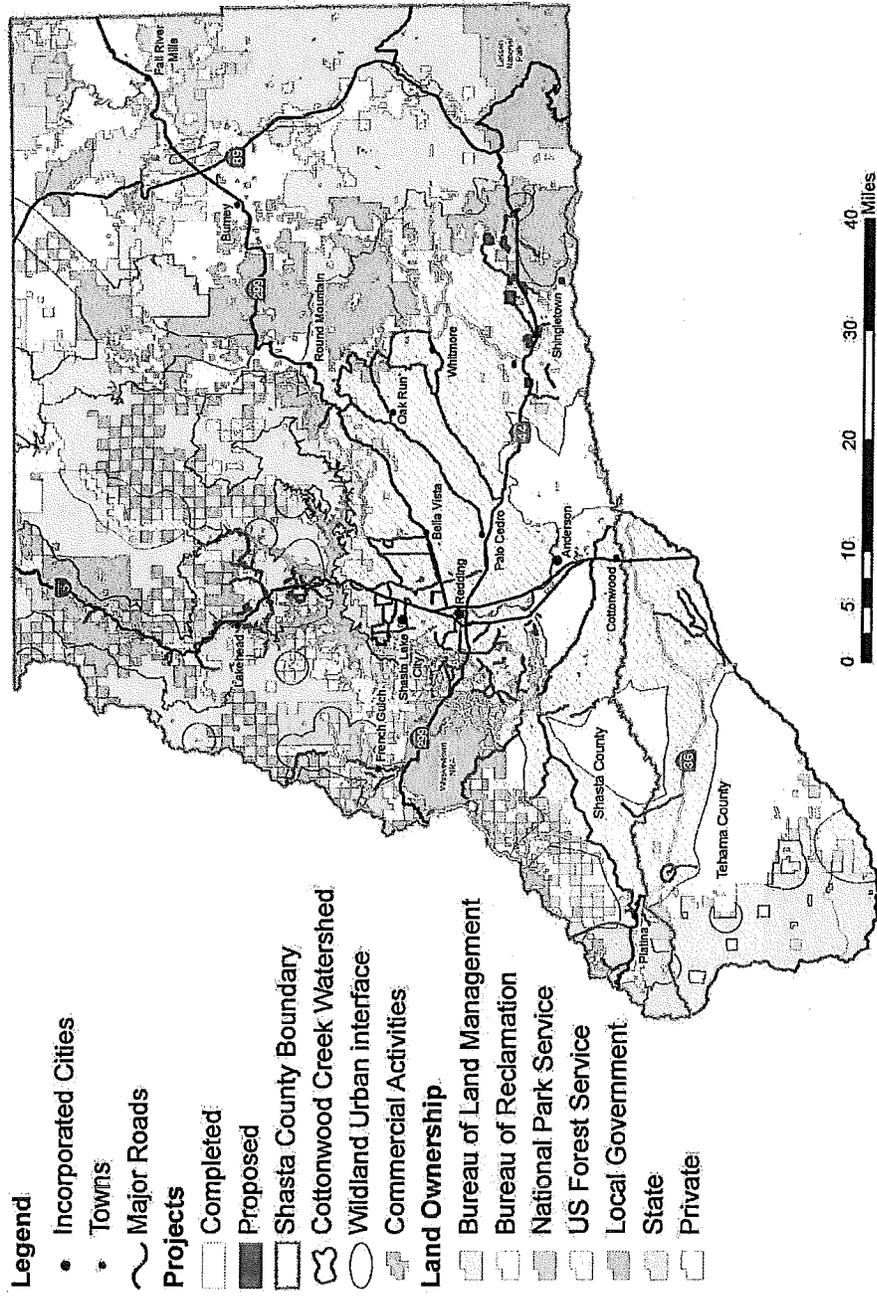
Fire History



Fire Protection



SHASTA COUNTY FIRE SAFE COUNCIL FIRE PLAN BASE MAP 2010



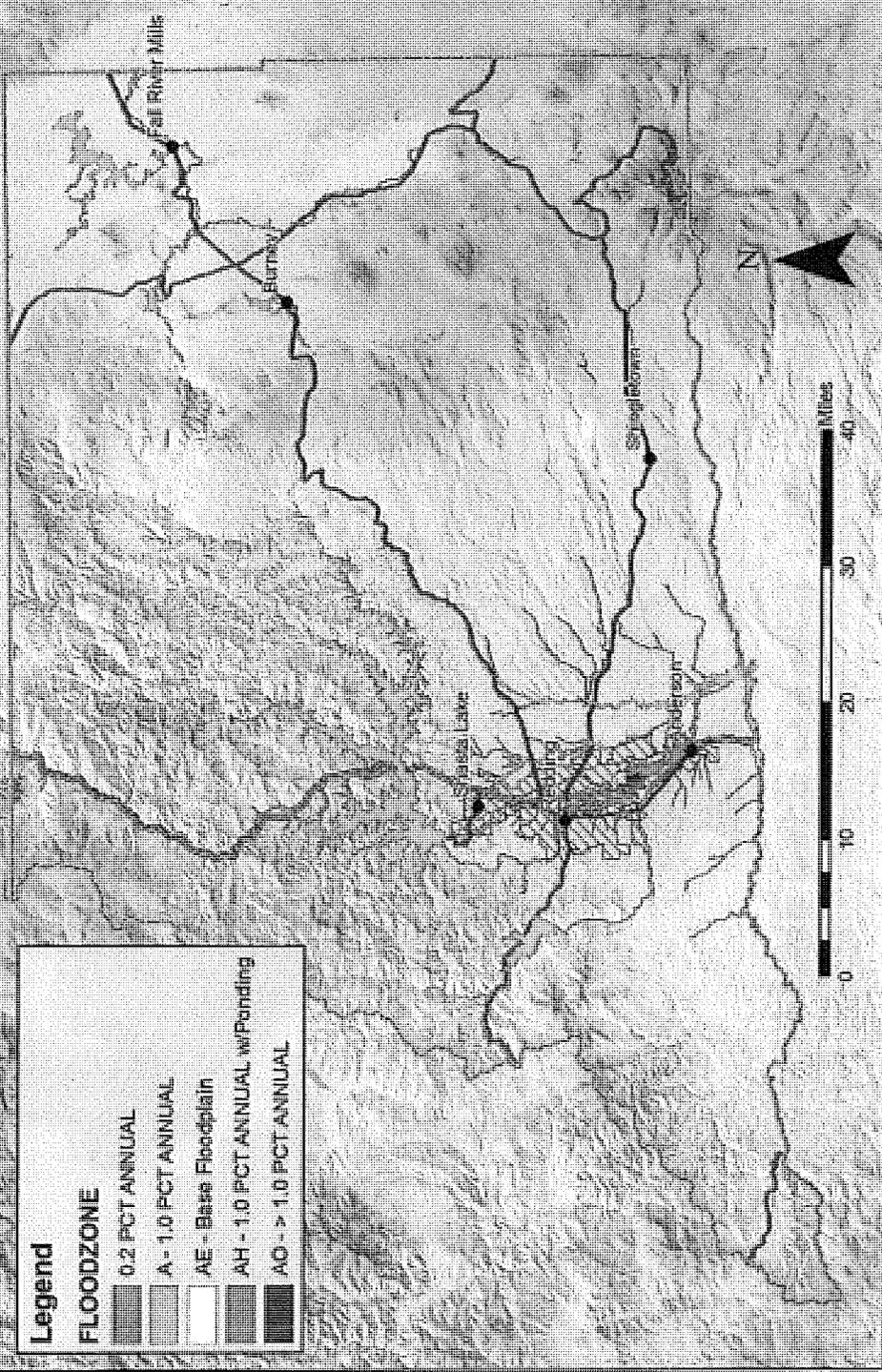
SHASTA COUNTY HIGH RISK FLOOD ZONES



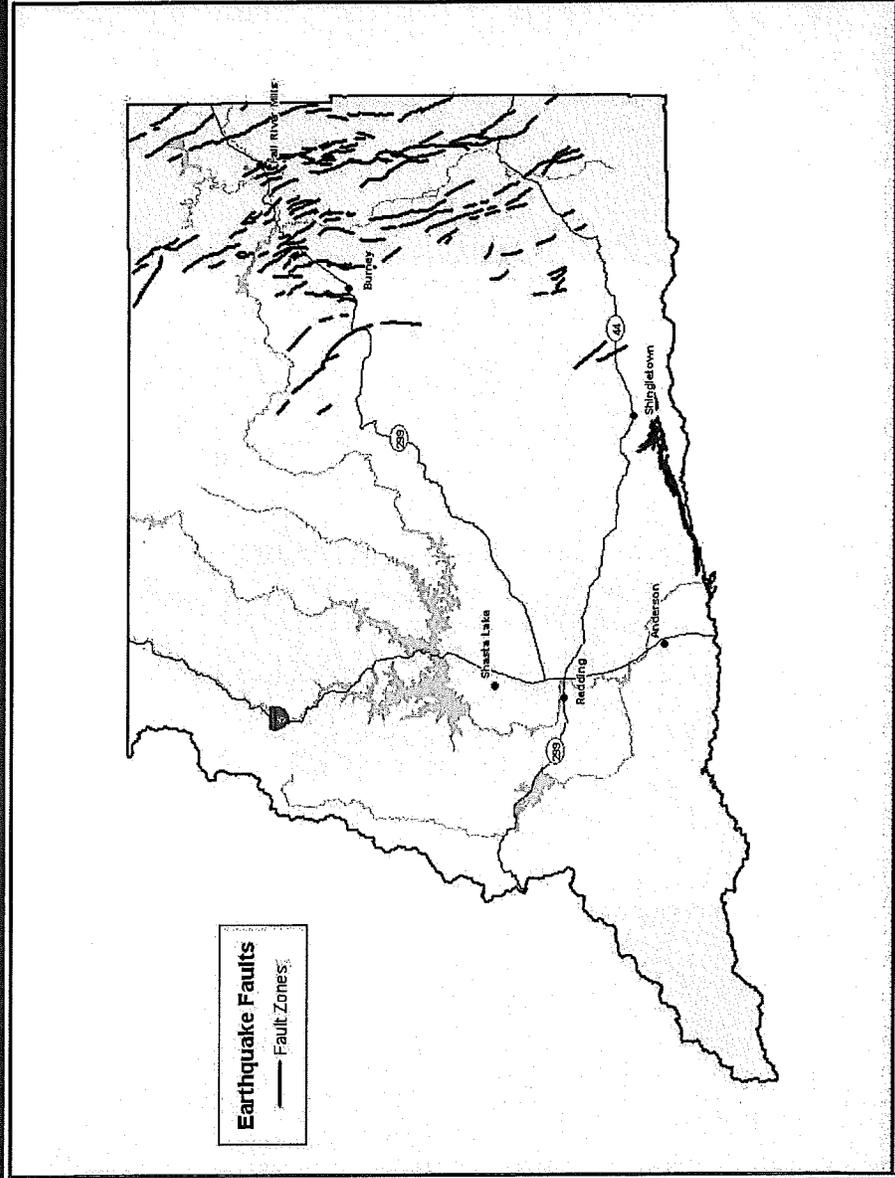
Legend

FLOODZONE

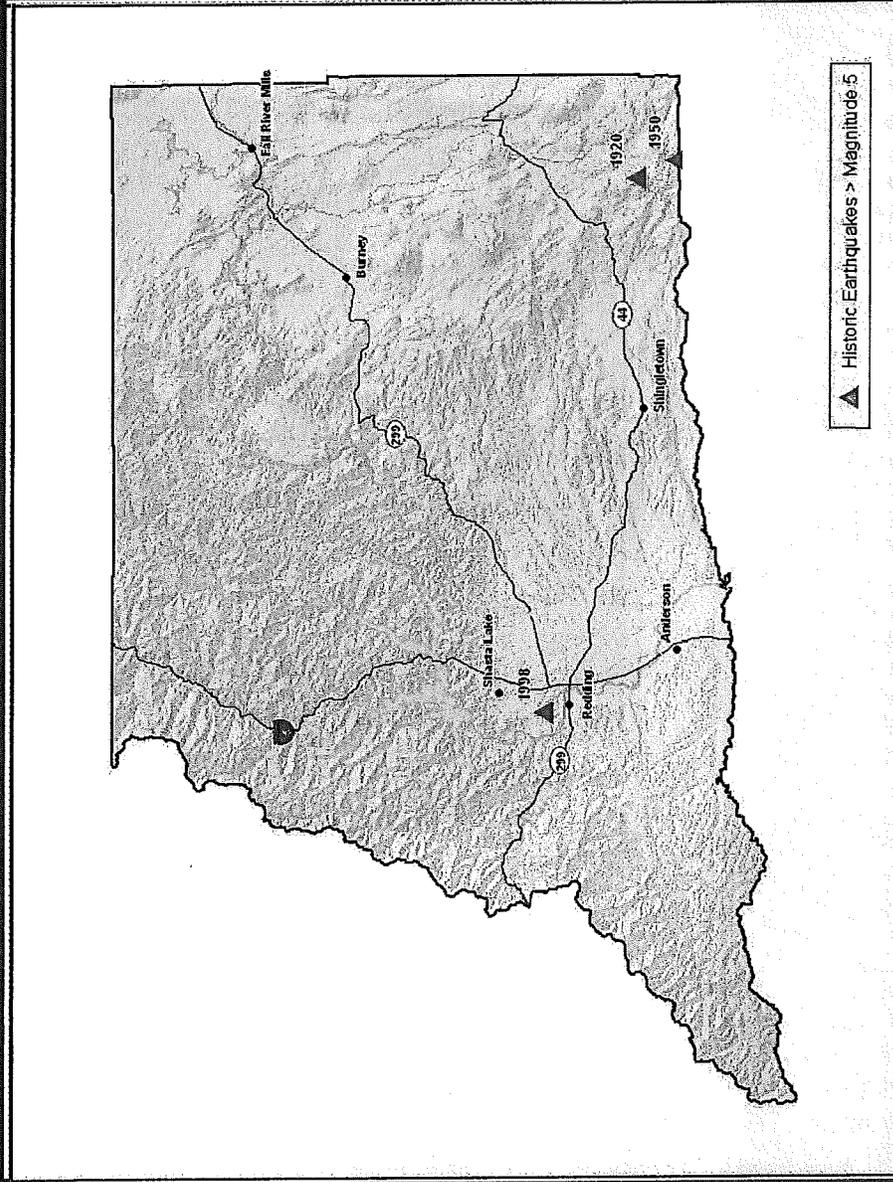
- 0.2 PCT ANNUAL
- A - 1.0 PCT ANNUAL
- AE - Base Floodplain
- AH - 1.0 PCT ANNUAL w/Ponding
- AO - > 1.0 PCT ANNUAL



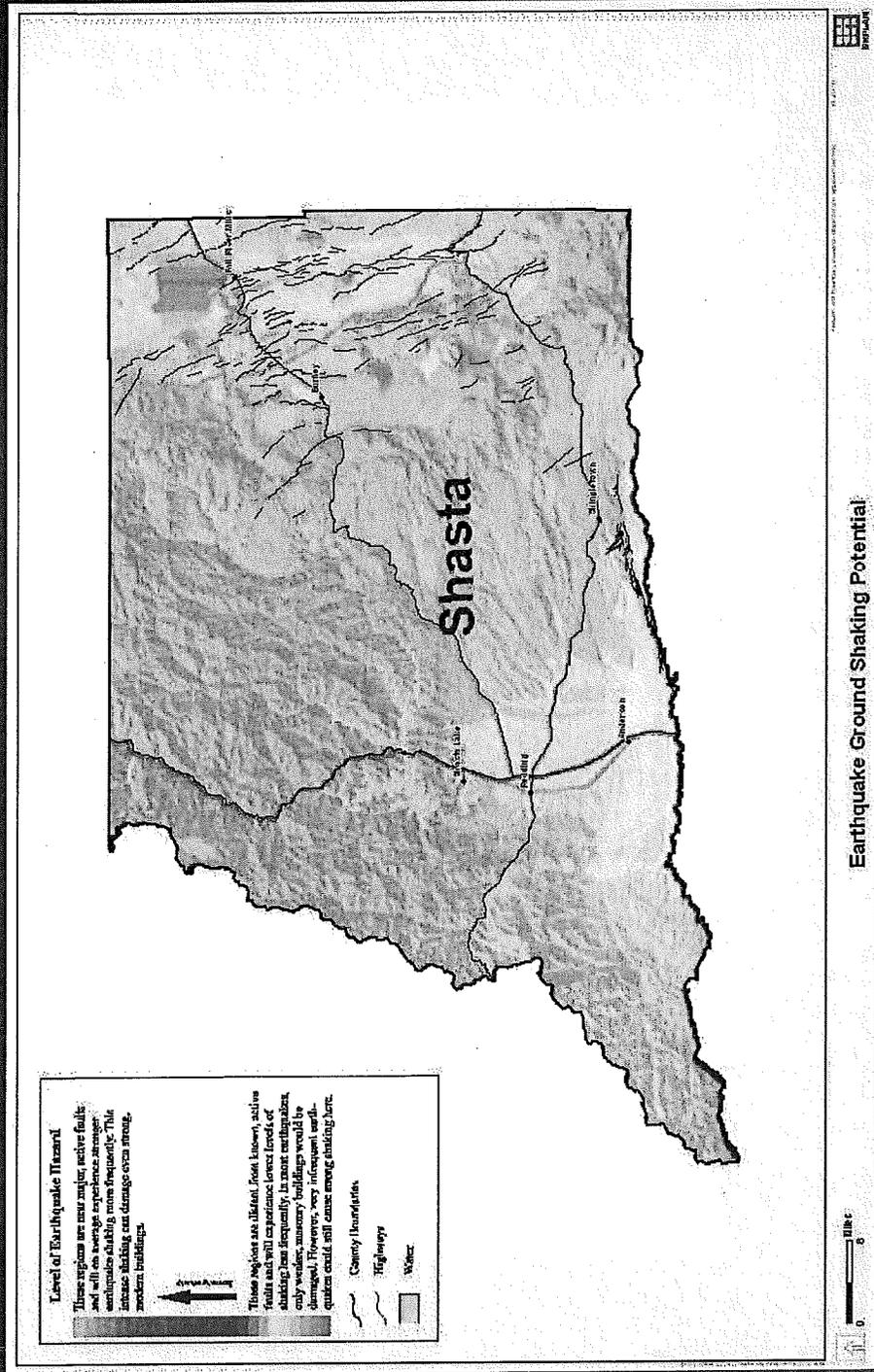
Earthquake Faults



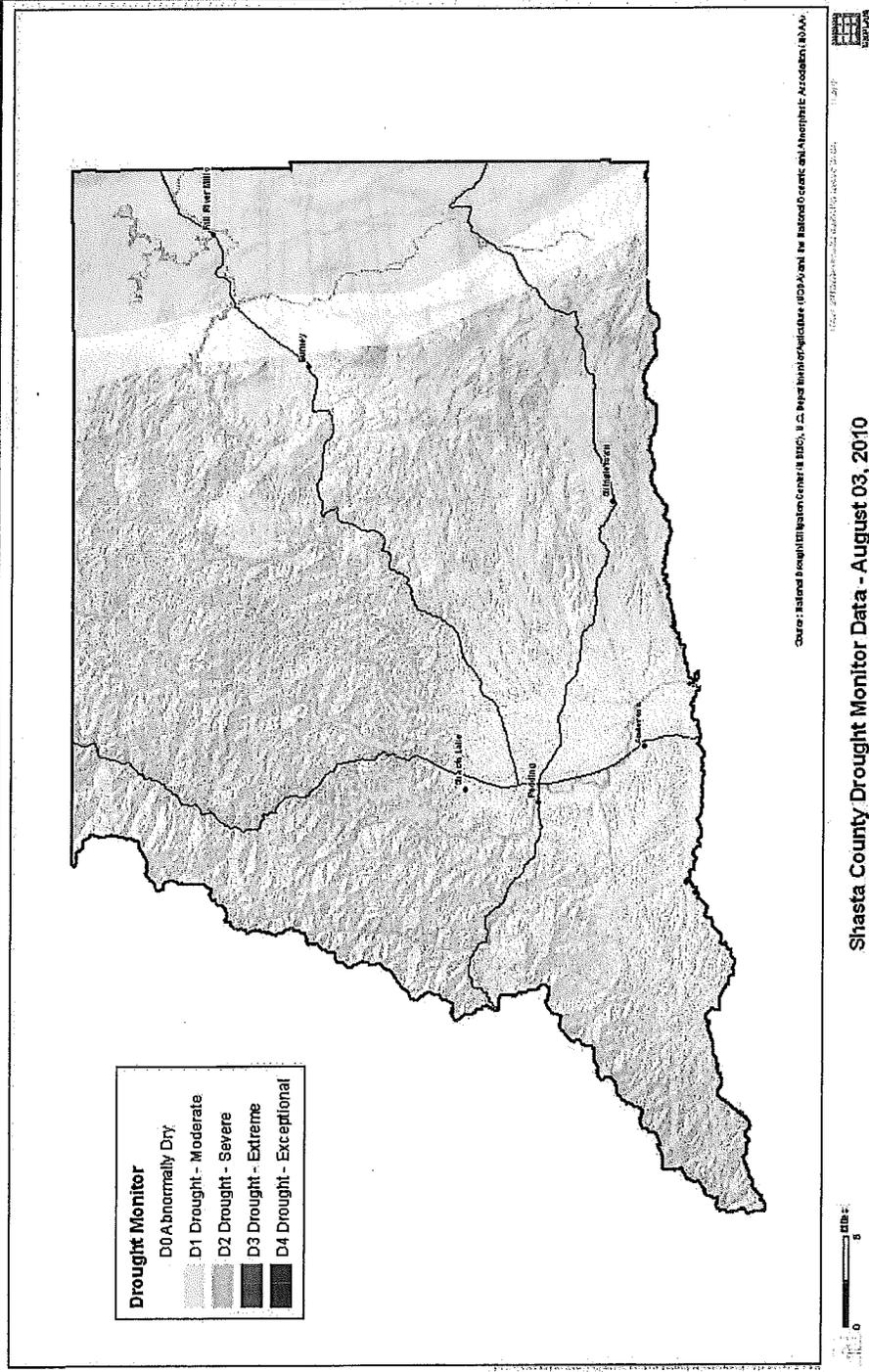
Historic Earthquakes



Ground Shaking Potential



Drought Monitor Data



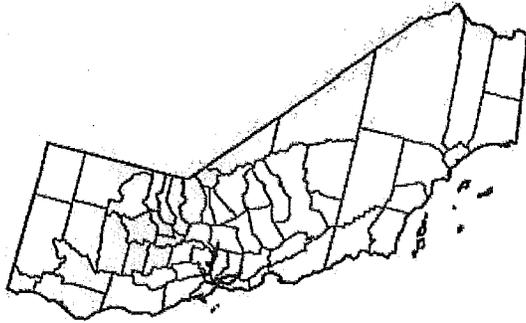
Drought Severity

California

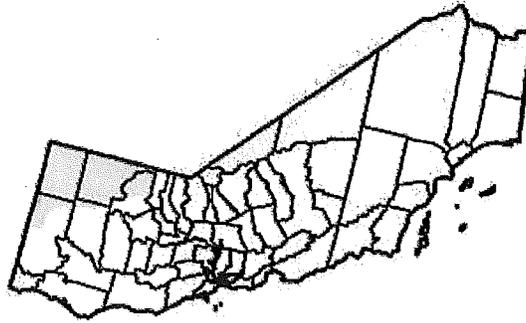
D0 - Abnormally Dry
D1 Drought - Moderate

D2 Drought - Severe
D3 Drought - Extreme

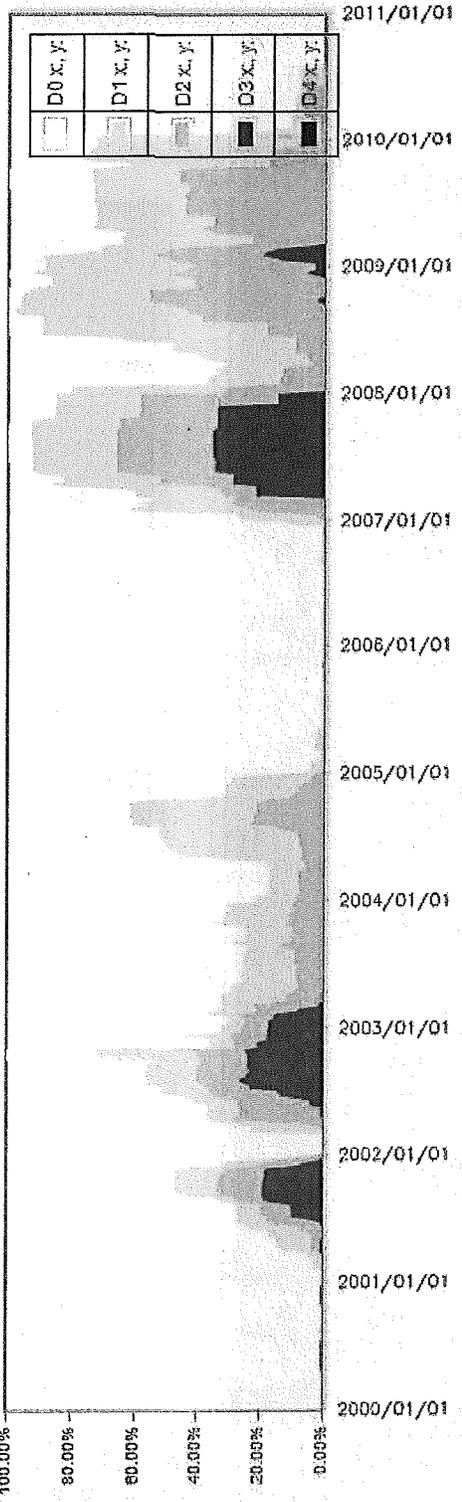
D4 Drought - Exceptional



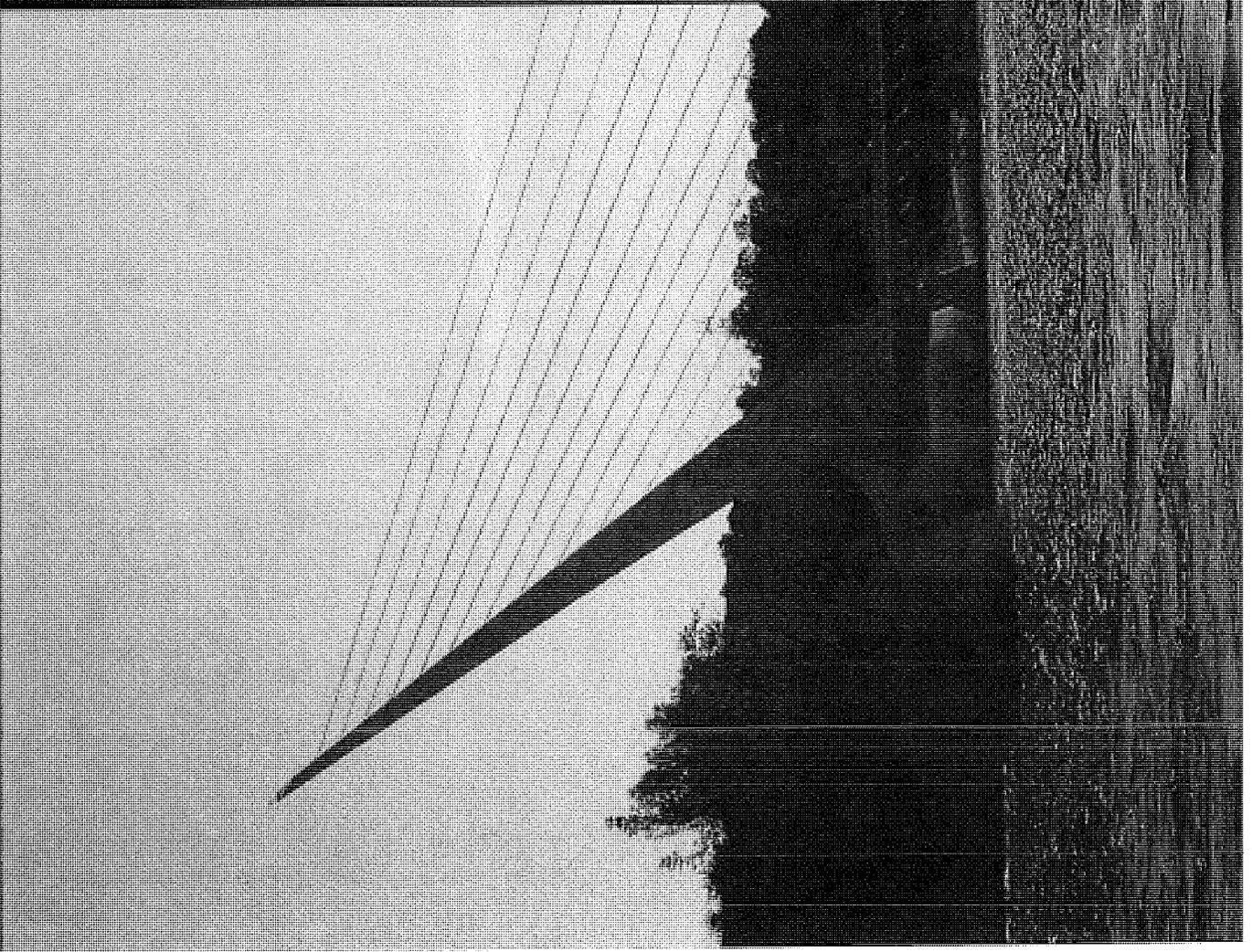
January 4, 2000



August 3, 2010



Questions?



HAZUS-MH: Flood Event Report

Region Name: Shasta County

Flood Scenario: Shasta County Flood 7

Print Date: Wednesday, August 11, 2010

Disclaimer:

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using HAZUS loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Flood. These results can be improved by using enhanced inventory data and flood hazard information.

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General Description of the Region

HAZUS is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of HAZUS is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The flood loss estimates provided in this report were based on a region that included 1 county(ies) from the following state(s):

- California

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 3,785 square miles and contains 6,263 census blocks. There are over 63 thousand households in the region and has a total population of 163,256 people (2000 Census Bureau data). The distribution of population by State and County for the study region is provided in Appendix B.

There are an estimated 69,896 buildings in the region with a total building replacement value (excluding contents) of 12,183 million dollars (2006 dollars). Approximately 92.56% of the buildings (and 77.24% of the building value) are associated with residential housing.

General Building Stock

HAZUS estimates that there are 69,896 buildings in the region which have an aggregate total replacement value of 12,183 million (2006 dollars). Table 1 and Table 2 present the relative distribution of the value with respect to the general occupancies by Study Region and Scenario respectively. Appendix B provides a general distribution of the building value by State and County.

**Table 1
Building Exposure by Occupancy Type for the Study Region**

Occupancy	Exposure (\$1000)	Percent of Total
Residential	9,410,456	77.2%
Commercial	1,907,456	15.7%
Industrial	328,910	2.7%
Agricultural	55,211	0.5%
Religion	191,410	1.6%
Government	164,514	1.4%
Education	125,418	1.0%
Total	12,183,375	100.00%

**Table 2
Building Exposure by Occupancy Type for the Scenario**

Occupancy	Exposure (\$1000)	Percent of Total
Residential	3,078,020	79.2%
Commercial	532,243	13.7%
Industrial	95,620	2.5%
Agricultural	20,993	0.5%
Religion	62,665	1.6%
Government	45,475	1.2%
Education	51,045	1.3%
Total	3,886,061	100.00%

Essential Facility Inventory

For essential facilities, there are 3 hospitals in the region with a total bed capacity of 528 beds. There are 120 schools, 38 fire stations, 9 police stations and no emergency operation centers.

Flood Scenario Parameters

HAZUS used the following set of information to define the flood parameters for the flood loss estimate provided in this report.

Study Region Name:	Shasta County
Scenario Name:	Shasta County Flood 7
Return Period Analyzed:	500
Analysis Options Analyzed:	No What-ifs

General Building Stock Damage

HAZUS estimates that about 5,851 buildings will be at least moderately damaged. This is over 14% of the total number of buildings in the scenario. There are an estimated 1,711 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the HAZUS Flood technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 summarizes the expected damage by general building type.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	6	42.86	3	21.43	0	0.00	0	0.00	5	35.71
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	1	6.25	13	81.25	2	12.50	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	95	1.63	788	13.54	529	9.09	2,703	46.44	1,706	29.31
Total	1		115		793		529		2,703		1,711	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	5	71.43	1	14.29	0	0.00	0	0.00	1	14.29
ManuffHousing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	728	100.00
Masonry	0	0.00	4	30.77	1	7.69	0	0.00	4	30.77	4	30.77
Steel	0	0.00	4	80.00	1	20.00	0	0.00	0	0.00	0	0.00
Wood	0	0.00	97	1.91	788	15.50	529	10.40	2,697	53.04	974	19.15

Essential Facility Damage

Before the flood analyzed in this scenario, the region had hospital beds available for use. On the day of the scenario flood event, the model estimates that 0 hospital beds are available in the region.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	38	4	0	0
Hospitals	3	0	0	0
Police Stations	9	1	0	0
Schools	120	12	0	0

If this report displays all zeros or is blank, two possibilities can explain this.

- (1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.
- (2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.

Debris Generation

HAZUS estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). 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 212,297 tons of debris will be generated. Of the total amount, Finishes comprises 23% of the total, Structure comprises 38% of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 8,492 truckloads (@25 tons/truck) to remove the debris generated by the flood.

Shelter Requirements

HAZUS estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. HAZUS also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 8,137 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 22,205 people (out of a total population of 163,256) will seek temporary shelter in public shelters.

The total economic loss estimated for the flood is 1,333.91 million dollars, which represents 34.33 % of the total replacement value of the scenario buildings.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 1,313.97 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 66.04% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.

Table 6: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Building Loss</u>						
	Building	545.46	100.18	17.26	20.20	683.09
	Content	334.00	190.55	30.37	66.10	621.01
	Inventory	0.00	3.66	5.56	0.66	9.87
	Subtotal	879.46	294.38	53.18	86.95	1,313.97
<u>Business Interruption</u>						
	Income	0.02	1.13	0.00	0.17	1.31
	Relocation	1.09	0.25	0.00	0.06	1.40
	Rental Income	0.31	0.16	0.00	0.00	0.48
	Wage	0.06	1.16	0.00	8.62	9.84
	Subtotal	1.47	2.70	0.00	8.85	13.02
<u>ALL</u>	Total	880.93	297.08	53.19	95.80	1,326.99

Appendix A: County Listing for the Region

- California
- Shasta

Appendix B: Regional Population and Building Value Data

	Building Value (thousands of dollars)			Total
	Population	Residential	Non-Residential	
California				
Shasta	163,256	9,410,456	2,772,919	12,183,375
Total	163,256	9,410,456	2,772,919	12,183,375
Total Study Region	163,256	9,410,456	2,772,919	12,183,375

INSTRUCTIONS FOR USING THE PLAN REVIEW CROSSWALK FOR REVIEW OF LOCAL MITIGATION PLANS

Attached is a Plan Review Crosswalk based on the *Local Multi-Hazard Mitigation Planning Guidance*, published by FEMA in July, 2008. This Plan Review Crosswalk is consistent with the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended by Section 322 of the *Disaster Mitigation Act of 2000* (P.L. 106-390), the *National Flood Insurance Act of 1968*, as amended by the *National Flood Insurance Reform Act of 2004* (P.L. 108-264) and *44 Code of Federal Regulations (CFR) Part 201 – Mitigation Planning*, inclusive of all amendments through October 31, 2007.

SCORING SYSTEM

- N – Needs Improvement:** The plan does not meet the minimum for the requirement. Reviewer's comments must be provided.
- S – Satisfactory:** The plan meets the minimum for the requirement. Reviewer's comments are encouraged, but not required.

Each requirement includes separate elements. All elements of a requirement must be rated "Satisfactory" in order for the requirement to be fulfilled and receive a summary score of "Satisfactory." A "Needs Improvement" score on elements shaded in gray (recommended but not required) will not preclude the plan from passing.

When reviewing single jurisdiction plans, reviewers may want to put an N/A in the boxes for multi-jurisdictional plan requirements. When reviewing multi-jurisdictional plans, however, all elements apply. States that have additional requirements can add them in the appropriate sections of the *Local Multi-Hazard Mitigation Planning Guidance* or create a new section and modify this Plan Review Crosswalk to record the score for those requirements. Optional matrices for assisting in the review of sections on profiling hazards, assessing vulnerability, and identifying and analyzing mitigation actions are found at the end of the Plan Review Crosswalk.

The example below illustrates how to fill in the Plan Review Crosswalk:

		Location in the Plan (section or annex and page #)		Reviewer's Comments	SCORE	
					N	S
<p>Assessing Vulnerability: Overview Requirement §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.</p>						
A. Does the new or updated plan include an overall summary description of the jurisdiction's vulnerability to each hazard?		Section II, pp. 4-10		The plan describes the types of assets that are located within geographically defined hazard areas as well as those that would be affected by winter storms.		S
B. Does the new or updated plan address the impact of each hazard on the jurisdiction?		Section II, pp. 10-20		<p>The plan does not address the impact of two of the five hazards addressed in the plan.</p> <p>Required Revisions:</p> <ul style="list-style-type: none"> • Include a description of the impact of floods and earthquakes on the assets. <p>Recommended Revisions:</p> <p>This information can be presented in terms of dollar value or percentages of damage.</p>	N	
SUMMARY SCORE					N	

LOCAL MITIGATION PLAN REVIEW SUMMARY

The plan cannot be approved if the plan has not been formally adopted. Each requirement includes separate elements. All elements of the requirement must be rated "Satisfactory" in order for the requirement to be fulfilled and receive a score of "Satisfactory." Elements of each requirement are listed on the following pages of the Plan Review Crosswalk. A "Needs Improvement" score on elements shaded in gray (recommended but not required) will not preclude the plan from passing. Reviewer's comments must be provided for requirements receiving a "Needs Improvement" score.

Prerequisite(s) (Check Applicable Box)

	NOT MET	MET
1. Adoption by the Local Governing Body: §201.6(c)(5) OR		
2. Multi-Jurisdictional Plan Adoption: §201.6(c)(5) AND		
3. Multi-Jurisdictional Planning Participation: §201.6(a)(3)		

Planning Process

	N	S
4. Documentation of the Planning Process: §201.6(b) and §201.6(c)(1)		

Risk Assessment

	N	S
5. Identifying Hazards: §201.6(c)(2)(i)		
6. Profiling Hazards: §201.6(c)(2)(i)		
7. Assessing Vulnerability: Overview: §201.6(c)(2)(ii)		
8. Assessing Vulnerability: Addressing Repetitive Loss Properties: §201.6(c)(2)(ii)		
9. Assessing Vulnerability: Identifying Structures, Infrastructure, and Critical Facilities: §201.6(c)(2)(ii)(B)		

10. Assessing Vulnerability: Estimating Potential Losses: §201.6(c)(2)(i)(B)
 11. Assessing Vulnerability: Analyzing Development Trends: §201.6(c)(2)(i)(C)

	N	S
12. Multi-Jurisdictional Risk Assessment: §201.6(c)(2)(iii)		

*States that have additional requirements can add them in the appropriate sections of the Local Multi-Hazard Mitigation Planning Guidance or create a new section and modify this Plan Review Crosswalk to record the score for those requirements.

SCORING SYSTEM

Please check one of the following for each requirement.

N – Needs Improvement: The plan does not meet the minimum for the requirement. Reviewer's comments must be provided.

S – Satisfactory: The plan meets the minimum for the requirement. Reviewer's comments are encouraged, but not required.

Mitigation Strategy

	N	S
13. Local Hazard Mitigation Goals: §201.6(c)(3)(i)		
14. Identification and Analysis of Mitigation Actions: §201.6(c)(3)(ii)		
15. Identification and Analysis of Mitigation Actions: NFIP Compliance: §201.6(c)(3)(ii)		
16. Implementation of Mitigation Actions: §201.6(c)(3)(iii)		
17. Multi-Jurisdictional Mitigation Actions: §201.6(c)(3)(iv)		

Plan Maintenance Process

	N	S
18. Monitoring, Evaluating, and Updating the Plan: §201.6(c)(4)(i)		
19. Incorporation into Existing Planning Mechanisms: §201.6(c)(4)(ii)		
20. Continued Public Involvement: §201.6(c)(4)(iii)		

Additional State Requirements*

	N	S
Insert State Requirement		
Insert State Requirement		
Insert State Requirement		

LOCAL MITIGATION PLAN APPROVAL STATUS

PLAN NOT APPROVED

See Reviewer's Comments

PLAN APPROVED

LOCAL MITIGATION PLAN REVIEW CROSSWALK

Local Mitigation Plan Review and Approval Status

Jurisdiction:		Title of Plan:	Date of Plan:
Local Point of Contact:		Address:	
Title:		E-Mail:	
Agency:			
Phone Number:			
State Reviewer:		Title:	Date:

The following information must be completed by the State Reviewer prior to submission to the regional office:

Review Priority: Routine or Immediate (If immediate, indicate reason)
 Pending Project Approval
 Pending Project Close-out
 Pending Declaration
 Other _____

Funding Source: HMGP (DR # _____) PDM-C (EMK # _____)
 FMA (EMK # _____) CRS
 PDM (EMK # _____) Other _____

When plans are submitted simultaneously for immediate review, write numerical prioritization (e.g. 1, 2, 3, etc.) on each plan submitted

LOCAL MITIGATION PLAN REVIEW CROSSWALK

PREREQUISITE(S)

1. Adoption by the Local Governing Body

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

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			NOT MET	MET
A. Has the local governing body adopted new or updated plan?				
B. Is supporting documentation, such as a resolution, included?				
SUMMARY SCORE				

2. Multi-Jurisdictional Plan Adoption

Requirement §201.6(c)(5): For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			NOT MET	MET
A. Does the new or updated plan indicate the specific jurisdictions represented in the plan?				
B. For each jurisdiction, has the local governing body adopted the new or updated plan?				
C. Is supporting documentation, such as a resolution, included for each participating jurisdiction?				
SUMMARY SCORE				

3. Multi-Jurisdictional Planning Participation

Requirement §201.6(a)(3): Multi-jurisdictional plans (e.g., watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process ... Statewide plans will not be accepted as multi-jurisdictional plans.

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			NOT MET	MET
A. Does the new or updated plan describe how each jurisdiction participated in the plan's development?				
B. Does the updated plan identify all participating jurisdictions, including new, continuing, and the jurisdictions that no longer participate in the plan?				
SUMMARY SCORE				

LOCAL MITIGATION PLAN REVIEW CROSSWALK

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

4. Documentation of the Planning Process

- Requirement §201.6(b):** *In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:*
- (1) *An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;*
 - (2) *An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and*
 - (3) *Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.*

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

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the plan provide a narrative description of the process followed to prepare the new or updated plan?				
B. Does the new or updated plan indicate who was involved in the current planning process? (For example, who led the development at the staff level and were there any external contributors such as contractors? Who participated on the plan committee, provided information, reviewed drafts, etc.?)				
C. Does the new or updated plan indicate how the public was involved? (Was the public provided an opportunity to comment on the plan during the drafting stage and prior to the plan approval?)				
D. Does the new or updated plan discuss the opportunity for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the planning process?				
E. Does the planning process describe the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information?				
F. Does the updated plan document how the planning team reviewed and analyzed each section of the plan and whether each section was revised as part of the update process?				
SUMMARY SCORE				

LOCAL MITIGATION PLAN REVIEW CROSSWALK

RISK ASSESSMENT: §201.6(c)(2): *The plan shall include a risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.*

5. Identifying Hazards

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

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan include a description of the types of all natural hazards that affect the jurisdiction?				
SUMMARY SCORE				

6. Profiling Hazards

Requirement §201.6(c)(2)(i): *[The risk assessment shall include a] description of the ... 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.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the risk assessment identify the location (i.e., geographic area affected) of each natural hazard addressed in the new or updated plan?				
B. Does the risk assessment identify the extent (i.e., magnitude or severity) of each hazard addressed in the new or updated plan?				
C. Does the plan provide information on previous occurrences of each hazard addressed in the new or updated plan?				
D. Does the plan include the probability of future events (i.e., chance of occurrence) for each hazard addressed in the new or updated plan?				
SUMMARY SCORE				

LOCAL FLOOD MITIGATION PLAN REVIEW CROSSWALK

7. Assessing Vulnerability: Overview

Requirement §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.

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan include an overall summary description of the jurisdiction's vulnerability to each hazard?				
B. Does the new or updated plan address the impact of each hazard on the jurisdiction?				
SUMMARY SCORE				

8. Assessing Vulnerability: Addressing Repetitive Loss Properties

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

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan describe vulnerability in terms of the types and numbers of repetitive loss properties located in the identified hazard areas?				
SUMMARY SCORE				

9. Assessing Vulnerability: Identifying Structures

Requirement §201.6(c)(2)(ii)(A): The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard area ...

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan describe vulnerability in terms of the types and numbers of existing buildings, infrastructure, and critical facilities located in the identified hazard areas?				
B. Does the new or updated plan describe vulnerability in terms of the types and numbers of future buildings, infrastructure, and critical facilities located in the identified hazard areas?		Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.		
SUMMARY SCORE				

LOCAL MITIGATION PLAN REVIEW CROSSWALK

10. Assessing Vulnerability: Estimating Potential Losses

Requirement §201.6(c)(2)(ii)(B): [The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan estimate potential dollar losses to vulnerable structures?		Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.		
B. Does the new or updated plan describe the methodology used to prepare the estimate?		Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.		
SUMMARY SCORE				

11. Assessing Vulnerability: Analyzing Development Trends

Requirement §201.6(c)(2)(ii)(C): [The plan should describe vulnerability in terms of] 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.

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan describe land uses and development trends?		Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.		
SUMMARY SCORE				

12. Multi-Jurisdictional Risk Assessment

Requirement §201.6(c)(2)(iii): For multi-jurisdictional plans, the risk assessment must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan include a risk assessment for each participating jurisdiction as needed to reflect unique or varied risks?				
SUMMARY SCORE				

LOCAL MITIGATION PLAN REVIEW CROSSWALK

MITIGATION STRATEGY: §201.6(c)(3): *The plan shall include a mitigation strategy that 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.*

13. Local Hazard Mitigation Goals

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

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A: Does the new or updated plan include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards?				
SUMMARY SCORE				

14. Identification and Analysis of Mitigation Actions

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

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan identify and analyze a comprehensive range of specific mitigation actions and projects for each hazard?				
B. Do the identified actions and projects address reducing the effects of hazards on new buildings and infrastructure?				
C. Do the identified actions and projects address reducing the effects of hazards on existing buildings and infrastructure?				
SUMMARY SCORE				

LOCAL MITIGATION PLAN REVIEW CROSSWALK

15. Identification and Analysis of Mitigation Actions: National Flood Insurance Program (NFIP) Compliance

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

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan describe the jurisdiction (s) participation in the NFIP?				
B. Does the mitigation strategy identify, analyze and prioritize actions related to continued compliance with the NFIP?				
SUMMARY SCORE				

16. Implementation of Mitigation Actions

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

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated mitigation strategy include how the actions are prioritized? (For example, is there a discussion of the process and criteria used?)				
B. Does the new or updated mitigation strategy address how the actions will be implemented and administered, including the responsible department, existing and potential resources and the timeframe to complete each action?				
C. Does the new or updated prioritization process include an emphasis on the use of a cost-benefit review to maximize benefits?				
D. Does the updated plan identify the completed, deleted or deferred mitigation actions as a benchmark for progress, and if activities are unchanged (i.e., deferred), does the updated plan describe why no changes occurred?				
SUMMARY SCORE				

LOCAL MITIGATION PLAN REVIEW CROSSWALK

17. Multi-Jurisdictional Mitigation Actions

Requirement §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.

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan include identifiable action items for each jurisdiction requesting FEMA approval of the plan?				
B. Does the updated plan identify the completed, deleted or deferred mitigation actions as a benchmark for progress, and if activities are unchanged (i.e., deferred), does the updated plan describe why no changes occurred?				
SUMMARY SCORE				

PLAN MAINTENANCE PROCESS

18. Monitoring, Evaluating, and Updating the Plan

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

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan describe the method and schedule for monitoring the plan, including the responsible department?				
B. Does the new or updated plan describe the method and schedule for evaluating the plan, including how, when and by whom (i.e. the responsible department)?				
C. Does the new or updated plan describe the method and schedule for updating the plan within the five-year cycle?				
SUMMARY SCORE				

LOCAL MITIGATION PLAN REVIEW CROSSWALK

19. Incorporation into Existing Planning Mechanisms

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

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan identify other local planning mechanisms available for incorporating the mitigation requirements of the mitigation plan?				
B. Does the new or updated plan include a process by which the local government will incorporate the mitigation strategy and other information contained in the plan (e.g., risk assessment) into other planning mechanisms, when appropriate?				
C. Does the updated plan explain how the local government incorporated the mitigation strategy and other information contained in the plan (e.g., risk assessment) into other planning mechanisms, when appropriate?				
SUMMARY SCORE				

Continued Public Involvement

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.

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan explain how continued public participation will be obtained? (For example, will there be public notices, an on-going mitigation plan committee, or annual review meetings with stakeholders?)				
SUMMARY SCORE				

LOCAL MITIGATION PLAN REVIEW CROSSWALK

MATRIX A: PROFILING HAZARDS

This matrix can assist FEMA and the State in scoring each hazard. Local jurisdictions may find the matrix useful to ensure that their plan addresses each natural hazard that can affect the jurisdiction. **Completing the matrix is not required.**

Note: First, check which hazards are identified in requirement §201.6(c)(2)(i). Then, place a checkmark in either the N or S box for each applicable hazard. An "N" for any element of any identified hazard will result in a "Needs Improvement" score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk.

To check boxes, double click on the box and change the default value to "checked."

Hazard Type	Hazards Identified Per Requirement §201.6(c)(2)(i)		A. Location		B. Extent		C. Previous Occurrences		D. Probability of Future Events	
	Yes		N	S	N	S	N	S	N	S
Avalanche	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						
Coastal Erosion	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						
Coastal Storm	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						
Dam Failure	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						
Drought	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						
Earthquake	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						
Expansive Soils	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						
Levee Failure	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						
Flood	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						
Hailstorm	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						
Hurricane	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						
Land Subsidence	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						
Landslide	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						
Severe Winter Storm	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						
Tornado	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						
Tsunami	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						
Volcano	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						
Wildfire	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						
Windstorm	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						
Other	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						
Other	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						
Other	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						

Legend:

- §201.6(c)(2)(i) Profiling Hazards
- A. Does the risk assessment identify the location (i.e., geographic area affected) of each hazard addressed in the new or updated plan?
- B. Does the risk assessment identify the extent (i.e., magnitude or severity) of each hazard addressed in the new or updated plan?
- C. Does the plan provide information on previous occurrences of each natural hazard addressed in the new or updated plan?
- D. Does the plan include the probability of future events (i.e., chance of occurrence) for each hazard addressed in the plan?

LOCAL MITIGATION PLAN REVIEW CROSSWALK

MATRIX B: ASSESSING VULNERABILITY

This matrix can assist FEMA and the State in scoring each hazard. Local jurisdictions may find the matrix useful to ensure that the new or updated plan addresses each requirement. **Completing the matrix is not required.**

Note: First, check which hazards are identified in requirement §201.6(c)(2)(i). Then, place a checkmark in either the N or S box for each applicable hazard. An "N" for any element of any identified hazard will result in a "Needs Improvement" score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk. Note: Receiving an N in the shaded columns will not preclude the plan from passing.

To check boxes, double click on the box and change the default value to "checked."

Hazard Type	Hazards Identified Per Requirement §201.6(c)(2)(i)		A. Overall Summary Description of Vulnerability		B. Hazard Impact		A. Types and Number of Existing Structures in Hazard Area (Estimate)		B. Types and Number of Future Structures in Hazard Area (Estimate)		§201.6(c)(2)(iii) Assessing Vulnerability: Estimating Potential Losses			
	Yes		N	S	N	S	N	S	N	S	N	S	N	S
Avalanche	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coastal Erosion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coastal Storm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dam Failure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drought	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Earthquake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expansive Soils	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Levee Failure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flood	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hailstorm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hurricane	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Land Subsidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Landslide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Severe Winter Storm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tornado	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tsunami	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Volcano	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wildfire	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Windstorm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Legend:

- §201.6(c)(2)(ii) Assessing Vulnerability: Overview
 - A. Does the new or updated plan include an overall summary description of the jurisdiction's vulnerability to each hazard?
 - B. Does the new or updated plan address the impact of each hazard on the jurisdiction?
- §201.6(c)(2)(iii)(A) Assessing Vulnerability: Identifying Structures
 - A. Does the new or updated plan describe vulnerability in terms of the types and numbers of existing buildings, infrastructure, and critical facilities located in the identified hazard areas?
- §201.6(c)(2)(iii)(B) Assessing Vulnerability: Estimating Potential Losses
 - A. Does the new or updated plan estimate potential dollar losses to vulnerable structures?
 - B. Does the new or updated plan describe the methodology used to prepare the estimate?

LOCAL MITIGATION PLAN REVIEW CROSSWALK

MATRIX C: IDENTIFICATION AND ANALYSIS OF MITIGATION ACTIONS

This matrix can assist FEMA and the State in scoring each hazard. Local jurisdictions may find the matrix useful to ensure consideration of a range of actions for each hazard. **Completing the matrix is not required.**

Note: First, check which hazards are identified in requirement §201.6(c)(2)(i). Then, place a checkmark in either the N or S box for each applicable hazard. An "N" for any identified hazard will result in a "Needs Improvement" score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk.

To check boxes, double click on the box and change the default value to "checked."

Hazard Type	Hazards Identified Per Requirement §201.6(c)(2)(i)		A. Comprehensive Range of Actions and Projects	
	Yes		N	S
Avalanche	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Coastal Erosion	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Coastal Storm	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Dam Failure	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Drought	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Earthquake	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Expansive Soils	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Levee Failure	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Flood	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Hailstorm	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Hurricane	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Land Subsidence	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Landslide	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Severe Winter Storm	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Tornado	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Tsunami	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Volcano	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Wildfire	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Windstorm	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Other _____	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Other _____	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Other _____	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

Legend:
 §201.6(c)(3)(ii) Identification and Analysis of Mitigation Actions
 A. Does the new or updated plan identify and analyze a comprehensive range of specific mitigation actions and projects for each hazard?

Minutes from the Meeting with the City of Anderson
Monday, November 15, 2010

In attendance: **Jeff Kiser, Public Works Director, City of Anderson**
 Mary Mitchell, WSRCD, District Manager
 Dave DeMar, WSRCD, GIS Specialist, Project Manager
 Rachel Aschbacher, WSRCD, Project Coordinator

The meeting began at 10:10 AM in the plan meeting room at the City of Anderson

The agenda was presented and reviewed.

Planning Overview: Dave reviewed the powerpoint presentation on Hazard Mitigation Planning, focusing on the several new pages focused on the Anderson area.

Identifying priority hazards for Anderson: There is no doubt that flooding is the #1 hazard. The groundwater level in the Anderson area is fairly high. The two main contributors to flooding problems are the Tormey Drain, which collects most of the surface water and directs it into the Sacramento River and ACID leaking ditches. Anderson Creek picks up a lot of the leaking water from ACID and it drains into the Sacramento River. When BOR raises the level of the river by increases the releases from Shasta Dam, it backs up the drainage flow into the river causing flooding. Tormey Drain is getting overgrown with vegetation, which is a big problem. Spraying overgrowth increases dead plant material in the drain, which catches sediment and eventually results in lost capacity. There is never a good time to clean out the ditch since in summer months the drain is never dry due to ACID leaking ditches during irrigation season and the occasional ditch blowout.

Jeff explained that Anderson is unique in that the City is cut in half by Interstate 5 and the north-south railroad, which moves a lot of freight through the city daily. Accidents and derailments could create significant hazardous materials issues and possibly mass casualty incidents. Jeff noted that the police department is located on the east side of the railroad and the fire district on the west side. Any blockage of east-west traffic can create a significant problem.

Wildfire is not much of a direct issue for the City, but the indirect issues are. For instance, when CAL FIRE sets up a wildfire command center at the District Fairgrounds, their water tenders fill up on City water. There is a huge draw on resources.

One area where fuels reduction would be very beneficial is Anderson River Park.

Although the top five hazards identified for Shasta County are the same top five for Anderson, the order is different for the City. Preferred order for Anderson is:

1. Flooding
2. Hazardous Materials
3. Extreme Weather
4. Earthquake
5. Wildfire

Identify plans that may lend information and data to the HMP: Jeff will look into publications and plans that may be helpful in development of the HMP.

Identifying projects:

- * Ideally a communication system could be set up with BOR that when releases are increased at the dam, perhaps a reverse 911 system could notify landowners and the City.
- * How to fund the extensive permitting needed to take care of the vegetation maintenance in Tormey Drain.
- * How to modernize the fairgrounds so CAL FIRE doesn't have to bring in so much communications and equipment to set up the incident command center.
- * Fuels reduction and maintenance in Anderson River Park.
- * Culvert replacement to prevent flooding in Anderson River Park.

Review the public meeting focus: The plan for the upcoming meeting in the City of Anderson's community room on November 30 at 5:30 PM was discussed. Jeff will brief City Council tomorrow night on the upcoming meeting.

The meeting ended at 10:45 AM.

**Minutes from the Meeting with Shasta County Public Health
Tuesday, November 23, 2010**

In attendance: **Dave Moran, Program Manager, Shasta County Public Health**
 Nicole Bonkrude, Shasta County Public Health
 Dave DeMar, WSRCD, GIS Specialist, Project Manager
 Rachel Aschbacher, WSRCD, Project Coordinator

The meeting began at 9:30 AM in the conference room at the Shasta County Public Health office on Breslauer Way in Redding California.

The agenda was presented and reviewed.

Planning Overview: Dave reviewed the powerpoint presentation on Hazard Mitigation Planning.

Identifying biological hazards for Shasta County: A review of the spreadsheet sent out to steering committee members requesting county information was reviewed with comments from Shasta County Public Health. It was felt that the questions on the spreadsheet were a great help to identifying information needed for the HMP. Dave Moran and Nicole ... were able to give some information relating to Pandemics and MCI and will follow up with more information after identifying specific information requested by Dave DeMar.

Pandemic concerns are centered on Category A Select Agents in the area.

Identify plans that may lend information and data to the HMP: A list of Grant funded projects being performed by the Shasta County Public Health office will be sent to the WSRCD for inclusion in the SCHMP.

Review the public meeting focus: Briefly discussed the upcoming public meetings in the Cities of Anderson and Redding and what general information the Shasta County Public Health would like to have presented in relation to the SCHMP.

The meeting ended at 11:00 AM.

Shasta County Multi-jurisdiction Hazard Mitigation Plan
Public Meeting at the Anderson Community Center
Tuesday, November 30, 2010
5:30 PM

In attendance:

ENPLAN: Clay Guzi, Todd Burciaga
Shasta County: Jan Bulinski
WSRCD: Mary Mitchell, Dave DeMar

Guests:

Jeff Kiser
Juanita Barnett
Marty Mofield
Jeff Smith
Ron Barnett
Marcia Burchid

The meeting opened with a welcome and 30-minute PowerPoint presentation by Dave DeMar about hazard mitigation planning and a review of maps of Shasta County land ownership, Shasta County wildfire history, Shasta County wildfire hazard rating, fuels reduction plans, urban flood zones in south Shasta County, City of Anderson, Anderson flood zone.

The presentation was followed by a question and answer session on the following:

Q: Can the presentation be viewed on line?

A: Yes, we will put it on the WSRCD web site as soon as possible.

Q: When was the largest earthquake in this area?

A: The last sizeable earthquake was in 1998.

Q: Does the Anderson Fire Protection District have full time staff?

A: Yes, the chief, marshall and paid office staff. The staff is larger during summer months.

Q: Where can I see the location of my home in the Anderson floodplain?

A: We will show you the map, which is on display here tonight. Or we can put the plan online.

Q: Is there a similar flood map for dam failure?

A: Yes, but the public doesn't have access to that information. A total breach of Shasta or Keswick dams is unrealistic. What is of greater risk is what would cause unscheduled release of water from the dams.

Q: What about volcanic eruption and the area of devastation?

A: If it was Mt. Lassen, due to the typical wind, most of the ash would go east. Would expect there would be air quality issues, like the dense smoke issues with the 2008 wildfires.

Q: What about ash levels and how do we protect ourselves from it?

A: It depends on prevailing winds and we expect most of it would blow east. And for that type of hazard, there would be plenty of early warning like there was with Mt. St. Helens.

Q: As far as critical facilities are concerned, will those be addressed?

A: Yes, as well as roads, bridges, power lines, schools, fire protection facilities and how all of this could be impacted and how much it costs to replace the facilities. Computer models provide a good idea of this cost.

Q: Why is this plan being done?

A: It is a proactive approach to identifying risks and potential mitigation projects that can lessen the impact of a hazard occurring. It is a living document that will be updated every five years.

Q: Will the plan specify what actions to take in a disaster?

A: No, this is not an operational plan, but will include a list of what operational plans are out there.

Q: I live in the county but my kids go to school in Anderson. Will there be more information about the county?

A: Yes, there will be a public meeting for the county on December 14th at the Community Room at Redding City Hall.

Q: What radio station would be the best to tune into during a disaster?

A: That is in the operational plans and Shasta County Public Health has a great framework for emergency services. Here is a flyer from Public Health and the Sheriff's Department on disaster preparedness, called Ready Shasta. There are several websites listed that have additional informational.

Q: Has WSRCDC been contracted by Anderson to do this plan?

A: The City of Anderson is tagging onto the Shasta County agreement with Enplan Consulting and the RCD is assisting in writing the plan.

The meeting ended at 6:30 PM.

City of Anderson – Hazard Mitigation Plan
 November 30, 2010 – Community Meeting



SIGN IN SHEET

NAME	ADDRESS	PHONE NUMBER If not on file	E-MAIL ADDRESS
Jeff Kiser			
Clay Guz.			cguzi@enplan.com
Mary Motter			wsrca
David DeMar			wsrca
Julia Pulinski			jpulinski@co.shasta.ca.us
Quinn E. Smith	2946 Sandstone Dr. And	365-7181	jbarnett@ci.anderson.ca.us
Todd Burcage			tburcage@enplan.com
MARTY MOFFELD			mmoffield@ci.anderson.ca.us
JEFF SMITH	4730 PHEASANT		jeff.lindsmith@eskybbal.net
RON BARNETT	2546 Sandstone Dr	365-7181	Rbarnett@charter.net
MARCA BURCHIEL			marcia.burchiel@calemc.ca.gov

Plan 9

You can do this!

Collect these nine essential items to help you shelter-in-place in the event of an emergency.

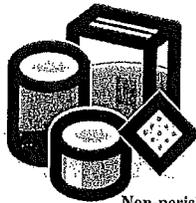
Start here

1 **Water**



One gallon per person, per day for three days.

2 **Food**



Non-perishables, such as canned or packaged food.

3 **Clothes**



One change of clothes and footwear per person.

4 **Medications**



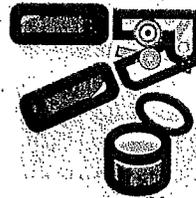
Three days' worth of prescription medications.

5 **Flashlight**



A bright flashlight and extra batteries.

6 **Can Opener**



Manual can opener in case there's no electric power.

7 **Radio**



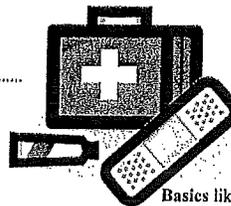
Battery-powered radio and extra batteries.

8 **Hygiene Items**



Basics like soap, toilet paper and a toothbrush.

9 **First Aid**



Basics like antiseptic, bandages, and non-prescription medicines.

Done!

For more information about emergency preparedness, contact some of the following organizations or call 1-800-971-1999 or 530-225-5591.

- Shasta County, CA co.shasta.ca.us
- Shasta County Sheriff sheriff.co.shasta.ca.us
- Shasta County Public Health shastapublichealth.net
- Be Prepared California bepreparedcalifornia.ca.gov
- American Red Cross redcross.org
- Centers for Disease Control cdc.gov
- Disability Preparedness disabilitypreparedness.gov
- Federal Emergency Management Agency fema.gov
- U.S. Department of Homeland Security ready.gov
- Humane Society of the United States hsus.org/disaster

(For help with pet preparation.)



**Shasta County Multi-Jurisdiction Hazard Mitigation Plan
Public Meeting at the City of Redding Community Room
Tuesday, December 14, 2010
5:30 PM**

In attendance:

ENPLAN: Clay Guzi

Shasta County: Jan Bulinski

WSRCD: Mary Mitchell, Dave DeMar

Guests:

Jeff Smith

Rick Simon

Nicole Bonkrude

Bruce Ross

The meeting opened with a welcome and 30-minute powerpoint presentation by Dave DeMar about hazard mitigation planning and a review of maps of Shasta County land ownership, Shasta County wildfire history, Shasta County wildfire hazard rating, fuels reduction plans, urban flood zones in south Shasta County.

The presentation was followed by a question and answer session on the following:

Q: Are there any levies in Shasta County?

A: Yes, several including Olney Creek.

Q: In the Extreme Weather hazard category, is freezing included?

A: Yes. There has been one declared hazard for a cold freeze in 2002.

Q: Will the report have a 500 year floodplain map update?

A: Yes. That data will be available in March 2011.

Q: What happens next in this process:

A: A draft will be sent to the Steering Committee for review. The Committee may change the ranking a bit. A final draft will be compiled that includes any issues brought up at the community meetings. The consultants will run the final draft through the CAL EMA Crosswalk, which is a checklist that identifies all of the key parts of the project to be sure it passes the test. Then it will go to FEMA and be approved by the Shasta County Board of Supervisors and Anderson City Council.

Q: What is the FEMA turnaround time?

A: We have been told six to eight weeks.

Q: What is the plan horizon? How long is it effective?

A: The plan has a 5-year life. Once this is fully adopted, it will be possible to apply for a grant to complete the 5-year update. It will be important in the update to show what progress has been made to implement any of the mitigation measures identified in the initial plan. Staff members in both Shasta County and City of Anderson are locating projects to add to this initial plan.

Q: In ranking hazards, how do you assess risk?

A: Some risks are quantifiable, such as frequency and the amount of damage expected. Others are a bit more difficult to quantify, such as flooding. We know flooding will occur, but the frequency and extent are more challenging so it becomes an expectation made by the Steering Committee and staff.

Q: Does the ranking of the hazards have any significance?

A: It is more of a planning tool on where to use resources for mitigation.

Q: What legal standing will the plan have? Is it binding?

A: No, it is not binding, but with both the County and City of Anderson adopting it, the projects for the top five hazards have a higher ranking in importance than the others. If we show progress on implementing priority projects it could be helpful on flood insurance rates.

Q: Could this plan be used as a baseline for a County Safety Element for the General Plan?

A: Very possible. It could be a foundation for policy measures that could become legally binding in a Safety Element.

The meeting ended at 6:30 PM.

HMP Steering Committee Meeting
Tuesday, January 11, 2011
City of Redding – Caldwell Room
1:00 to 3:00 PM

In attendance: Lance Brown, DOT; Kurt Schneider, DOT; Rachel Aschbacher, WSRCD; David DeMar, WSRCD; Scott White, DOT; Dave Maron, Shasta County Public Health; Jan Bulinski, Shasta County Public Works; Sandy Long, Redding Rancheria; Ron Kingsley, USBR; Mark Mezzano, CHP; Jerry Flavin, CHP; Clay Guzi, ENPLAN; Mary Mitchell, WSRCD; John Kaylor, City of Redding; Kevin Kreitman, City of Redding; Fred Tulley, California Fire; Dave Dean, Shasta County; Lily Toy, City of Redding; David Durette, City of Anderson; Jim Whittle, Shasta County; Troy Bartolomei, Shasta County.

Clay Guzi opened the meeting and explained the work being done by ENPLAN and Western Shasta Resource Conservation District. Self-introductions followed.

David DeMar summarized what had been accomplished to date and reviewed each section of the draft HMP and requested comments. No comments were made on Sections 1, 2, and 3. In Section 4, it was noted that anywhere it mentions City/Fire Department should also include the County. In Section 5, page 9, Shasta County OES is not part of the Fire Department, but rather the Sheriff's Office and in Shasta County OES it mentions the Tri-County Coordinator, which may not exist at this time. In Section 5, it was noted that there were no action items listed for the Flood Objective regarding adopting zoning regulations (page 20).

Each hazard was discussed and the following action items or suggestions were made:

Flood

- Create electronic maps showing flood prone tributaries of the Sacramento River. Some gage data available to identify these flood events (e.g CDEC website - <http://cdec.water.ca.gov/>). Identifying flood areas and gages would be helpful to relay flooding potential to agencies.
- Work with the California Data Exchange Center to get the ability to send out county-wide alerts on tributary flooding.
- Cal EMA 2011 is planning the Golden Guardian Exercise statewide.
- Create a map of lifeline escape routes during floods.
- Identify repetitive flooding areas.
- Regional Transportation Planning Authority is working on a county-wide GIS system for the web site, which is 3-4 years until completion.

Wildfire

- Annual training for fire departments and CAL FIRE summer staff, including defensible space inspections.
- Install wells in areas with inadequate water supply for firefighting.
- More public education programs.

Extreme Weather

- Caltrans noted that they meet with their Oregon counterparts prior to winter to plan for highway incidents.
- Caltrans has been approved to install 100-125 KVA generators at their nine maintenance facilities so the facilities can be used as critical facilities when the power is out.
- Most critical infrastructure needs generators for power backup, including the fuel to run generators.
- California Highway Patrol said they have annual meetings prior to both the snow season and fire season to discuss mitigation of hazardous road conditions during extreme weather.
- Public outreach and education regarding extreme weather and how to stay safe, where to go in case of extreme heat or cold.
- Reference was made to power outages and power shortages in regard to water/wastewater treatment facilities and the possible need for backup power generators.

Earthquake

- There currently is a ten-year plan for addressing needs for bridges and roads. Caltrans suggested the need for advanced planning on the seismic retrofit of numerous bridges (e.g. the Pit River Bridge) – There is a need for planning dollars to make a determination between retrofit vs. replacement. This advanced planning would be used to identify the scope, cost, and prioritization of seismic retrofits of bridges.
- Need code enforcement of the County plan.

Hazardous Materials

- When funded vehicle inspection stations (e.g. Dunsmuir and Cottonwood) can identify hazardous materials along the I-5 corridor.
- The City Fire Department received a record from the Union Pacific Railroad on what hazardous materials move through the city by rail.
- SCHMIRT (Shasta County Hazardous Materials.....) has a lot of information on this issue.
- First responders would like a map of where hazardous materials are stored and the area of evacuation for the various materials. It was mentioned that each business with hazardous materials has to identify the evacuation area for their own hazard. In most hazardous materials cases, it is best to shelter people in place.
- Some population centers received evacuation shelter location maps in their utility bills, but not all areas were covered.
- General county preparedness and SIMS/NIMS training of personnel.

Volcano

- The committee felt the threat of volcanic explosion would be received very early and action plans put in place. Specific recommendations for mitigating this hazard include the continued monitoring of seismic and volcanic activity in the region to allow for early notification of potential threats.

]

Chemical/Biological

- The Bureau of Reclamation has an annual county-wide disaster drill, each year it covers a different aspect of the potential disasters. One is scheduled for 2011.
- A multi-agency mock drill would be helpful if it was activated by communications between agencies to determine who is ready and who is not.
- The Highway Patrol has a rig with communication systems to every agency. It has visited the north state recently. At that exercise, Verizon brought out a portable cell tower and could show live video feed from a helicopter. Cell phones did not work well in the drill.
- training mock disaster drill will be undertaken at the airport in the spring. The airport drills every three years.
- The Postal Service held a biological detection drill this past year and will do another in three years.
- Check into the distribution of Chem Packs through the hospitals.
- Many agencies need backup communication centers. Just switching locations when one system is out may not work in a big emergency.
- The 911 system needs an infrastructure upgrade.
- STAIRES (?) has identified all of the Ham operators if the phone system goes down.

Pandemic/Epidemic

- Conduct an Isolation and Quarantine Tabletop Exercise by Spring 2013
- Annual Mass Vaccination Exercises held

Mass Casualty

- Plans are at place at the hospitals.
- CAL FIRE has trailers to handle up to 20 patients each in various locations around the state.
- Highway Patrol drills all include mass casualty.
- Statewide Medical Health Exercise developed and conducted November 2010 practiced Mass Casualty Event-25 healthcare agencies participated along with 25 Shasta Dam first responder and law enforcement agencies
- Quarterly Shasta County Sierra-Sacramento Valley Emergency Medical Services meetings
- County wide EMS MCI field operations guide in process
- Consultant hired to develop a county wide fatality management plan 2010-2011
- Consultant hired to develop a Government-Authorized Alternate Care Site (ACS) Plan Annex to ERP 2011
- ACS Exercise planned in combination with Redding Air Show September 2011

Dam Failure

- The committee agreed to change the term dam failure to dam flooding . The last threat of overtopping Shasta Dam was in 1998 when inflow to the lake reached 225,000 cfs with a maximum outflow of 78,000 cfs. It did not overflow.

Overall

Caltrans suggested a single source directory of Emergency Operations Centers with points of contact would be beneficial.

Public Health received a Disaster Healthcare Volunteer grant to assist the Red Cross in shelters in response to all hazards.

Participants agreed to review projects they might be undertaking over the next five years and get the information to David DeMar within the next two weeks.

County of Shasta – Hazard Mitigation Plan
January 11, 2011 – Steering Committee Meeting



SIGN IN SHEET

NAME	ADDRESS	PHONE NUMBER	E-MAIL ADDRESS
		If not on file	
Lance Brown	1657 RIVERSIDE DR	225-3251	lance_brown@dot.ca.gov
Kurt Schneider	1657 River side DR.	225-3382	kurt_schneider@dot.ca.gov
Rachel Aschbacher	6270 Parallel Rd Anderson	365-7332	rachel@westernshastared.org
Scott White	1657 Riverside Dr	229-0574	Scott_White@dot.ca.gov
DAVE MARON	2250 BIRLAHUA	225 5597	DMARON@CO.SHASTA.CA.US
Sandy Long		242-4596	sandy@redding-rancheria.com
Ron Kingsley	16349 SHASTA DAM Blvd SHASTA LAKE 96019	276-2026	rkingsley@esbr.gov
MARK MEZZANO	2503 CASCADE BL REDDING	242-3200	M.MEZZANO@CHP.CA.GOV
Jerry Flavin	2503 CASCADE BL REDDING	242-3200	JFLAVIN@CHP.CA.GOV
Clay Guzi	3179 Bechelli Lane, Redding	221-0440	cguzi@enplan.com
Mary Mitchell	6270 Parallel And 07	36573324202	mary@westernshastared.org
JOHN KAYLOR	777 CYPRESS AVE., RDG. 96002	225-4572	jkaylor@ci.Redding.ca.us
Kevin Krutman	" "	225-4142	kkrutman@ci.Redding.ca.us
FRED TULLEY	875 CYPRESS AVE., RDG 96001	225-2401	fred.tulley@fire.ca.gov
DAVE DEAN	1525 COURT ST. RDG. 96001	245-6148	ddean@co.shasta.ca.us

Minutes from the Meeting with the City of Anderson
Thursday, February 03, 2010

In attendance: **Jeff Kiser, Public Works Director, City of Anderson**
 Mary Mitchell, WSRCD, District Manager
 Dave DeMar, WSRCD, GIS Specialist, Project Manager
 Rachel Aschbacher, WSRCD, Project Coordinator

The meeting began at 9:00 AM in the plan meeting room at the City of Anderson

The agenda was presented and reviewed.

Identify hazards within future building and infrastructure in the City:

The General Plan speaks to the proposed residential development to the east of Rhonda Road and the Wal-Mart shopping center.

Discussion of information needed for projects identified in the Plan:

Presented template for identifying the projects. Jeff will identify projects, fill out tables and forward the in the information in the coming week.

Identify Projects planned by the City to mitigate hazards:

- * Develop communication system could be set up with BOR to communicate increased releases at the dam.
- * Vegetation maintenance in Tormey Drain.
- *Modernize communications and equipment for an incident command center at the fairgrounds so CAL FIRE doesn't have to bring in so much communications and equipment
- * Fuels reduction and maintenance in Anderson River Park.
- * Culvert replacement to prevent flooding in Anderson River Park.

The meeting ended at 10:05 AM.

Appendix 3B

HOUSEHOLD NATURAL HAZARDS PREPAREDNESS SURVEY

Thank you for taking time to answer this survey and assist us in the preparation of a Shasta County Hazard Mitigation Plan. The survey will help us identify the level of understanding and preparedness in our county. The information you provide will help improve public/private coordination of preparedness and risk reduction activities within the county. Thank you!

NATURAL HAZARD INFORMATION

1. Have you or someone in your household been involved in a natural disaster within Shasta County, such as an earthquake, severe windstorm, wildfire, flood, or extreme heat?

Yes No (If "NO" skip to question #2)

If "Yes" please check the natural disasters you or someone in your household experienced within Shasta County:

Drought Dust Storm Earthquake
 Extreme Heat Flood Wildfire
 Landslide/Debris flow Household Fire Volcanic Eruption
 Windstorm Winter Storm
 Other _____

2. How concerned are you personally about the following potential for natural disasters to effect Shasta County? Circle the corresponding number for each hazard.

Natural Disaster	Not Concerned	Somewhat Concerned	Concerned	Very Concerned	Extremely Concerned
Drought	1	2	3	4	5
Dust Storm	1	2	3	4	5
Earthquake	1	2	3	4	5
Flood	1	2	3	4	5
Wildfire	1	2	3	4	5
Landslide/Debris flow	1	2	3	4	5
Household Fire	1	2	3	4	5
Volcanic Eruption	1	2	3	4	5
Windstorm	1	2	3	4	5
Severe Storm	1	2	3	4	5
Utility Disruption	1	2	3	4	5
Chemical/biological	1	2	3	4	5
Mass Casualty	1	2	3	4	5
Dam Failure	1	2	3	4	5
Pandemic/epidemic	1	2	3	4	5
Other: _____	1	2	3	4	5

3. Have you ever received information on how to make your family and home safer from natural disasters?

Yes No (If "NO", skip to question 4)

If "Yes", on any particular subject? _____

How recently?

Within the last 6 months Between 2 and 5 years ago
 Between 6 and 12 months ago 5 years ago or more
 Between 1 and 2 years ago

From whom did you last receive information about how to make your family and home safer from natural disasters? (Check only one)

News media American Red Cross
 Government agency Other non-profit organization
 Insurance agent or company Not sure
 Utility company Other: _____

4. Who would you most trust to provide you with information about how to make your family and home safer from natural disasters? (Please check all that apply)

News media University or research institution
 Government agency American Red Cross
 Insurance agent or company Other non-profit organization
 Utility company Not sure
 Other: _____

5. What is the most effective way for you to receive information about how to make your family and home safer from natural disasters? (Please check all that apply)

Newspaper stories Schools
 Newspaper ads Outdoor ads (billboards, etc)
 Television news Books
 Television ads Mail
 Radio news Fire Department/Rescue
 Radio Ads Internet
 Fact sheets or brochures Chamber of Commerce
 Public workshops/meetings Magazines
 Academic institutions Other: _____

6. To assist in communicating information to Shasta County residents about how to better prepare for a natural disaster, which of the following phrases do you think is the easiest to understand? (Check only ONE)

Natural disaster readiness Disaster preparedness
 Emergency preparedness Natural hazard risk reduction
 Other: _____

NATURAL DISASTER PREPAREDNESS

7. Please check those activities that you **have done** in your household, **plan to do** in the near future, **have not done**, or are **unable to do**. (Please check one answer for each activity)

Have you or someone in your household:

Activity	Yes	No, but would like to	Not Interested
a. Attended meetings or received written information on natural disasters or emergency preparedness.	_____	_____	_____
b. Talked with members in our household about what to do in case of a natural disaster or emergency.	_____	_____	_____
c. Developed a "Household Emergency Plan" in order to decide what everyone would do in case of a household emergency.	_____	_____	_____
d. Prepared a "Disaster Supply kit" with extra food, water, batteries, or other emergency supplies?	_____	_____	_____

8. All of the above activities require a personal time commitment. How much time **each year** are you willing to spend on preparing yourself or your household for a natural disaster or emergency?

Number of Hours will to spend

Circle One: 0-1 2-5 6-10 11-15 16+

9. What steps have you taken in your household to prepare for a natural disaster? (Check all that apply)

Stored or stocked up on:

- Food
- Water
- Flashlights
- Batteries
- Battery-powered radio
- Medical supplies, first aid kit
- Fire extinguisher
- Smoke detectors

Other:

- Prepared a Disaster Supply Kit
- Received First Aid/CPR Training
- Made a fire escape plan
- Developed a reconnection plan, where to meet and who to call
- Discussed utility shutoffs and locations
- Other: _____

10. Does your household have insurance coverage for flood events?

Yes or No

If "NO", what is the main reason? (Check only one)

Not located in a floodplain Deductibles too high/not worth it
 Too expensive Don't know about it
 Not necessary Never considered it
 Other: _____

11. Does your household have insurance coverage for earthquake events?

Yes or No

If "NO", what is the main reason? (Check only one)

Too expensive Deductibles too high/not worth it
 Not necessary Don't know about it
 Never considered it Other: _____

NATURAL HAZARD RISK REDUCTION

12. Did you consider the possible occurrence of a natural hazard when you bought or moved into your current home?

Yes or No

13. Would you be willing to spend more money on a home that had features that made it more disaster resistant?

Yes or No

14. How much more money are you willing to spend to better protect your family and home from natural disasters? (Check only one)

Less than \$100 \$5,000 and above
 \$100 to \$499 Nothing
 \$500 to \$999 Don't know
 \$1,000 to \$2,499 Other: _____
 \$2,500 to \$4,999

15. Which of the following incentives, if any, would motivate you to take additional steps to better protect your family and home from a natural disaster? (Check all that apply)

Insurance discount Tax break or incentive
 Low interest rate loan None
 Lower new home construction cost Other: _____
 Mortgage discount

GENERAL HOUSEHOLD INFORMATION

16. Please indicate your age: _____

17. Gender (check one): ___ Male ___ Female

18. Indicate your level of education:

- | | |
|----------------------------------|-------------------------|
| ___ Grade school/no schooling | ___ College degree |
| ___ Some high school | ___ Postgraduate degree |
| ___ High school graduate (GED) | ___ Other: _____ |
| ___ Some college or trade school | |

19. Zip Code: _____

20. How long have you lived in Shasta County?

- | | |
|------------------------|----------------------|
| ___ Less than one year | ___ 10-19 years |
| ___ 1-4 years | ___ 20 years or more |
| ___ 5-9 years | |

21. If you have lived in Shasta County for less than 20 years, where did you live before you moved to Shasta County?

City: _____ County: _____ State: _____

22. Do you have access to the Internet or World Wide Web?

- ___ Yes or ___ No

23. Do you own (or are buying) or renting your home?

- ___ Own or ___ Renting

Other Comments:

THANK YOU VERY MUCH FOR PROVIDING THIS INFORMATION!

Please return the survey by mail, email, or drop it off at either of the following:

Western Shasta RCD
Attention Mary Mitchell
6270 Parallel Road
Anderson, CA 96007
Email: mary@westernshastarc.org

City of Anderson
Attention: Jeff Kiser
1887 Howard Street
Anderson, CA 96007

Appendix 3B

SURVEY ANSWERS

HOUSEHOLD NATURAL HAZARDS PREPAREDNESS SURVEY

Thank you for taking time to answer this survey and assist us in the preparation of a Shasta County Hazard Mitigation Plan. The survey will help us identify the level of understanding and preparedness in our county. The information you provide will help improve public/private coordination of preparedness and risk reduction activities within the county. Thank you!

NATURAL HAZARD INFORMATION

1. Have you or someone in your household been involved in a natural disaster within Shasta County, such as an earthquake, severe windstorm, wildfire, flood, or extreme heat?

Yes No (If "NO" skip to question #2)

If "Yes" please check the natural disasters you or someone in your household experienced within Shasta County:

Drought Dust Storm Earthquake
 Extreme Heat Flood Wildfire
 Landslide/Debris flow Household Fire Volcanic Eruption
 Windstorm Winter Storm
 Other _____

2. How concerned are you personally about the following potential for natural disasters to effect Shasta County? Circle the corresponding number for each hazard.

ANSWERS IN BOLD: Average of all responses

Natural Disaster	Not Concerned	Somewhat Concerned	Concerned	Very Concerned	Extremely Concerned	
Drought	1	2	2.7	3	4	5
Dust Storm	1	1.0	2	3	4	5
Earthquake	1	2	2.2	3	4	5
Flood	1	2	2.0	3	4	5
Wildfire	1	2	3	4.1	5	
Landslide/Debris flow	1	1.6	2	3	4	5
Household Fire	1	2	2.7	3	4	5
Volcanic Eruption	1	2	2.1	3	4	5
Windstorm	1	2	2.1	3	4	5
Severe Storm	1	2	2.4	3	4	5
Utility Disruption	1	2	2.2	3	4	5
Chemical/biological	1	1.6	2	3	4	5
Mass Casualty	1	1.6	2	3	4	5
Dam Failure	1	2	2.0	3	4	5
Pandemic/epidemic	1	2	2.1	3	4	5
Other: none listed	1	2	3	4	5	

3. Have you ever received information on how to make your family and home safer from natural disasters?

22 Yes **11** No (If “NO”, skip to question 4)

If “Yes”, on any particular subject? _____

How recently?

- | | |
|--------------------------------------|------------------------------------|
| 9 Within the last 6 months | 1 Between 2 and 5 years ago |
| 6 Between 6 and 12 months ago | 2 5 years ago or more |
| 3 Between 1 and 2 years ago | |

From whom did you last receive information about how to make your family and home safer from natural disasters? (Check only one)

- | | |
|-------------------------------------|--|
| 5 News media | 1 American Red Cross |
| 10 Government agency | 1 Other non-profit organization |
| 5 Insurance agent or company | 0 Not sure |
| 2 Utility company | 0 Other: _____ |

4. Who would you most trust to provide you with information about how to make your family and home safer from natural disasters? (Please check all that apply)

- | | |
|-------------------------------------|--|
| 6 News media | 11 University or research institution |
| 9 Government agency | 13 American Red Cross |
| 5 Insurance agent or company | 10 Other non-profit organization |
| 7 Utility company | 4 Not sure |
| 0 Other: _____ | |

5. What is the most effective way for you to receive information about how to make your family and home safer from natural disasters? (Please check all that apply)

- | | |
|-------------------------------------|--|
| 12 Newspaper stories | 2 Schools |
| 0 Newspaper ads | 1 Outdoor ads (billboards, etc) |
| 0 Television news | 1 Books |
| 15 Television ads | 12 Mail |
| 10 Radio news | 19 Fire Department/Rescue |
| 0 Radio Ads | 15 Internet |
| 18 Fact sheets or brochures | 2 Chamber of Commerce |
| 13 Public workshops/meetings | 2 Magazines |
| 4 Academic institutions | 0 Other: _____ |

6. To assist in communicating information to Shasta County residents about how to better prepare for a natural disaster, which of the following phrases do you think is the easiest to understand? (Check only ONE)

- | | |
|-------------------------------------|--|
| 8 Natural disaster readiness | 4 Disaster preparedness |
| 17 Emergency preparedness | 1 Natural hazard risk reduction |
| 0 Other: _____ | |

NATURAL DISASTER PREPAREDNESS

7. Please check those activities that you **have done** in your household, **plan to do** in the near future, **have not done**, or are **unable to do**. (Please check one answer for each activity)

Have you or someone in your household:

Activity	Yes	No, but would like to	Not Interested
a. Attended meetings or received written information on natural disasters or emergency preparedness.	19	0	0
b. Talked with members in our household about what to do in case of a natural disaster or emergency.	28	0	0
c. Developed a “Household Emergency Plan” in order to decide what everyone would do in case of a household emergency.	15	0	0
d. Prepared a “Disaster Supply kit” with extra food, water, batteries, or other emergency supplies?	16	0	0

8. All of the above activities require a personal time commitment. How much time **each year** are you willing to spend on preparing yourself or your household for a natural disaster or emergency?

Circle One:	0-1	2-5	6-10	11-15	16+
	6	16	6	1	4

9. What steps have you taken in your household to prepare for a natural disaster? (Check all that apply)

Stored or stocked up on:

- 18 Food
- 16 Water
- 26 Flashlights
- 24 Batteries
- 16 Battery-powered radio
- 23 Medical supplies, first aid kit
- 23 Fire extinguisher
- 26 Smoke detectors

Other:

- 0 Prepared a Disaster Supply Kit
- 0 Received First Aid/CPR Training
- 6 Made a fire escape plan
- 5 Developed a reconnection plan, where to meet and who to call
- 5 Discussed utility shutoffs and locations
- 0 Other: _____

10. Does your household have insurance coverage for flood events?

7 Yes or 25 No

If "NO", what is the main reason? (Check only one)

- | | |
|--------------------------------|-------------------------------------|
| 25 Not located in a floodplain | 0 Deductibles too high/not worth it |
| 4 Too expensive | 0 Don't know about it |
| 4 Not necessary | 0 Never considered it |
| 0 Other: _____ | |

11. Does your household have insurance coverage for earthquake events?

12 Yes or 21 No

If "NO", what is the main reason? (Check only one)

- | | |
|-----------------------|-------------------------------------|
| 10 Too expensive | 4 Deductibles too high/not worth it |
| 4 Not necessary | 0 Don't know about it |
| 3 Never considered it | 0 Other: _____ |

NATURAL HAZARD RISK REDUCTION

12. Did you consider the possible occurrence of a natural hazard when you bought or moved into your current home?

24 Yes or 9 No

13. Would you be willing to spend more money on a home that had features that made it more disaster resistant?

22 Yes or 10 No

14. How much more money are you willing to spend to better protect your family and home from natural disasters? (Check only one)

- | | |
|----------------------|---------------------|
| 0 Less than \$100 | 0 \$5,000 and above |
| 10 \$100 to \$499 | 2 Nothing |
| 11 \$500 to \$999 | 7 Don't know |
| 0 \$1,000 to \$2,499 | 0 Other: _____ |
| 0 \$2,500 to \$4,999 | |

15. Which of the following incentives, if any, would motivate you to take additional steps to better protect your family and home from a natural disaster? (Check all that apply)

- | | |
|------------------------------------|---------------------------|
| 26 Insurance discount | 24 Tax break or incentive |
| 5 Low interest rate loan | 4 None |
| 2 Lower new home construction cost | 4 Other: _____ |
| 9 Mortgage discount | |

GENERAL HOUSEHOLD INFORMATION

16. Please indicate your age: **6** 31-45
6 46-55
16 55+

17. Gender (check one): **16** Male **12** Female

18. Indicate your level of education:
0 Grade school/no schooling **14** College degree
0 Some high school **4** Postgraduate degree
2 High school graduate (GED) **0** Other: _____
9 Some college or trade school

19. Zip Code: **5** 96001 **4** 96069 **1** 96059
3 96003 **6** 96022 **6** 96088
2 96007 **1** 96096 **1** 96073

20. How long have you lived in Shasta County?
2 Less than one year **7** 10-19 years
2 1-4 years **17** 20 years or more
6 5-9 years

21. If you have lived in Shasta County for less than 20 years, where did you live before you moved to Shasta County? **No answers given.**
City: _____ County: _____ State: _____

22. Do you have access to the Internet or World Wide Web?
32 Yes or **0** No

23. Do you own (or are buying) or renting your home?
31 Own or **0** Renting

Other Comments:
None

**Shasta County and City of Anderson Hazard Mitigation Plan
Steering Committee Meeting**

Date: February 2, 2016

Time: 1:00 – 3:00 p.m.

**Location: Shasta County Sheriff OES
2486 Progress Drive, Redding**

1:00 Introductions

1:15 Overview of Existing Plan

Project Timeline

1:30 Planning Requirements for Updates

Any new hazard events? *Drought and wildland fires*

Any changes to land development patterns?

Are there changes in priorities?

Has the Plan been integrated in other planning documents?

Status of previous mitigation action items (project worksheets)

2:30 Role of Steering Committee (Homework Assignments)

Provide 2010 Plan project status worksheets

Review 2010 Risk Assessment and Goals

Assign agency specific plan sections for update

Identify new plans and studies that could affect hazard planning

Reviews administrative and draft plan

2:45 Due dates, next steps and next meeting

Shasta County Hazard Mitigation Plan

Steering Committee Meeting Notes

February 2, 2016

1:00-3:00 p.m.

Shasta County OES, 2486 Progress Drive, Redding

Sue Crowe, Shasta County Department of Public Works (Hazard Mitigation Plan Coordinator/Chair) opened the meeting at 1:10 p.m. Introductions followed (attendance sheet attached).

Information packets were provided to committee members that included:

- Hazard Mitigation Plan fact sheet
- FEMA Mitigation Planning fact sheet
- Plan update evaluation worksheet
- List of 2010 prioritized hazards and goals
- List of 2010 mitigation action items
- Summary of 2010 goals/objectives/action items by hazard
- Mitigation action progress report form

Sue presented a brief overview of the 2010 Plan, the plan update process, timeline, and FEMA planning requirements for the update. The plan will be prepared in-house with consultants performing map revisions.

Discussion was held on if there were new hazard events or land development patterns in the Jurisdictions planning areas, or changes in plan priorities. The Committee validated that no new development patterns or hazard events have occurred since the 2010 plan adoption.

Sue explained the role of the Committee. Members of the committee who were determined as the coordinating individual/organization for the 2010 mitigation action item were assigned to update a progress report form for each project and to identify any new projects for inclusion in the 2015 plan. Discussion continued on existing projects and potential projects.

Members were asked to also review the 2010 goals and objectives. Members were asked to edit sections of the 2015 administrative draft specific to their agency, department or organization and to report on any new plans or studies that could affect the hazard plan update.

Completed progress report forms and section edits will be returned to Sue Crowe by April 1 for inclusion in the Plan draft.

The next committee meeting will be scheduled for May. A public comment period will be publicized shortly thereafter.

The meeting closed at 2:00 p.m.



Shasta County & City of Anderson Multi-Jurisdictional Hazard Mitigation Plan Update



FACT SHEET

What is a Hazard Mitigation Plan?

A Hazard Mitigation Plan is a pre-disaster strategic plan to guide how a community will lower its risk and exposure to disasters.

Why revise the Hazard Mitigation Plan?

Local agencies may receive Federal Emergency Management Agency (FEMA) funds for natural and technological hazards. Eligible agencies shall have an approved Hazard Mitigation Plan in place prior to any declared disaster. That plan shall be updated every 5 years. Hazard Mitigation Plans may also facilitate agency savings – every dollar spent on mitigation typically results in dollars saved in response and recovery related costs.

What is the purpose of this meeting?

Steering committee meetings will be held between February 2016 and April 2016. Regional hazards identified in the 2010 Plan will be revisited. Risk assessments and goals related to these hazards will be updated. Plans shall include open public involvement. Your input is important for implementation of the specific mitigation goals, objectives and action items for the Plan.

What elements are included in the Plan Process?



When will the Plan be complete?

The updated plan will be proposed for adoption by the Shasta County Board of Supervisors and the Anderson City Council in September 2016. The adopted Plan will be submitted to FEMA by October 2016.

Who is preparing the Plan?

The County of Shasta is designated as the lead agency. Committee members will assist in updating the Plan prior to public meetings. The Committee will utilize additional key staff at each agency for subject matter expertise and policy direction.

Contact Information: Sue Crowe, Staff Services Manager, Shasta County Department of Public Works
Ph (530)245-6826 Fax (530)225-5667 Email scrowe@co.shasta.ca.us
Mitigation Plan Website:
http://www.co.shasta.ca.us/index/pw_index/news_events/2010-hazard-mitigation-plan-update

**Shasta County and City of Anderson Hazard Mitigation Plan
Steering Committee Meeting**

Date: June 1, 2016

Time: 10:00-11:00 a.m.

**Location: Shasta County Public Works Conference Room
1855 Placer Street, Redding**

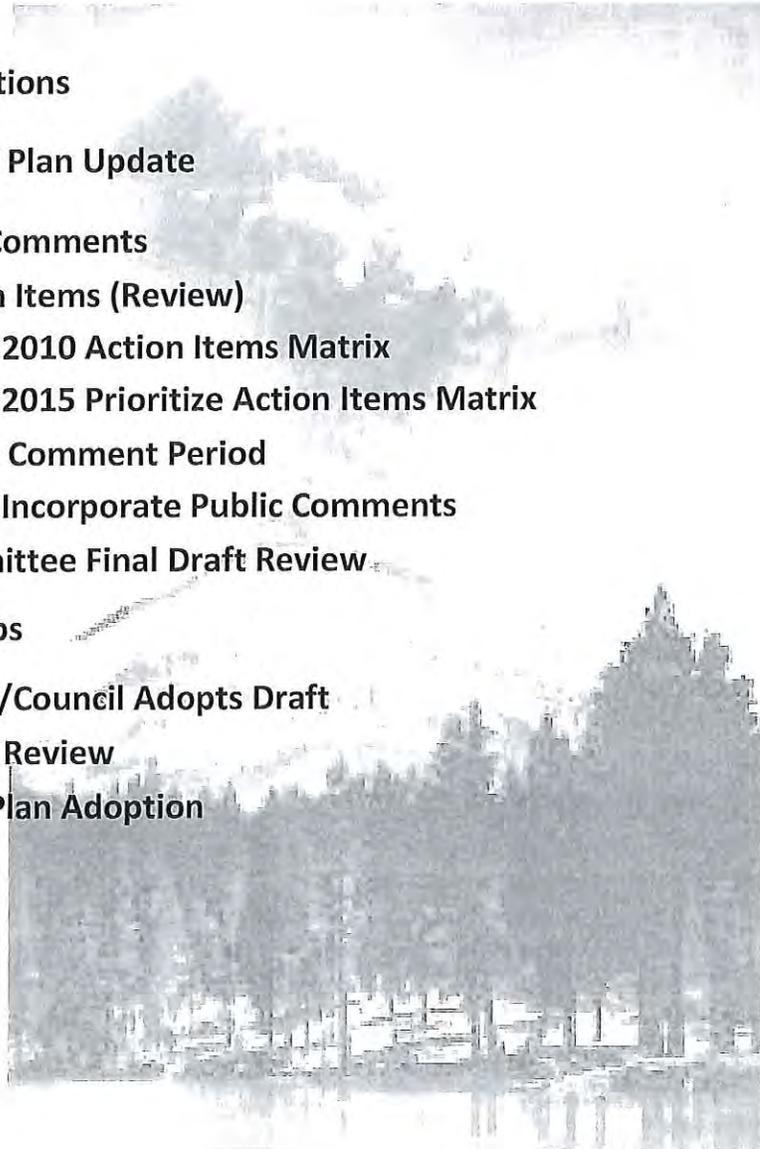
10:00 Introductions

10:10 Status of Plan Update

- **Plan Comments**
- **Action Items (Review)**
 - **2010 Action Items Matrix**
 - **2015 Prioritize Action Items Matrix**
- **Public Comment Period**
 - **Incorporate Public Comments**
- **Committee Final Draft Review**

10:45 Next Steps

- **Board/Council Adopts Draft**
- **FEMA Review**
- **Final Plan Adoption**



Shasta County Hazard Mitigation Plan

Steering Committee Meeting Notes

June 1, 2016

10:00-11:00 a.m.

Shasta County Public Works, 1855 Placer Street, Redding, CA

Sue Crowe, Shasta County Department of Public Works (Hazard Mitigation Plan Coordinator/Chair) opened the meeting at 10:00 a.m. Introductions followed (attendance sheet attached).

Sue provided a plan status update to committee members.

2010 Projects:

- Take out CCPW – annual looked at under Cal Fire
- Day Lassen bench is w/ Lassen County
- No info on Middle Creek Project
- CalTrans generators are ongoing (maintenance stations)
- Unplanned bridge scour/closure – ongoing checking

MCI-1 EMS project – public health has a grant through them, & Cal Fire (Brett) attends meeting (advisory group meeting) John Lord – agent to contact.

Cal Fire (Brett) wants to connect dots with Burney Basin Safe Council on the Burney Community Wildfire Protection plan. The plan is included in the Cal Fire unit plan.

New/Ongoing Projects:

Committee members ranked 2015 mitigation action items.

- CalTrans unplanned bridge closure/scour – depends on 2 priorities:
 - 1 – Maintenance
 - 2 – Quality of the road (money related budget)
- No change in ranking for flood projects
- Wildfire (Brett) CWPP target to minimize fires. CWPP developed locally to help with funding. Has to identify as “shovel ready” plans to obtain funding
- Volcanoes (Jason) is ranked low because other plans can help make up for that
- Multi- Casualty Project for air jet, air prop will be placed in Redding airport to help train/learn for incidents next April (Brett)

Timeline:

The plan will be ready the first to mid July for public comments. The committee will review the draft document after public comments are added. Plan will then be presented to the Anderson City Council and Shasta County Board of Supervisors for draft plan adoption. Formal FEMA review follows with final plan adoption upon FEMA's approval.

Nicole (Public Health) suggests when placing the Hazard Mitigation Plan online to separate document into chapters to reduce file size.

Brett will be sending in updated maps.

Meeting concluded at 10:50 a.m.

**Annual Safety Luncheon
Shasta County Public Works**

DISASTER PLANNING & PREVENTION

Special Guest Speakers:

Cal Fire, County Fire, Sheriff OES

Date: 04/14/2016

Time: 11:00am - 1:00pm



Lunch Provided

Date: April 14, 2016

Time: 11:00am-1:00pm

Location: Veterans Hall

1605 Yuba Street

Contact person: Tammy Frye

tfrye@co.shasta.ca.us

530-245-6793

530-604-9374





DEPARTMENT OF PUBLIC WORKS
Annual Safety Luncheon
Thursday, April 14, 2016 commencing at 11:00 AM

Master of Ceremonies – **John Heath**

- a. Welcome - **Pat Minturn**
 1. Introduction of Guests
 - Board of Supervisors
 - Larry Lees - CEO
 - Angela Davis – Support Services
 - Jim Johnson and Thomas Vandepol – Risk Management
 - Fire Captain Nick Wallingford-Cal Fire, Deputy Chief Bret Gouvea-County Fire, Lieutenant ~~Jason Barnhardt-OES~~ *Sgt Rob Sandbloom*
- b. Recognition of Employees – **Troy Bartolomei**
 1. Facilities Management – **Tom Forbish**
 - i. Custodial Services - Bob Wilkinson
 - ii. Grounds - Chris Swearingen
 - iii. Administration – Tom Forbish
 - iv. Mechanical Crafts – Nick Butrie
 - v. Structural Crafts – Tom Fuller
 2. Operations Superintendent – **Troy Bartolomei**
 - i. Roads District 1 – Rick Richards
 - ii. Roads District 2 – Ron Jimenez
 - iii. Roads District 3 – Jason Eilts
 - iv. Roads District 4 – Cathy Myers
 - v. Special Crews – Jack Ball
 - vi. Shop - Day – Craig Isberg, Night – Troy Burns
 3. CSA – **Scott Sealander**
 4. Office – **Scott Wahl**
 - i. Administration – Ken Cristobal
 - ii. Development Services – Eric Wedemeyer
 - iii. Road Design & Administration – Al Cathey
 1. Right of Way – Brandon Magby
 - iv. Bridge Design & Administration – Shawn Ankeny
 - v. Special Projects – Neil McAuliffe
 - vi. Solid Waste/Storm Water/Safety – John Heath
- c. Retirees - 2014 (alphabetical order) – **Troy Bartolomei**
 - i. Jeanne August – *13 years of service*
 - ii. David Beyelia -- *9 years of service*
- d. Director's Comments – **Pat Minturn**
 - i. Budget update
- e. Awards – **Troy Bartolomei**
 - a. Safety Contest – **John Heath**
 - b. Employee of the Year – **Pat Minturn**
- f. (11:35-12:00) Presentation: **Disaster Planning and Prevention, Cal Fire, County Fire and OES**
- g. Lunch, catered by Juvenile Hall Catering Services – Mike Hefner
- h. Clean Up



ANNUAL SAFETY MEETING SIGNUP SHEET

Subjects Covered: Hazard Mitigation

Work Location/Job Classes Included: DPW employees, Invited guests

Date: 4/14/16

Presenter: Rick Wallingford, Bret Gouvea, Jason Barnhart

Attendees: Please sign your name legibly.

If your name is not on the list please add it at the end.

Last Name	First		Signature
Abbey	Dennis	Roads	Dennis M. Abbey
Abbey	Kathy	Roads	Kathy Abbey
Adamec	Jeff	Fleet	Jeff Adamec
Allen	Jon	Shop	Jon H. Allen
Anderson	Matthew	Roads	
Ankeny	Shawn	Eng	Shawn Ankeny
Ball	Jack	Roads	Jack Ball
Bartolomei	Devon	Eng	
Bartolomei	Troy	Admin	Troy Bartolomei
Beard	Charleen	Eng	
Belflower	Buck	Fleet	Buck Belflower
Berry	Dawnda	Cust	Dawnda Berry
Blankenship	Jake	Roads	Jake Blankenship
Book	Darrin	Eng	Darrin Book
Brubaker	Rick	Roads	Rick Brubaker
Burns	Troy	Shop	Troy Burns
Butrie	Nick	Fac Man	Nick Butrie
Calvert	Jim	Roads	Jim Calvert



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Last Name	First		Signature
Campbell	Andrea	Fac Man	<i>Andrea Campbell</i>
Campbell	Brian	Eng	<i>Brian Campbell</i>
Cannafax	Johnny	Roads	<i>Johnny Cannafax</i>
Cannan	Josh	Eng	<i>Josh Cannan</i>
Cantrell	Kolyn	Roads	
Carlin	Tina	Admin	<i>Tina Carlin</i>
Cathey	Al	Eng	<i>Al Cathey</i>
Ciancio	Mark	Eng	<i>Mark S. Ciancio</i>
Clark	Jamie	Fleet	<i>Jamie Clark</i>
Collins	Kyle	Roads	
Cook	Dan	Shop	<i>Dan Cook</i>
Corley	Seth	CSA	
Correll	William	Shop	<i>William Correll</i>
Cottrell	Gary	Roads	<i>Gary Cottrell</i>
Covert	Joseph	Roads	<i>Joseph Covert</i>
Cristobal	Ken	Admin	<i>Ken Cristobal</i>
Crowe	John	Eng	
Crowe	Sue	Admin	<i>Sue Crowe</i>



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Date: 4/14/16

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Attendees: Please sign your name legibly.
If your name is not on the list please add it at the end.

Last Name	First		Signature
Davis	Stuart	Eng	<i>Stuart Davis</i>
DoMoe	Ben	Fac Man	<i>Ben DoMoe</i>
Dorroh	Travis	Fac Man	
Duffy	Michael	Shop	<i>Michael A Duffy</i>
Duncan	Levi	CSA	<i>Levi Duncan</i>
DuPont	Robert	Roads	<i>Robert Dupont</i>
Duzyk	Mark	Fac Man	<i>Mark Duzyk</i>
Eilts	Jason	Roads	<i>Jason Eilts</i>
Fierro	Rose	Admin	<i>Rose Fierro</i>
Forbish	Thomas	Fac Man	<i>Thomas Forbish</i>
Fox	Ron	Eng	<i>Ron Fox</i>
Frye	Tammy	Eng	<i>Tammy Frye</i>
Fuller	Tom	Fac Man	<i>Tom Fuller</i>
Gardner	Shawn	Fac Man	<i>Shawn Gardner</i>
Gehres	Linda	CSA	<i>Linda Gehres</i>
Gonzalez	Amanda	Cust	
Gonzalez	Miguel	Cust	<i>Miguel Gonzalez</i>
Gordon	Robin	Fleet	<i>Robin Gordon</i>



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Last Name	First		Signature
Grames	Darell	Roads	<i>Darell Grames</i>
Graves	Gary	CSA	
Graves	Jed	CSA	
Gross	Kevin	CSA	
Harris	Robin	Fac Man	<i>Robin Harris</i>
Heath	John	Eng	<i>John Heath</i>
Henriquez	Alex	Roads	<i>Alex Henriquez</i>
Hermann	William	Roads	<i>William Hermann</i>
Hines	Ed	CSA	
Hines	Gary	Fleet	<i>Gary Hines</i>
Humphries	Cheryl	Cust	
Isberg	Craig	Shop	<i>Craig Isberg</i>
Jenkins	Cody	Roads	<i>Cody Jenkins</i>
Jimenez	Ron	Roads	<i>Ron Jimenez</i>
Kenneally	James	Roads	<i>James Kenneally</i>
Lassa	David	Cust	<i>David Lassa</i>
Layfield	Scott	Roads	
Lee	Carmen	CSA	



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**Attendees: Please sign your name legibly.
If your name is not on the list please add it at the end.**

Last Name	First		Signature
Lee	David	CSA	
Lemler	Donna	Fac Man	<i>Donna Lemler</i>
Luken	Robert	Grounds	<i>Robert Luken</i>
Magby	Brandon	Eng	<i>Brandon Magby</i>
Maple	Kevin	Eng	<i>Kevin Maple</i>
Marquez	Klayton	Roads	<i>Walter Marquez</i>
Matthews	Jim	Cust	
Maynes	Mike	Fac Man	<i>Mike Maynes</i>
McAuliffe	Neil	Eng	<i>Neil McAuliffe</i>
McClain	Casey	Roads	
McCullough	Michael	Roads	
McGarry	Matthew	Eng	
Meers	James	Fac Man	<i>James Meers</i>
Meyers	John	Roads	<i>John Meyers</i>
Minturn	Pat	Admin	<i>Pat Minturn</i>
Mitchell	Victoria	Roads	<i>Victoria Mitchell</i>
Moon	Jerry	Roads	<i>Jerry Moon</i>
Morgan	Dale	Fac Man	<i>Dale Morgan</i>



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Attendees: Please sign your name legibly.
If your name is not on the list please add it at the end.

Last Name	First		Signature
Munro	Robert	Roads	<i>Robert Munro</i>
Myers	Cathy	Roads	
Nash	James	Roads	<i>James Nash</i>
Nicholas	Stanley	Roads	<i>Stanley Nicholas</i>
Nicholas	Steven	Roads	<i>Steven Nicholas</i>
Nickens	Bart	Roads	<i>Bart Nickens</i>
Nield	David	Roads	<i>David Nield</i>
Nunez	Senecca	Eng	<i>Senecca Nunez</i>
Olson	Norm	Roads	
Park	Ken	Roads	
Pendleton	Paul	Shop	<i>Paul Pendleton</i>
Pepin	James	Roads	
Plesa	Nikita	Cust	<i>Nikita Plesa</i>
Powell	Phillip	Fac Man	
Ratledge	Cathy	Cust	<i>Cathy Ratledge</i>
Reilly	Glenn	Shop	<i>Glenn Reilly</i>
Rennels	COREY Cory	Roads	<i>Cory Rennels</i>
Renz	Don	Eng	<i>Don Renz</i>



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Attendees: Please sign your name legibly.

If your name is not on the list please add it at the end.

Last Name	First		Signature
Richards	Rick	Roads	<i>Rick Richards</i>
Riley	Henry	Cust	<i>Henry W. Riley</i>
Riley	T. Dan	Cust	<i>T. Dan Riley</i>
Robinson	Dan	CSA	<i>D. Robinson</i>
Rotter	Edward	Roads	
Rulon	Robert	Grounds	<i>Bob Rulon</i>
Russell	Laura	Admin	<i>Laura Russell</i>
Russell	Rachelle	Admin	<i>Rachelle Russell</i>
Salay	Mandy	Cust	<i>Mandy Salay</i>
Sealander	Scott	CSA	<i>Scott Sealander</i>
Sease	Brad	Shop	<i>Brad Sease</i>
Seghetti	Jim	Roads	<i>Jim Seghetti</i>
Smith	Scott	Fac Man	<i>Scott Smith</i>
Stainbrook	Butch	Roads	<i>Butch Stainbrook</i>
Starr	Randy	Roads	<i>Randy Starr</i>
Stevens	Jim	Cust	<i>Jim Stevens</i>
Stone	Dennis	Shop	<i>Dennis Stone</i>
Sturm	Brandon	Roads	



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Attendees: Please sign your name legibly.
If your name is not on the list please add it at the end.

Last Name	First		Signature
Williams	Rosella	Fleet	Rosella Williams
Wilson	John	Roads	John Wilson
Winton	Shane	Eng	Shane Winton
Wolter	Debbie	Admin	Debbie Wolter
Wood	William	Fac Man	William Wood
Woolery	Matt	Roads	Matt Woolery
Zeimet	Dennis	Eng	Dennis Zeimet
Fields	Chris		Chris Fields
Whan	Don		Don Whan



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If your name is not on the list please add it at the end.

Last Name	First		Signature
Swayne	Rusty	CSA	<i>Rusty Swayne</i>
Swearingen	Chris	Grounds	<i>Chris Swearingen</i>
Swingseth	Russell	Cust	<i>R. Swingseth</i>
Thomas	Ranell	Cust	
Timmons	Keith	Roads	<i>Keith Timmons</i>
Trotter	Venton	Eng	<i>Venton Trotter</i>
Tyrolt	George	Roads	<i>George Tyrolt</i>
Uzzardo	Tim	Roads	<i>Tim Uzzardo</i>
Van Slyke	Susan	Grounds	<i>Susan Van Slyke</i>
Vasquez	George	Roads	<i>George Vasquez</i>
Vellines	Russell	CSA	<i>Russell Vellines</i>
Wahl	Amy	Admin	<i>Amy Wahl</i>
Wahl	Scott	Admin	<i>Scott Wahl</i>
Warren	Pete	Cust	
Watkins	Andy	Roads	<i>Andy Watkins</i>
Wedemeyer	Eric	Eng	<i>Eric Wedemeyer</i>
Wilkinson	Robert	Cust	<i>Robert Wilkinson</i>
Williams	Eric	Roads	<i>Eric Williams</i>



ANNUAL SAFETY MEETING SIGNUP SHEET

Subjects Covered: Hazard Mitigation

Work Location/Job Classes Included: DPW employees, Invited guests

Date: 4/14/16

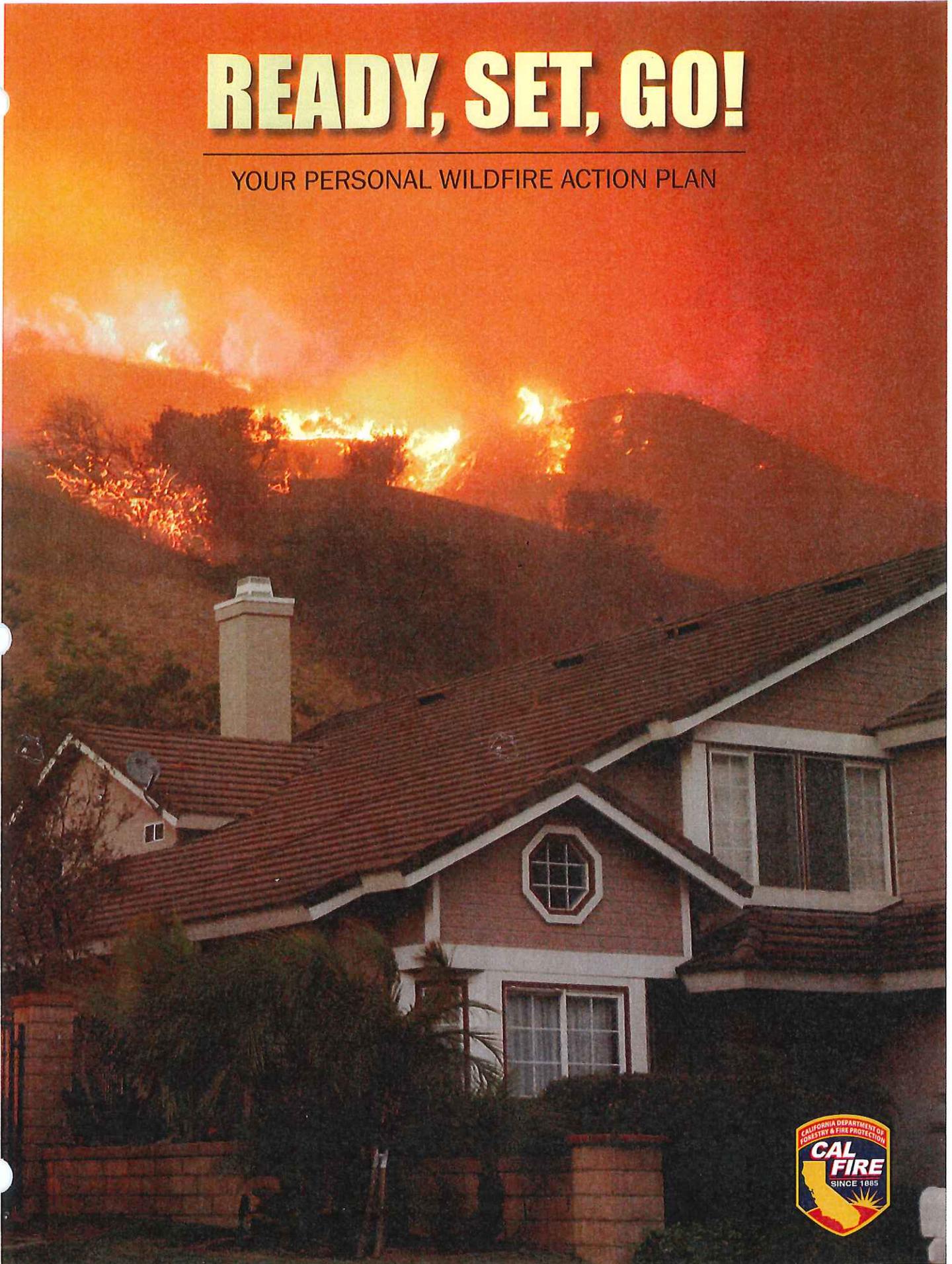
Presenter: Rick Wallingford, Bret Gouvea, Jason Barnhart

Attendees: Please sign your name legibly.
If your name is not on the list please add it at the end.

Last Name	First		Signature
GUESTS			
<u>Sarnavian</u> Barnhart	<u>Jason</u>	<u>OES</u> OES	<u>Rick Wallingford</u>
<u>Baugh</u>	<u>Les</u>	<u>Supervisor</u>	<u>[Signature]</u>
<u>Davis</u>	<u>Angela</u>	<u>Supt Svcs</u>	
<u>Dorney</u>	<u>Megan</u>	<u>CAO's</u>	
<u>Giacomini</u>	<u>Pam</u>	<u>Supervisor</u>	
<u>Gouvea</u>	<u>Bret</u>	<u>County Fire</u>	<u>[Signature]</u>
<u>Johnson</u>	<u>James</u>	<u>Risk Man</u>	<u>attended - did not sign</u>
<u>Kehoe</u>	<u>David</u>	<u>Supervisor</u>	<u>[Signature]</u>
<u>Lees</u>	<u>Larry</u>	<u>CEO</u>	<u>[Signature]</u>
<u>Moty</u>	<u>Leonard</u>	<u>Supervisor</u>	
<u>Schappell</u>	<u>Bill</u>	<u>Supervisor</u>	<u>Bill Schappell</u>
<u>Vanderpol</u>	<u>Thomas</u>	<u>Risk Man</u>	<u>attended - did not sign</u>
<u>Wallingford</u>	<u>Nick</u>	<u>Cal Fire</u>	<u>[Signature]</u>

READY, SET, GO!

YOUR PERSONAL WILDFIRE ACTION PLAN



CAL FIRE Land Use Planning Program



Nick Wallingford, Fire Captain

Program Overview

- ▶ Driven by Senate Bill 1241, January 2014
- ▶ Goals:
 - Save lives
 - Save property
 - Ease the financial burden for fire suppression on both state and local government

History: Injuries and Deaths

- ▶ In the top ten most damaging fires since 2000, 29 deaths have resulted.
- ▶ The Tunnel Fire alone in Oakland Hills/Berkeley resulted in 25 deaths in 1991.
- ▶ More people living in the wildland means higher potential for injuries and deaths.



History: Damages

- ▶ 6/10 California's most damaging fires ever recorded have occurred since 2003.
 - These six fires alone destroyed nearly 9,000 structures
 - 2/10 most damaging fires have occurred in Shasta County (Jones 1999, Fountain 1992)
- ▶ 7/10 California's largest fires ever recorded have occurred since 2003.
 - High intensity
 - Fast moving

2015 Property Damages

- ▶ Last fire season alone, nearly 2,000 homes were destroyed, plus approximately 800 outbuildings (mostly from Butte and Valley Fires).
 - *Outbuilding= Permanent structure, min. size of 120sf.
- ▶ Butte and Valley fires alone:
 - Over \$2 Billion in damages
 - Over \$100+ million in suppression costs
 - Six civilian deaths
 - Burn over of four CAL FIRE helitack firefighters resulting in serious injuries. The crew was engaged in structure defense

History: Financial Burden

- ▶ 2014-2015 Wildland fire Budget \$762 million
 - Additional \$200 million used from emergency fund
- ▶ Multiple fire seasons have surpassed \$1 Billion in wildland fire suppression costs

History: Financial Burden

- ▶ Per CA Legislative Analysts Office:
 - CAL FIRE budget tripled from 1998-1999 to 2008-2009 period

- Some main reasons for increased costs:
 - Larger fires
 - More housing/development in fire prone areas

Future Projections

- ▶ Houses and people in the SRA grew 16% between 2000 and 2010.
- ▶ Longer fire seasons
- ▶ Increased fuel loading



Shifting Mentality

Develop land and build structures with the expectation that a fire will burn



Senate Bill 1241

- ▶ Requires
 - Updating Safety Element within the General Plan to include planning for wildland fire hazards
 - Submission to the State Board of Forestry and Fire Protection for comment
 - Submission to agencies providing fire protection in jurisdiction
 - Specific findings before map approvals

Land Use Planning Program

- ▶ Twelve Person group to serve the entire state
- ▶ Provide technical expertise to local planners regarding wildland fire planning
- ▶ Bridge the gap between fire fighters on the ground, local planners and personnel in Sacramento



Thank you for your time!



PROTECTING THE HOMES & CITIZENS OF CALIFORNIA

Wildland Urban Interface Building Standards California Building Code Chapter 7A

Can we live with wildland fire?

In the 1800s settlers started building homes in areas of California where wildfires naturally roam. Since then Californians have watched raging wildfires threaten or destroy their communities. Each year, as the cost in lost lives, burned homes, ruined businesses, and devastated communities increases, millions of dollars are being spent on firefighting. Unfortunately that number continues to escalate.

California always will experience wildland fires but residents don't have to accept the losses. Research into home loss in the wildland urban interface shows not only why structures burn but the best way to protect homes **BEFORE** a wildfire occurs.

Appendix 4A HAZUS MH Flood Event Reports

Shasta County Flood 100-year

Table 1

Building Exposure by Occupancy Type for the Study Region		
Occupancy	Exposure (\$1000)	Percent of Total
Residential	9,410,456	77.2%
Commercial	1,907,456	15.7%
Industrial	328,910	2.7%
Agricultural	55,211	0.5%
Religion	191,410	1.6%
Government	164,514	1.4%
Education	125,418	1.0%
Total	12,183,375	100.00%

Table 2

Building Exposure by Occupancy Type for the Scenario		
Occupancy	Exposure (\$1000)	Percent of Total
Residential	3,672,812	80.5%
Commercial	583,221	12.8%
Industrial	101,532	2.2%
Agricultural	27,285	0.6%
Religion	73,584	1.6%
Government	51,813	1.1%
Education	50,203	1.1%
Total	4,560,450	100.00%

Table 3

Expected Building Damage by Occupancy												
Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	4	44.44	0	0.00	0	0.00	2	22.22	3	33.33
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	3	21.43	11	78.57	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	122	2.48	884	17.96	620	12.60	2,135	43.38	1,161	23.59
Total	3		137		884		620		2,137		1,164	

Table 4

Expected Building Damage by Building Type												
Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)								
Concrete	1	20.00	4	80.00	0	0.00	0	0.00	0	0.00	0	0.00
ManufHousing	0	0.00	0	0.00	0	0.00	0	0.00	4	0.68	581	99.32
Masonry	1	10.00	3	30.00	0	0.00	0	0.00	3	30.00	3	30.00
Steel	1	25.00	3	75.00	0	0.00	0	0.00	0	0.00	0	0.00
Wood	0	0.00	122	2.82	884	20.42	620	14.32	2,126	49.10	578	13.35

Table 5

Expected Damage to Essential Facilities				
Classification	Total	# Facilities		Loss of Use
		At Least Moderate	At Least Substantial	
Fire Stations	38	4	0	1
Hospitals	3	0	0	0
Police Stations	9	1	0	0
Schools	120	12	1	1

Table 6

Building-Related Economic Loss Estimates						
(Millions of dollars)						
Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss	Building	460.34	80.75	12.37	15.95	569.41
	Content	286.31	154.25	21.87	54.08	516.50
	Inventory	0.00	2.71	3.99	0.59	7.29
	Subtotal	746.65	237.71	38.23	70.61	1,093.20
Business Interruption	Income	0.02	0.92	0.00	0.13	1.08
	Relocation	0.94	0.19	0.00	0.05	1.18
	Rental Income	0.27	0.13	0.00	0.00	0.39
	Wage	0.06	0.96	0.00	7.43	8.46
	Subtotal	1.29	2.20	0.00	7.62	11.11
ALL	Total	747.93	239.91	38.23	78.23	1,104.31

Building Value (thousands of dollars)				
	Population	Residential	Non-Residential	Total
California				
Shasta	163,256	9,410,456	2,772,919	2,183,375
Total	163,256	9,410,456	2,772,919	12,183,375
Total Study Region	163,256	9,410,456	2,772,919	12,183,375

Shasta County Flood 500-year

Table 1

Building Exposure by Occupancy Type for the Study Region		
Occupancy	Exposure (\$1000)	Percent of Total
Residential	9,410,456	77.2%
Commercial	1,907,456	15.7%
Industrial	328,910	2.7%
Agricultural	55,211	0.5%
Religion	191,410	1.6%
Government	164,514	1.4%
Education	125,418	1.0%
Total	12,183,375	100.00%

Table 2

Building Exposure by Occupancy Type for the Scenario		
Occupancy	Exposure (\$1000)	Percent of Total
Residential	3,078,020	79.2%
Commercial	532,243	13.7%
Industrial	95,620	2.5%
Agricultural	20,993	0.5%
Religion	62,665	1.6%
Government	45,475	1.2%
Education	51,045	1.3%
Total	3,886,061	100.00%

Table 3

Expected Building Damage by Occupancy												
Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)								
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	6	42.86	3	21.43	0	0.00	0	0.00	5	35.71
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	1	6.25	13	81.25	2	12.50	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	95	1.63	788	13.54	529	9.09	2,703	46.44	1,706	29.31
Total	1		115		793		529		2,703		1,711	

Table 4

Expected Building Damage by Building Type												
Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)								
Concrete	0	0.00	5	71.43	1	14.29	0	0.00	0	0.00	1	14.29
ManuffHousing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	728	100.00
Masonry	0	0.00	4	30.77	1	7.69	0	0.00	4	30.77	4	30.77
Steel	0	0.00	4	80.00	1	20.00	0	0.00	0	0.00	0	0.00
Wood	0	0.00	97	1.91	788	15.50	529	10.40	2,697	53.04	974	19.15

Table 5

Expected Damage to Essential Facilities				
Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	38	4	0	0
Hospitals	3	0	0	0
Police Stations	9	1	0	0
Schools	120	12	0	0

Table 6

Building-Related Economic Loss Estimates						
(Millions of dollars)						
Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss	Building	545.46	100.18	17.26	20.20	683.09
	Content	334.00	190.55	30.37	66.10	621.01
	Inventory	0.00	3.66	5.56	0.66	9.87
	Subtotal	879.46	294.38	53.18	86.95	1,313.97
Business Interruption	Income	0.02	1.13	0.00	0.17	1.31
	Relocation	1.09	0.25	0.00	0.06	1.40
	Rental Income	0.31	0.16	0.00	0.00	0.48
	Wage	0.06	1.16	0.00	8.62	9.84
	Subtotal	1.47	2.70	0.00	8.85	13.02
ALL	Total	880.93	297.08	53.19	95.80	1,326.99

Building Value (thousands of dollars)				
	Population	Residential	Non-Residential	Total
California				
Shasta	163,256	9,410,456	2,772,919 1	2,183,375
Total	163,256	9,410,456	2,772,919 1	2,183,375
Total Study Region	163,256	9,410,456	2,772,919	12,183,375

Appendix 4B

HAZUS MH Earthquake Events

Shasta County Earthquake 500 yr

Table 1

Transportation System Lifeline Inventory			
System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	213	305.60
	Segments	130	2,021.00
	Tunnels	0	0.00
		Subtotal	2,326.60
Railways	Bridges	5	0.40
	Facilities	1	2.70
	Segments	33	58.30
	Tunnels	0	0.00
	Subtotal	61.30	
Light Rail	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	Tunnels	0	0.00
	Subtotal	0.00	
Bus	Facilities	1	1.30
		Subtotal	1.30
Ferry	Facilities	0	0.00
		Subtotal	0.00
Port	Facilities	0	0.00
		Subtotal	0.00
Airport	Facilities	1	10.70
	Runways	2	75.90
		Subtotal	86.60
	Total		2,475.80

Table 2

Utility System Lifeline Inventory			
System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	47.30
	Facilities	2	78.60
	Pipelines	0	0.00
		Subtotal	125.90
Waste Water	Distribution Lines	NA	28.40
	Facilities	5	392.90
	Pipelines	0	0.00
		Subtotal	421.30
Natural Gas	Distribution Lines	NA	18.90
	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	18.90
Oil Systems	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	0.00
Electrical Power	Facilities	3	389.40
		Subtotal	389.40
Communication	Facilities	7	0.80
		Subtotal	0.80
	Total		956.40

Table 3

Expected Building Damage by Occupancy										
	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	88	0.30	47	0.31	49	0.56	25	0.95	6	1.49
Commercial	848	2.85	632	4.21	867	9.91	430	16.29	92	24.29
Education	44	0.15	19	0.13	22	0.25	11	0.42	2	0.60
Government	45	0.15	29	0.19	41	0.47	19	0.73	4	1.01
Industrial	224	0.75	175	1.17	2556	2.93	136	5.15	32	8.42
Other Residential	4,635	15.56	3,339	22.25	3,529	40.33	1,482	56.15	208	55.27
Religion	79	0.26	45	0.30	54	0.62	26	0.97	5	1.30
Single Family	23,820	79.98	10,719	71.44	3,932	44.94	511	19.36	29	7.62
Total	29,783		15,004		8,750		2,639		377	

Table 4

Expected Building Damage by Building Type (All Design Levels)										
	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	26,712	89.69	12201	81.32	4,515	51.60	544	20.63	36	9.42
Steel	316	1.06	205	1.37	372	4.25	176	6.66	45	11.99
Concrete	303	1.02	240	1.60	353	4.04	166	6.30	61	8.20
Precast	189	0.63	121	0.81	264	3.01	216	8.18	53	14.46
RM	595	2.00	250	1.67	441	5.04	275	10.40	31	8.19
URM	142	0.48	101	0.67	102	1.16	45	1.72	15	4.01
MH	1,527	5.13	1887	12.57	2,703	30.90	1,217	46.11	166	44.03
Total	29,783		15,004		8,750		2,639		377	

*Note:

RM Reinforced Masonry

URM Unreinforced Masonry

MH Manufactured Housing

Table 5

Expected Damage to Essential Facilities				
Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	3	3	0	0
Schools	120	0	0	105
EOCs	0	0	0	0
Police Stations	9	0	0	8
Fire Stations	38	0	0	25

Table 6

Expected Damage to the Transportation Systems						
System	Component	Number of Locations				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	162	0	0	162	162
	Bridges	430	0	0	430	430
	Tunnels	0	0	0	0	0
Railways	Segments	71	0	0	71	71
	Bridges	7	0	0	7	7
	Tunnels	0	0	0	0	0
	Facilities	1	0	0	1	1
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	1	0	0	1	1
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	1	0	0	1	1
	Runways	2	0	0	2	2

Table 7

Expected Utility System Facility Damage					
System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	2	0	0	2	2
Waste Water	5	0	0	0	5
Natural Gas	1	0	0	0	1
Oil Systems	0	0	0	0	0
Electrical Power	5	0	0	3	5
Communication	22	0	0	22	22

Table 8

Expected Utility System Pipeline Damage (Site Specific)			
System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water 1	1,872	2484	621
Waste Water	7,123	1965	491
Natural Gas	4,749	2100	525
Oil	0	0	0

Table 9

Expected Potable Water and Electric Power System Performance						
	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	63,426	13,249	11,451	7,918	0	0
Electric Power		0	0	0	0	0

Table 10

Casualty Estimates					
		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	3	1	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	4	1	0	0
	Industrial	4	1	0	0
	Other-Residential	113	20	2	3
	Single Family	76	8	0	1
	Total	200	31	2	4
2 PM	Commercial	224	54	8	16
	Commuting	0	0	0	0
	Educational	70	17	2	5
	Hotels	1	0	0	0
	Industrial	29	7	1	2
	Other-Residential	26	5	0	1
	Single Family	18	2	0	0
	Total	367	85	12	24
5 PM	Commercial	179	43	7	13
	Commuting	2	2	4	1
	Educational	7	2	0	0
	Hotels	1	0	0	0
	Industrial	18	4	1	1
	Other-Residential	41	7	1	1
	Single Family	29	3	0	0
	Total	277	62	12	16

Table 11

Building-Related Economic Loss Estimates (Millions of dollars)							
Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses	Wage	0.00	3.97	52.38	1.43	4.29	62.06
	Capital-Related	0.00	1.69	42.63	0.84	0.65	45.81
	Rental	7.68	10.94	24.57	0.41	2.32	45.92
	Relocation	29.14	16.01	39.27	2.55	12.40	99.37
	Subtotal	36.82	32.61	158.84	5.22	19.66	253.16
Capital Stock Losses	Structural	45.11	25.37	54.01	8.32	13.72	146.54
	Non-Structural	219.60	92.61	122.00	20.56	30.13	484.90
	Content	71.67	18.56	50.87	11.73	12.71	165.54
	Inventory	0.00	0.00	1.43	2.28	0.24	3.95
	Subtotal	336.38	136.54	228.32	42.89	56.80	800.93
	Total	373.20	169.15	387.16	48.11	76.47	1,054.09

Table 12

Transportation System Economic Losses (Millions of dollars)				
System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	3,446.27	\$0.00	0.00
	Bridges	514.99	\$9.89	1.92
	Tunnels	0.00	\$0.00	0.00
	Subtotal	3961.30	9.90	
Railways	Segments	128.00	\$0.00	0.00
	Bridges	0.83	\$0.01	0.64
	Tunnels	0.00	\$0.00	0.00
	Facilities	2.66	\$0.43	16.25
	Subtotal	131.50	0.40	
Light Rail	Segments	0.00	\$0.00	0.00
	Bridges	0.00	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	0.00	
Bus	Facilities	1.29	\$0.21	16.25
	Subtotal	1.30	0.20	
Ferry	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	0.00	
Port	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	0.00	
Airport	Facilities	10.65	\$1.76	16.49
	Runways	75.93	\$0.00	0.00
	Subtotal	86.60	1.80	
Total		4180.60	12.30	

Table 13

Utility System Economic Losses (Millions of dollars)				
System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.00	\$0.00	0.00
	Facilities	78.60	\$6.80	8.65
	Distribution Lines	237.40	\$11.18	4.71
	Subtotal	316.03	\$17.98	
Waste Water	Pipelines	0.00	\$0.00	0.00
	Facilities	392.90	\$34.45	8.77
	Distribution Lines	142.50	\$8.84	6.21
	Subtotal	535.40	\$43.29	
Natural Gas	Pipelines	0.00	\$0.00	0.00
	Facilities	1.30	\$0.18	13.81
	Distribution Lines	95.00	\$9.45	9.95
	Subtotal	96.26	\$9.63	
Oil Systems	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	\$0.00	
Electrical Power	Facilities	649.00	\$68.69	10.58
	Subtotal	649.00	\$68.69	
Communication	Facilities	2.60	\$0.25	9.70
	Subtotal	2.60	\$0.25	
Total		1,599.28	\$139.84	

Shasta County Earthquake 100 yr

Table 1

Transportation System Lifeline Inventory			
System	Component	# locations/# Segments	Replacement value (millions of dollars)
Highway	Bridges	430	515.00
	Segments	162	3,446.30
	Tunnels	0	0.00
	Subtotal		3,961.30
Railways	Bridges	7	0.80
	Facilities	1	2.70
	Segments	71	128.00
	Tunnels	0	0.00
	Subtotal		131.50
Light Rail	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	Tunnels	0	0.00
	Subtotal		0.00
Bus	Facilities	1	1.30
	Subtotal		1.30
Ferry	Facilities	0	0.00
	Subtotal		0.00
Port	Facilities	0	0.00
	Subtotal		0.00
Airport	Facilities	1	10.70
	Runways	2	75.90
	Subtotal		86.60
Total			4,180.60

Table 2

Utility System Lifeline Inventory			
System	Component	# Locations /Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	237.40
	Facilities	2	78.60
	Pipelines	0	0.00
	Subtotal		316.00
Waste Water	Distribution Lines	NA 1	42.50
	Facilities	5	392.90
	Pipelines	0	0.00
	Subtotal		535.40
Natural Gas	Distribution Lines	NA	95.00
	Facilities	1	1.30
	Pipelines	0	0.00
	Subtotal		96.30
Oil Systems	Facilities	0	0.00
	Pipelines	0	0.00
	Subtotal		0.00
Electrical Power	Facilities	5	649.00
	Subtotal		649.00
Communication	Facilities	22	2.60
	Subtotal		2.60
Total			1,599.30

Table 3

Expected Building Damage by Occupancy										
	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	237	0.40	33	0.44	19	0.75	4	1.31	0	2.17
Commercial	2,658	4.46	409	5.52	235	9.29	45	15.21	3	25.12
Education	106	0.18	12	0.16	7	0.27	1	0.41	0	0.75
Government	143	0.24	21	0.28	12	0.49	2	0.62	0	1.39
Industrial	771	1.29	129	1.74	82	3.25	17	5.83	1	8.45
Other Residential	13,015	21.82	2,392	32.25	1,390	54.89	170	57.83	6	59.96
Religion	205	0.34	28	0.38	15	0.61	2	0.78	0	1.72
Single Family	42,507	71.27	4,393	59.23	771	30.47	53	18.01	0	0.44
Total	59,642		7,417		2,532		265		11	

Table 4

Expected Building Damage by Building Type (All Design Levels)										
	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	47,865	80.25	5012	67.58	857	33.87	55	8.79	0	1.16
Steel	1,014	1.70	178	2.40	132	5.22	21	7.18	2	20.35
Concrete	1,030	1.73	174	2.35	93	3.67	12	4.14	1	4.98
Precast	744	1.25	114	1.54	106	4.20	30	10.28	1	7.52
RM	1,624	2.72	152	2.05	116	4.59	23	7.68	0	2.47
URM	359	0.60	74	0.99	42	1.65	10	3.35	2	14.41
MH	7,006	11.75	1712	23.08	1,185	46.80	143	48.57	5	49.11
Total	59,642		7,417		2,532		295		11	

*Note:

- RM Reinforced Masonry
- URM Unreinforced Masonry
- MH Manufactured Housing

Table 5

Expected Damage to Essential Facilities				
Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	3	0	0	3
Schools	120	0	0	120
EOCs	0	0	0	0
Police Stations	9	0	0	9
Fire Stations	38	0	0	38

Table 6

Expected Damage to the Transportation Systems						
System	Component	Number of Locations				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	162	0	0	162	162
	Bridges	430	0	0	430	430
	Tunnels	0	0	0	0	0
Railways	Segments	71	0	0	71	71
	Bridges	7	0	0	7	7
	Tunnels	0	0	0	0	0
	Facilities	1	0	0	1	1
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	1	0	0	1	1
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	1	0	0	1	1
	Runways	2	0	0	2	2

Table 7

Expected Utility System Facility Damage					
System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50%	
				After Day 1	After Day 7
Potable Water	2	0	0	2	2
Waste Water	5	0	0	5	5
Natural Gas	1	0	0	1	1
Oil Systems	0	0	0	0	0
Electrical Power	5	0	0	5	5
Communication	22	0	0	22	22

Table 8

Expected Utility System Pipeline Damage (Site Specific)			
System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water	11,872	366	92
Waste Water	7,123	290	72
Natural Gas	4,749	310	77
Oil	0	0	0

Table 9

Expected Potable Water and Electric Power System Performance						
	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	63,426	29	0	0	0	0
Electric Power		0	0	0	0	0

Table 10

Casualty Estimates					
		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	0	0	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	0	0	0	0
	Other-Residential	14	1	0	0
	Single Family	12	1	0	0
	Total	26	2	0	0
2 PM	Commercial	18	2	0	0
	Commuting	0	0	0	0
	Educational	6	1	0	0
	Hotels	0	0	0	0
	Industrial	2	0	0	0
	Other-Residential	3	0	0	0
	Single Family	3	0	0	0
	Total	32	4	0	1
5 PM	Commercial	14	2	0	0
	Commuting	0	0	0	0
	Educational	1	0	0	0
	Hotels	0	0	0	0
	Industrial	1	0	0	0
	Other-Residential	5	1	0	0
	Single Family	4	0	0	0
	Total	26	3	0	0

Table 11

Building-Related Economic Loss Estimates (Millions of dollars)							
Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses	Wage	0.00	0.37	6.59	0.18	0.58	7.73
	Capital-Related	0.00	0.16	5.48	0.11	0.08	5.83
	Rental	1.03	1.41	3.45	0.06	0.28	6.22
	Relocation	3.61	2.59	5.14	0.43	1.47	13.24
	Subtotal	4.63	4.53	20.66	0.79	2.41	33.02
Capital Stock Losses	Structural	7.26	3.64	6.30	1.08	1.60	19.87
	Non-Structural	37.85	13.89	15.86	2.88	4.13	74.62
	Content	11.66	2.93	7.86	1.71	1.97	26.12
	Inventory	0.00	0.00	0.21	0.34	0.03	0.58
	Subtotal	56.76	20.46	30.23	6.01	7.73	121.19
	Total	61.39	24.99	50.89	6.80	10.14	154.22

Table 12

Transportation System Economic Losses (Millions of dollars)				
System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	3,446.27	\$0.00	0.00
	Bridges	514.99	\$0.56	0.11
	Tunnels	0.00	\$0.00	0.00
	Subtotal	3961.30	0.60	
Railways	Segments	128.00	\$0.00	0.00
	Bridges	0.83	\$0.00	0.01
	Tunnels	0.00	\$0.00	0.00
	Facilities	2.66	\$0.16	5.96
	Subtotal	131.50	0.20	
Light Rail	Segments	0.00	\$0.00	0.00
	Bridges	0.00	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	0.00	
Bus	Facilities	1.29	\$0.08	5.96
	Subtotal	1.30	0.10	
Ferry	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	0.00	
Port	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	0.00	
Airport	Facilities	10.65	\$0.63	5.90
	Runways	75.93	\$0.00	
	Subtotal	86.60	0.60	
	Total	4180.60	1.40	

Table 13

Utility System Economic Losses (Millions of dollars)				
System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.00	\$0.00	0.00
	Facilities	78.60	\$1.34	1.70
	Distribution Lines	237.40	\$1.65	0.69
	Subtotal	316.03	\$2.99	
Waste Water	Pipelines	0.00	\$0.00	0.00
	Facilities	392.90	\$6.65	1.69
	Distribution Lines	142.50	\$1.30	0.92
	Subtotal	535.40	\$7.95	
Natural Gas	Pipelines	0.00	\$0.00	0.00
	Facilities	1.30	\$0.03	2.28
	Distribution Lines	95.00	\$1.39	1.47
	Subtotal	96.26	\$1.42	
Oil Systems	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	\$0.00	
Electrical Power	Facilities	649.00	\$12.63	1.95
	Subtotal	649.00	\$12.63	
Communication	Facilities	2.60	\$0.05	1.88
	Subtotal	2.60	\$0.05	
	Total	1,599.28	\$25.05	

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Table 1

Transportation System Lifeline Inventory			
System	Component	# locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	213	305.60
	Segments	130	2,021.00
	Tunnels	0	0.00
		Subtotal	2,326.60
Railways	Bridges	5	0.40
	Facilities	1	2.70
	Segments	33	58.30
	Tunnels	0	0.00
		Subtotal	61.30
Light Rail	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	Tunnels	0	0.00
		Subtotal	0.00
Bus	Facilities	1	1.30
		Subtotal	1.30
Ferry	Facilities	0	0.00
		Subtotal	0.00
Port	Facilities	0	0.00
		Subtotal	0.00
Airport	Facilities	1	10.70
	Runways	2	75.90
		Subtotal	86.60
		Total	2,475.80

Table 2

Utility System Lifeline Inventory			
System	Component	# Locations/ Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	47.30
	Facilities	2	78.60
	Pipelines	0	0.00
		Subtotal	125.90
Waste Water	Distribution Lines	NA	28.40
	Facilities	5	392.90
	Pipelines	0	0.00
		Subtotal	421.30
Natural Gas	Distribution Lines	NA	18.90
	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	18.90
Oil Systems	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	0.00
Electrical Power	Facilities	3	389.40
		Subtotal	389.40
Communication	Facilities	7	0.80
		Subtotal	0.80
		Total	956.40

Table 3

Expected Building Damage by Occupancy										
	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	209	0.38	3	0.47	1	0.82	0	1.72	0	2.33
Commercial	2,787	5.01	57	7.92	21	13.90	3	30.58	0	47.62
Education	97	0.17	1	0.20	0	0.31	0	0.59	0	1.34
Government	135	0.24	3	0.35	1	0.49	0	0.70	0	2.11
Industrial	799	1.43	17	2.31	7	4.33	1	9.54	0	5.48
Other Residential	12,797	22.99	300	41.65	93	60.30	4	43.13	0	38.17
Religion	204	0.37	3	0.46	1	0.64	0	0.98	0	2.94
Single Family	38,645	69.42	336	46.63	30	19.22	1	12.75	0	0.00
Total	55,672		719		154		9		0	

Table 4

Expected Building Damage by Building Type (All Design Levels)										
	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	43,592	78.30	383	53.30	32	20.61	1	12.97	0	0.00
Steel	1,092	1.96	16	2.20	5	3.45	0	4.34	0	6.77
Concrete	1,066	1.91	22	3.02	5	3.09	0	3.00	0	0.00
Precast	801	1.44	25	3.47	14	9.30	2	25.91	0	0.81
RM	1,552	2.79	26	3.68	12	7.71	1	13.48	0	0.00
URM	381	0.68	17	2.32	6	4.05	1	9.75	0	92.42
MH	7,187	12.91	230	32.01	80	51.80	3	30.55	0	0.00
Total	55,672		719		154		9		0	

*Note:

RM Reinforced Masonry
 URM Unreinforced Masonry
 MH Manufactured Housing

Table 5

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	87	0	0	87
EOCs	0	0	0	0
Police Stations	6	0	0	6
Fire Stations	15	0	0	15

Table 6

Expected Damage to the Transportation Systems						
System	Component	Number of Locations				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	130	0	0	130	130
	Bridges	213	0	0	213	213
	Tunnels	0	0	0	0	0
Railways	Segments	33	0	0	33	33
	Bridges	5	0	0	5	5
	Tunnels	0	0	0	0	0
	Facilities	1	0	0	1	1
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	1	0	0	1	1
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	1	0	0	1	1
	Runways	2	0	0	2	2

Table 7

Expected Utility System Facility Damage					
System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	2	0	0	2	2
Waste Water	5	0	0	5	5
Natural Gas	0	0	0	0	0
Oil Systems	0	0	0	0	0
Electrical Power	3	0	0	3	3
Communication	7	0	0	7	7

Table 8

Expected Utility System Pipeline Damage (Site Specific)			
System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water	2,366	5	1
Waste Water	1,419	4	1
Natural Gas	946	4	1
Oil	0	0	0

Table 9

Expected Potable Water and Electric Power System Performance						
	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	53,742	0	0	0	0	0
Electric Power		0	0	0	0	0

Table 10

		Casualty Estimates			
		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	0	0	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	0	0	0	0
	Other-Residential	1	0	0	0
	Single Family	1	0	0	0
	Total	2	0	0	0
2 PM	Commercial	2	0	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	0	0	0	0
	Other-Residential	0	0	0	0
	Single Family	0	0	0	0
	Total	2	0	0	0
5 PM	Commercial	1	0	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	0	0	0	0
	Other-Residential	0	0	0	0
	Single Family	0	0	0	0
	Total	2	0	0	0

Table 11

Building-Related Economic Loss Estimates (Millions of dollars)							
Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Loses	Wage	0.00	0.02	0.51	0.01	0.05	0.59
	Capital-Related	0.00	0.01	0.40	0.01	0.01	0.43
	Rental	0.04	0.10	0.33	0.01	0.02	0.50
	Relocation	0.13	0.16	0.46	0.04	0.09	0.87
		Subtotal	0.17	0.29	1.70	0.06	0.16
Capital Stock Loses	Structural	0.40	0.27	0.59	0.09	0.10	1.44
	Non-Structural	2.57	1.21	1.49	0.26	0.36	5.89
	Content	0.90	0.29	0.81	0.16	0.20	2.35
	Inventory	0.00	0.00	0.02	0.03	0.00	0.05
		Subtotal	3.87	1.76	2.91	0.53	0.66
	Total	4.04	2.05	4.60	0.60	0.82	12.11

Table 12

Transportation System Economic Losses (Millions of dollars)				
System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	2,021.02	\$0.00	0.00
	Bridges	305.61	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Subtotal	2326.60	0.00	
Railways	Segments	58.25	\$0.00	0.00
	Bridges	0.40	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	2.66	\$0.08	3.15
	Subtotal	61.30	0.10	
Light Rail	Segments	0.00	\$0.00	0.00
	Bridges	0.00	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	0.00	
Bus	Facilities	1.29	\$0.04	3.15
	Subtotal	1.30	0.00	
Ferry	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	0.00	
Port	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	0.00	
Airport	Facilities	10.65	\$0.20	1.89
	Runways	75.93	\$0.00	0.00
	Subtotal	86.60	0.20	
Total		2475.80	0.30	

Table 13

Utility System Economic Losses (Millions of dollars)				
System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.00	\$0.00	0.00
	Facilities	78.60	\$0.38	0.48
	Distribution Lines	47.30	\$0.02	0.04
	Subtotal	125.90	\$0.40	
Waste Water	Pipelines	0.00	\$0.00	0.00
	Facilities	392.90	\$0.95	0.24
	Distribution Lines	28.40	\$0.02	0.06
	Subtotal	421.33	\$0.96	
Natural Gas	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Distribution Lines	18.90	\$0.02	0.09
	Subtotal	18.93	\$0.02	
Oil Systems	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	\$0.00	
Electrical Power	Facilities	389.40	\$1.19	0.30
	Subtotal	389.40	\$1.19	
Communication	Facilities	0.80	\$0.00	0.45
	Subtotal	0.83	\$0.00	
Total		956.38	\$2.57	

Appendix 5A			
Shasta County Mitigation Implementation Strategy Tracking Table			
Area	Actions and Strategies	Timeframe	Update
FLD-1	Increase Participation in Floodplain Re-mapping Initiative		
FLD-2	Adding Community Volunteers to Creek Cleanup Committees		
FLD-3	Burney Flood Wall		
FLD-4	Cottonwood Sewer Treatment Plant		
FLD-5	Culvert inventory with GPS coordinates and GIS maps		
FLD-6	Replacement of a low flow culvert on Silver Bridge Road		
FLD-7	Repair Cottonwood's Fourth Street Drainage		
FLD-8	Reduce flooding of Burney Creek in Burney		
FLD-9	Reduce flooding of Wilshire Ditch on Bechelli		
FLD-10	Reduce vegetation in all creeks where cleanout would help reduce flooding.		
FLD-11	Open up the constricted creek channel along Platina Road, Trinity Mountain Road, Fountain Fire area and French Gulch Road.		
FLD-12	Restore adequate drainage on Dog Creek Road to prevent further erosion.		
FLD-13	CalEMA Golden Guardian 2011 Tabletop Exercise (flood scenario).		
FLD-14	Sub Scour Mitigation of County Bridges		
WDF-1	2010 Cottonwood Creek Watershed Strategic Fuels Reduction Plan		
WDF-2	2010 Cow Creek Watershed Strategic Fuels Reduction Plan		
WDF-3	2010 French Gulch Area Fuels Reduction and Management Plan		
WDF-4	2010 Lakehead Strategic Fuels Reduction and Management Plan		
WDF-5	2010 Lower Clear Creek Watershed Strategic Fuels Plan		
WDF-6	2010 Shasta West Watershed Strategic Fuels Reduction Plan		
WDF-7	2010 Shingletown/Manton Communities Fire Safe Plan		
WDF-8	2010 Stillwater-Churn Creek Community Wildfire Protection Plan		
WDF-9	2009 Keswick Basin Community Wildfire Protection Plan		
WDF-10	2008 CAL FIRE, Shasta – Trinity Unit Fire Plan		
WDF-11	2002 Backbone Ridge Defensible Fuel Profile Zone		
WDF-12	2005 Day Lassen Bench Community Fire Safe Plan		
WDF-13	1994 Middle Creek Watershed Strategic Wildfire Defense Plan		
WDF-14	Assistance to Burney water infrastructure for sustained fire fighting.		
WDF-15	Reorganization of Disaster Healthcare Volunteers and training for Red Cross emergency shelters.		
EW-1	Severe Storm		
EW-2	Extreme Heat		
EW-3	Critical Infrastructure Power Generation		
EQ-1	Retrofit any County buildings that do not meet seismic standards.		
EQ-2	Retrofit any County bridges that do not meet seismic standards.		
HM-1	Biohazard Detection System drill (suspected Anthrax scenario)		

Shasta County Mitigation Implementation Strategy Tracking Table			
Area	Actions and Strategies	Timeframe	Update
V-1	Maintain integrated evacuation plan to address the unique situation of volcanic eruption		
CB-1	Educate citizens for protection/prevention		
PE-1	Update Pan Flu Annex to ERP		
PE-2	Isolation and Quarantine Tabletop Exercise		
PE-3	Mass Vaccination		
MCI-1	Statewide Medical Health Exercise		
MCI-2	Shasta County Sierra-Sacramento Valley Emergency Medical Services meetings.		
MCI-3	EMS MCI Field Operations Guide		
MCI-4	County wide fatality management plan		
MCI-5	Government-Authorized Alternate Care Site (ACS) Plan Annex to ERP 2011.		
MCI-6	ACS Exercise		
DF-1	Effective outreach and education about emergency services and plans for communication about dam failure/overtopping		

Appendix 5B			
Anderson Mitigation Implementation Strategy Tracking Table			
Area	Actions and Strategies	Timeframe	Update
FLD-1	Increase Participation in Floodplain Re-mapping Initiative		
FLD-2	Floodplain Management and Flood Mitigation Education and Outreach Action		
FLD-3	Enhance Floodplain Management Ordinance		
FLD-4	Adding Community Volunteers to Creek Cleanup Committees		
FLD-5	Tormey Drain		
FLD-6	City of Anderson Police Department		
FLD-7	ACID Aqueduct at South Street		
HM-1	Biohazard Detection System Drills		
EW-1	Extreme weather emergency operation drills		
EQ-1	Retrofit any City buildings that do not meet seismic standards.		
WDF-1	Complete a Strategic Fuels Reduction Ploan for Anderson Creek Watershed		
WDF-2	Anderson River Park Fuels Reduction		
WDF-3	Factory Outlets Drive-Deschutes Road interchange with I-5		

