

EXECUTIVE SUMMARY

Contents

Executive Summary	1
Mitigation Goals and Objectives	4
Mitigation Progress	5
Mitigation Actions	5
The Roles of County Departments in Hazard Mitigation	11
Summary of Capabilities	12
Risk Assessment	14
Hazard Identification	14
Asset Inventory & Exposure Analysis	14
Critical Facility Inventory	17
Hazard Profiles & Vulnerability Assessments	18
Flood and Coastal Storm Surge	18
Wildfire	19
Agricultural Pests	19
Earthquake	20
Landslide and Coastal Erosion	21
Dam Failure	21
Tsunami	22
The 25 County Facilities Most Exposed to Natural Hazards	24
Plan Maintenance	25

Santa Barbara County
2011 Multi-Jurisdictional Hazard Mitigation Plan

Dear Fellow County Residents,

The Santa Barbara County Office of Emergency Management (OEM), working with the county's eight incorporated cities, various County departments and the consulting firm Dewberry, is pleased to present the 2011 Multi-Jurisdictional Hazard Mitigation Plan. The County's Plan serves as the lead document for the Santa Barbara County Operational Area. The "Operational Area" is the entire geographic county. As the eight cities complete their respective annexes they will be submitted to OEM for review, comments and, if approved, forwarded to the California Emergency Management Agency (Cal EMA). Local hazard mitigation plans are reviewed and approved by both state and federal officials.

The Santa Barbara County Operational Area is not unique in that it faces a myriad of threats and risks. The purpose of this plan update is to maintain eligibility for funding and technical assistance from state and federal hazard mitigation programs, such as the Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation-Competitive Program (PDM), and the Flood Mitigation Assistance program. This Plan also serves as a comprehensive tool for evaluating natural hazard risk throughout the County. It contains a strategy for implementing mitigation actions designed to reduce vulnerability and increase the resiliency of the County's most valuable assets. The Plan itself is over 300 pages. To assist our residents in accessing the Plan, the entire plan can be downloaded at www.countyofsb.org/ceo/oes.

This *Multi-Jurisdictional Hazard Mitigation Plan* for Santa Barbara County, California was updated by the countywide Mitigation Advisory Committee consisting of representatives from each incorporated city. Assessing our hazards and mitigating risks is an important initiative that must involve cities and the County working together with State and Federal emergency management.

OEM recognizes that it serves a diverse and complex community. Several opportunities for public involvement in the plan update process were provided in both English and Spanish. These included the issuance of a press release on February 4, 2011 announcing the commencement of the hazard mitigation plan. On March 8, 2011, Emergency Services Managers Richard Abrams, Santa Barbara County and Yolanda McGlinchey, Santa Barbara City, discussed the mitigation planning process on the local radio program Community Alert on KZSB-AM 1290. On March 28, 2011, the County issued a public survey (in Spanish and English) to seek input on how community members would prioritize hazards facing the county and what government officials could do to better communicate the risk. A bilingual press release was issued on March 28, 2011 announcing the web link to the survey. The survey was open for more than 30 days. 510 Santa Barbara County residents responded to the Santa Barbara County Hazard Mitigation Plan Survey. On July 8, 2011 OEM issued a press release in both English and Spanish advertising the public review period for this complete draft updated hazard mitigation plan. An email notifying interested stakeholders about this review opportunity was distributed on July 12th, 2011.

Santa Barbara County
2011 Multi-Jurisdictional Hazard Mitigation Plan

OEM wants to thank the Federal Emergency Management Agency (FEMA) and Cal EMA for providing the County with hazard mitigation funding and plan review. Working with our State and Federal partners, continuing to focus our efforts with city and agency professionals, will help us improve safety in our communities. Most of all, OEM wants to thank the interested members of our community who have provided us with feedback and input. Together, we can make Santa Barbara County a more resilient community.

Michael D. Harris, Emergency Operations Chief
Santa Barbara County

MITIGATION GOALS AND OBJECTIVES

The Mitigation Advisory Committee agreed upon the following revised goals and objectives for this plan update.

Goal 1: Promote disaster-resistant future development.
<i>Objective 1.A: Facilitate the development or updating of the County's Comprehensive Plan, City General Plans and zoning ordinances to limit (or ensure safe) development in hazard areas.</i>
<i>Objective 1.B: Facilitate the adoption of building codes and development regulations that protect existing assets and require disaster resistant design for new development in hazard areas.</i>
<i>Objective 1.C: Facilitate consistent enforcement of the comprehensive plan, zoning ordinances, and building and fire codes.</i>
<i>Objective 1.D: Address identified data limitations regarding the lack of information about new development and build-out potential in high hazard areas.</i>
<i>Objective 1.E: Educate the professional community on design and construction techniques that will minimize damage from the identified hazards</i>
Notes: This goal focuses on the programmatic/policy approaches to reducing risk to future new development. Building codes are updated on a regular basis in California. The MAC agreed the objectives for this goal are ongoing to ensure that the best and most recent building and fire codes are adopted in each of the participating jurisdictions. New building and fire codes were adopted in January 2011.
Goal 2: Build and support capacity and commitment for existing assets, including people, critical facilities/infrastructure, and public facilities, to become less vulnerable to hazards.
<i>Objective 2.A: Increase awareness and knowledge of hazard mitigation principles and practice among local government officials.</i>
<i>Objective 2.B: Provide technical assistance to local governments to implement their mitigation plans.</i>
<i>Objective 2.C: Address data limitations identified in Hazard Profiling and Risk Assessment.</i>
<i>Objective 2.D: Decrease the vulnerability of public infrastructure including facilities, roadways, and utilities.</i>
<i>Objective 2.E: Protect existing structures with the highest relative vulnerability to the effects of identified hazards through structural mitigation projects.</i>
Notes: This goal focuses on the programmatic and structural approaches to reducing risk to existing

development. The term “local government” is used to refer to city, county, and special districts.
Goal 3: Enhance hazard mitigation coordination and communication.
<i>Objective 3.A: Educate the public to increase awareness of hazards, potential impact, and opportunities for mitigation actions.</i>
<i>Objective 3.B: Monitor and publicize the effectiveness of mitigation actions implemented countywide.</i>
<i>Objective 3.C: Participate in initiatives that have mutual hazard mitigation benefits for the County, cities, state, tribal, and federal governments.</i>
<i>Objective 3.D: Encourage other organizations, within the public, private, and non-profit sectors, to incorporate hazard mitigation activities into their existing programs and plans.</i>
<i>Objective 3.E: Continue partnerships between the state, local, and tribal governments to identify, prioritize, and implement mitigation actions.</i>
<i>Objective 3.F: Continuously improve the County’s capability and efficiency at administering pre- and post-disaster mitigation programs, including providing technical support to cities and special districts.</i>
<i>Objective 3.G: Support a coordinated permitting activities process and consistent enforcement.</i>
Note: This goal focuses on communication and coordination required for successful mitigation of risk.

MITIGATION PROGRESS

The County MAC participants reviewed the mitigation actions listed in the 2005 plan to determine the status of each action. Seventeen (17) projects identified in the original plan have been completed while twenty-five (25) are currently in progress. Some notable items of mitigation progress include a new Adopted Procurement Policy and Mutual Aid Plan for public works for all of the Cities. These accomplishments are a result of the Disaster Recovery Manager working with the Office of Emergency Management.

MITIGATION ACTIONS

The following table presents the 44 prioritized actions to be considered and implemented during the life of this plan update. Many of these actions were identified in the original plan and have not yet been implemented. Some of these actions were newly identified during the planning process to update this plan. The priorities were established using the STAPLE/E Criteria (Social, Technical, Administrative, Political, Legal, Economic, and Environmental).

Santa Barbara County
2011 Multi-Jurisdictional Hazard Mitigation Plan

Table 0.1 Mitigation Actions for Future Implementation

Action #	Mitigation Action Description	Status	Responsible Department	Comments	Priority Score	S	T	A	P	L	E	E
2011 - 1	Tecolote Tunnel rebuild	New in 2011	COMB-PW	Replace/rebuild aging water delivery piping for So Coast cities	15	3	2	2	2	1	3	2
2011 - 2	Seismic Retrofit of 14 County Courthouse Facilities	Deferred EQ-1 from 2004	General Services Robert Ooley & Jill Van Wee	2006/2007/2008 On Going - with General Services Robert Ooley & Jill Van Wee - 4 Facilities Completed under FEMA-1505-45-19; FEMA-1505-44-18; FEMA-1505-43-17 (Completed)Ongoing is FEMA-1731-51-21R	13	2	3	2	1	2	2	1
2011 - 3	Inventory of Un-reinforced Masonry Structures	Deferred EQ-6 from 2004			13	2	3	2	1	2	2	1
2011 - 4	Bradley Channel Improvements	New in 2011			12	2	3	2	1	1	2	1
2011 - 5	'A' Street Basin	New in 2011			12	2	3	2	1	1	2	1
2011 - 6	Unit II Ditch Improvements	New in 2011			12	2	3	2	1	1	2	1
2011 - 7	Laguna County Sanitation District Earthquake Retrofit Project 1	Deferred EQ-4 from 2004			12	2	3	2	1	1	2	1
2011 - 8	Laguna County Sanitation District Earthquake Retrofit/Analysis Project 2	Deferred EQ-5 from 2004			12	2	3	2	1	1	2	1
2011 - 9	Seismic Safety and Mitigation Outreach and Education	Deferred EQ-7 from 2004			12	2	3	2	1	1	2	1
2011 - 10	Laguna County Sanitation District Flood Analysis and Protection	Deferred FLD-34 from 2004			12	2	3	2	1	1	2	1
2011 - 11	Evaluate Expansion of Flood Warning System	Deferred FLD-40 from 2004			12	2	3	2	1	1	2	1
2011 - 12	GIS Multi-Hazard Disaster Management Information System	Deferred GEN-1 from 2004			12	2	3	2	1	1	2	1

Santa Barbara County
2011 Multi-Jurisdictional Hazard Mitigation Plan

Table 0.1 Mitigation Actions for Future Implementation

Action #	Mitigation Action Description	Status	Responsible Department	Comments	Priority Score	S	T	A	P	L	E	E
2011 - 13	Old San Marcos Road Geotechnical Survey of Slope Stability	Deferred LSD/WDF-2 from 2004			12	2	3	2	1	1	2	1
2011 - 14	South County Geotechnical Survey of Slope Stability	Deferred LSD-3 from 2004			12	2	3	2	1	1	2	1
2011 - 15	North County Geotechnical Survey of Slope Stability	Deferred LSD-4 from 2004			12	2	3	2	1	1	2	1
2011 - 16	Ongoing Wildfire Education Campaign	New in 2011		Implementation and continual update of the "Ready! Set! Go!" program.	12	2	3	2	1	1	2	1
2011-17	Staffing of Operations Division of Fire Department	Deferred WDF-6 from 2004		Vegetation and fuel management is a high priority. Population growth into the wildland-urban interface increases the risk of loss of life & property.	12	2	3	2	1	1	2	1
2011 - 18	Incorporate Dam inundation Area "Information Only" Layer in FEMA DFIRM Map Modernization Initiative	Deferred DF-1 from 2004			11	2	2	2	1	2	1	2
2011 - 19	Construct Storm Drainage Improvements at Toro Canyon Park	Deferred FLD-23 from 2004			11	2	2	2	1	2	1	2
2011 - 20	Tucker's Grove Park Interior Access Road Creek Crossing Improvements	Deferred FLD-24 from 2004			11	2	2	2	1	1	2	1
2011 - 21	Cachuma Lake Mohawk Trail Bridge and Dock Abutment Rehabilitation and Access Improvements	Deferred FLD-26 from 2004			11	2	2	2	1	1	2	1
2011 - 22	Cachuma Lake Mohawk Camping Area Bridge Abutment Protection	Deferred FLD-27 from 2004			11	2	2	2	1	1	2	1
2011 - 23	Enhancements to Annual Culvert Inspection Program to Include Mitigation Strategies	Deferred FLD-31 from 2004			11	2	2	2	1	1	2	1

Santa Barbara County
2011 Multi-Jurisdictional Hazard Mitigation Plan

Table 0.1 Mitigation Actions for Future Implementation

Action #	Mitigation Action Description	Status	Responsible Department	Comments	Priority Score	S	T	A	P	L	E	E
2011 - 24	University Circle Open Spaces Berkeley Bike/Pedestrian Bridge Removal and Replacement	Deferred FLD-35 from 2004			11	3	2	2	1	1	1	1
2011 - 25	Jalama Beach Park Waterline Protection	Deferred FLD-36 from 2004			11	2	2	2	1	1	2	1
2011 - 26	Live Oak Camp Access Road Protection	Deferred FLD-37 from 2004		Temporary emergency measures (gabions) installed. Permanent solution is required.	11	2	2	2	1	1	2	1
2011 - 27	Bridge Scour Abatement Program	Deferred FLD-44 from 2004			11	2	2	2	1	1	2	1
2011 - 28	Investigation of Low Capacity Bridges to Determine Appropriate Long-Term Solutions	Deferred FLD-45 from 2004			11	2	2	2	1	1	2	1
2011 - 29	Goleta Beach Park Embankment Protection for Park Maintenance Facilities	Deferred LSD/CE-5 from 2004		\$200,000 estimated cost	11	2	2	2	1	1	2	1
2011 - 30	Goleta Beach Parking Areas Reinforcement	Deferred LSD/CE-10 from 2004		PW-2207 FEMA-1577 permitted 75,000 CY of Sand which raised the elevation of the overall beach	11	2	2	2	1	1	2	1
2011 - 31	Wallace Avenue Bluff Re-Vegetation and Stabilization	Deferred LSD/CE-7 from 2004			11	2	2	2	1	1	2	1
2011 - 32	Mountainous Road Rockfall Hazard Geotechnical Surveys	Deferred LSD/WDF-8 from 2004			11	2	2	2	1	1	2	1
2011 - 33	Parks - Guadalupe Dunes Park Entrance Road	New in 2011			11	2	2	2	1	1	2	1

Santa Barbara County
2011 Multi-Jurisdictional Hazard Mitigation Plan

Table 0.1 Mitigation Actions for Future Implementation

Action #	Mitigation Action Description	Status	Responsible Department	Comments	Priority Score	S	T	A	P	L	E	E
2011 - 34	Santa Barbara Bowl - Service Road Improvements (N. End Drive- Service Road off of Newton Rd) Entrance	New in 2011		Service Rd into and out of North Entrance to Bowl has severe AC damage (in access of 750 LF), no drainage, and unsuitable to be used as an emergency evacuation or fire entrance for vehicles in the event of an emergency.	11	2	2	2	1	1	2	1
2011 - 35	Toro Canyon Park Gazebo Access Road Drainage	Deferred FLD-39 from 2004			10	2	2	1	1	1	2	1
2011 - 36	Obtain National Weather Service "Storm Ready" Designation	Deferred FLD-42 from 2004			10	2	2	1	1	1	2	1
2011 - 37	Jalama Road Geotechnical Survey of Slope Stability	Deferred LSD/WDF-9 from 2004		Perform Annual Inclinometer Readings and quarterly Surface Crack Measurements. \$2.5 Million estimated costs	10	2	2	1	1	1	2	1
2011 - 38	Relocate the Hearts Adaptive Riding Center	New in 2011	Resource Recovery Division of Public Works	The Closed Foothill Landfill is a receiver site for Flood Control maintenance activities in the Goleta Slough. In the case of an emergency, the site may also become a receiver site for soil debris from other Flood Control or road maintenance activities (e.g. landslide debris). Relocate the Hearts Adaptive Riding Center currently on the land somewhere else where this riding club may still be active and the county may carry out debris plans at location.	10	2	2	1	1	1	2	1
2011 - 39	Geotechnical Engineered Solution of Slope Failure on Glen Annie Road (South County)	Deferred LSD-1 from 2004		Preliminary Stability Analyses Completed by Edison.	9	2	2	1	1	1	1	1
2011 - 40	Cachuma Lake Recreational Area Public Access Ramp Protection	Deferred FLD-29 from 2004		Need new log boom.	7	1	1	1	1	1	1	1

Santa Barbara County
2011 Multi-Jurisdictional Hazard Mitigation Plan

Table 0.1 Mitigation Actions for Future Implementation

Action #	Mitigation Action Description	Status	Responsible Department	Comments	Priority Score	S	T	A	P	L	E	E
2011 - 41	Cachuma Lake Water Treatment Plant Relocation Develop a Debris Management Plan for All Hazards	Deferred FLD-28 from 2004 Deferred GEN-4 from 2004		Currently pursuing funds through the Bureau of Reclamation; In Funding queue	7	1	1	1	1	1	1	1
2011 - 42			Public Works		7	1	1	1	1	1	1	1
2011 - 43	Goleta Beach Park Pier Abutment Protection	Deferred LSD/CE-6 from 2004		Appeal pending regarding the California Coastal Commission permitting; County attempted permitting to do Rock Ventment or Piles - CCC denied permits	7	1	1	1	1	1	1	1
2011 - 44	Enhance Fire Weather Forecasting and Predictive Services Program	Deferred WDF-2 from 2004		County Fire currently has obtained two portable units. The necessity of additional units is a high priority, deferred due to funding limitations.	7	1	1	1	1	1	1	1
2011 - 45	Firewise Community Planning and Prevention Techniques Training	Deferred WDF-7 from 2004		Good program hasn't been implemented due to time and fiscal constraints. Hope to pursue in the near future.	7	1	1	1	1	1	1	1

THE ROLES OF COUNTY DEPARTMENTS IN HAZARD MITIGATION

Several departments within Santa Barbara County play instrumental roles in implementing the hazard mitigation strategies identified in this plan.

The **Santa Barbara County Office of Emergency Management (SBC OEM)**, a division of the Santa Barbara County Chief Executive Office is responsible for emergency planning and coordination for the Santa Barbara Operational Area. The Santa Barbara County OEM developed the SEMS Emergency Management Plan (SEMS EMP) in June 2003 to ensure the most effective and economical allocation of resources for the maximum benefit and protection of the civilian population in time of emergency.

The Santa Barbara County Office of Emergency Management will use this Local Hazard Mitigation Plan in conjunction with the SEMS EMP to implement strategies, projects, and policies which lead to a county that is safer and more resilient.

The **Santa Barbara County Fire Department** serves and safeguards the community from the impacts of fires, medical emergencies, environmental emergencies, and natural disasters through leadership, planning, education, prevention, code enforcement, and all-hazard emergency response.

The County's policies and development standards designed to reduce the risk to wildfire damage provide a foundation for implementing the identified wildfire mitigation strategies within this Local Hazard Mitigation Plan. Through participation in the Mitigation Advisory Committee, the County Fire Department will use this foundation to help implement the identified wildfire mitigation strategies as resources are available.

The **General Services Department** provides customer-oriented, internal support services for all County Departments and other public agencies. *The General Services Department is a crucial component to managing the financial aspect of implementing mitigation actions.*

Planning & Development plans for and promotes reasonable, productive and safe long-term uses of the land which foster economic and environmental prosperity in the unincorporated areas of Santa Barbara County. It is responsible for the creation, update and implementation of the County Comprehensive Plan, including the Seismic Safety and Safety Element. *The Planning and Development department plays an instrumental role in the Mitigation Advisory Committee ensuring this Local Hazard Mitigation Plan is consistent with other long term and comprehensive planning efforts throughout the County.*

Santa Barbara County Agricultural Commissioner's Office – Regulates pesticide use by commercial agriculture and regulates the movement of plant material to ensure compliance with local, state, federal, and foreign regulations. During disasters, this office gathers and compiles crop loss data to determine eligibility for Disaster Declarations and associated aid. *Since agricultural pests and diseases was identified as a hazard of concern during the 2011 update of this Local Hazard Mitigation Plan, the Agricultural Commissioner's Office within the County Park Department will continue to play a critical role with the Mitigation Advisory Committee to reduce risk to agricultural production from future pests and diseases.*

Within the administration division of the **Public Works Department** is the Disaster Recovery Manager (DRM). This position is responsible for coordinating among County departments and agencies in a post-

Santa Barbara County
2011 Multi-Jurisdictional Hazard Mitigation Plan

disaster environment to ensure that federal and state disaster relief programs are handled efficiently and to the maximum benefit of the residents of Santa Barbara County.

The Public Works Department and its various divisions within are responsible for the construction/physical aspects of implementing structural mitigation projects throughout the County. Mitigation measures minimize the damage to the infrastructure in the event of a natural or man-made disaster. Some examples of where mitigation measures could be implemented is retrofitting bridge structures, placing cable mesh netting on slopes that are prone to rock falls, constructing retaining walls on slopes that are prone to slides, lengthening and raising bridges to reduce the flooding impacts, and installing scour mitigation at bridges that have been identified as scour critical by Caltrans.

SUMMARY OF CAPABILITIES

The following tables summarize the mechanisms and resources available to Santa Barbara County for implementing mitigation actions.

Table 0.2 County of Santa Barbara: Administrative and Technical Capacity

Staff/Personnel Resources	Y/N	Department/Agency and Position
A. Planner(s) or engineer(s) with knowledge of land development and land management practices	Y	Multiple
B. Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Multiple
C. Planners or Engineer(s) with an understanding of natural and/or manmade hazards	Y	Multiple
D. Floodplain Manager	Y	Public Works, Flood Control District
E. Surveyors	Y	Public Works, County Surveyor's Office (GIS also)
F. Staff with education or expertise to assess the community's vulnerability to hazards	Y	Public Works, County Fire, OEM
G. Personnel skilled in GIS and/or HAZUS	Y	Assessors Office, Public Works - County Surveyor's Office, Planning & Development
H. Scientists familiar with the hazards of the County	Y	OEM, PW, P&D
I. Emergency Manager	Y	OEM
J. Grant writers	Y	Departments determine their own level of service. (Disaster Recovery Manager with Public Works is lead for most disaster related grants.

Table 0.3 County of Santa Barbara: Legal and Regulatory Capability

Regulatory Tools (ordinances, codes, plans)	Local Authority (Y/N)	Does State Prohibit (Y/N)
• Building code	Y	N
• Zoning ordinance	Y	N
• Subdivision ordinance or regulations	Y	N
• Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances, wildfire ordinances, hazard setback requirements)	Y	N
• Growth management ordinances (also called “smart growth” or anti-sprawl programs)	Y	N
• Site plan review requirements	Y	N
• General or comprehensive plan	Y	N
• A capital improvements plan	Y	N
• An economic development plan	Y	N
• Emergency response plan (s)	Y	N
• A post-disaster recovery plan	Y	N
• Real estate disclosure requirements	Y	N

Table 0.4 County of Santa Barbara: Fiscal Capability

Financial Resources	Accessible or Eligible to Use (Yes/No)
A. Community Development Block Grants (CDBG)	Yes
B. Capital improvements project funding	Yes
C. Authority to levy taxes for specific purposes (flood control districts)	Yes
D. Fees for water, sewer, gas, or electric service	Yes
E. Impact fees for homebuyers or developers for new developments/homes	Yes
F. Incur debt through general obligation bonds	Yes
G. Incur debt through special tax and revenue bonds	Yes
H. Incur debt through private activity bonds	No
I. Withhold spending in hazard-prone areas	No

RISK ASSESSMENT

The mitigation goals and objectives in this plan are based upon the results of a comprehensive risk assessment which included the identification of hazards, development of hazard profiles, and completion of a vulnerability analysis of the County’s critical facilities.

Hazard Identification

The Mitigation Advisory Committee identified seven hazards for consideration within this plan and prioritized them using a ranking tool described in Section 5.2.2. The tool considered the probability that the hazard will affect the community and potential impacts on the community. The results of the prioritization are shown in Table 0.4.

Table 0.5 Hazard Ranking and Planning Consideration 2011

Hazard Type and Ranking	Planning Consideration Based on Hazard Level
Flooding (including coastal surge)	Significant
Wildfire	Significant
Agriculture (pests and disease)	Significant
Earthquake	Significant
Landslide/Coastal Erosion	Moderate
Dam Failure	Limited
Tsunami	Limited

Asset Inventory & Exposure Analysis

To generate a basic level of understanding what is at risk within Santa Barbara County, the MAC reviewed the General Summary Report produced using FEMA’s loss estimation software, HAZUS MH-MR4. This software provides a nationwide dataset presenting census block and census tract level information for general building stock, essential facilities, lifeline utilities, vehicle stock, agriculture and other important assets in the community, such as high potential loss facilities. The following tables summarize the assets noted in the HAZUS database for Santa Barbara County. It should be acknowledged that at the time of developing this plan the HAZUS database contained population information based on the 2000 Census. Also, the new Santa Maria airport was not included in the HAZUS database.

Table 0.6– Base Information from the General Summary Report for Santa Barbara, CA (HAZUS MH-MR4)

Base Information	Value
Count of Census Tracts	86
Households	136,000
Total Population (2000 Census)	399,347
Total Buildings	128,000
Total Building Replacement Value (No contents)	\$32,239,000,000
% Residential Buildings	91%
% Residential Building Value (as a % of the \$32 billion total above)	79%
Replacement Value of the Transportation Systems	\$4,354,000,000
Replacement Value of the Utility Lifeline Systems	\$1,153,000,000
Dominant Construction Type	Wood Frame (83%)

HAZUS breaks down critical facilities into two groups; essential facilities and high potential loss facilities. The essential facilities are those that are public in nature and deemed critical to recovery such as hospitals, medical clinics, schools, fire stations, police stations, and emergency operations facilities. The high potential loss facilities are those such as dams, levees, military installations, nuclear power plants, and hazardous material sites.

Table 0.7 Summary of Critical Facilities

Critical Facilities	Count
Hospitals	7 (Total bed capacity of 920)
Schools	162
Fire Stations	16
Police Stations	16
Emergency Operation Facilities	1
Dams	15 (11 identified as 'high hazard')
Hazardous Material Sites	10
Military Institutions (Vandenberg AFB)	1
Nuclear Power Plants	0

Santa Barbara County
2011 Multi-Jurisdictional Hazard Mitigation Plan

The table below is a breakdown of the default infrastructure for Santa Barbara County which consists of 7 transportation systems (highway, rail, light rail, bus, ports, ferry, and airport) and 6 utility systems (potable water, wastewater, natural gas, crude and refined oil, electric power, and communications). The total value of this lifeline inventory is over \$5.5 billion dollars including over 370 miles of highways, 360 bridges, and over 11,000 miles of pipes.

Table 0.8– Transportation System Lifeline Inventory (HAZUS MH, MR4)

System	Component	# Locations or # of Segments	Replacement Value (Millions of Dollars)
Highway	Bridges	360	407.90
	Segments	270	3,299.40
	Tunnels	1	1.70
		Subtotal	3,709.10
Railways	Bridges	6	0.60
	Facilities	5	13.30
	Segments	157	263.90
	Tunnels	0	0.00
		Subtotal	277.80
Light Rail	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	Tunnels	0	0.00
		Subtotal	0.00
Bus	Facilities	5	6.40
Ferry	Facilities	3	4.00
Port	Facilities	0	0.00
Airport	Facilities	5	53.30
	Runways	8	303.70
		Subtotal	357.00
		Total	4,354.20

Table 0.9- Utility System Lifeline Inventory (HAZUS MH, MR4)

System	Component	# Locations or # of Segments	Replacement Value (Millions of Dollars)
Potable Water	Distribution Lines	NA	181.60
	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	181.60
Waste Water	Distribution Lines	NA	109.00
	Facilities	8	628.70
	Pipelines	0	0.00
		Subtotal	737.70
Natural Gas	Distribution Lines	NA	72.70
	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	72.70
Oil Systems	Facilities	2	0.20
	Pipelines	0	0.00
		Subtotal	0.20
Electric Power	Facilities	4	519.20
Communication	Facilities	42	5.00
		Total	1,506.40

Critical Facility Inventory

Santa Barbara County and the Mitigation Advisory Committee identified 293 critical facilities and provided this list to assist in the countywide planning process. This list of critical facilities presents the buildings and structures that are the County's primary concern for ensuring resiliency and therefore applying hazard mitigation strategies. In the main Plan, Table 6.5 on page 6-4 shows that there is approximately \$375 million in structure values and \$52 million in content costs that were evaluated for risk to the hazards identified in the plan.

HAZARD PROFILES & VULNERABILITY ASSESSMENTS

Flood and Coastal Storm Surge

Flooding has been a major problem throughout Santa Barbara County's history. Between 1862 and the 2010, Santa Barbara experienced 15 significant floods. Eight of these floods received Presidential Disaster Declarations.

FEMA FIRM data was used to determine hazard risk for floods in the County of Santa Barbara. FEMA defines flood risk primarily by a 100-year flood zone, which is applied to those areas with a 1% chance, on average, of flooding in any given year. Any area that lies within the FEMA-designated 100-year floodplain is designated as high risk. Any area found in the 500-year floodplain is designated at low risk.

Climate change is both a present threat and a slow-onset disaster. It acts as an amplifier of existing hazards. Extreme weather events have become more frequent over the past 40 to 50 years and this trend is projected to continue. Rising sea levels, changes in rainfall distribution and intensity are expected to have a significant impact on coastal communities, including portions of Santa Barbara County.

Rising sea levels pose a significant threat to coastal areas of Santa Barbara County. Sea level rise can occur through one or more of three processes that include land subsidence, the melting of ice sheets and thermal expansion of water as a result of warming. Sea levels are already rising along the Santa Barbara County coastline evidenced in long term tidal gauge records where the rate of rise has been approximately 0.41 feet per century¹. A growing consensus of scientists believes that sea level rise will continue and the rate of rise will increase. The Intergovernmental Panel on Climate Change (IPCC) suggests that global SLR on the order of 0.2 m (0.66 ft) and 0.6 m (1.97 ft) is possible by 2100 with other scientists indicating this rise could be over 3.28 ft (1 m).

In addition to possible inundation resulting from rising sea levels, climate change has the potential to increase flood risk through changes in precipitation patterns. Predicted changes may translate into greater storm water run-off into the future, which could exacerbate flooding hazards. While it might not seem intuitive, fewer, but more intense precipitation events might lead to more frequent flash flooding episodes, while longer dry periods between precipitation events might also increase the frequency and severity of drought.

Flood and Coastal Surge Vulnerability

The County is a participant in the Federal Emergency Management Agency's National Flood Insurance Program and has regulatory flood maps. There are 47 County structures within the flood risk zones. Given the available data, there is approximately \$40 million in building value and just over \$3.1 million in contents exposed to the risk. Thirteen (13) of the County's critical facilities are located within the 100 year floodplain and should be considered at most risk to experiencing impacts from a flood event.

¹ NOAA: http://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?stnid=9411340; retrieved April 6, 2011.

Wildfire

Between the years 1950 and 1997, Santa Barbara County was declared a state of emergency due to fires four times. Over the last ten years, Santa Barbara County has experienced seven major fires. Santa Barbara County was subject to 29 major wildfires over 88 years, resulting in a 33% chance of occurrence in any given year.

Heat waves, drought, cyclical climate changes such as El Nino, and regional weather patterns can increase the risk and alter the behavior of wildfires dramatically. Projections of future climate change from general circulation models simulate significant increases in temperature across the western United States during the 21st century. Projections of precipitation are more variable, but they generally suggest drier summer conditions in the West. These projections, combined with an increase in population density and the continued expansion of the wildland urban interface (WUI), indicate that fires will continue to be a concern. (<http://www.pewclimate.org/docuploads/regional-impacts-west.pdf>)

Wildfire Vulnerability

In looking at critical facilities' vulnerability to wildfire, there were three measures that were evaluated. The first is whether a critical facility is within the Fire Severity Zone (FSZ). The FSZ is mapped by the CA Department of Forestry and Fire Protection. It shows the geographic extents for areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. The final measure is that of "Fire Threat". This metric is a combination of the factors of fire frequency and potential fire behavior. All of the County's critical facilities have at least some threat from one or more of the three measures.

Agricultural Pests

Insect and disease infestation occur when an undesirable organism inhabits an area in a manner that causes serious harm to agriculture crops, livestock or poultry, and wild land vegetation or animals. Countless insects and diseases live on, in, and around plants and animals in all environments. In addition to agricultural pests and diseases, the effects of flooding can be devastating on agriculture. Flooding can damage crops, livestock, dairy stock, and can also have deleterious effects on soil and the ability to reinvigorate the agricultural activities impacted once the flood waters recede. Wildfires can burn crop land, livestock, dairy stock, and grazing land, while also causing harm to soil and water. Earthquakes can cause loss of human life, loss of animal life, and property damage to structures and land dedicated to agricultural uses. Landslides and coastal erosion can temporarily or permanently remove land from agriculture. Many acres of agricultural lands are located in dam inundation zones.

Santa Barbara County has a demonstrated vulnerability to insect infestation. Infestations of Medfly, Gypsy Moth, Oriental Fruit Fly, Glassy-winged Sharpshooter, Vine Mealybug and Light-brown Apple Moth have all occurred in the last 30 years. All but the sharpshooter and the mealybug were successfully eradicated. Diseases such as Chrysanthemum White Rust and Pierce's Disease of

Grapes have caused significant losses to local growers. The rust has been eradicated, Pierce's Disease has not.

Land under the Williamson Act has been zoned as agricultural, open space, or recreational. These lands are susceptible to agricultural pests and diseases. Crop land areas are also susceptible to agricultural pests and diseases.

Agriculture Vulnerability

Although significant threats to agriculture were considered by the Mitigation Advisory Committee, there are no physical structures to consider for exposure to this risk. The actual acreage of agriculture exposed to pests and disease, as well as other hazards, is 546,512.61 acres including 138,723.18 acres of crop land. California farmers contend with a wide range of crop - damaging pests and pathogens. Continued climate change is likely to alter the abundance and types of many pests, lengthen pests' breeding season, and increase pathogen growth rates. For example, the pink bollworm, a common pest of cotton crops, is currently a problem only in southern desert valleys because it cannot survive winter frosts elsewhere in the state. However, if winter temperatures rise 3 to 4.5°F, the pink bollworm's range would likely expand northward, which could lead to substantial economic and ecological consequences for the state. Temperature is not the only climatic influence on pests. For example, some insects are unable to cope in extreme drought, while others cannot survive in extremely wet conditions. Furthermore, while warming speeds up the lifecycles of many insects, suggesting that pest problems could increase, some insects may grow more slowly as elevated carbon dioxide levels decrease the protein content of the leaves on which they feed (California Climate Change Center 2006).

Earthquake

Minor earthquakes occur regularly in the County of Santa Barbara. Strong earthquakes that affected residents and damaged structures occurred in 1806, 1812, 1857, 1902, 1925, 1927, 1978 and 2003.

Earthquake Vulnerability

The entire geography of Santa Barbara County is exposed to some risk of shaking from an earthquake. The many fault lines, soil types, and construction types lead to a complicated assessment of vulnerability to earthquake. A HAZUS-MH (Major Release #4) analysis was performed using a magnitude 7 earthquake scenario with a probabilistic return period of 1000 years. This analysis resulted in the following estimates:

- 55,031 buildings will be at least moderately damaged
- 7,207 buildings will be damaged beyond repair
- Before the earthquake, the region had 920 hospital beds available for use. On the day of the earthquake, the model estimates that only 316 hospital beds (34%) are available for use by patients already in the hospital and those injured by the earthquake.
- After one week, 81% of the beds will be back in service.
- By 30 days, 98% will be operational.

Landslide and Coastal Erosion

In the spring of 1995, La Conchita, located at the western border of Ventura County and adjacent to Santa Barbara County, experienced a landslide that completely destroyed several houses in its path. In January 2005, a powerful Pacific storm brought heavy rain, snow, flash flooding, high winds and landslides to Central and Southern California. This type of landslide was mostly debris flow from heavy rainfall.

Several areas in the County are prone to more frequent rain induced landslides, resulting in disruption to transportation and damage to roadways.

Climate change can increase the frequency and/or intensity of landslides. Landslides may happen more frequently due to the increased number of heavy rainfall events. Coastal erosion can be increased by climate change in two ways. First, sea level rise, over time, will cause more rapid erosion of more inland areas than in previous years. This will be chronic erosion; however it will reach new, more inland areas, in the future due to higher average sea levels. Secondly, while the topic of increased frequency of storms is up in debate, if more severe or frequent storms do occur, it will increase coastal erosion events. More frequent storms will impact the how frequently coastal erosion acute events occur, while more intense events will cause the erosion to occur in areas more inland than before.

Landslide Vulnerability

In an effort to assess vulnerability for landslides, data was collected from the United States Geological Survey (USGS) that represents landslide incidence and susceptibility. The geographies impacted are categorized into low, moderate, and high zones. These layers were intersected with the critical facilities to estimate exposure and show that there is approximately \$14.4 million in structure value and just under \$4 million in contents with at least moderate risk to landslides. None of the County's critical facilities are located in high risk areas. Forty-seven (47) critical facilities are located in areas at moderate risk to landslide.

Dam Failure

Dams fail due to old age, poor design, structural damage, improper sitting, landslides flowing into a reservoir, or terrorist actions. Structural damage is often a result of a flood, erosion, or earthquake. The cities of Lompoc, Santa Barbara, and Carpinteria and portions of Santa Maria, Buellton, and Solvang are subject to potential dam failure.

Built in 1917, the Sheffield Dam only survived for eight years, failing catastrophically during an earthquake in 1925. It was built on sandy soil which liquefied during the event. The center 300-foot of the 720-foot long dam broke off and were carried away on the liquefied soil, spilling 30 million gallons of water. Damage estimates are unavailable. This is the only major dam failure identified in the County during research.

Dams are designed partly based on assumptions about a river's flow behavior, expressed as hydrographs. Changes in weather patterns can have significant effects on the hydrograph used for the design of a dam. If the hydrograph changes, it is conceivable that the dam can lose some or its entire designed margin of safety, also known as freeboard. If freeboard is reduced, dam operators may be

forced to release increased volumes earlier in a storm cycle in order to maintain the required margins of safety. Such early releases of increased volumes can increase flood potential downstream.

Additionally, dams are constructed with safety features known as “spillways.” Spillways are put in place on dams as a safety measure in the event of the reservoir filling too quickly. Spillway overflow events often referred to as “design failures,” result in increased discharges downstream and increased flooding potential. Dam operators face increased probability of design failures due to weather impacts from climate change.

So while climate change will not increase the probability of catastrophic dam failure, it may increase the probability of design failures. Throughout the west, communities downstream of dams are already seeing impacts from climate change due to increases in stream flows from earlier releases from dams.

Dam Failure Vulnerability

The dam failure vulnerability is simply a look at those structures exposed to risk as indicated by whether they fall into a geographic region that represents a dam inundation zone. All others are considered to be not at risk to dam failure. There are 39 County structures within the dam inundation zones. Where there are dollar values available, there is approximately \$32.7 million in building value and almost \$2.8 million in contents exposed to the risk. Thirty-nine (39) of the County’s critical facilities are located within a potential dam inundation zone.

Tsunami

The Cities of Santa Barbara, Carpinteria and Goleta are located on or near several offshore geological faults, the more prominent faults being the Mesa Fault, the Santa Ynez Fault in the mountains, and the Santa Rosa Fault. There are other unnamed faults in the offshore area of the Channel Islands. These faults have been active in the past and can subject the entire area to seismic activity at any time.

On February 27, 2010, a magnitude 8.8 earthquake occurred along the central coast of Chile and produced a tsunami. For the coast of Southern California, it was one of the largest tsunami episodes since 1964. In general, tsunami waves between 2 and 4 feet were reported. Tsunami waves of around 3 feet were reported by tide gauges across the Santa Barbara Channel. At the Santa Barbara Harbor / Waterfront, significant beach erosion was reported along with displacement of buoys. The tsunami surge lasted in excess of 20 hours. The most significant damage occurred along the coasts of Ventura and southern Santa Barbara counties. Numerous reports of dock damage were reported along with beach erosion.

Santa Barbara County experienced minimal impacts as a result of the tsunami which originated off the Pacific coast of Tohoku, Japan on March 11, 2011.

Climate change may increase the impact of tsunamis indirectly. While climate change may not have any impact on the frequency or intensity of underwater earthquakes, sea level rise from climate change will likely intensify the impact of a tsunami. Rising sea levels, discussed in detail in Section 5.3.5, of the main Plan, will allow for waters to reach more inland areas. When a tsunami hits, the

waters will reach further inland than without sea level rise and the resulting tsunami waves will impact more people and structure.

Tsunami Vulnerability

Critical facilities provided by the County were compared to tsunami hazard overlays to see whether they fell within the geographic extent of the hazard as shown by California EMA. When the structures were compared to the tsunami hazard areas, only one (the Goleta Pier) of the 293 facilities fell within the risk area. The Goleta Pier has an estimated structure value of approximately \$6 million with no dollar value provided for content costs.

The 25 County Facilities Most Exposed to Natural Hazards

The table below shows the 25 facilities with the most potential exposure to the identified hazards based on the completed vulnerability analysis.

Table 0.10 Critical Facilities with Most Exposure to Identified Hazards

Map ID	Critical Facility	FEMA Flood Zone	Flood Overlay Zone	Fire Severity Zone	WUI Zone	Fire Threat	Dam Inundation Zone	Tsunami Inundation Area	Landslide Incidence	Groundwater/Liquefaction Severity	Risk Rank
78	GOLETA PIER										1
59	FIRE STATION #24										2
26	FIRE STATION #31										3
122	BUELLTON SHERIFF'S OFFICE										4
69	FIRE STATION #24 DUPLEX										5
77	BUELLTON SENIOR CNTR										6
123	FIRE DEPT OPERATIONS OFFICE (BUELLTON)										7
227	COMMUNITY HEALTH CENTERS OF THE CENTRAL COAST- SANTA MARIA II										8
243	SANSUM CLINIC-LOMPOC										9
243	STORAGE BUILDING #2										10
200	LOMPOC SKILLED AND REHABILITATION CENTER										11
210	VILLA MARIA HEALTH CARE CENTER										12
226	COMMUNITY HEALTH CENTERS OF THE CENTRAL COAST- SANTA MARIA HIGH SCHOOL										13
39	SM COURT COMPLEX COURTHOUSE BLDG D										14
83	SM COURT COMPLEX JURY ASSY BLDG F										15
96	SM COURT COMPLEX SUP CRT/DA BLDG G										16
118	SM COURT COMPLEX PUB. DEFEND BLDG A										17
127	SM COURT COMPLEX SUPERIOR COURT BLDG C										18
128	SM COURT COMPLEX SUPERIOR COURT BLDG H										19
192	SM COURT COMPLEX SUP CRT/DA BLDG										20
186	FIRE DEPARTMENT CACHUMA EMERGENCY COMMAND POST										21
178	ADMHS OFFICES										22
221	COMMUNITY HEALTH CENTERS OF THE CENTRAL COAST- LOMPOC										23
194	CASA DORINDA HEALTH CENTER										24
51	NEW CUYAMA FIRE STATION #41										25

These structures show an estimated exposure of approximately \$31.7 million in structure value and just under \$1.9 million in content value. However 14 of the structures are missing either structure or content costs, or both. One of the recommendations for future updates (or a current mitigation action) may be for the County to update its data collection of critical facilities to better assess vulnerability and facilitate better mitigation planning.

PLAN MAINTENANCE

County OEM will be responsible for ensuring that this plan is monitored on an on-going basis. OEM will call the Mitigation Advisory Committee (MAC) together on an annual basis to review the mitigation actions set forth in this plan and discuss progress. During this meeting the MAC will develop a list of items to be updated/added in future revisions of this plan.

OEM will report the outcomes of the annual MAC meeting to the County Board of Supervisors in a publicly noticed meeting. All participating Cities will be encouraged to do the same reporting to their City Councils.

The hazard mitigation plan will be a discussion/work item on the County's OEM agenda each year. Department heads and other County staff, will focus on evaluating the Plan in light of technological, budgetary, and political changes that may occur during the year or other significant events.

Major disasters affecting the County or its communities, legal changes, and other events may trigger a meeting of the MAC. This group, in collaboration with other Santa Barbara County officials, will be responsible for determining if the plan should be updated.

The County of Santa Barbara is committed to reviewing and updating this plan annex at least once every five years, as required by the Disaster Mitigation Act of 2000. The jurisdictions within Santa Barbara County should continue to work together on updating this multi-jurisdictional plan.

The public will continue to be involved whenever the plan is updated and as appropriate during the monitoring and evaluation process. Prior to adoption of updates, the County will provide the opportunity for the public to comment on the updates. A public notice will be published prior to the meeting to announce the comment period and meeting logistics. Moreover, the County will engage stakeholders in community emergency planning.

Point of Contact

Comments or suggestions regarding this plan may be submitted at any time to Richard Abrams, County Emergency Manager using the following information:

Richard Abrams
Office of Emergency Management
4408 Cathedral Oaks Road
Santa Barbara, CA 93110
rabrams@countyofsb.org
805-681-5526