Multi-Jurisdictional Hazard Mitigation Plan Update

San Bernardino County Unincorporated Area
San Bernardino County Fire Protection District
San Bernardino County Flood Control District
San Bernardino County Special Districts Department
Big Bear Parks and Recreation District
Bloomington Parks and Recreation District

FEMA Approval

October 11, 2011

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RESOLUTION NO. 2011-_____

A RESOLUTION OF THE BOARD OF SUPERVISORS OF THE COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, ADOPTING THE SAN BERNARDINO COUNTY UNINCORPORATED AREA MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN DATED MARCH 2011, AND AUTHORIZING FUTURE NON-SUBSTANTIVE AMENDMENTS TO THE PLAN

On Tuesday, _____, 2011, on motion of Supervisor _____, duly seconded by Supervisor _____ and carried, the following resolution is adopted by the Board of Supervisors of San Bernardino County, State of California.

WHEREAS, the preservation of life and property is an inherent responsibility of local, state and federal government, including the County of San Bernardino, and the San Bernardino County Office of Emergency Services, to prepare a local Multi-Jurisdictional Hazard Mitigation Plan (HMP) for the unincorporated area of San Bernardino County to define hazard mitigation measures to reduce or eliminate loss of life and/or property; and

WHEREAS, this HMP represents a comprehensive description of the County's commitment to reducing, preventing or eliminating potential impacts of disasters caused by natural hazards; and

WHEREAS, the HMP is a Federal requirement under the Disaster Mitigation Act of 2000 for the County to be eligible to apply for federal funds for disaster recovery and mitigation assistance; and

WHEREAS, the HMP established a coordinated effort to support mitigation activities, identifies measures to combat natural hazards within our County; and

WHEREAS, the HMP is an extension of the State of California Multi-Hazard Mitigation Plan, and will be reviewed periodically and revised as necessary to meet changing conditions; and

WHEREAS, the Board of Supervisors agrees to adopt this HMP and urges all officials, employees, public and private organizations, and citizens, individually and collectively, to do their share in furthering the preparation of hazard mitigation within the County of San Bernardino;

NOW, THEREFORE, BE IT RESOLVED THAT:

The Board of Supervisors of the County of San Bernardino, a public entity established under the laws of the State of California, hereby authorizes this HMP to be adopted, that the San Bernardino County Fire Protection District Office of Emergency Services Division Manager is hereby authorized to implement future non-substantive amendments, recommended by the Federal Emergency Management Agency upon their review, to the HMP, that a copy of the Board of Supervisors' approved San Bernardino County Unincorporated Area Hazard Mitigation Plan be forwarded to the Federal Emergency Management Agency and the California Emergency Management Agency, that once approved the HMP will be considered to be incorporated into the County's General Plan, and this plan become effective immediately.

PASSED AND ADOPTED by the Board of Supervisors of the County of San Bernardino, State of California, by the following vote:

AYES: SUPERVISORS:

NOES: SUPERVISORS:

ABSENT: SUPERVISORS:

* * * * *

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN BERNARDINO)

I, **LAURA H. WELCH,** Clerk of the Board of Supervisors of the County of San Bernardino, State of California, hereby certify the foregoing to be a full, true and correct copy of the record of the action taken by the Board of Supervisors, by vote of the members present, as the same appears in the Official Minutes of said Board at its meeting of _____, 2011.

LAURA H. WELCH
Clerk of the Board of Supervisors

By _____
Deputy

RESOLUTION NO. 2011-

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE SAN BERNARDINO COUNTY FIRE PROTECTION DISTRICT ADOPTING THE SAN BERNARDINO COUNTY UNINCORPORATED AREA MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN DATED MARCH 2011, AND AUTHORIZING FUTURE NON-SUBSTANTIVE AMENDMENTS TO THE PLAN

On Tuesday, , 2011, on motion of Director , duly seconded by Director and carried, the following resolution is adopted by the Board of Directors of San Bernardino County Fire Protection District.

WHEREAS, the preservation of life and property is an inherent responsibility of local, state and federal government, including the County of San Bernardino, and the San Bernardino County Office of Emergency Services, to prepare a local Multi-Jurisdictional Hazard Mitigation Plan (HMP) for the unincorporated area of San Bernardino County to define hazard mitigation measures to reduce or eliminate loss of life and/or property; and

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WHEREAS, the HMP is an extension of the State of California Multi-Hazard Mitigation Plan, and will be reviewed periodically and revised as necessary to meet changing conditions; and

WHEREAS, the Board of Directors agrees to adopt this HMP and urges all officials, employees, public and private organizations, and citizens, individually and collectively, to do their share in furthering the preparation of hazard mitigation within the County of San Bernardino;

NOW, THEREFORE, BE IT RESOLVED THAT:

The Board of Directors of the San Bernardino County Fire Protection District, a public entity established under the laws of the State of California, hereby authorizes this HMP to be adopted, that the San Bernardino County Fire Protection District Office of Emergency Services Division Manager is hereby authorized to implement future non-substantive amendments, recommended by the Federal Emergency Management Agency upon their review, to the HMP, that a copy of the Board of Directors' approved San Bernardino County Unincorporated Area Hazard Mitigation Plan be forwarded to the Federal Emergency Management Agency and the California

Emergency Management Agency, that once approved the HMP will be considered to be incorporated into the County's General Plan, and this plan become effective immediately.

PASSED AND ADOPTED by the Board of Directors of the San Bernardino County Fire Protection District by the following vote:

AYES: DIRECTORS:

NOES: DIRECTORS:

ABSENT: DIRECTORS:

* * * * *

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN BERNARDINO)

I, **LAURA H. WELCH,** Secretary of Board of Directors of the San Bernardino County Fire Protection District, hereby certify the foregoing to be a full, true and correct copy of the record of the action taken by the Board of Directors, by vote of the members present, as the same appears in the Official Minutes of said Board at its meeting of Tuesday, , 2011.

LAURA H. WELCH
Secretary

By _____
Deputy

RESOLUTION NO. 2011-_____

A RESOLUTION OF THE BOARD OF SUPERVISORS OF THE SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT, STATE OF CALIFORNIA, ADOPTING THE SAN BERNARDINO COUNTY UNINCORPORATED AREA MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN DATED MARCH 2011, AND AUTHORIZING FUTURE NON-SUBSTANTIVE AMENDMENTS TO THE PLAN

On Tuesday, _____, 2011, on motion of Supervisor _____, duly seconded by Supervisor _____ and carried, the following resolution is adopted by the Board of Supervisors of the San Bernardino County Flood Control District, State of California.

WHEREAS, the preservation of life and property is an inherent responsibility of local, state and federal government, including the County of San Bernardino, and the San Bernardino County Office of Emergency Services, to prepare a local Multi-Jurisdictional Hazard Mitigation Plan (HMP) for the unincorporated area of San Bernardino County to define hazard mitigation measures to reduce or eliminate loss of life and/or property; and

WHEREAS, this HMP represents a comprehensive description of the County's commitment to reducing, preventing or eliminating potential impacts of disasters caused by natural hazards; and

WHEREAS, the HMP is a Federal requirement under the Disaster Mitigation Act of 2000 for the County to be eligible to apply for federal funds for disaster recovery and mitigation assistance; and

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WHEREAS, the HMP is an extension of the State of California Multi-Hazard Mitigation Plan, and will be reviewed periodically and revised as necessary to meet changing conditions; and

WHEREAS, the Board of Supervisors agrees to adopt this HMP and urges all officials, employees, public and private organizations, and citizens, individually and collectively, to do their share in furthering the preparation of hazard mitigation within the County of San Bernardino;

NOW, THEREFORE, BE IT RESOLVED THAT:

The Board of Supervisors of the San Bernardino County Flood Control District, a public entity established under the laws of the State of California, hereby authorizes this HMP to be adopted, that the San Bernardino County Fire Protection District Office of Emergency Services Division Manager is hereby authorized to implement future non-substantive amendments, recommended by the Federal Emergency Management Agency upon their review, to the HMP, that a copy of the Board of Supervisors' approved San Bernardino County Unincorporated Area Hazard Mitigation Plan be forwarded to the Federal Emergency Management Agency and the California

Emergency Management Agency, that once approved the HMP will be considered to be incorporated into the County's General Plan, and this plan become effective immediately.

PASSED AND ADOPTED by the Board of Supervisors of the San Bernardino County Flood Control District, State of California, by the following vote:

AYES: SUPERVISORS:

NOES: SUPERVISORS:

ABSENT: SUPERVISORS:

* * * * *

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN BERNARDINO)

I, **LAURA H. WELCH,** Clerk of the Board of Supervisors of the San Bernardino County Flood Control District, State of California, hereby certify the foregoing to be a full, true and correct copy of the record of the action taken by the Board of Supervisors, by vote of the members present, as the same appears in the Official Minutes of said Board at its meeting of __ _____, 2011.

LAURA H. WELCH
Clerk

By _____
Deputy

RESOLUTION NO. 2011-

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE BOARD GOVERNED COUNTY SERVICE AREAS ADOPTING THE SAN BERNARDINO COUNTY UNINCORPORATED AREA MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN DATED MARCH 2011, AND AUTHORIZING FUTURE NON-SUBSTANTIVE AMENDMENTS TO THE PLAN

On Tuesday, , 2011, on motion of Director , duly seconded by Director and carried, the following resolution is adopted by the Board of Directors of the Board Governed County Service Areas and their Zones.

WHEREAS, the preservation of life and property is an inherent responsibility of local, state and federal government, including the County of San Bernardino, and the San Bernardino County Office of Emergency Services, to prepare a local Multi-Jurisdictional Hazard Mitigation Plan (HMP) for the unincorporated area of San Bernardino County to define hazard mitigation measures to reduce or eliminate loss of life and/or property; and

WHEREAS, this HMP represents a comprehensive description of the County's commitment to reducing, preventing or eliminating potential impacts of disasters caused by natural hazards; and

WHEREAS, the HMP is a Federal requirement under the Disaster Mitigation Act of 2000 for the County to be eligible to apply for federal funds for disaster recovery and mitigation assistance; and

WHEREAS, the HMP established a coordinated effort to support mitigation activities, identifies measures to combat natural hazards within our County; and

WHEREAS, the HMP is an extension of the State of California Multi-Hazard Mitigation Plan, and will be reviewed periodically and revised as necessary to meet changing conditions; and

WHEREAS, the Board of Directors agrees to adopt this HMP and urges all officials, employees, public and private organizations, and citizens, individually and collectively, to do their share in furthering the preparation of hazard mitigation within the County of San Bernardino;

NOW, THEREFORE, BE IT RESOLVED THAT:

The Board of Directors of the Board Governed County Service Areas and their Zones, a public entity established under the laws of the State of California, hereby authorizes this HMP to be adopted, that the San Bernardino County Fire Protection District Office of Emergency Services Division Manager is hereby authorized to implement future non-substantive amendments, recommended by the Federal Emergency Management Agency upon their review, to the HMP, that a copy of the Board of Directors' approved San Bernardino County Unincorporated Area Hazard Mitigation Plan be forwarded to the Federal Emergency Management Agency and the California Emergency Management Agency, that once approved the HMP will be considered to be incorporated into the County's General Plan, and this plan become effective immediately.

PASSED AND ADOPTED by the Board of Directors of the Board Governed County Service Areas and their Zones by the following vote:

AYES: DIRECTORS:

NOES: DIRECTORS:

ABSENT: DIRECTORS:

* * * * *

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN BERNARDINO)

I, **LAURA H. WELCH,** Secretary of Board of Directors of the Board Governed County Service Areas and their Zones, hereby certify the foregoing to be a full, true and correct copy of the record of the action taken by the Board of Directors, by vote of the members present, as the same appears in the Official Minutes of said Board at its meeting of Tuesday, , 2011.

LAURA H. WELCH
Secretary

By _____
Deputy

RESOLUTION NO. 2011-

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE BIG BEAR VALLEY RECREATION AND PARK DISTRICT ADOPTING THE SAN BERNARDINO COUNTY UNINCORPORATED AREA MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN DATED MARCH 2011, AND AUTHORIZING FUTURE NON-SUBSTANTIVE AMENDMENTS TO THE PLAN

On Tuesday, , 2011, on motion of Director , duly seconded by Director and carried, the following resolution is adopted by the Board of Directors of the Big Bear Valley Recreation and Park District.

WHEREAS, the preservation of life and property is an inherent responsibility of local, state and federal government, including the County of San Bernardino, and the San Bernardino County Office of Emergency Services, to prepare a local Multi-Jurisdictional Hazard Mitigation Plan (HMP) for the unincorporated area of San Bernardino County to define hazard mitigation measures to reduce or eliminate loss of life and/or property; and

WHEREAS, this HMP represents a comprehensive description of the County's commitment to reducing, preventing or eliminating potential impacts of disasters caused by natural hazards; and

WHEREAS, the HMP is a Federal requirement under the Disaster Mitigation Act of 2000 for the County to be eligible to apply for federal funds for disaster recovery and mitigation assistance; and

WHEREAS, the HMP established a coordinated effort to support mitigation activities, identifies measures to combat natural hazards within our County; and

WHEREAS, the HMP is an extension of the State of California Multi-Hazard Mitigation Plan, and will be reviewed periodically and revised as necessary to meet changing conditions; and

WHEREAS, the Board of Directors agrees to adopt this HMP and urges all officials, employees, public and private organizations, and citizens, individually and collectively, to do their share in furthering the preparation of hazard mitigation within the County of San Bernardino;

NOW, THEREFORE, BE IT RESOLVED THAT:

The Board of Directors of the Big Bear Valley Recreation and Park District, a public entity established under the laws of the State of California, hereby authorizes this HMP to be adopted, that the San Bernardino County Fire Protection District Office of Emergency Services Division Manager is hereby authorized to implement future non-substantive amendments, recommended by the Federal Emergency Management Agency upon their review, to the HMP, that a copy of the Board of Directors' approved San Bernardino County Unincorporated Area Hazard Mitigation Plan be forwarded to the Federal Emergency Management Agency and the California

Emergency Management Agency, that once approved the HMP will be considered to be incorporated into the County's General Plan, and this plan become effective immediately.

PASSED AND ADOPTED by the Board of Directors of the Big Bear Valley Recreation and Park District by the following vote:

AYES: DIRECTORS:

NOES: DIRECTORS:

ABSENT: DIRECTORS:

* * * * *

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN BERNARDINO)

I, **LAURA H. WELCH,** Secretary of Board of Directors of the Big Bear Valley Recreation and Park District, hereby certify the foregoing to be a full, true and correct copy of the record of the action taken by the Board of Directors, by vote of the members present, as the same appears in the Official Minutes of said Board at its meeting of Tuesday, , 2011.

LAURA H. WELCH
Secretary

By _____
Deputy

RESOLUTION NO. 2011-

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE BLOOMINGTON RECREATION AND PARK DISTRICT ADOPTING THE SAN BERNARDINO COUNTY UNINCORPORATED AREA MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN DATED MARCH 2011, AND AUTHORIZING FUTURE NON-SUBSTANTIVE AMENDMENTS TO THE PLAN

On Tuesday, , 2011, on motion of Director , duly seconded by Director and carried, the following resolution is adopted by the Board of Directors of the Bloomington Recreation and Park District.

WHEREAS, the preservation of life and property is an inherent responsibility of local, state and federal government, including the County of San Bernardino, and the San Bernardino County Office of Emergency Services, to prepare a local Multi-Jurisdictional Hazard Mitigation Plan (HMP) for the unincorporated area of San Bernardino County to define hazard mitigation measures to reduce or eliminate loss of life and/or property; and

WHEREAS, this HMP represents a comprehensive description of the County's commitment to reducing, preventing or eliminating potential impacts of disasters caused by natural hazards; and

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WHEREAS, the Board of Directors agrees to adopt this HMP and urges all officials, employees, public and private organizations, and citizens, individually and collectively, to do their share in furthering the preparation of hazard mitigation within the County of San Bernardino;

NOW, THEREFORE, BE IT RESOLVED THAT:

The Board of Directors of the Bloomington Recreation and Park District, a public entity established under the laws of the State of California, hereby authorizes this HMP to be adopted, that the San Bernardino County Fire Protection District Office of Emergency Services Division Manager is hereby authorized to implement future non-substantive amendments, recommended by the Federal Emergency Management Agency upon their review, to the HMP, that a copy of the Board of Directors' approved San Bernardino County Unincorporated Area Hazard Mitigation Plan be forwarded to the Federal Emergency Management Agency and the California Emergency Management Agency, that once approved the HMP will be considered to be incorporated into the County's General Plan, and this plan become effective immediately.

PASSED AND ADOPTED by the Board of Directors of the Bloomington Recreation and Park District by the following vote:

AYES: DIRECTORS:

NOES: DIRECTORS:

ABSENT: DIRECTORS:

* * * * *

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN BERNARDINO)

I, **LAURA H. WELCH,** Secretary of Board of Directors of the Bloomington Recreation and Park District, hereby certify the foregoing to be a full, true and correct copy of the record of the action taken by the Board of Directors, by vote of the members present, as the same appears in the Official Minutes of said Board at its meeting of Tuesday, , 2011.

LAURA H. WELCH
Secretary

By _____
Deputy

Table of Contents

Section 1. Introduction 1
San Bernardino County Fire Protection District 1
San Bernardino County Flood Control District 3
DESCRIPTION OF MAJOR SERVICES 3
Special Districts Department 5
1.1. Purpose of the Plan 9
1.2. Authority 9
1.3. Community Profile 10
Physical Setting 10
History 12
Climate 13
Demographics 14
Existing Land Use 16
Development Trends 27

Section 2. Plan Adoption 28
2.1. Adoption by Local Governing Body 29
2.2. Promulgation Authority 29
2.3. Primary Point of Contact 30

Section 3. Planning Process 31
3.1. Preparing for the Plan 31
Project prioritization involved comprehensive consideration of criteria/factors. 33
Planning Team 33
3.2. Coordination with Other External Jurisdictions, Agencies, and Organizations 36
Internal Coordination 36
External Coordination 42
3.3. Public Involvement/Outreach 43
Public Meetings 43
Press Releases 44
Web Posting 44
CERT Teams 44
Public Hearing Process 45
3.4. Assess the Hazard 45
3.5. Set Goals 47
3.6. Review and Propose Mitigation Measures 47
3.7. Draft the Multi-Jurisdictional Hazard Mitigation Plan 50
3.8. Adopt the Plan 50

Section 4. Risk Assessment 52
4.1. Hazard Identification 53
Hazard Screening Criteria 53
Hazard Assessment Matrix 54
Hazard Prioritization 63
4.2. Hazard Profile 64
Wildfires 64
Earthquake/Geologic Hazards 68
Flood 72
Other Hazards 76

4.3. Inventory Assets 76
Buildings *77*
Critical Facility List *78*
4.4. Vulnerability Assessment 81
Methodology *81*
Results for Wildfire *81*
Results for Earthquake *82*
Results for Dam Inundation *92*
Results for Flood *93*

Section 5. Community Capability Assessment 100
5.1. Agencies and People 100
5.2. Existing Plans 102
5.3. Regulations, Codes, Policies, and Ordinances 102
5.4. Mitigation Programs 103
Wildfire Programs *103*
Earthquakes/Geologic Hazards Programs *109*
Flood Programs *110*
Extreme Heat, Extreme Cold, and Drought Programs *118*
5.5. Fiscal Resources 119

Section 6. Mitigation Strategies 124
6.1. Mitigation Overview 124
6.2. Mitigation 5 Year Progress Report 124
Wildfire *124*
Earthquake/Geologic Hazards *129*
Flood *130*
6.3. Mitigation Goals, Objectives, and Projects 133
Wildfires *133*
Earthquake/Geologic Hazards *136*
Flood *136*
Additional Proposed Projects with Mitigation Benefits *139*
6.4. Mitigation Priorities 139
Prioritization Process *139*
Wildfire *139*
Flood *140*
6.5. Implementation Strategy 143
Wildfire *143*
Earthquake/Geological Hazards *144*
Flood *144*

Section 7. Plan Maintenance 146
7.1. Monitoring, Evaluating and Updating the Plan 146
7.2. Implementation through Existing Programs 147
7.3. Continued Public Involvement 147

Section 8. Annex 150
8.1. Annex I -- San Bernardino County Flood Control District Projects 152
8.2. Annex II - Other Proposed Projects with Mitigation BenefitsOther Proposed Projects with Mitigation Benefits 165
Studies/Plans 165
Codes/Ordinances 167

Infrastructure 171
Preparedness/Response 172
8.3. Annex -- Special Districts Department Generalized Projects 175
8.4. Annex – Special Districts Department 181
Special Revenue Districts 181
Enterprise Funds – Airport - Refuse 181
Parks Districts 181
Road Districts 182
Enterprise Funds - Sewer 183
Street Light Districts 184
Enterprise Funds - Water 184
8.5. Operational Area Stakeholders 185
Operational Area Stakeholders – 185
8.6. HMP Web Pages 187
8.7. HMP Press Release 189
8.8. Newspaper Clipping 191
8.9. HMP PowerPoint Presentation 193

Figures

Figure 7. Unincorporated and Corporate Areas in San Bernardino County 11
Figure 8. Topographic Features in San Bernardino County 12
Figure 9. San Bernardino County Quadrant Index Map 18
Figure 10. West End Quadrant 19
Figure 11. East Valley, Mountains, Desert, and Morongo Basin Quadrant 20
Figure 12. Twentynine Palms Quadrant 21
Figure 13. Parker Needles Quadrant 22
Figure 14. Red Mountain Trona Quadrant 23
Figure 15. Baker Quadrant 24
Figure 16. Mountain Pass Quadrant 25
Figure 17. Lanfair Valley Quadrant 26
Figure 18. Project Timeline 32
Figure 19. FEMA Flood Hazard Areas for San Bernardino County 56
Figure 20. Areas Potentially Containing Alluvial Fans as mapped by the Alluvial Fan Task Force (2010) 56
Figure 21. California Area 30-Year Earthquake Probabilities (USGS Open-File Report 2007-1437) 57
Figure 22. Dam Inundation Areas in San Bernardino County 58
Figure 23. Lightning Flash Density Map 1996 – 2000 (National Weather Service, http://www.lightningsafety.noaa.gov/lightning_map.htm) 60
Figure 25. Average Annual Number of Tornadoes by State, 1953-2004 (National Climactic Data Center, 2008 62
Figure 26. Average Annual Number of Strong-Violent (F2-F5) Tornadoes by State, 1950–1995 (National Climactic Data Center, 2008 62
Figure 27. Fire Hazard Severity Zones 65
Figure 28. Wildfire History 1900 – 2008 (CalFire and USFS Data 2010) 66
Figure 29. Major California Faults 69
Figure 30. California Faults - Probability of ≥M6.7 Earthquake 70
Figure 31. California Area Earthquake Probabilities By Magnitude By Probability 71
Figure 32. USGS Liquefaction Susceptibility Zones 72
Figure 33. FEMA's National Flood Hazard Layer for San Bernardino County 73
Figure 34. Scenario 1: Magnitude 7.8 Earthquake - Southern San Andreas Fault 83
Figure 35. Scenario 2: Shakemap for Magnitude 6.7 Earthquake San Jacinto Fault 84
Figure 36. Scenario 3: Shakemap for Magnitude 6.7 Earthquake Chino Hills Fault 85
Figure 37. Dam Inundation Zones 92
Figure 38. FEMA Flood Hazard Areas 96
Figure 39. Southwest Corner of San Bernardino County Showing FEMA Flood Zones (FEMA National Flood Hazard Layer, April 10, 2010) 97
Figure 40. FEMA Flood Hazard Area Map Legend 97
Figure 41. High Desert Region of San Bernardino County Showing FEMA Flood Zones (FEMA National Flood Hazard Layer, April 10, 2010, See Figure 34 for Map Legend) 98
Figure 42. Low Desert Region of San Bernardino County Showing FEMA Flood Zones (FEMA National Flood Hazard Layer, April 10, 2010, See Figure 34 for Map Legend) 98
Figure 43. Organizational Chart - San Bernardino County 102

Tables

Table 1. Hazard Assessment Matrix 63
Table 2. Prioritized Hazard Assessment Matrix 64
Table 3. Wildfire Occurrences 2005–2010 67
Table 4. Earthquakes: 2005–2010 San Bernardino County 69
Table 5. Severe Weather Events 2005-Present 76
Table 6. Building/Contents Replacement Value 77
Table 7. Critical Facility List 78
Table 8. Hazard Identification for Selected Essential Facilities 79
Table 9. Critical Facilities within Wildfire Hazard Area 82
Table 10. Direct Economic Loss, Casualties, and Building Damage by General Building Type for the Unincorporated Areas of San Bernardino County 86
Table 11. Direct Economic Loss, Casualties, and Building Damage by General Building Type for the Unincorporated Areas of San Bernardino County 89
Table 12. HAZUS-Estimated Flood Losses for San Bernardino County 93
Table 13. County Buildings in FEMA Flood Hazard Zones 95
Table 14. Land Use Compatibility Chart for 100-Year Flood Plains (General Plan Table S-1) 112
Table 15. Completed Flood Control Projects 132
Table 16. On-Going Projects to Mitigate the Flooding Hazard 132
Table 17. Hazardous Tree Removal Project and Fuel Modification Projects 133
Table 18. Proposed Flood Control Mitigation Projects 138
Table 19. Flood Control Projects Prioritized by Total Cost 141
Table 20. Proposed Projects Prioritized by Hazard Assessment Matrix 142
Table 21. Proposed Projects Prioritized by Potential Fatalities 142
Table 22. Implementation Strategy Summary 143
Table A-1: Flood Projects—Completed 152
Table A-2: Flood Projects—Proposed 155

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Section 1. Introduction

The MJHMP update is a "living document" that should be reviewed, monitored, and updated to reflect changing conditions and new information. As required, the MJHMP must be updated every five (5) years to remain in compliance with regulations and Federal mitigation grant conditions. In that spirit, this Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) is an update of the San Bernardino County Unincorporated Area MJHMP approved by FEMA on April 29, 2005. This MJHMP presents updated information regarding hazards being faced by the County, the San Bernardino County Fire Protection District, the San Bernardino County Flood Control District, Big Bear Valley Recreation and Parks District, Bloomington Recreation and Parks District (Districts), and those Board-governed Special Districts administered by the San Bernardino County Special Districts Department. The Plan also presents mitigation measures to help reduce consequences from hazards, and outreach/education efforts within the unincorporated area of the County since 2005.

These Board-Governed Special Districts were formed by the Board of Supervisors to provide a specific service for a specific area of San Bernardino County. Additionally, these Special Districts are treated as an all-inclusive County Organization, not as separate or independent entities. Each Special District is governed cooperatively by the San Bernardino County Board of Supervisors acting as the Board of Supervisors for each of the individual districts. The San Bernardino County Organizational Chart clearly shows the relationships between these Board-governed Special Districts and other County departments as one of equal relationship Departments/Districts.

San Bernardino County Unincorporated Area

The Unincorporated Area of San Bernardino County has a population of 296,284persons (6.9% of the entire County Population) and covers 19,848 square miles (98.7% of the entire County land area). There are approximately 61 unincorporated communities within the unincorporated County. San Bernardino County is the largest County in the continental United States. San Bernardino County provides basic services to the residents and citizens of the unincorporated areas. These services include Law Enforcement, Fire Protection, Building and Safety Services, Public Health Services, Library, and Human Services (social services). Five Interstate Highways and four inter-continental railroad lines cross the County, providing vital transportation links from southern California to the remainder of the United States.

San Bernardino County Fire Protection District

San Bernardino County Fire Protection District is a community based all-risk emergency services organization dedicated to the health and well-being of the citizens of San Bernardino County through a balance of regionalized services delivery and accountability to the local community.

On July 1, 2008, twenty-seven separate fire districts were merged into one single board governed fire protection district with four regional service zones. The reorganization was not only an administrative advancement but also a significant advancement in operations and delivery of emergency response services.

It has resulted in simplified budgeting and fiscal operations, greater flexibility in the use in the use of department resources and assets and more effective use of day-to-day operations. The reorganization will continue to improve the delivery of fire services and overall operating efficiency.

The San Bernardino County Fire Protection District (County Fire) covers 18,353 square miles, operates 81 fire stations and facilities within 4 Regional Service Zones (Mountain, North Desert, South Desert and Valley), and serves 64 unincorporated communities, the City of Grand Terrace, and the Town of Yucca Valley. There are also 6 ambulance enterprise operations that provide service within these Regional Service Zones. In addition, five cities are Independent Fire Protection Districts that contract with County Fire: Adelanto, Fontana, Hesperia, Needles and Victorville. County Fire's executive management is provided by the Fire Chief/County Fire Warden, Deputy Chief, Assistant Chief of Operations as well as Division Managers and Division Chiefs.

County Fire is an all-risk department providing emergency mitigation and management for fire suppression, emergency medical services (paramedic and non-paramedic), ambulance services, HAZMAT response, arson investigation, technical rescue including water borne, flooding and mudslide, winter rescue operations, and terrorism and weapons of mass destruction. As part of disaster preparation, response, and mitigation, the department's Office of Emergency Services specifically provides support and assistance to the 24 cities and towns, as well as, all the unincorporated portions of the county. The field functions are supported by a countywide management system that includes organizational business practices, human resources, financial and accounting services, vehicles services and support, and equipment warehousing and distribution. County Fire also provides for the management of community safety services such as: fire prevention, building construction plans and permits, household hazardous waste, Local Oversight Program for hazardous materials, HAZMAT facility inspections, planning and engineering, and public education and outreach.

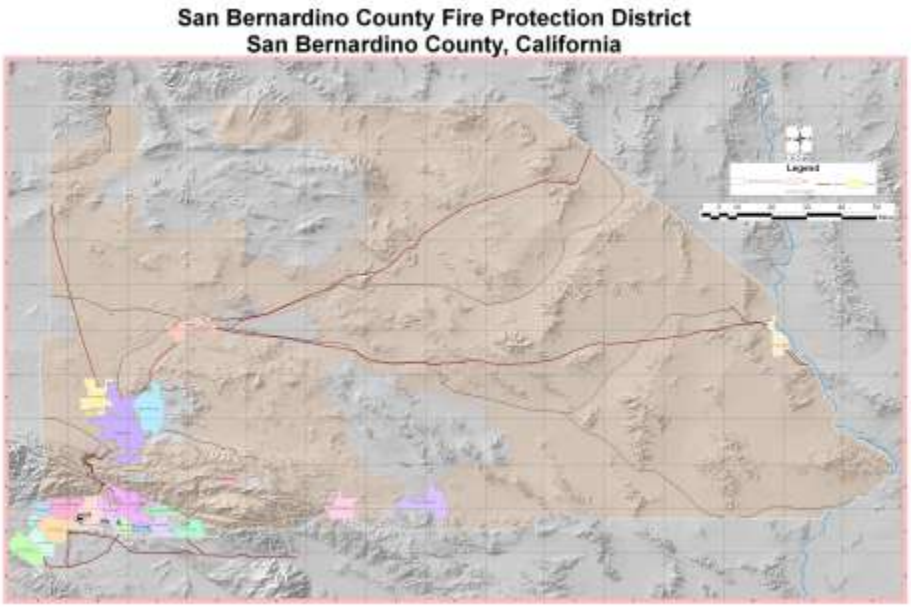


Figure 1 San Bernardino County Fire Protection District

San Bernardino County Flood Control District

DESCRIPTION OF MAJOR SERVICES

The San Bernardino County Flood Control District (District) was created in 1939 under special state legislation. Since its inception, the District has developed a very extensive system of flood control and water conservation facilities, including dams, conservation basins, debris basins, channels and storm drains. The purpose of these facilities is to intercept and convey flood flows through and away from developed areas of the county, as well as to promote water conservation and improved water quality.

The District covers the entire county, including all of the incorporated cities. The District is divided into six geographic flood zones (in recognition of the different characteristics and flood control needs in various areas).

- Zone 1 encompasses the county's West End, from the Los Angeles and Riverside County lines to West Fontana.
- Zone 2 encompasses the central area of the San Bernardino Valley easterly of Zone 1 to approximately the Santa Ana River and City Creek demarcations.
- Zone 3 covers the east end of San Bernardino valley, east of Zone 2.
- Zone 4 covers the Mojave River valley region, from the San Bernardino Mountains to Silver Lakes.
- Zone 5 primarily includes the San Bernardino mountains.
- Zone 6 encompasses the remainder of the county not covered by other zones.

The District has also established a countywide administrative zone (Zone 7).

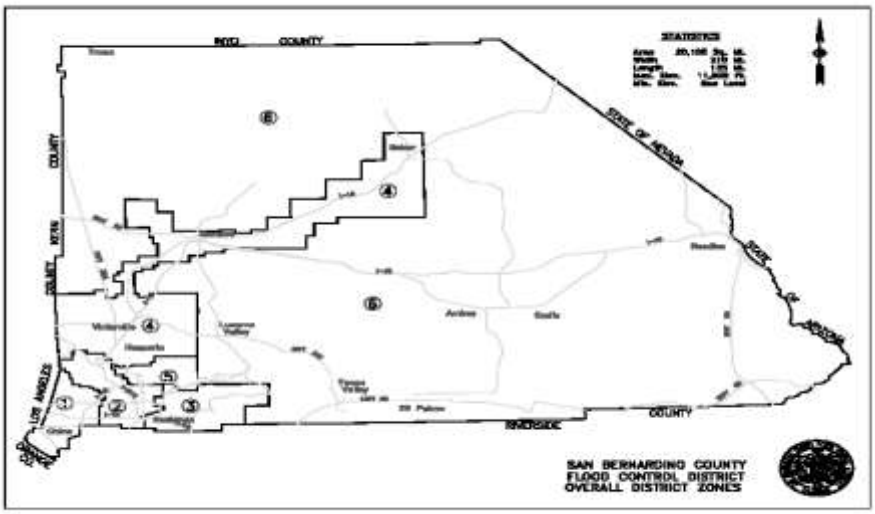


Figure 2 Map of San Bernardino County Flood Control District Boundaries

The District's funding is primarily derived from property taxes, federal and state aid on specific projects, subdivision and permit fees, rents and royalties, and revenue from local water agencies for water spreading services.

The District's principal functions are as follows:

- **Flood Protection on Major Streams:** In cooperation with the federal government, the District conducts programs for channel and levee construction, floodwater retention, and debris basin maintenance. Programs or projects are often done in cooperation with the incorporated cities, the U.S. Army Corps of Engineers, and the U.S. Bureau of Reclamation.
- **Water Conservation:** The District operates and maintains water conservation basins and spreading grounds. Water from the local mountains and northern California is spread and percolated into the groundwater basins underlying the county. The District has numerous joint use agreements with water districts allowing use of District facilities for groundwater recharge.
- **Storm Drain Construction:** The District is active in comprehensive storm drain master planning/construction and cooperates with incorporated cities and other agencies in storm drain projects.
- **Facility Maintenance:** The District has a proactive maintenance program for its facilities. Regular inspections of the storm drains, channels, and basins are made as required by various state and federal agencies.
- **National Pollution Discharge Elimination System (NPDES):** The District is the lead permittee in the San Bernardino valley area-wide NPDES permit with 16 cities as co-permittees. The NPDES program, through the State Water Quality Management Board, regulates storm water quality through very detailed and complex permits, which affect everyone within the Santa Ana River Watershed and is expanding into the high desert area of the Victor Valley under Phase II of the permit.
- **Flood Operations:** During the flood season, the District maintains telemetry systems for monitoring rainfall and runoff and dispatches storm patrols as dictated by the projected severity of a storm. The District has access to a weather satellite data delivery system to provide state-of-the-art weather information. The system provides advance warning of major storm activity.
- **Flood Area Safety Task Force (FAST):** As a result of the October/November fires of 2003, the FAST organization was created. The District is a key component of this task force, which is meant to respond to the elevated flood risk associated with the aftermath of these devastating fires.

Special Districts Department

The Special Districts Department promotes safe, healthy, enjoyable and dynamic communities by providing essential programs and municipal services that meet the current and future needs of the communities served.

The San Bernardino County Board of Supervisors is the governing body for all Board governed Districts, CSAs, and Improvement Zones. The day-to-day management and administration is done through the Special Districts Department. The County Board of Supervisors and the Special Districts Department depend quite heavily on input from the community. The successful operation of a District, CSA and Improvement Zone is a team effort between County staff and property owners. Where needed, the Board of Supervisors will set up a property owner Advisory Commission or Municipal Advisory Council (MAC) to work with and make recommendations to the Board and County staff.

The formation process begins with a request from property owners and then involves a feasibility study performed by the Special District Department with the assistance of many other County Departments. The final approval of the District, CSA and Improvement Zone is done by the County Board of Supervisors at a public hearing. Depending on the complexity of the issues, the process can take from three (3) months to one (1) year to complete.

There are various forms of financial mechanisms that can be used to fund services such as fees, special taxes, assessments, etc. Prior to a new funding source being implemented, it must receive approval from either the property owners or the registered voters in the area. It is important to understand that all funding is generated through the Districts, CSAs, and Improvement Zones. No County general funds are used or are available.

Special Districts Department is responsible for operating the Board-governed Special Districts within San Bernardino County. There are 102 special districts managed by the Special Districts Department:

Special Districts Department District Listing

	District Type	Number
1	Special Revenue Districts	11
2	Enterprise Funds (Airport and Refuse)	3
3	Parks Districts	19
4	Road Districts	41
5	Enterprise Funds (Sewer)	9
6	Street Light Districts	11
7	Enterprise Funds (Water)	8
	Total Special Districts	102

- **Special Revenue Districts** were created to provide a service to the property owners within the Special Revenue District.
- **Enterprise Funds Districts** derive their funds through fees collected for delivery of a service or good such as water, sewer, refuse or airport fees from the users within the individual District.
- **Parks Districts** derive their funds through property taxes levied on property owners within the individual Park District.
- **Road Districts** derive their funds through property taxes levied on property owners within the Road District.
- **Street Light Districts** derive their funds through property taxes levied on property owners within the Street Light District.

The two below Special Districts were formed differently than the other special districts above managed by the Special Districts Department. These two districts were formed with a Board of Directors. (San Bernardino County Board of Supervisors) and are not independently elected. All governance actions are by the elected members of the Board of Supervisors acting as the Board of Directors for the Recreation and Park District.

Big Bear Valley Recreation and Parks District

Big Bear Valley Recreation and Park District currently maintains 6 developed parks, 2 undeveloped parks, several community buildings including the Big Bear Valley Senior Center, 3 ball fields, and a swim beach. Moonridge Animal Park is administered by the Big Bear Valley Recreation and Park District. The Zoo is open year round for visitors to see alpine species on exhibit. The Zoo receives approximately 99,600 visitors annually.

Bloomington Recreation and Parks District

Bloomington Recreation and Park District maintains two community parks, an equestrian arena, sports fields, and a community center.

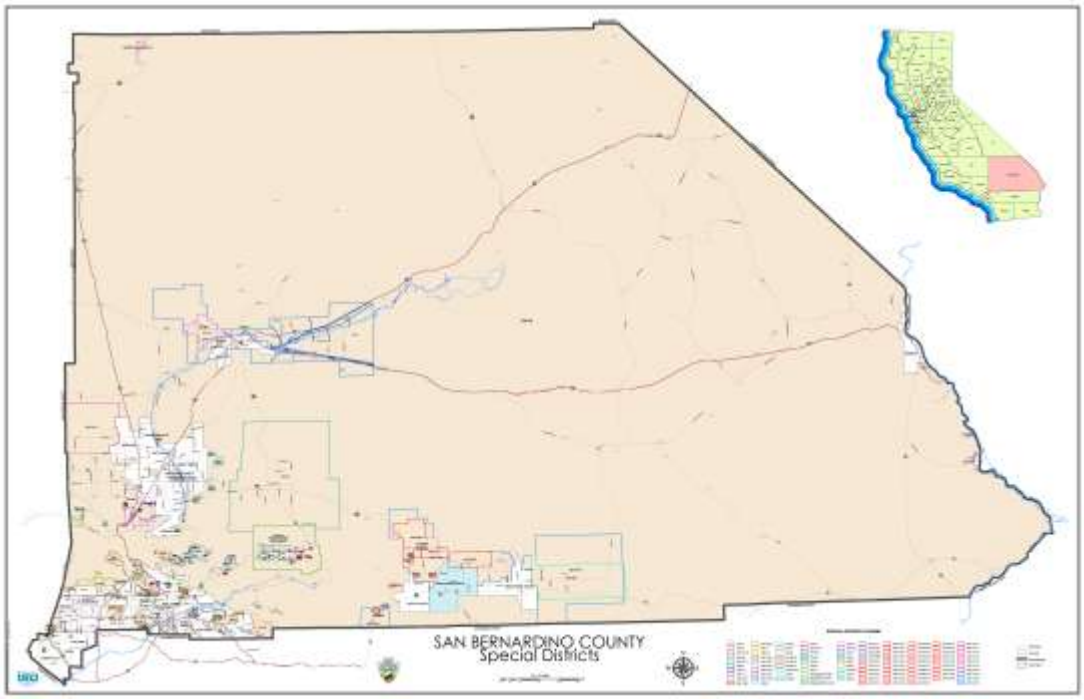


Figure 3 Map of Special District Department Districts

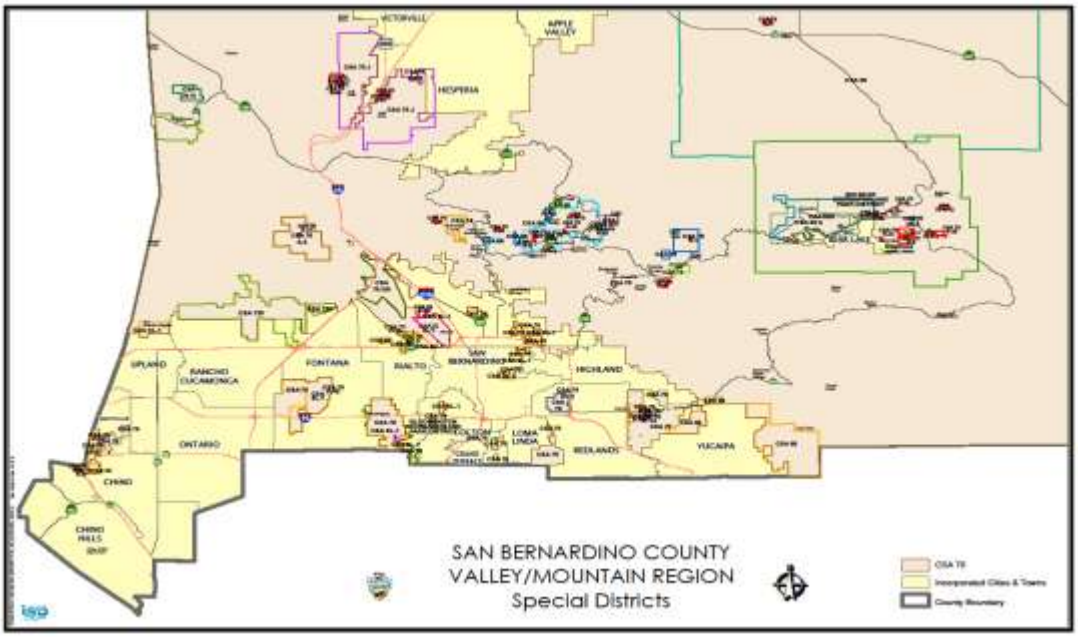


Figure 4 Special Districts - Valley/Mountain Region

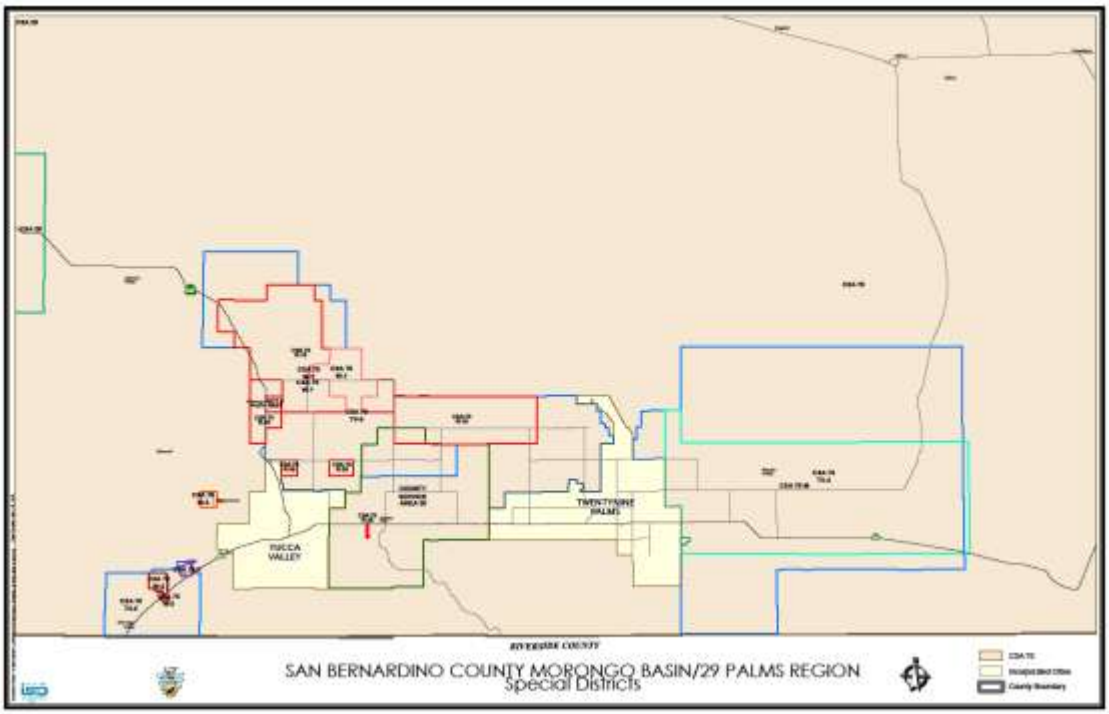


Figure 5 Special Districts - Morongo Basin/29 Palms Region

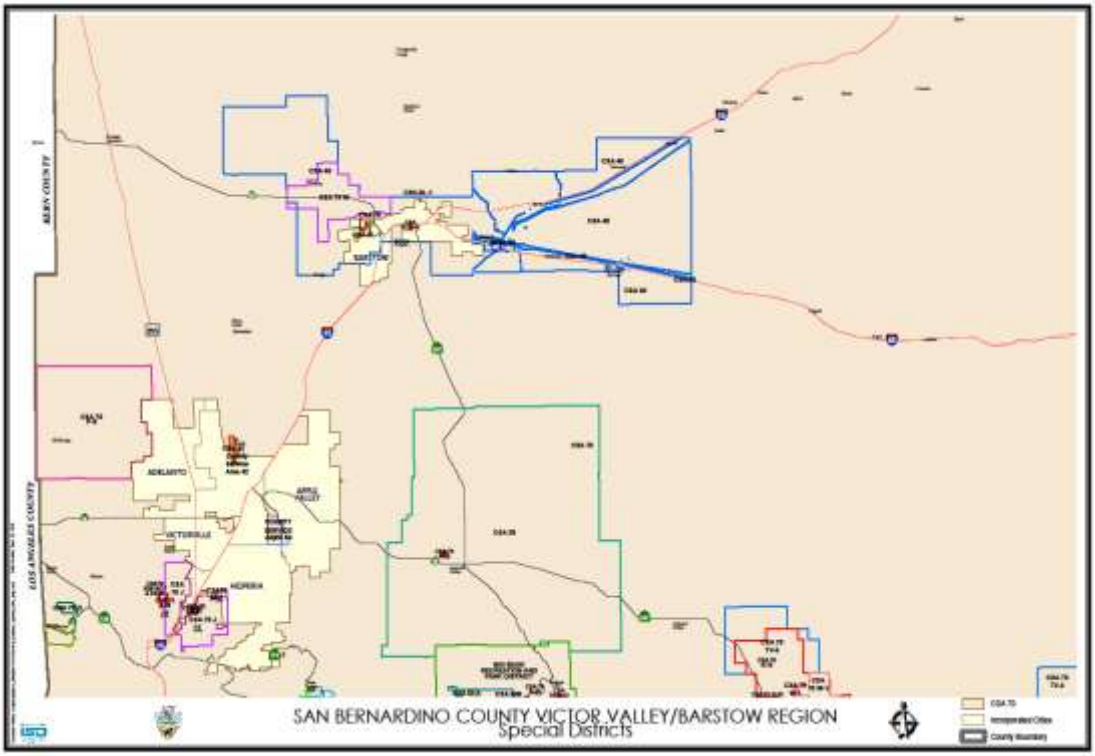


Figure 6 Special Districts Victor Valley/Barstow Region

1.1. Purpose of the Plan

The intent of hazard mitigation is to reduce and/or eliminate loss of life and property. Hazard mitigation is defined by FEMA as "*any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards*." A "hazard" is defined by FEMA as "*any event or condition with the potential to cause fatalities, injuries, property damage, infrastructure damage, agricultural loss, environmental damage, business interruption, or other loss*."

The purpose of the Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) is to demonstrate the plan for reducing and/or eliminating risk in the unincorporated area of the County and it's five Special Districts. The MJHMP process encourages communities to develop goals and projects that will reduce risk and build a more disaster resilient community by analyzing potential hazards. By cooperatively and jointly together as a Multi-Jurisdictional Planning team, the partners were able to develop common goals and objectives for mitigation efforts. The individual stakeholders can then take the goals and objectives back to their individual Special Districts for discussion, ranking and project development, and then bring the resulting projects back to the Multi-Jurisdictional Planning Team. The Multi-Jurisdictional Planning Team can then integrate all projects into the appropriate project listing to be acted upon by the most appropriate special District for the listed project.

After disasters, repairs and reconstruction are often completed in such a way as to simply restore to pre-disaster conditions. Such efforts expedite a return to normalcy; however, the restoring of things to pre-disaster conditions sometimes result in feeding the disaster cycle; damage, reconstruction, and repeated damage. Mitigation is one of the primary phases of emergency management specifically dedicated to breaking the cycle of damage. Hazard mitigation is distinguished from other disaster management functions by measures that make County development and the natural environment safer and more disaster resilient. Mitigation generally involves alteration of physical environments, significantly reducing risks and vulnerability to hazards by altering the built environment so that life and property losses can be avoided or reduced. Mitigation also makes it easier and less expensive to respond to and recover from disasters.

Also with an approved (and adopted) MJHMP, the County and its Special Districts are eligible for federal disaster mitigation funds/grants (Hazard Mitigation Grant Program, Pre-Disaster Mitigation, and Flood Management Assistance) aimed to reduce and/or eliminate risk.

1.2. Authority

In 2000, FEMA adopted revisions to the Code of Federal Regulations. This revision is known as "Disaster Mitigation Act (DMA)." DMA 2000, Section 322 (a-d) requires that local governments, as a condition of receiving federal disaster mitigation funds, have a Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) that describes the process for assessing hazards, risks and vulnerabilities, identifying and prioritizing mitigation actions, and engaging/soliciting input from the community (public), key stakeholders, and adjacent jurisdictions/agencies.

1.3. Community Profile

Physical Setting

The County is bounded by the states of Arizona and Nevada on the east, Inyo County on the north, Kern and Los Angeles Counties on the west, and Orange and Riverside Counties on the south.

San Bernardino County covers 20,102 square miles and is geographically the largest county in the continental United States. The States of Hawaii, Connecticut, Delaware, and Rhode Island and the District of Columbia could all fit inside the County boundary at the same time. The unincorporated area of San Bernardino County covers approximately 19,848 square miles; this is 98.7% of the entire County.

The remaining 1.3% of acreage (254 square miles) is under the jurisdiction of incorporated cities or towns. **Figure 7** displays the unincorporated area and the cities/towns. The cities/towns on the map are concentrated in the south/west portion of the county and are color-coded.

San Bernardino County is characterized by three (3) distinct geographic areas: Valley, Mountains, and Desert: the Valley Region contains the majority of the county's incorporated areas and is the most populous region; the Mountain Region is primarily comprised of public lands owned and managed by federal and state agencies; and, the Desert Region is the largest region (over 93% of the county's land area) and includes parts of the Mojave Desert.4 Aside from open or undeveloped land, the largest land use in the county is for military purposes.

The mountains stretch across the south end of the county. The mountain elevations range from 2,000 feet along the foothills to the 11,502-foot summit of Mount San Gorgonio, the highest peak in Southern California. **Figure 8** displays the terrain/topographic features throughout San Bernardino County.

The San Bernardino Mountains feature four (4) large lakes (Big Bear Lake, Silverwood Lake, Lake Arrowhead, and Lake Gregory),and many smaller lakes. The majority of the lakes are the headwaters of the Santa Ana River and the Mojave River.

The Santa Ana River originates in the San Bernardino Mountains and flows southwest to the ocean. The Santa Ana Watershed includes streams flowing south from the San Gabriel Mountains and streams flowing north and west from the San Jacinto Mountains in Riverside County.

The desert area contains low mountains, valleys, and dry lakebeds. The elevations within the valley range of the County is from about 500 feet on the valley floor to 1,700 feet in Live Oak Canyon, and to about 5,400 feet in the hills in Yucaipa. The desert area is an assemblage of mountain ranges interspersed with long, broad valleys that often contain dry lakes. Many of these mountains rise from 1,000 to 4,000 feet above the valleys. Due to the persistent winds that blow throughout the year, large portions of the desert surface have been modified into a mosaic of pebbles and stones known as desert pavement.

A major physical resource of the desert area is the Mojave River, a critical water source for many of its residents. Among the few rivers that both flow north and do not empty into an ocean, the Mojave River travels north and east away from its watershed in the San Bernardino Mountains. The major part of its

over 100-mile length is marked by a dry riverbed that only on occasion reveals the water within it. Except in exceedingly wet years, the Mojave River ends its flow at Soda Dry Lake near Baker. The Colorado River, at the California and Arizona border, borders the County on the east. Streams in the eastern areas of the County area flow into the Colorado River which eventually ends at the Gulf of California.

The densely urban southern part of the County is at the headwaters of the Santa Ana River with its tributaries crossing the valley floor. With the construction of the Seven Oaks Dam the main river source has been controlled. However, Mill Creek, City Creek, Lytle Creek, and Cajon Creek still have the potential to flood areas of the valley if levees fail. A similar potential occurs with the high desert portion of the County with the Mojave River, which is controlled by the Mojave River Falls Dam that flows north from the San Bernardino Mountains to the city of Barstow. The San Antonio Dam on the southwest side of the county provides more than 100-year flood protection to the west end of the San Bernardino Valley. The Colorado River is on the eastern border of the County. The dams along the river have controlled the flow but bank erosion and damage to roads in the area have been experienced during periods of high water.

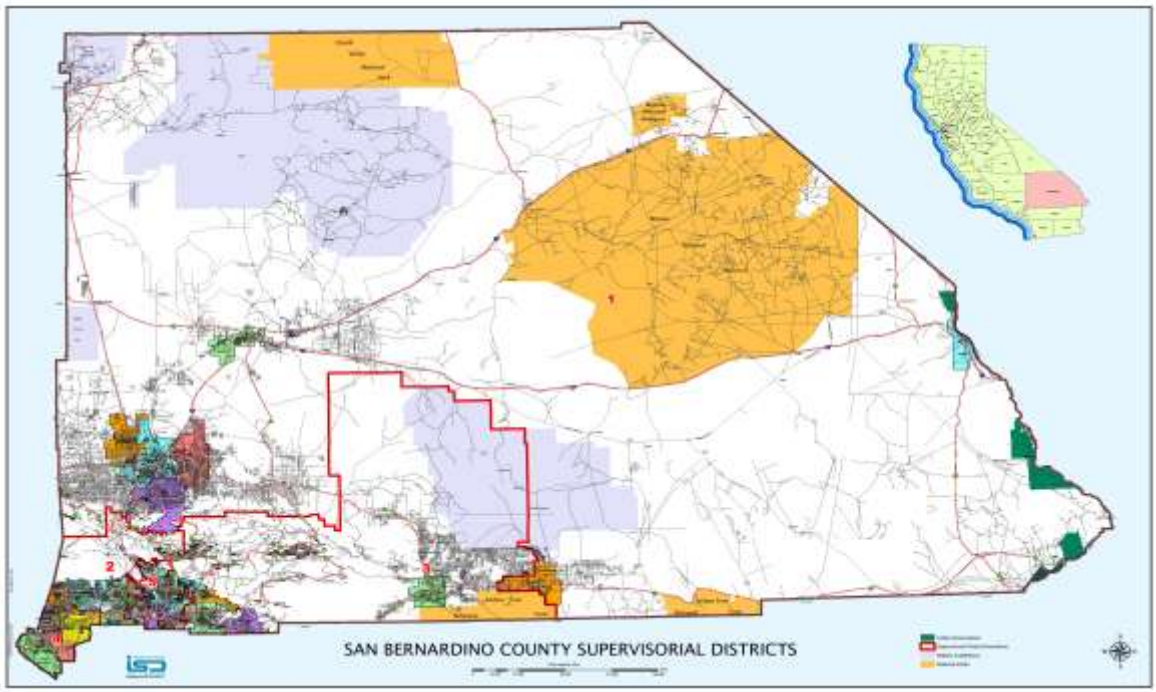


Figure 7. Unincorporated and Corporate Areas in San Bernardino County

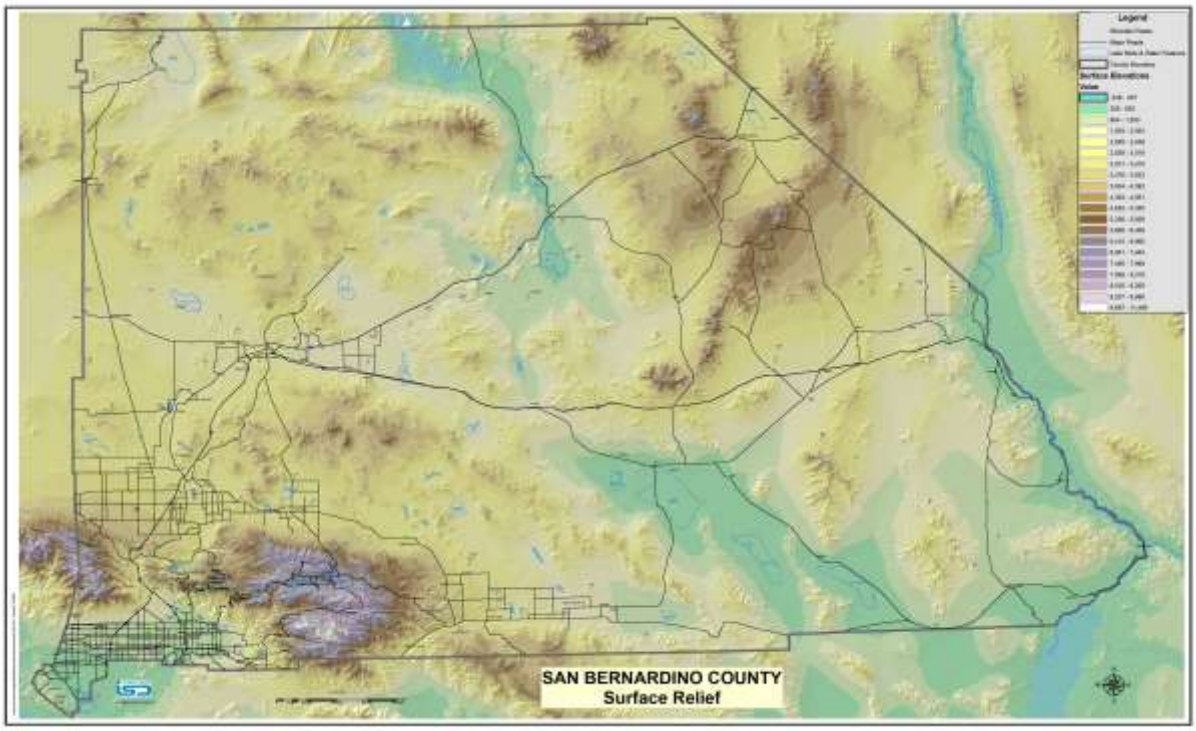


Figure 8. Topographic Features in San Bernardino County

History

Paleo-Indian sites dating from c. 10,000 BC show that the San Bernardino County area has been inhabited for at least 12,000 years. Artifacts in the Calico area suggest much earlier human occupation, but this has not been confirmed. In the past three thousand years, various Indian tribes flourished in the area: the Gabrielenos occupied the West Valley; the Serranos lived in the foothills of the San Bernardino Mountains; the Vanyumes lived along the Mojave River; the Mohave lived along the Colorado River; and the Chemehuevi occupied the Mojave Desert.

The first European explorers to enter the area were Pedro Fages, Military Commander of California, in 1772 and Fr. Francisco Garces, a missionary priest, in 1774. On May 20, 1810, Franciscan missionary Francisco Dumatz, of the San Gabriel Mission, led his company into a valley. In observance of the feast day of St. Bernardine of Siena, Dumatz named the valley San Bernardino. This name was later given to the nearby mountain range, and later the city and county.

In 1842 the Lugo family was granted the Rancho San Bernardino, a holding of 37,700 acres encompassing the entire San Bernardino Valley. Captain Jefferson Hunt, of the Mormon Battalion, led a group of settlers into San Bernardino and founded a Mormon Colony. In 1851 the Mormon Colony purchased the Rancho from the Lugo family.

In 1850 California was admitted into the United States. On April 26, 1853, San Bernardino County was created from parts of Los Angeles, San Diego, and Mariposa Counties. In 1854 the City of San Bernardino was incorporated as the county seat.

In 1857, three orange trees were set out on a farm in Old San Bernardino. By 1882 a rail car load of oranges and lemons grown in the East Valley was shipped to Denver, Colorado. As early as the 1840s, vineyards were planted in the Cucamonga area and in the 1870 census; San Bernardino County was credited with producing 48,720 gallons of wine.

In 1860, gold was discovered in Holcomb and Bear Valleys in the San Bernardino Mountains, and placer mining began in Lytle Creek. Silver was being mined at Ivanpah in 1870, and the rich silver mines of the Calico district were developed in the 1880s. Borax was first discovered in 1761 at Searles Dry Lake near Trona, and transported out by twelve-, eighteen- or twenty-mule team wagons.

As a county, San Bernardino has been uniquely endowed with rich mineral deposits. Large deposits of gold have been mined at Stedman and Vanderbilt, with smaller but still important deposits at Alvord, Oro Grande, Old Dad Mountain, Dale and Nantan, Calico, Ivanpah, Waterman and Providence were the largest silver deposits, with lesser, but important deposits in the Mescal Mountains and at the Death Valley Mine. The most important copper mines are the Copper World and the Bagdad Chase (known usually for its gold production).

Except for a brief period after World War I when silver prices were high, low metal prices and inflation put a damper on mining in the 1920s. However, with the Great Depression of the 1930's and an increase in the price of gold by nearly $15 an ounce, many small operators reactivated old mines. The region around Barstow, Vanderbilt, Stedman, and Dale were the principal centers of mining activity until World War II.

During World War II, iron was extracted from the Vulcan Mine in the Providence Mountains, and the Bagdad Chase Mine remained active. Since the war, there has been sporadic mining of gold, silver, and tungsten in the county. A major new mine opened during the 1950s, the Mountain Pass rare earth mine. Recently, exploration has outlined potential large tonnage molybdenum properties in the New York and Ord Mountains, copper in the Cooper Basin area of the Whipple Mountains and gold in the Clark Mountains.

After World War II, the citrus industry slowly declined. However, dairies relocating out of Los Angeles County settled in the Chino Valley area, creating a robust dairy industry in San Bernardino County. Elsewhere in the Valley region, suburbs grew as moderate priced housing developments were built. By the late 1980’s, the county had grown into bedroom communities and warehousing for southern California.

Climate

The valleys between mountain ranges experience very high temperatures, while the adjacent mountains often experience much cooler temperatures, particularly at their summits. Rainfall and humidity are low. The annual average precipitation for the area is approximately 30 inches. The differences in elevation and topography are in part responsible for variations in temperature and precipitation from the Valley and Desert areas.

Winter temperatures in some areas of the Desert range near zero, the cold often compounded by the wind-chill factor. In the summer, temperatures can reach as high as 134°F in the lower elevations and along the Colorado River area. Temperatures in the San Bernardino valley area range from an average

high of 80ºF and an average low of 53ºF. The record high for the area is 117ºF and the record low is 17ºF. The annual average rainfall for the area is 15.6 inches. During the fall and winter months, strong "Santa Ana" winds blow across the area.

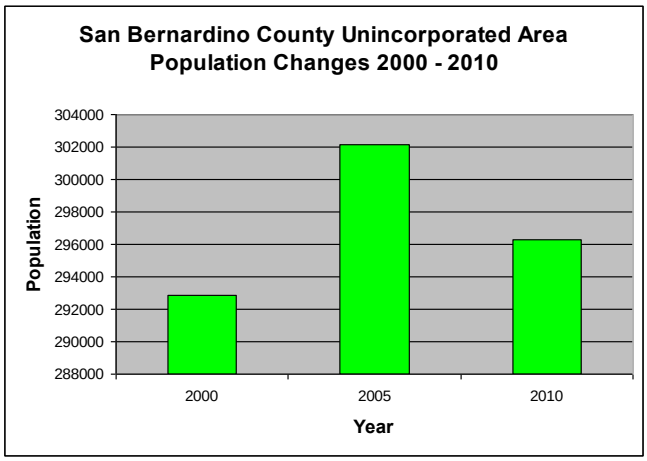
The mountains experience a four-season climate. Temperatures in the Mountain area range from an average high of 62ºF and an average low of 36ºF. The record high for the area is 106ºF and the record low is -25ºF.

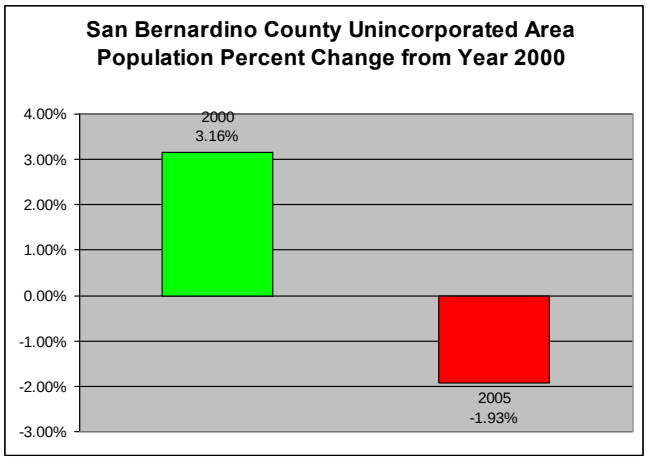
With the possible exception of some of the higher elevations in the mountains, precipitation throughout the Desert area is less than four inches per year, usually of short duration and high intensity. The resulting flash floods rapidly modify the terrain that is exposed to the erosive surface runoff. Unusually heavy or persistent rains often result in the temporary filling of a number of dry lakes until the surface water evaporates or infiltrates the soil. Persistent winds blow throughout the year.

Demographics

The total population of San Bernardino County is approximately 2,073,149 people (California Department of Finance, Demographics Unit, 2010). Most of the County's population is in the valley areas located in the south western portion of the County. The County's population has grown by 21%, approximately 363,715 people, since 2000 (population in 2000 was approximately 1,709,434 people). This rate of growth was relatively slower than the population growth in three (3) neighboring counties (Kern, Imperial, Riverside), but much higher than the next three (3) other counties in Southern California (San Diego, Orange, San Luis Obispo).

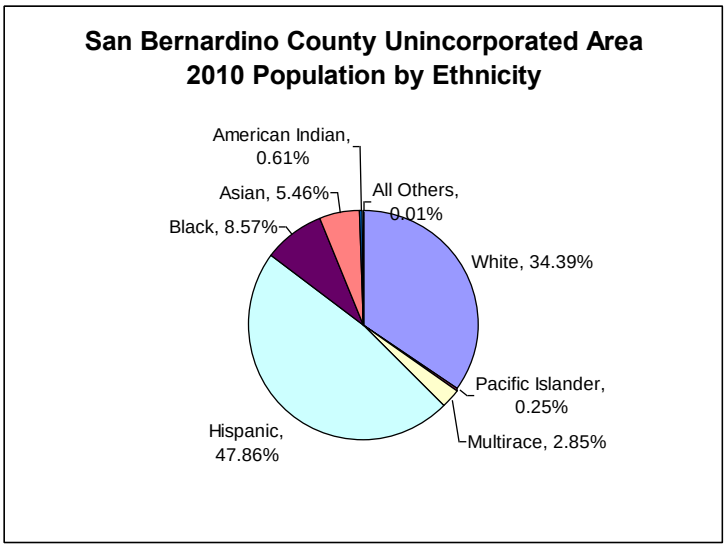
The population of the unincorporated area of the County in 2005 was 302,121 people. In 2010, the population was 296,284; a decline of 5,837 persons (or 2%). Source (2010 California Department of Finance, Demographics Unit).





According to the Census Bureau data, the population of the San Bernardino County in 2000 was 1,709,434 people. The population San Bernardino grew from 2000 to 2010 to 2,073,149 (a 21% increase).

Ethnic composition includes Hispanics (48%) who form the largest share of the County's population, followed by Whites (34%). Blacks (9%) and Asians (5%) form a relatively lower share of the total population. It should be noted that the Hispanic population is growing at the fastest rate among all ethnic groups. From 2000 to 2010, the Hispanic population increased by 44%. This trend is consistent with that of the neighboring counties of Riverside and Orange, where the Latino population grew by 63% and 24%, respectively. During this period, the Asian population grew by 38%, whereas the Black population grew by 15%. The population of Whites declined in all the six counties in Southern California; San Bernardino County experienced a decline of 7% in its White population. Changes in Ethnicity are from the California Department of Finance, Demographics Unit.



The distribution of population according to age is similar among all the counties, with San Bernardino and Imperial counties having slightly higher share of the young population as compared to the other four counties. The age groups of "under 5 years" and "5-17 years," cumulatively, form 32% of the total County population. San Bernardino County has a distribution of households by income similar to that of the neighboring Los Angeles and Riverside counties, as well as the state. The County has a higher number of low income households as compared to Orange and Ventura counties, but smaller number of low income households as compared to Imperial County; 28% of the households in San Bernardino County have an income of less than $25,000; 11% of the households have an income between $25,000 to $34,999. The majority of the households (61%) have an income of $35,000 or more. San Bernardino County has a lesser percentage of population with undergraduate and graduate degrees, as compared to Orange and Ventura counties. The educational background of the population in San Bernardino County is very similar to that of Riverside County.

Existing Land Use

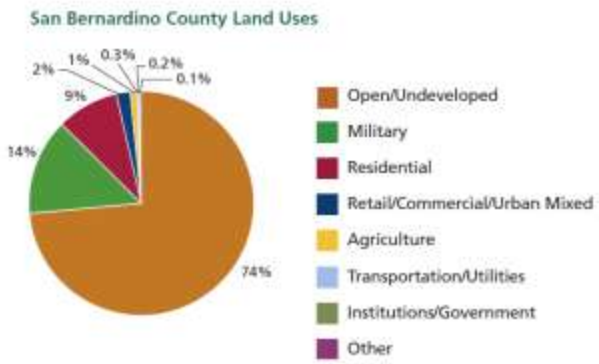
The County has adopted a "one-map approach." The "one-map approach" permits the use of a single map showing both General Plan land use designations and zoning classifications. The one-map approach assures that there will always be land use consistency between the County's General Plan and its Zoning Code.

There are 18 land use zoning districts that apply only to privately owned lands in the County and not to the lands controlled by other jurisdictions. Lands that are controlled by other jurisdictions, including lands controlled by federal and state agencies as well as incorporated cities, are mapped to identify the public agencies that control them. The 18 land use zoning districts are as follows:

- Resource Conservation (RC),
- Agriculture (AG),
- Rural Living (RL),
- Single Residential (RS),
- Multiple Residential (RM),
- Office Commercial (CO),
- Neighborhood Commercial (CN),
- Rural Commercial (CR),
- Highway Commercial (CH),
- General Commercial (CG),
- Service Commercial (CS),
- Community Industrial (IC),
- Regional Industrial (IR),
- Institutional (IN),
- Special Development (SD),
- Floodway (FW),
- Specific Plan (SP), and
- Open Space (OS).

Resource Conservation (RC) comprises the majority (55.98 percent) of the designated land uses in the County. This land use designation covers over 1 million acres, or about 1,500 square miles of land. Most of the land within this designation is publicly owned (federal and state) and includes national parks, military bases, conservation areas, and lands owned by other federal and state agencies. The County has designated approximately 681,500 acres or 1,065 square miles (37.92 percent) for residential uses. Out of this, about 587,535 acres (32.76 percent of total unincorporated area) are designated Rural Living, 67,691 acres are designated Single Residential, while 4,986 acres are designated Multiple Residential.

Commercial land use zoning districts (Office Commercial, Neighborhood Commercial, Rural Commercial, Highway Commercial, General Commercial, and Service Commercial) occupy a total of 12,177 acres or 0.68 percent of the total unincorporated area. Industrial land use zoning districts (including Community Industrial and Regional Industrial) occupy 21,834 acres or 1.21 percent of the total unincorporated area. Other land use designations include Agriculture occupying 41,793 acres (2.32 percent), Institutional occupying 8,567.51 acres (0.48 percent), Floodway occupying 20,281 acres (1.13 percent), and Specific Plan occupying 4,861.37 acres (0.27 percent).



Note: Percentages don't sum to 100% due to rounding.

Source: Calculated from San Bernardino Associated Governments (SANBAG), GIS Data – Land Use, General Plan Land Use Data – 2006

Because of the size of the County, the San Bernardino County General Plan divides the county into 8 quadrants (**Figure 9**). The "one-map approach" allows the quadrant maps to be used for many different planning and development purposes. **Figure 10 though Figure 17** presents the Land Use Zoning for each quadrant. The Land Use Zoning identifies the type of construction and growth that exists or may occurs in area.

County designated Land Use Zoning Districts do not apply to Federal, State, or incorporated owned property.

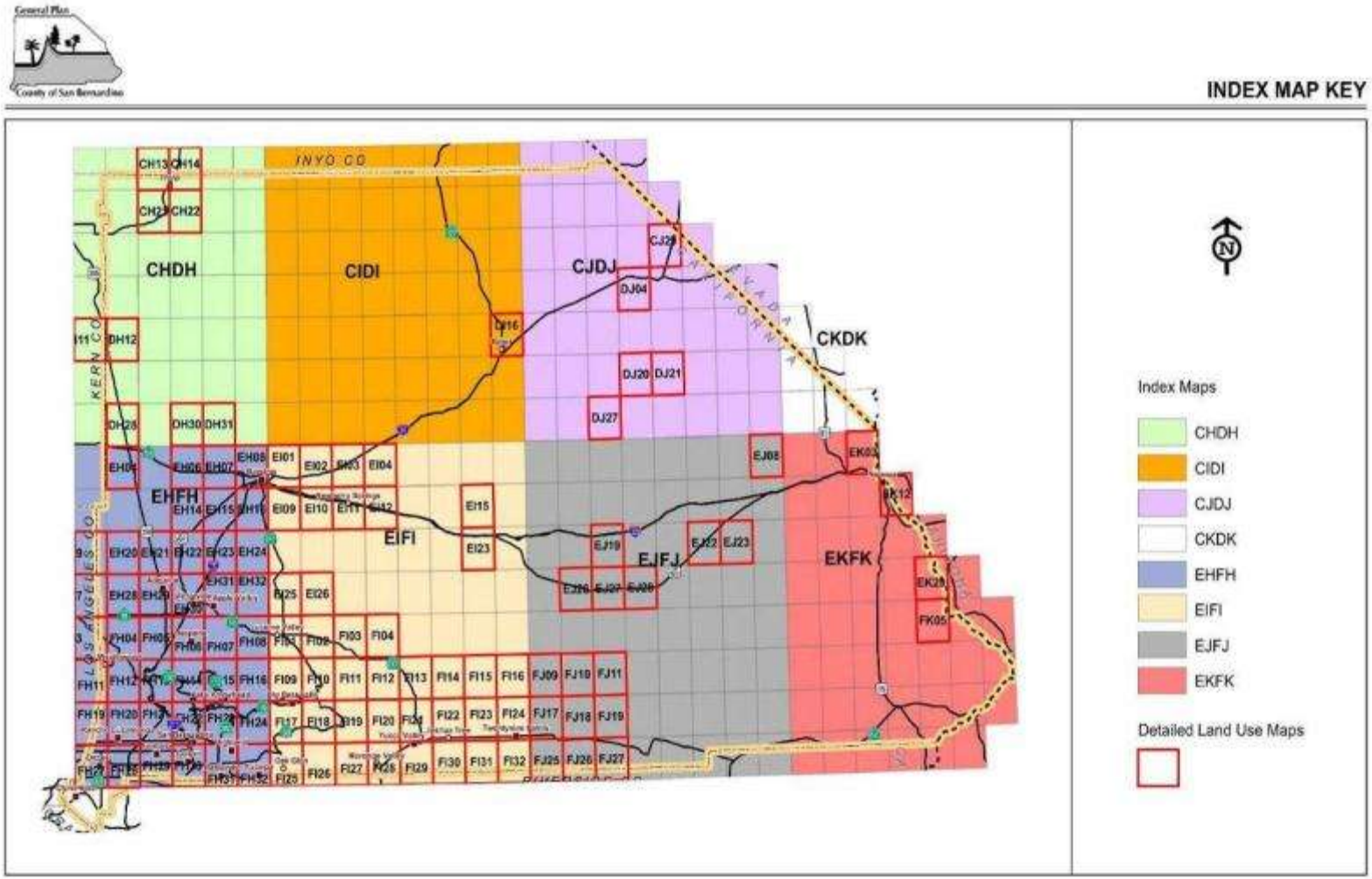


Figure 9. San Bernardino County Quadrant Index Map

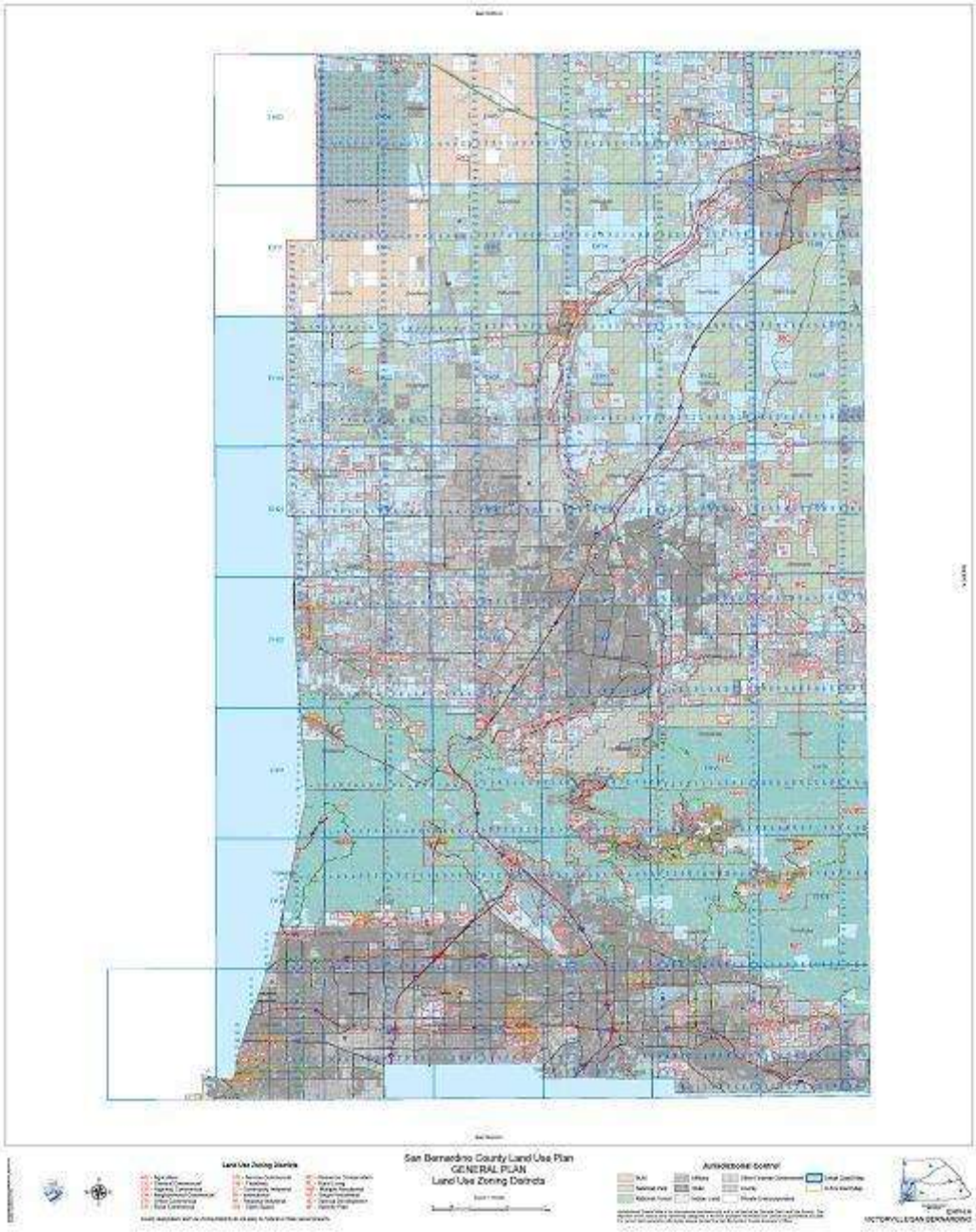


Figure 10. West End Quadrant

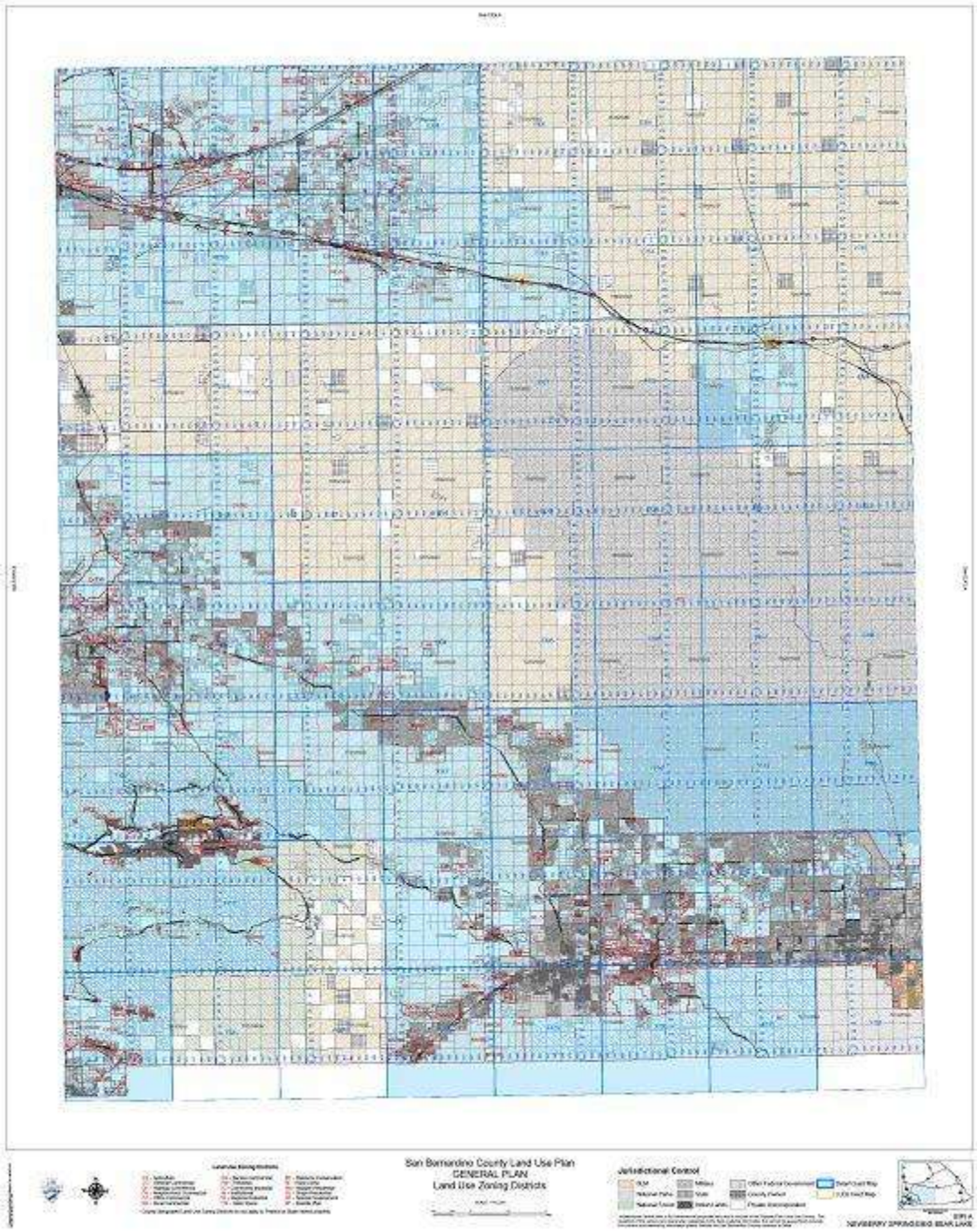


Figure 11. East Valley, Mountains, Desert, and Morongo Basin Quadrant

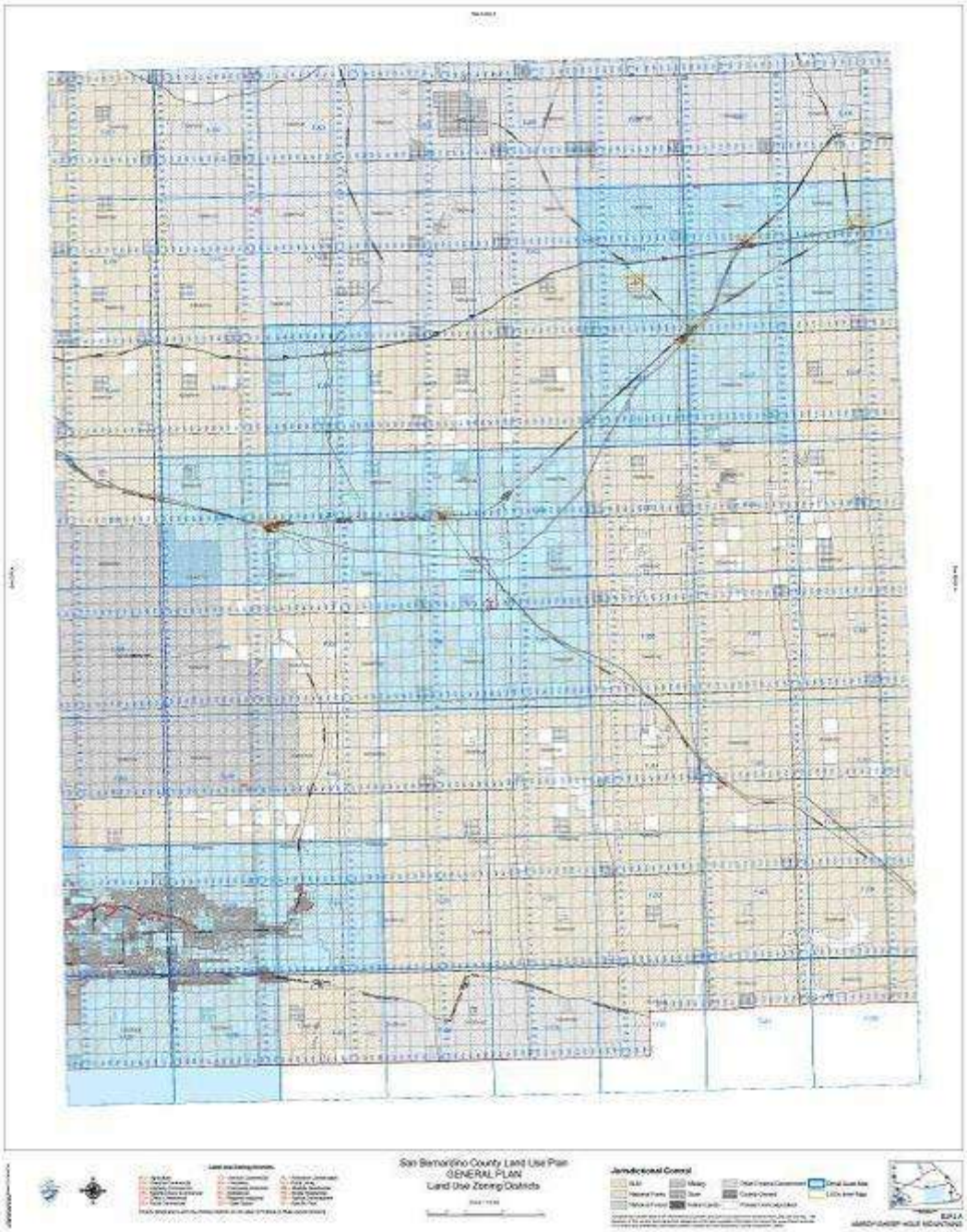


Figure 12. Twentynine Palms Quadrant

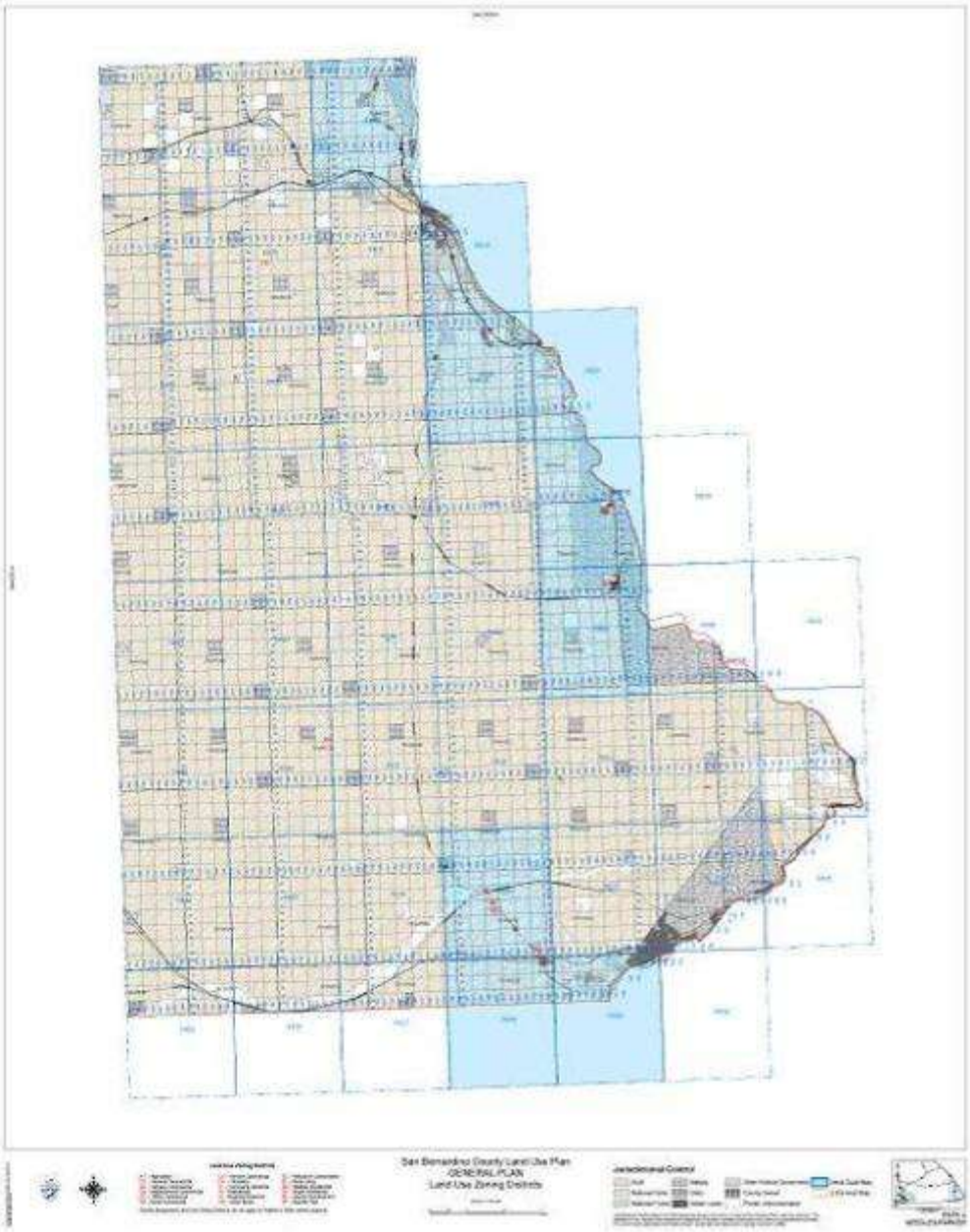


Figure 13. Parker Needles Quadrant

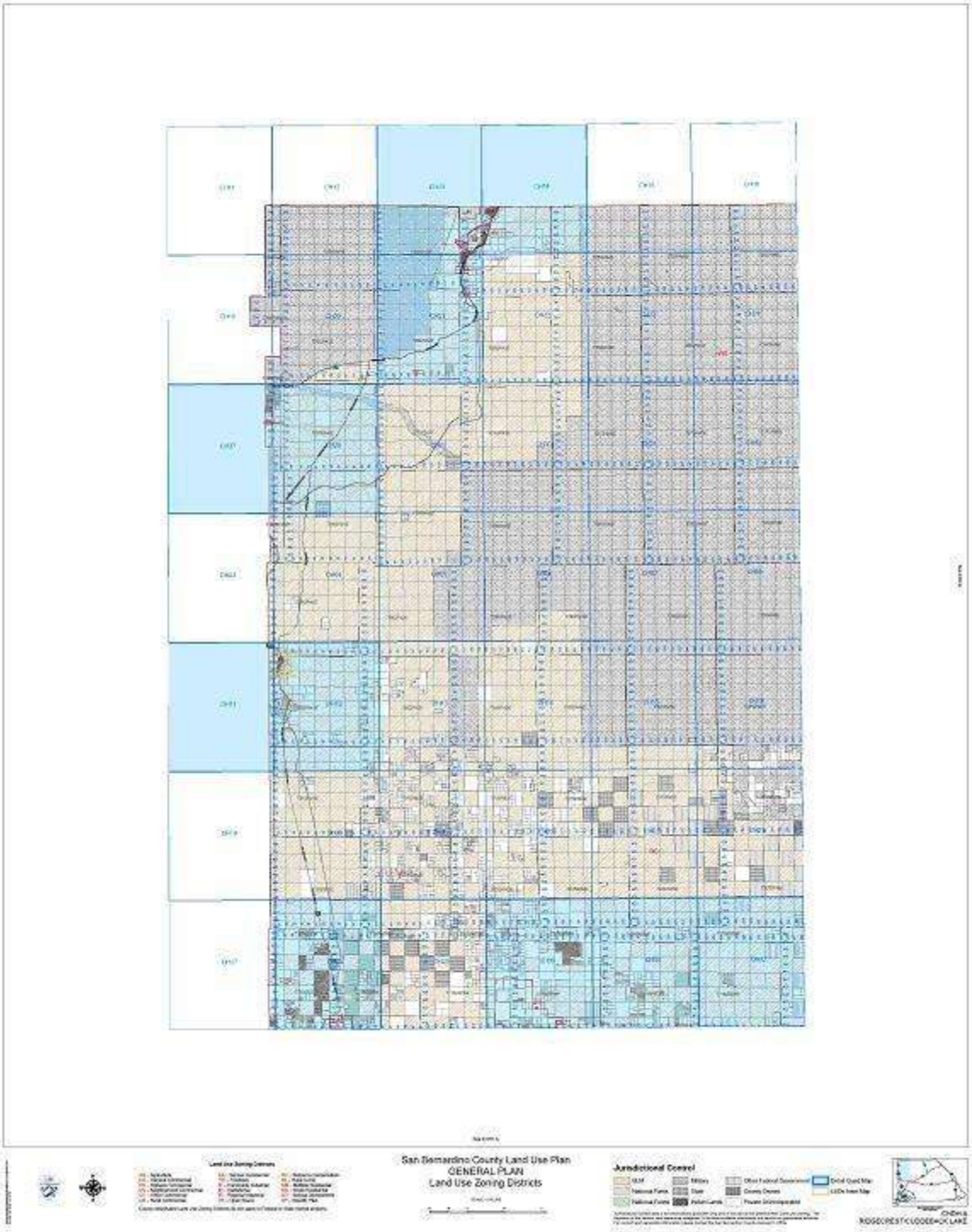


Figure 14. Red Mountain Trona Quadrant

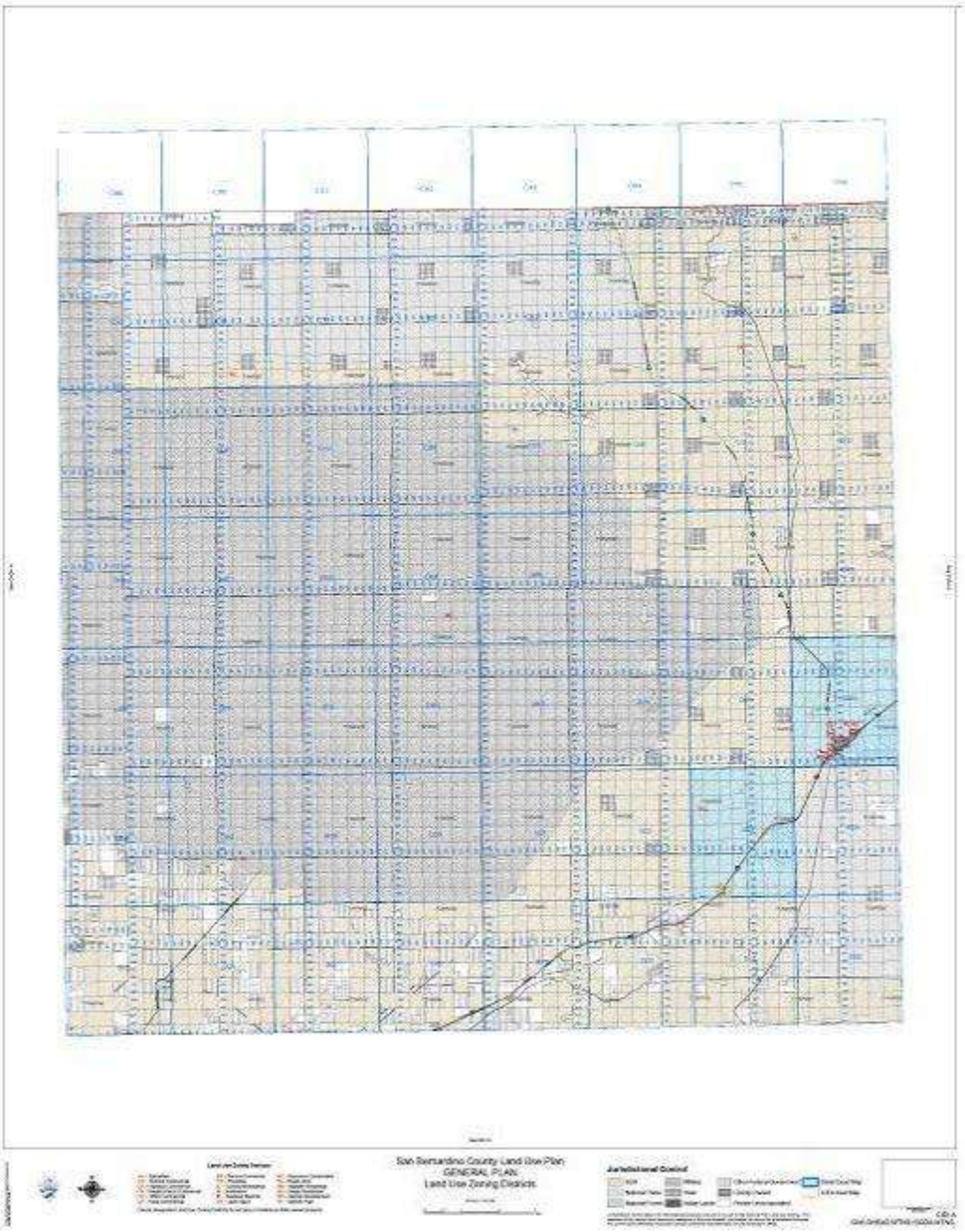


Figure 15. Baker Quadrant

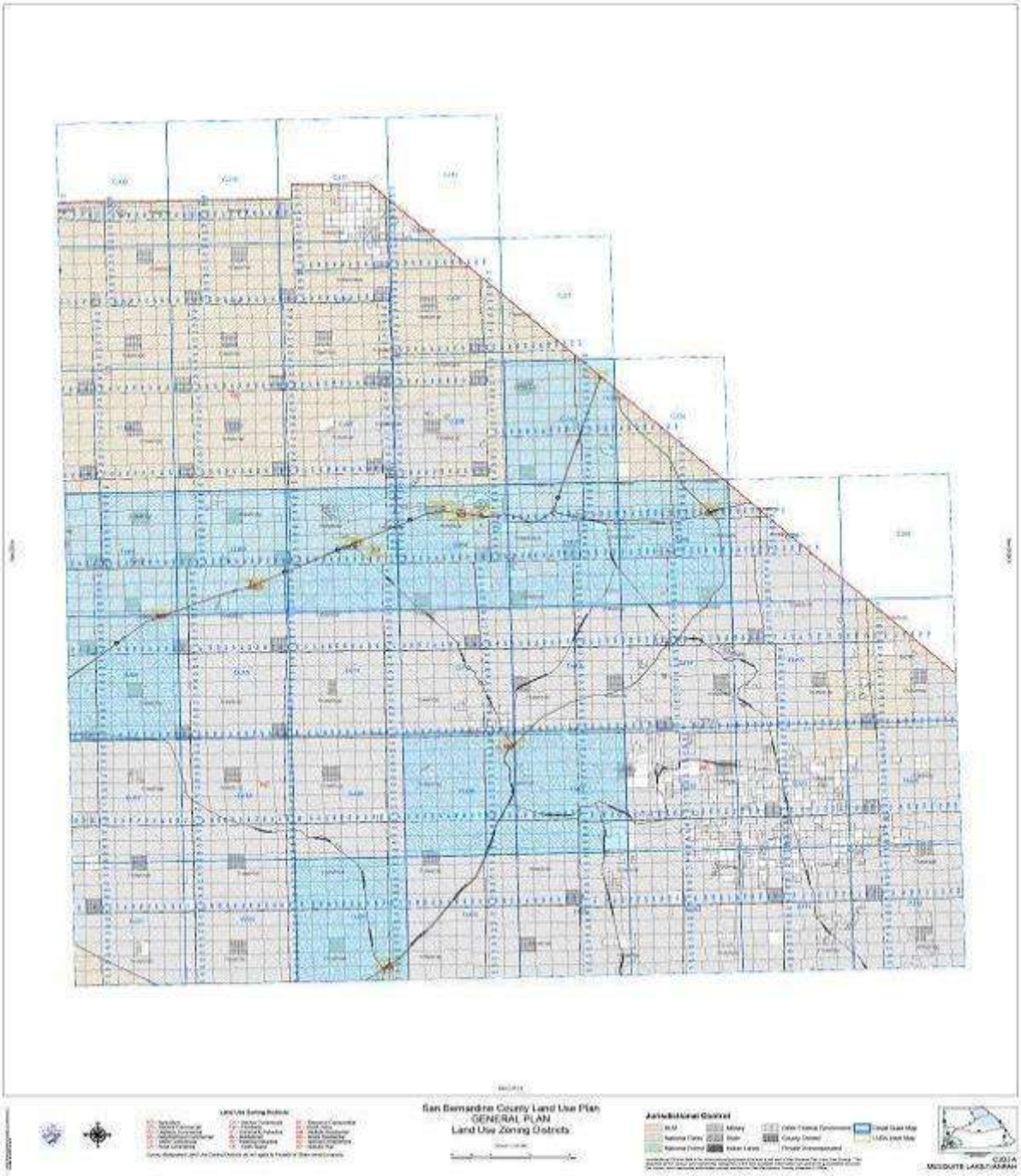


Figure 16. Mountain Pass Quadrant

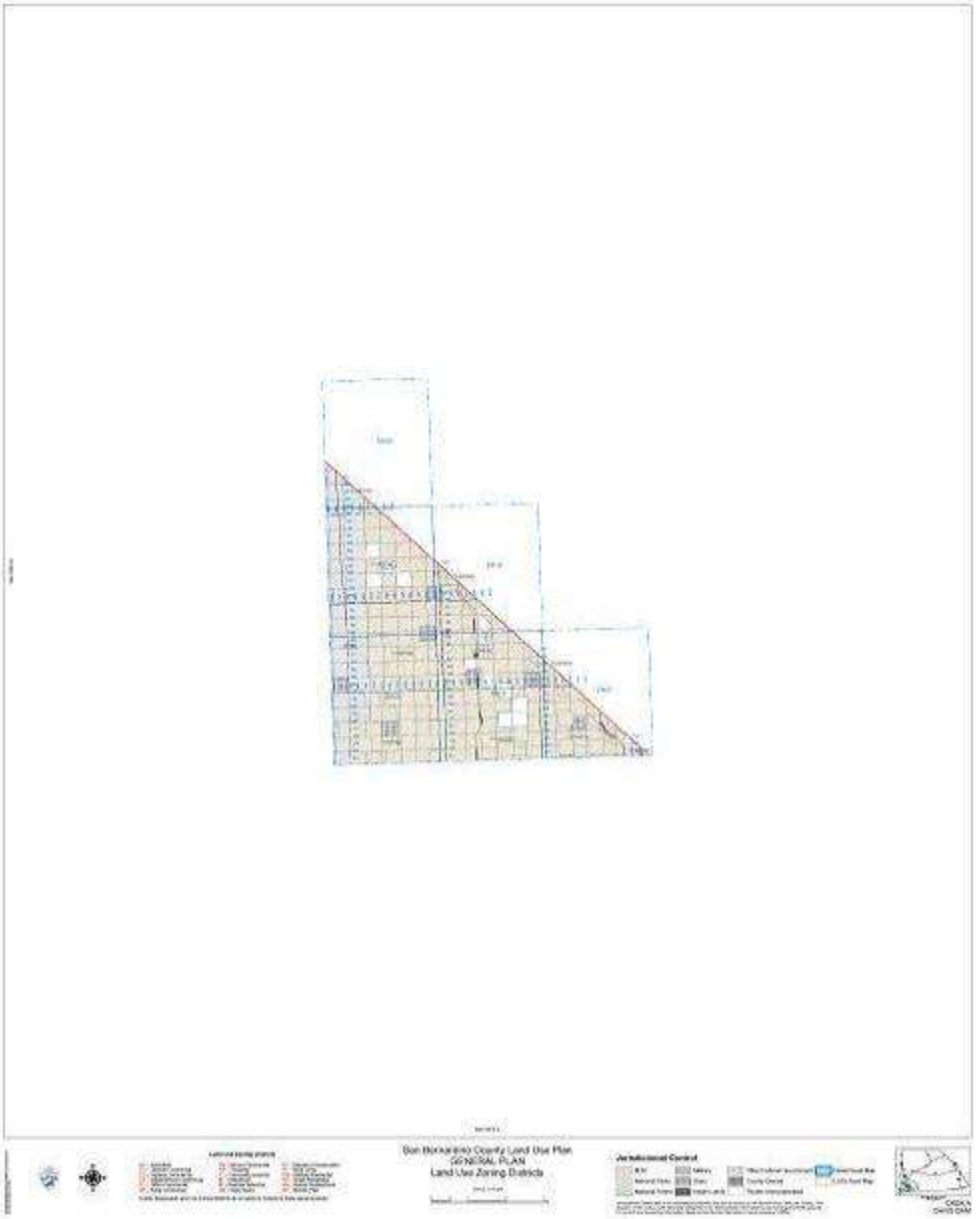


Figure 17. Lanfair Valley Quadrant

Development Trends

No major developments occurred in the unincorporated area of the county since the 2005 MJHMP was adopted. The limited development that did occur was scattered throughout the unincorporated area; with no one area being singled out. All development was in accordance with the pre designated Land Use Zones development zones and complied with all Fire, Flood, and Seismic codes of the County and State at the time of development. This includes commercial, industrial, and residential developments.

The County is optimistic about the potential for future development. The High Desert area of San Bernardino County is one of the best places in the world for solar energy development because of its high altitude, the number of sunny days each year, and existing power infrastructure.

- Many large solar energy projects are being proposed in California's desert area on federal Bureau of Land Management (BLM) land. BLM has received right-of-way requests encompassing more than 300,000 acres for the development of approximately 34 large solar thermal power plants totaling approximately 24,000 megawatts. This number of projects has not yet reached the stage of an Application for Certification (AFC) with the California Energy Commission.
- California's electric utility companies are required to use renewable energy to produce 20 percent of their power by 2010 and 33 percent by 2020. A main source of renewable power will be solar energy. Within the County of San Bernardino a Hybrid Power Project has been approved in the Victor Valley area. As of August 2010, three large Solar Projects to be placed in the County are in review by the California Energy Commission.

Once built, these projects will not impact the area to a great extent. Minimal staffing is required to operate these facilities and their very nature places them in remote locations of the County.

Additionally, with the completion of the Alameda Corridor and the emergence of the Ports of Los Angeles and Long Beach as the largest ports in the U.S., shipping trans-Pacific goods from the booming Asian economies, San Bernardino County has evolved as the logistics and distribution hub for the 20 million resident Southern California market and into the rest of the nation. As the international economy recovers amidst tightening land availability for warehousing and transit, San Bernardino County is better positioned than other areas in the region to harness the opportunity to become an even more important logistics hub.

The County has also started development of a bullet train. The bullet train will connect Victorville, CA and Las Vegas NV generally following the I-15 corridor (NOTE: There are discussions of additional bullet trains connecting San Bernardino with Los Angeles and San Diego and San Bernardino County and San Francisco/Sacramento).

While all of these development trends may not be recognized over the next 5 years, all future development that will take place is planned to occur in accordance with the General Plan Land Use Zones and will consider all potential hazards identified within this plan. Additionally, all development will be in compliance with all Fire, Flood, and Seismic codes of the County and State at the time of development.

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Section 2. Plan Adoption

2.1. Adoption by Local Governing Body

The San Bernardino County Board of Supervisors created each of the Districts to provide a specific service to a particular area/population of San Bernardino County. These Districts are Board Governed in that the Board of Supervisors has direct control and legislative oversight of the Districts. The Board of Supervisors takes action on behalf of each District whenever governance items are necessary. As the Five districts are separate legal entities from the County of San Bernardino for tax/revenue purposes the Board of Supervisors, acting as the Board of Directors for each District, will be adopting the Multi-Jurisdictional Hazard Mitigation Plan on behalf of each District. The Districts are not independent from San Bernardino County but are controlled and administered as any other County Department is administered.

The six jurisdictions participating in this Multi-Jurisdictional Hazard Mitigation Plan are:

1. The County of San Bernardino (unincorporated areas)
2. San Bernardino County Fire District
3. San Bernardino County Flood Control District
4. San Bernardino County Special Districts Department
5. Big Bear Valley Recreation and Parks District
6. Bloomington Recreation and Parks District

San Bernardino County Board of Supervisors is responsible for the review, approval, and adoption of the Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) update for the unincorporated area of San Bernardino County, the San Bernardino County Fire Protection District, the San Bernardino County Flood Control District, the Big Bear Valley Recreation and Park District, Bloomington Recreation and Park District and for the County's Board Governed Special Districts Department. It is also the intent of the San Bernardino County Board of Supervisors to take appropriate actions to incorporate the MJHMP update into the San Bernardino County General Plan.

2.2. Promulgation Authority

The Promulgator Authority for the adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the unincorporated area of San Bernardino County, the San Bernardino County Fire Protection District, the San Bernardino County Flood Control District, the Big Bear Valley Recreation and Park District, Bloomington Recreation and Park District and for the County's Board Governed Special Districts Department and incorporation of the MJHMP into the San Bernardino County General Plan is:

Brad Mitzelfelt, Vice Chairman	First District Supervisor
Janice Rutherford	Second District Supervisor
Neil Derry	Third District Supervisor
Gary Ovitt	Forth District Supervisor
Josie Gonzales, *Chairman*	Fifth District Supervisor

2.3. Primary Point of Contact

The Point of Contact for information regarding this MJHMP is:

Denise L. Benson, Division Manager
San Bernardino County Fire Protection District/Office of Emergency Services
1743 Miro Way
Rialto, CA, 92376
(909) 356-3998

Section 3. Planning Process

3.1. Preparing for the Plan

Multi-Jurisdictional Hazard Mitigation Planning is a process State, Tribal, and local governments use to identify risks and vulnerabilities associated with natural disasters, and to develop long-term strategies for protecting people and property from future hazard events.

Planning creates a way to solicit and consider input from diverse interests. Involving stakeholders is essential to building community-wide support for the plan. In addition to emergency managers, the planning process involves other government agencies (e.g., zoning, floodplain management, public works, community, and economic development), businesses, civic groups, environmental groups, and schools.

To assist with the updating of the Multi-Jurisdictional Hazard Mitigation Plan (MJHMP), an Unincorporated Area Multi-Jurisdictional Planning Team (Planning Team) was established. The Planning Team was the lynchpin for all activities to update the MJHMP. The Planning Team was established to define and identify the strategies, goals, activities, and development of the MJHMP. The Planning Team represents a comprehensive team of subject matter experts from a range of areas that the team felt was affected by the plan or could provide great benefit to the team. Members of the Planning Team were drawn from San Bernardino County Departments, the San Bernardino County Fire Protection District, the San Bernardino County Flood Control District, the San Bernardino County Special Districts Department, the Big Bear Valley Recreation and Parks District and the Bloomington Recreation and Parks District.

The Multi-Jurisdictional Planning Team members worked together to jointly determine and rank the risks facing the six participating agencies, develop goals and objectives to mitigate the risks, and identify which of the participating jurisdictions would be most appropriate for leading any particular project area identified by the Multi-Jurisdictional Planning Team. The individual Planning Team members then returned to their respective Special Districts where discussions were held, input sought, and potential projects developed and ranked for each of the Planning Team identified risks and projects relevant to the Special District. The Planning Team members then returned to the Multi-Jurisdictional Planning Team and provided the Planning Team with their vetted, prioritized list of potential projects and budgets to include in the Multi-Jurisdictional Hazard Mitigation Plan. These projects and budgets were integrated into the Multi-Jurisdictional Hazard Mitigation Plan. Upon approval, each participating jurisdiction would then be able to apply for grant funding for their prioritized projects without interference from another participating jurisdiction as funding became available.

The Planning Team was led by a representative from the San Bernardino County Fire Protection District-Office of Emergency Service. This representative took on the responsibilities of a Project Manager and facilitated and coordinated activates.

The Project Manager also represented the Unincorporated County at the San Bernardino County Operational Area (OA) Stakeholder meetings. San Bernardino County OES led the effort to coordinate

Stakeholder in the Operational Area update their local MJHMP. This effort included: proving technical support, establishing a platform to encourage the exchange of ideas, and help coordination among neighboring stakeholders. The Project Manager was responsible for attending these meetings and incorporating the material into their planning process.

One of the resource materials provided through the OA Stakeholder meetings was a suggested Table of Contents (TOC). The purpose of the TOC was to ensure all aspect of the MJHMP requirements were being met and could be found in similar sections in each of the Stakeholders updated MJHMPs.

This sample TOC was reviewed by the Planning Team and incorporated into the unincorporated county's MJHMP update efforts. Using the TOC, the Planning Team decided to conduct a section by section; page by page review of the 2005 MJHMP. To assist with this effort, a proposed project timeline was developed. The proposed Project Timeline illustrates the windows when each section of the 2005 MJHMP will be reviewed and the section revised.

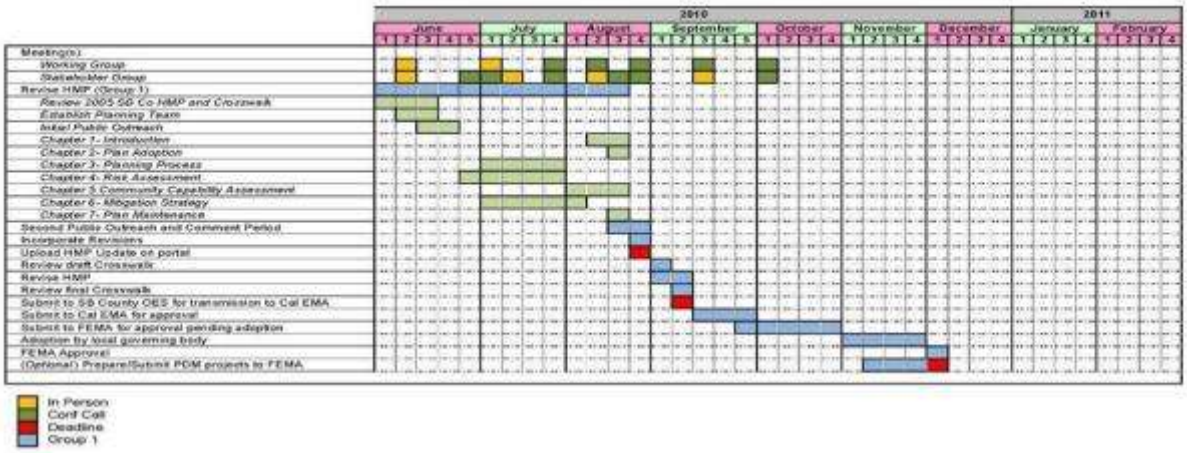

Figure 18. Project Timeline

Based on the TOC, the Planning Team divided the update process into seven (7) phases; one for each section of the TOC. This approach allowed for a very focused review of the material and provided an organized method to introduce new or updated material. The Project Manager led the discussion, solicited comments, took notes, and incorporated results in the MJHMP. Additionally, the Project Manager collected and summarized material provide by Planning Team members. During the Planning Team meetings some members were assigned tasks or action items which were to be completed prior to the next meeting.

Staff assigned to the MJHMP Update reviewed the 2005 MJHMP and provided comments referencing updated information such as current population statistics, new HAZUS-MH MR3 analysis of floods and earthquakes, and provide suggestions for updating the MJHMP. The Planning Team then reviewed the update information and validated/identified Goals, Objectives, and Projects. This step included discussion of how the projects would be prioritized.

Project prioritization involved comprehensive consideration of criteria/factors.

While there is not a standard process followed by each of San Bernardino County Departments, and Districts.; they all considered social, technological, administrative, political, legal, economic, and environmental factors. The County and each district participated on the Planning Team, then took the risks, goals, objectives and projects back to their respective jurisdiction for discussion and vetting. After vetting, the individual Planning Team members returned to the Multi-Jurisdictional Planning Team where the individual materials were combined into a single Multi-Jurisdictional Hazard Mitigation Plan. This Multi-Jurisdictional effort resulted in goals, objectives and projects for all participants being listed under the appropriate hazard sections and not by individual participants. This reflects the overall County philosophy of allowing the department/district with the most expertise to suggest and/or manage a project that may affect another participant who does not have expertise in the hazard.

Planning Team

Much of the Planning Team is composed of representatives who were part of the development of the 2005 Unincorporated Area County MJHMP. This provided added value to the team in that they were familiar with the process and provided continuity in the updating of the MJHMP.

The Planning Team is comprised of representatives from San Bernardino County Departments, the San Bernardino County Fire Protection District, the San Bernardino County Flood Control District, the San Bernardino County Special Districts Department, the Big Bear Valley Recreation and Parks District and the Bloomington Recreation and Parks District who specialize in mitigation type activities/planning. The Planning Team members represented select aspects of the community and were thought of as liaisons to the greater community. Each Planning Team member was responsible for communicating the direction and status of the planning effort to their outside members and in return they are expected to bring to the team outside perspectives. Additionally, the individual Planning Team members acted as liaisons for their respective Special Districts and were responsible for ensuring that the Special Districts provide appropriate input from their respective internal planning processes. Potential projects/budget meetings were held where potential projects were developed and prioritized along with budget development for the individual participating Special Districts and Departments. Additional prioritization after budgets were developed to ensure proper Benefit Cost Analysis (BCA) techniques were applied. Representation was present on the Multi-Jurisdictional Planning Team from various County Departments and the five Districts.

Planning Team included representatives from all the participating San Bernardino County Special Districts and Departments:

- **San Bernardino County Fire Protection District- Office of Emergency Services**
  Denise L. Benson
  Cindy Serrano
  Miles Wagner
  Robin Lindsay
- **County Geographical Information Systems**
  Brent Rolf
- **Land Use Services**
  Judy Tatman
  Christney Barilla
- **Building and Safety**
  Harmon Randall
- **County Geologist**
  Wes Reeder
- **Economic Development Agency**
  Patricia Cole
- **Architecture and Engineering Department**
  Carl Alban
- **San Bernardino County Flood Control District**
  Melissa Walker
- **Solid Waste Management Division**
  Art Rivera
- **Public Works Dept./Transportation Division**
  Mazin Kasey
- **Special Districts Department / Big Bear Valley Recreation and Parks District / Bloomington Recreation and Parks District**
  Jeff Rigney
  Manuel Benitez
  Jared Beyeler
- **Sheriff-Coroner**
  Sgt Jeff Joling
  John Amrhein
- **Superintendent of Schools**
  Carolyn Tillman
  Linda Fabre
- **San Bernardino County Museum**
  Robert McKernan
  Kathleen Springer
- **Arrowhead Regional Medical Center**
  Maureen Malone

There were a series of meeting held with the Planning Team. Each meeting had a primary focus and provided an opportunity to discuss updates and exchange ideas. Below is a list of the Planning Team meetings:

Date	Activity
June 13, 2010	Organizational Meeting for County Unincorporated Area Planning team. Planning Team members were introduced to the project and assigned to review 2005 MJHMP and update risks and mitigation projects as needed. Three more meetings were scheduled: July 21, 2010, August 11, 2010, and August 24, 2010. All data due by August 13, 2010 to OES.
July 29, 2010	Conference Call. Planning Team discussed status of MJHMP Sections where County Departments share responsibilities. Also discussed were the review of existing hazards and risks and the status of updates of mitigation projects for the top three hazards.
August 11, 2010	Conference Call. Planning Team discussed repetitive loss properties. The consultant was asked to make contact with FEMA and obtain a list of repetitive loss properties in san Bernardino County. Mitigation Project update was discussed as was the need to indicate how any Benefit Cost Analysis was done for the listed projects. The Planning Team also discussed URM/MHP strategies, MJHMP inclusion in the General Plan, Fiscal Resources, and Public Outreach.
August 24, 2010	In person meeting to discuss revisions and additions to the Planning Process, risk Assessment, Community capability Assessment, Mitigation Strategies, Plan maintenance, fiscal Resources, and Public Outreach. Each section was reviewed and discussed by the Team. Additions and corrections will be forwarded to OES for inclusion in the plan.
September 30, 2010	In person meeting to discuss changes suggested by the Cal EMA Courtesy Review. Public Works and Land Use Services will be making changes to their respective sections. The timeline for completion was decided on as Tuesday, October 5, 2010 for all changes. This will allow the MJHMP to be submitted for review on Wednesday, October 6, 2010.
November 9, 2010	In Person meeting to discuss Planning Team Goals and Objectives, Project determination and Prioritization, and related issues. Prioritization exercise conducted to focus attention on highest priority hazards facing the County was conducted. Planning Team members are matching projects with the highest priority hazards.
December 1, 2010	In Person meeting of Planning Team to discuss Project Prioritization, determine missing County departments with exposure to hazards the Planning Team prioritized, and issues related to the approval of the Multi-Jurisdictional Hazard Mitigation Plan update.
December 16, 2010	In Person meeting of the Planning Team with new Team Members. Discussed hazards and risk identification, project description, implementation strategies, and next steps. Team members given assignments relevant to their individual County Department responsibilities. Deadline for submitting material is December 31, 2010.

3.2. Coordination with Other External Jurisdictions, Agencies, and Organizations

Internal Coordination

Because of the size and geographical location of Unincorporated County area, there are many jurisdictions, agencies, and organizations that are affected by or have influence on the county. As part of the planning process, the Planning Team, and particularly the Project Manager, took great efforts to engage and include as many members as possible. These members were drawn from San Bernardino County Departments, the San Bernardino County Fire Protection District, the San Bernardino County Flood Control District, and the San Bernardino County Special Districts Department.

One of the first efforts that were made was when the Planning Team was being established. The Planning Team members gave special considerations as to what they thought needed to be in the MJHMP and attempted to identify a person who could representative that area. This consideration went beyond the county departments.

As mentioned above, in addition to being required to participate in the Planning Team meetings, the Planning Team members were also required to liaison with other groups including their own department/districts planning and project staff and with cooperating agencies to provide updates on the project and to bring to the team the different perspectives and comments. The Planning Team conducted a very extensive outreach effort. This was done mostly through leveraging of existing meetings and efforts. In this liaison role, the Planning Team members coordinated with CalFire; the United States Forest Service - San Bernardino National Forest and Angeles National Forest; Natural Resource Conservation Service, Special Districts, and the 24 cities and towns within the County. This allowed for the Planning Team to capture a larger perspective; while keeping the Planning Team at a manageable level. The information was then brought back to the Multi-Jurisdictional Planning Team by the individual Planning Team members. At these meeting, potential cooperative projects were discussed, categorized, and prioritized for inclusion in the Multi-Jurisdictional Hazard Mitigation Plan.

As previously mentioned, the Unincorporated County and special districts were also active members of the San Bernardino OA Stakeholder Group meetings. These meetings provided an opportunity to coordinate with all cities/towns and special districts in the county. Through this venue, the Planning Team and the Project Manager reached out to adjacent jurisdictions and associated special districts to ensure that their efforts and findings were not in conflict. Stakeholder Meetings include the primary, alternate, and any consultants for all the participating jurisdictions.

As part of this effort, an OA Stakeholder Web Portal was developed to assist the jurisdictions update their MJHMPs, and encouraged sharing information, resources, and ideas necessary to complete the update process. Meetings, attended by the County Project Manager, were both in person and by conference call; many including a webinar. The Project Manager then brought the materials and discussions held at these meetings back to the Planning Team for review and action wherever applicable

to the MJHMP effort. Participating Stakeholders are listed in Annex **5**. A list of the OA Stakeholder Meetings is listed below:

- **June 10, 2010**
  Stakeholders Meeting
  Ontario Police Department
  Ontario, CA
  10:00 a.m. to 12 Noon

  54 Participants representing 24 cities/towns, 30 special districts, and the unincorporated area of the County plus one observer from a Riverside County Water District participated. This Stakeholders Meeting introduced the Web Portal and the process to develop a current MJHMP from the 2005 MJHMP. Timelines were presented as well as templates for use in updating the project. Copies of the 2005 MJHMP for the jurisdictions were made available on the Web Portal to use as a starting point in the update process.

- **July 1, 2010**
  Stakeholders
  Conference Call/Webinar
  10:00 a.m. to 11:00 a.m.

  38 participants in MJHMP Update Project Portal Rollout participated in the Conference Call and Webinar to introduce MJHMP Update Portal. Portal has public and stakeholder sections. During this conference call participants were shown the portal and walked through the log-in process to access the stakeholders' side of the website. This Webinar will be represented next week.

- **July 7, 2010**
  Stakeholders
  Conference Call/Webinar
  10:00 a.m. to 11:00 a.m.

  8 participants in MJHMP Update Project Portal Rollout participated in the Conference Call and Webinar to introduce MJHMP Update Portal. Portal has public and stakeholder sections. During this conference call participants were shown the portal and walked through the log-in process to access the stakeholders' side of the website. This Webinar is a repeat of last week for those unable to attend the 7/1/10 presentation.

- **July 15, 2010**
  Stakeholders Meeting
  Ontario Police Department
  9:00 a.m. to 12 Noon

  This meeting presented the organizational structure, the MJHMP timeline by chapter, and confirmed who was in Group 1 and Group 2. The MJHMP Resource material was also reviewed. The tentative

schedule of Stakeholder Meetings was reviewed. The session was opened to questions from the Stakeholders by the consultant.

- **July 29, 2010**
  Stakeholders
  Conference Call
  10:00 a.m. to 11:00 a.m.

  Stakeholders discussed MJHMP progress of the MJHMP updates. Revised timelines for both Group 1 and 2 were presented. New Reference Materials now available on the Web Portal were presented. Questions from the participants were discussed and answered.

- **August 12, 2010**
  Stakeholders Meeting
  Ontario Police Department
  10:00 a.m. to 12:00 a.m.

  Stakeholders discussed Repetitive Loss/Severe Repetitive Loss Properties criteria and data acquisition, Approval Pending Adoption. Also discussed were the MJHMP guidance document Promulgation Letter/Resolution (Section 2), and the Mitigation Strategies (Section 2). Resource Material additions were discussed and new material was shown. Links to Approved MJHMP's, both 2005 and post 2008 were shown and discussed.

- **August 26, 2010**
  Stakeholders
  Conference Call
  10:00 a.m. to 11:00 a.m.

  Stakeholders discussed progress of the MJHMP updates. Importance of Group 1 timelines was discussed. Questions from the participants were discussed and answered.

- **September 9, 2010**
  Stakeholders
  Conference Call
  10:00 a.m. to 11:00 a.m.

  Twenty-two stakeholders participated in the Conference Call. The consultant discussed the Courtesy Review process Cal EMA is proposing for the Group 1 stakeholders. This process is able to address any suggested revisions prior to formally submitting the Plan to Cal EMA and FEMA for review. The formal review will be faster and more accurate after the courtesy review by Cal EMA. The consultant is beginning to reach out to the Group 2 stakeholders to see where they are in the update process and any help that may be needed. This is being done through email and phone calls. The goal is to expedite the plan revision process. Contact with all Group 2 partners should be done in 7 to 10 days. Questions from the participants were discussed and answered. Crosswalks were discussed. It is important that

Crosswalks be filled out accurately. The Crosswalk is how all plans are graded by FEMA. How the public was dealt with is also an important part of the MJHMP update. It must be clearly stated.

- **October 28, 2010**
  Stakeholders
  Conference Call
  10:00 a.m. to 11:00 a.m.

  Stakeholders discussed progress of the MJHMP updates. Group 2 timelines was discussed. Questions from the participants were discussed and answered.

- **December 2, 2010**
  Stakeholders
  Conference Call
  10:00 a.m. to 11:00 a.m.

  Stakeholders discussed problems and progress of the MJHMP updates. Group 2 timelines was discussed. Questions from the participants regarding project prioritization were discussed and answered.

- **January 11, 2011**
  Stakeholders
  Conference Call
  10:00 a.m. to 11:00 a.m.

  Stakeholders discussed progress of the MJHMP updates. Importance of Group 2 timelines and the importance of submitting the MJHMP with Group 2 were discussed. Questions from the participants on project development and prioritization were discussed and answered.

Multi-Jurisdictional Hazard Mitigation Plan Management Team Meetings

- **May 27, 2010**
  OES Conference Room
  Conference on MJHMP Process with ICF (Consultant)

  Discussed timelines, processes to complete MJHMP updates, kickoff meeting 6/10/10 in Ontario, invitations, agendas,

- **June 29, 2010**
  OES Conference Room
  10:00 a.m. to 11:30 a.m.

  Conference Call on Portal Development, both public and stakeholder. Discussed Public and Stakeholder content. Approved structure for Reference Documents and structure for individual Stakeholder folders, OA Rollup folders, and permissions of different users. Determined a master list of group meetings should be on portal. Individual stakeholder meetings will be placed on the individual stakeholders' site in the portal. Timeline to be placed on portal.

- **July 26, 2010**
  OES
  10:00 a.m. to 11:30 a.m.

  Conference Call on Working Group Meeting Agenda and contents for 7/27/2010. Included guidance document, Table of Contents outline, Risk Ranking Strategies.

- **August 9, 2010**
  OES
  2:00 p.m. to 3:00 p.m.

  Management Team met by conference call and discussed Group 1 and Group 2 changes. Consultant will lead discussion at 8/12/10 stakeholders meeting on those who did not submit a NOI to move into Group 2. Portal access was also discussed for Planning Teams. Repetitive Loss Property tracking by the County is only for the unincorporated areas. A list for repetitive loss properties may be available through the National Flood Insurance Program. The consultant will check with FEMA to determine how to obtain this information. The Guidance was discussed.

- **August 23, 2010**
  OES
  2:00 p.m. to 3:00 p.m.

  In a conference call with the consultant, the status of Group 1 participants was discussed. There may only be three or four Group 1 participants left. Most stakeholders are moving to Group 2. The list of repetitive loss properties as received from FEMA was reviewed. The list will be forwarded to the affected cities with a cautionary note that it is confidential information that cannot be released. The unincorporated area has several properties that must be researched and addressed in the MJHMP. The agenda for the next Stakeholders Conference Call was reviewed.

- **August 30, 2010**
  OES
  2:00 p.m. to 3:00 p.m.

  Management Team met by conference call and discussed status of Group 1 and 2. Group 2 seems to be more active than Group 1 in contacting the consultant for advice.

- **September 7, 2010**
  OES
  2:00 p.m. to 3:00 p.m.

  Management Team met by conference call and discussed status of Group 1 and 2. Only three from Group 1 (Unincorporated San Bernardino County, City of Yucaipa, and west valley water District submitted plans for consultant review. Topics for Stakeholders Conference Call on 9/9/10 will include Crosswalk and Table of Contents relationships, Mixing Projects, and objectives; they must be kept separate. Feedback from the first reviews will be presented with an emphasis on the Table of Contents and guidance documents.

- **October 4, 2010**
  OES
  2:00 p.m. to 3:00 p.m.

  Management Team met by conference call and discussed status of Group 1 and 2. Group 1 submittals scheduled for Thursday, October 7, 2010

- **October 18, 2010**
  OES
  2:00 p.m. to 3:00 p.m.

  Management Team met by conference call and discussed status of Group 1 submittals and Group 2 anticipated problems. Group 2 continue to contacting the consultant for advice. County Unincorporated MJHMP problems discussed.

- **October 25, 2010**
  OES
  2:00 p.m. to 3:00 p.m.

  Management Team met by conference call and discussed status of Group 1 and 2. Strategy on documenting process used to rank hazards and projects discussed.

- **November 29, 2010**
  OES
  2:00 p.m. to 3:00 p.m.
  Management Team met by conference call and discussed status of Group 2. Group 2 participants continue to update plans. Problems with County Unincorporated Plan regarding Project selection and Prioritization discussed.

- **January 12, 2011**
  OES
  11:00 a.m. to 11:30 a.m.

  Management Team met by conference call and discussed status of Group 2 and County Unincorporated MJHMP. Group 2 submission schedule discussed and rescheduled.

- **January 18, 2011**
  OES
  10:00 a.m. to 10:30 a.m.

  Management Team met by conference call and discussed status of Group 2 and County Unincorporated MJHMP. Group 2 submission schedule discussed and finalized. Plans for submitting MJHMP's to Cal EMA/FEMA finalized.

External Coordination

The unincorporated county also had representation on the OA Working Group team. The Working Group is a small group of OA Stakeholders with experience in developing Multi-Jurisdictional Hazard Mitigation Plans. Members are drawn from the 24 cities/towns, 33 special districts, and the County. The goal of the Working Group is to vet the direction and material being provided to the larger Stakeholder Group such as crosswalk, Web Portal, use of maps, and a method to prioritize and rank the existing and any new hazards. The Working Group also discusses problems and solutions that arise during the MJHMP update process. Meetings were either in person or by conference call.

- **June 8, 2010**
  SB OES
  2:30 p.m. to 4:00 p.m.

  Working Group discussed MJHMP update process and next steps. Determined that stakeholder meetings will be mixed in-person meeting and conference calls. Stakeholders must begin work as soon as possible due to deadlines.

- **July 8, 2010**
  SB OES
  10:00 a.m. to 11:30 a.m.

  Working Group discussed progress of MJHMP update and next steps. Determined that stakeholders must be urged to begin work as soon as possible due to deadlines.

- **July 27, 2010**
  SB OES
  10:00 a.m. to 11:30 a.m.

  Working Group for MJHMP with selected Stakeholders. Discussed progress of MJHMP update and next steps. Reviewed Crosswalks, conditional approval, OA Plan. Vetted Table of Contents, draft guidance document. Discussed risk Assessment section, Public Outreach efforts. Reviewed stakeholder meeting schedule.

- **August 10, 2010**
  SB OES
  10:00 a.m. to 11:30 a.m.

  Working Group for MJHMP with selected Stakeholders. Discussed progress of MJHMP update and next steps. Reviewed conditional approval, OA Plan. Discussed risk Assessment section, Public Outreach efforts.

3.3. Public Involvement/Outreach

Public involvement was solicited throughout the process. Since the 2005 MJHMP approval, the County and its special districts have taken several steps to educate the public on the hazards facing the county and had several public forums where mitigation projects were discussed and identified. At all events, public opinion and comments are solicited.

The Planning Team also considered the possibility of including public members on the Planning Team. However, because of the vast size of the county and the volume of possibilities, it was determined that having the Planning Team members liaison with the public would better serve and capture the public interest.

During this process, the County and Special Districts also used several platforms to reach out and inform the public of the MJHMP update. Wherever possible, a joint effort was made by the Planning Team members to include discussion for each participating jurisdictions hazards, goals, and objectives. These joint meetings of the Special Districts and County resulted in joint leverage of the planning effort and a resulting joint benefit of goals/objectives, and project development for the MJHMP development. Public Involvement consisted of meetings for County Departments or Special Districts which gave the public the direct opportunity to comment on the County Unincorporated Area MJHMP, meetings of County Department or Special District advisory committees where hazard specific information and possible projects were discussed, updates on the County website, press releases regarding the MJHMP, and public hearing regarding the MJHMP. All participants collectively supported the following public outreach meetings. Below is a summary list of the public outreach:

Public Meetings

- **Mountain Mutual Aid Association of Big Bear Valley**
  100 W. Meadow Lane, Big Bear City, CA
  August 11, 2010
  9:00 a.m. to 11:00 a.m.

  24 representatives of local agencies, special districts, utilities, and the public in the Big Bear Valley attended the meeting. The City of Big Bear Lake and the Big Bear City CSD reported on the status of their MJHMP Update efforts. Both are proceeding with the goal of submitting the plan following the Group 1 timelines. Both agencies made presentations to their residents explaining the MJHMP Update Process, public involvement, and timelines.

  San Bernardino County Fire Protection District Office of Emergency Services presented a PowerPoint presentation on the effort to update the MJHMP for the unincorporated area of the County. A copy of this PowerPoint is in Annex 9of the MJHMP.

- **Wrightwood Fire Safe Council**
  Station 14, Wrightwood, CA
  August 17, 2010
  7:00 p.m. to 9:00 p.m.

17 community members and 7 Wrightwood Fire Safe Council members attended. A demonstration of Thermo-Gel and various application methods was demonstrated by a private vendor. Reports of activities were given by the Angeles National Forest and the San Bernardino National Forest.

San Bernardino County Fire Protection District Office of Emergency Services presented a PowerPoint presentation on the effort to update the MJHMP for the unincorporated area of the County. A copy of this PowerPoint is in Annex 9 of the MJHMP.

- **Special Districts CSA 70J Oak Hills Advisory Committee**
  Oak Hills Community Center
  Oak Hills, CA
  August 17, 2010
  7:00 p.m. to 9:00 p.m.

  During the regularly scheduled community meeting a PowerPoint presentation developed by the County Fire Protection District explaining the MJHMP update of the Unincorporated Area Multi-Jurisdictional Hazard Mitigation Plan was presented. Input and comment was sought from the audience.

  This Committee is under the oversight of the Special Districts Department. Committee Input, public comment, and recommendations are integrated into the internal planning process of the Special Districts Department.

Press Releases

A Press Release explaining the Multi-Jurisdictional Hazard Mitigation Plan Update Process with links to the Executive Summary for the MJHMP Update was released by the County Fire Department Public Information Officer on behalf of the County on September 1, 2010. Press release was published in the Press Enterprise newspaper on Thursday, September 2, 2010. Comments were received from a citizen and resident of Crestline. The comments were incorporated into the MJHMP. The Press Release was also posted on the County's website. A copy of the Press Release is in **Annex 7**.

Web Posting

The Press Release and Executive Summary mentioned above were posted on the San Bernardino County website on August 3, 2010. The public was invited to submit comments on the Multi-Jurisdictional Hazard Mitigation Plan Update. Public comments must be submitted by September 7, 2010. A copy of the Web Page posting is in **Annex 6**.

CERT Teams

The Press Release and Executive Summary were forwarded to the CERT Team leaders for those CERT Teams located in the unincorporated County area. The Team Leaders forwarded the MJHMP Press Release and Executive summary to their team members with the request for comments on the MJHMP.

The sixteen (16) CERT Teams within the unincorporated County include:

Angelus Oaks CERT	Big Bear Valley CERT	Green Valley Lake CERT
Helendale CERT	Lake Arrowhead CERT	Lucerne Valley CERT
Lytle Creek CERT	Mill Creek Canyon CERT	Morongo Basin CERT
Oak Hills CERT	Phelan/Pinon Hills CERT	Running Springs Area CERT
San Antonio Heights CERT	Silver Valley CERT	Spring Valley Lake CERT
Wrightwood CERT		

Public Hearing Process

The Board of Supervisors will review, approve, and adopt the Unincorporated Area Multi-Jurisdictional Hazard Mitigation Plan for the County and its Special Districts at their September 27, 2011 meeting. The Board of Supervisors will issue a Letter of Promulgation and Resolution denoting approval of the Multi-Jurisdictional Hazard Mitigation Plan for the County and its special Districts.

Prior to the September 27, 2011 Hearing, the Plan will be posted on the San Bernardino County website as part of the Agenda for the meeting. The Agenda with all attachments is posted the Wednesday prior to the hearing date. Members of the public are invited to review and make comments at the meeting on September 27, 2011. The Multi-Jurisdictional Hazard Mitigation Plan for the County and its Special Districts will be on the Board of Supervisors agenda for review and adoption at their regularly scheduled meeting on Tuesday, September 27, 2011. Any resident of the County may make comments or request information on the Multi-Jurisdictional Hazard Mitigation Plan during the regularly scheduled meeting. Only after the public has an opportunity to review and comment on the Plan will the Board of Supervisors take action on the Board Agenda items.

3.4. Assess the Hazard

As discussed, the planning process was organized around the Table of Content (TOC). One of the main sections in the TOC is Risk Assessment. The Risk Assessment section include four (4) basic step; 1) hazard identification and screening; 2) hazard profiling; 3) hazard exposure; and, 4) hazard vulnerability. The Project Manager, working with the Planning Team, facilitated discussions around these steps.

The first step in this process was to identify all of the natural hazards present in the community. The Planning Team started with the 2005 MJHMP and augmented as necessary. This augmentation considered both adding and removing of hazards to develop a list of potential natural hazards in the community. The Planning Team utilized several sources to ensure they were considering all potential hazards. A summary of the list of material reviewed is: the 2005 San Bernardino County Operational Area MJHMP, the State of California MJHMP, FEMA “How-to Guides,” and several surround community MJHMPs. After the list of potential hazards in the community is generated, the hazards were screened.

The intent of screening of hazards is to help prioritize which hazard creates the greatest concern in the community. Because the 2005 MJHMP process used to rank hazards (Critical Priority Risk Index (CPRI) software) is not being utilized again, an alternative approach was implemented.

The Planning Team agreed to utilize a non-numerical ranking system for the MJHMP update process. This process consists of generating a qualitative ranking (High, Medium, or Low) rating for: 1) probability; and, 2) impact from each hazard. To further assist with the process, the following definition of "High", "Medium", and "Low" probability and impacts are being provided (NOTE: these definitions we utilized in the 2005 MJHMP process):

Probability

High- Highly Likely/Likely
Medium- Possible
Low- Unlikely

Impact

High- Catastrophic/Critical
Medium- Limited
Low- Negligible

The hazards were then placed into a matrix with the appropriate/corresponding box/cell. The table below is an example of how the process will capture the results.

		Impact		
		High	Medium	Low
Probability	High			
	Medium			
	Low			

After all hazards had been analyzed, the Planning Team then determined which Probability and Impact category (i.e., High Impact; High Probability, Medium Impact) the community will focus on over the next five (5) years. An example of how the hazards may be prioritized is below (Red equaling high priority):

		Impact		
		High	Medium	Low
Probability	High			
	Medium			
	Low			

After identifying the "higher" priority hazards in the community, each of the "high" priority hazards were profiled. The hazard profiling include the incorporation of all new information, material, and reports to better help the Planning Team and the community understand the hazard.

Additionally, for each of the profiled hazards, the Planning Team then analyze the community's exposure to each hazard (inventory of assets) and the potential impact under scenario events. The Planning Team will use HAZUS and a recent project completed within San Bernardino County to produce this information.

3.5. Set Goals

Goal setting was approached by the Planning Team as a two layered process. The first layer involved the stakeholders acting together as the Planning Team. The second layer involved the individual Special Districts working internally to coordinate those goals identified by the Planning Team with the goals identified internally by the Special Districts The Planning Team validated and identified new Goals and Objectives for the MJHMP update. The Planning Team reviewed the hazard exposure and scenario impacts developed during the Risk Assessment portion of the process. With a firm understanding of the risk the community is potentially facing, the Planning Team then re-evaluated the 2005 Multi-Jurisdictional Hazard Mitigation Plan Goals and Objectives; assessed their status and effectiveness in meeting the 2005 Mitigation Measures and identified new Goals and Objectives.

As part of this process, the Planning Team also reviewed the County's General Plan, the State of California MJHMP, the SB County Operational Area MJHMP, Floodplain Management Plans, Task Force After Action, and/or documents, and adjacent local jurisdiction MJHMPs to ensure the Goals and Objectives were comprehensive and compatible.

3.6. Review and Propose Mitigation Measures

After the Goals and Objectives were established, the Planning Team then turned to identifying projects under each Goal and Objective that could be implemented to help reduce and/or eliminate the impacts from the priority hazards. As part of this process, the Planning Team reviewed the projects in the 2005 MJHMP to determine which are completed, which are ongoing, and which were deferred. For projects that were not completed the Planning Team validated whether or not the project was necessary.

With a firm understanding of past accomplishments and a good understanding of the potential exposure and scenario impacts from the Risk Assessment section, the Planning Team then started to identify projects that will help reduce and/or eliminate the risk for the high priority hazards. Again, a two-layer approach was used. The Planning Team as a whole identified common projects. These common projects were then coordinated internally by the Special Districts and the County to develop a common list of projects. After a list of all possible projects has been identified, the Planning Team then went through the process of prioritizing the projects.

To assist with this effort the Planning Team adopted the STAPLEE methodology. STAPLEE stands for:

- **Social**—The public must support the overall implementation strategy and specific mitigation actions. Therefore, the projects will have to be evaluated in terms of community acceptance.
- **Technology**—It is important to determine if the proposed action is technically feasible, will help to reduce losses in the long term, and has minimal secondary impacts. Determine whether the alternative action is a whole or partial solution, or not a solution at all.
- **Administrative**—Under this part of the evaluation criteria, examine the anticipated staffing, funding, and maintenance requirements for the mitigation action to determine if the jurisdiction/special district has the personnel and administrative capabilities necessary to implement the action or whether outside help will be needed
- **Political**—Understanding how your current community and State political leadership feels about issues related to the environment, economic development, safety, and emergency management. This will provide valuable insight into the level of political support you may have for the mitigation activities and programs. Proposed mitigation objectives sometimes fail because of a lack of political acceptability.
- **Legal**—Without the appropriate legal authority, the action cannot lawfully be undertaken. When considering this criterion, determine whether your jurisdiction has the legal authority at the State, or local level to implement the action, or whether the jurisdiction must pass new laws or regulations. Each level of government operates under a specific source of delegated authority. As a general rule, most local governments operate under enabling legislation that gives them the power to engage in different activities. Identify the unit of government undertaking the mitigation action, and include an analysis of the interrelationships between local, regional, State, and Federal governments. Legal authority is likely to have a significant role later in the process when your State, or community will have to determine how mitigation activities can best be carried out, and to what extent mitigation policies and programs can be enforced.
- **Economic**—Every local government experiences budget constraints at one time or another. Cost-effective mitigation actions that can be funded in current or upcoming budget cycles are much more likely to be implemented than mitigation actions requiring general obligation bonds or other instruments that would incur long-term debt to a community. Local communities with tight budgets or budget shortfalls may be more willing to undertake a mitigation initiative if it can be funded, at least in part, by outside sources. “Big ticket” mitigation actions, such as large-scale acquisitions and relocation, are often considered for implementation in a post-disaster scenario when additional Federal and State funding for mitigation is available.
- **Environmental**–Impact on the environment is an important consideration because of public desire for sustainable and environmentally healthy communities and the many statutory considerations, such as NEPA, to keep in mind when using Federal funds. The Planning Team needed to evaluate whether, when implementing mitigation actions, there would be negative consequences to environmental assets such as threatened and endangered species, wetlands, and other protected natural resources.

In addition to the STAPLEE methodology, the Planning Team incorporated other criteria/factor questions into the process to help engage and solicit input from members. Examples of these criteria/factor questions are:

- **Does the Action:**
  - Solve the problem?
  - Address Vulnerability Assessment?
  - Reduce the exposure or vulnerability to the highest priority hazard?
  - Address multiple hazards?
  - Address more than one (1) Goal/Objective?
  - Benefits equal or exceed costs?
- **Can the Action:**
  - Be implemented with existing funds?
  - Be implemented by existing state or federal grant programs?
  - Be completed within the 5-year life cycle of the LMJHMP?
  - Be implemented with currently available technologies?
- **Will the Action:**
  - Be accepted by the community?
  - Be supported by community leaders?
  - Adversely impact segments of the population or neighborhoods?
  - Require a change in local ordinances or zoning laws?
  - Result in legal action such as a lawsuit?
  - Positively or negatively impact the environment?
  - Comply with all local, state, and federal environmental laws and regulations?
- **Is there:**
  - Sufficient staffing to undertake the project?
  - Existing authority to undertake the project?

After going through this process for each and every project, the Planning Team will then have the ability to identify the higher priority projects.

3.7. Draft the Multi-Jurisdictional Hazard Mitigation Plan

The Multi-Jurisdictional Hazard Mitigation Plan Update was drafted by the Project Manager, based on input and comments provided by the Planning Team. As indicated previously, the Planning Team used the 2005 MJHMP as a starting point but revised it to reflect updated information and the new Table of Content (TOC). The proposed TOC is closely related to the 2005 MJHMP format but there are slight differences. The Planning Team deemed this revision prudent and felt that it provided a better format of the MJHMP update. In addition to the TOC, the Planning Team also uses the FEMA Guidance and materials provided by the consultant hired to coordinate the Operational Area MJHMP and Stakeholder groups. This material aided in the Planning Team's understanding of the level of detail and type of information that is excepting in each section.

This process started with the Special Districts and County providing information to the Planning Team through their liaison on the planning team. After the Planning Team ranked and prioritized the materials, the liaisons returned to their respective Special Districts to vet the Planning Team's work. The Planning Team then worked together with the vetted materials to produce the draft MJHMP. As mentioned earlier, each section was reviewed and updated as necessary. While some Planning Team members are responsible for the updating select sections, all members are responsible for reviewing and commenting on the entire MJHMP. The Planning Team Project Manager was responsible for version control and distribution of the final MJHMP for review.

Once the MJHMP update was drafted, the Planning Team provided opportunities for the public to review and comment on the plan. After the public comment period was closed, the Planning Team finalized the plan and forwarded to Cal EMA and FEMA for approval.

3.8. Adopt the Plan

The San Bernardino County Board of Supervisors created each of the Special Districts to provide a specific service to a particular area/population of San Bernardino County. These Special Districts are Board Governed in that the Board of Supervisors has direct control and legislative oversight of the Special Districts. The Board of Supervisors takes action on behalf of each Special District whenever governance items are necessary. As the Five special districts are separate legal entities from the County of San Bernardino for tax/revenue purposes the Board of supervisors, acting as the Board of Directors for each Special District, will be adopting the Multi-Jurisdictional Hazard Mitigation Plan on behalf of each Special District. The Special Districts are not independent from San Bernardino County but are controlled and administered as any other County Department is administered. In order to comply with legal requirement for each of the five Special Districts, separate resolutions are required. Copies of these resolutions are attached at the front of this MJHMP.

San Bernardino County Board of Supervisors is responsible for the review, approval, and adoption of the Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) update for the unincorporated area of San Bernardino County, the San Bernardino County Fire Protection District, the San Bernardino County Flood Control District, the Big Bear Valley Recreation and Park District, Bloomington Recreation and Park District and for the County's board governed Special Districts Department. It is also the intent of the San

Bernardino County Board of Supervisors to take appropriate actions to incorporate the MJHMP update into the San Bernardino County General Plan.

After Cal EMA and FEMA have approved the HMP update, it will be adopted by the San Bernardino County Board of Supervisors. Currently, the adoption process is scheduled for **September 27, 2011**. The item will be part of the consent calendar subject to a public hearing if necessary. The HMP will be listed on the agenda with the plan being made available electronically to the general public for at least three (3) business days prior to the Board of Supervisor's meeting date. Any member of the public can make comments on the Plan during the meeting prior to any action by the Board of Supervisors.

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Section 4. Risk Assessment

The goal of mitigation is to reduce and/or eliminate the future impacts of a hazard including property damage, disruption to local and regional economies, and the amount of public and private funds spent to assist with recovery. However, mitigation should be based on an assessment of the risk.

This Risk Assessment Section evaluates the potential loss from a hazard event by assessing the vulnerability of buildings, infrastructure, and people. It identifies the characteristics and potential consequences of hazards, how much of the unincorporated areas of the County could be affected by a hazard, and the impact on unincorporated County area assets. Our Risk Assessment approach consists of four (4) components:

- **Hazard identification** – Identification and screening of hazards (Section 4.1)
- **Hazard profile** – Review of historic occurrences and assessment of the potential for future events (Section 4.2)
- **Asset inventory** – Identification of exposed buildings, infrastructure and population (Section 4.3)
- **Vulnerability assessment** – Determination of potential losses or impacts to buildings, infrastructure and population (Section 4.4)

4.1. Hazard Identification

Hazard Screening Criteria

The first step in this process was to identify which natural hazards exist in the unincorporated County area. To assist with this identification, an extensive data collection and document review effort was conducted. Identifying new or emerging hazards, obtaining updated hazard maps, hazard probability research studies and reports, reviewing data from new or updated local plans (i.e. Safety Element of the San Bernardino County 2007 General Plan, threat assessments, disaster planning scenarios, community wildfire protection plans, etc.) and obtaining information about emergencies or disasters that have occurred since the 2005 MJHMP provided valuable insights into which parts of the risk assessment, and the overall MJHMP, warranted updates.

Starting with the 2005 MJHMP and augmenting as necessary, the Planning Team identified the following thirteen (13) hazards:

- Wildfires
- Flood
- Earthquake/Geologic Hazards
- Dam Inundation
- Infestation
- Drought
- High Winds/Straight Line Winds
- Lightning
- Extreme Heat
- Extreme Cold
- Hail
- Tornado
- Winter Storm (Heavy Snowfall)

This list represents an update to the list of hazards used in the 2005 MJHMP; hazards added to the current list include Dam Inundation, Extreme Cold, and Winter Storm (Heavy Snowfall). Severe Thunderstorms[1] have been removed as a stand-alone hazard, as the more damaging hazards caused by thunderstorms (high winds, lightning, hail, and tornado) are captured individually.

Hazard Assessment Matrix

The intent of assessing the hazards is to help prioritize which hazard(s) create the greatest concern(s) in the unincorporated County area. All of the identified hazards were ranked in the 2005 MJHMP using the Critical Priority Risk Index (CPRI) software developed by Visual Risk Technologies. Because the process used to rank hazards in the 2005 Multi-Jurisdictional Hazard Mitigation Plan development process (the Critical Priority Risk Index (CPRI) software) was not utilized for the MJHMP update, an alternative approach was used.

The Planning Team implemented a qualitative ranking system for the MJHMP update process; a non-numerical rating (High, Medium, or Low) was determined for both the 1) probability and 2) expected impact from each screened hazard.

Using the hazard rankings from the 2005 MJHMP, information on hazard occurrences during the last five years, and available data on specific hazard probabilities, the Planning Team assessed each hazard. A discussion of each hazard is provided below.

The following definitions of "High," "Medium," and "Low" probability and impacts were used. (NOTE: these categories were also utilized in the 2005 MJHMP process):

Probability:

- **High**: Highly Likely/Likely. There may or may not have been historic occurrences of the hazard in the community or region but experts feel that it is *likely* that the hazard will occur in the community. Citizens feel that there is a likelihood of occurrence.
- **Medium**: Possible. There may or may not have been a historic occurrence of the hazard in the community or region but experts feel that it is *possible* that the hazard could occur in the community. Citizens may feel that there is a likelihood of occurrence.
- **Low**: Unlikely. There have been no historic occurrences of the hazard in the community or region and both experts and citizens agree that it is highly *unlikely* that the hazard will occur in the community.

[1] The National Weather Service (NWS) defines a severe thunderstorm as "A thunderstorm that produces a tornado, winds of at least 58 mph (50 knots), and/or hail at least ¾" in diameter. Structural wind damage may imply the occurrence of a severe thunderstorm. A thunderstorm wind equal to or greater than 40 mph (35 knots) and/or hail of at least ½" is defined as approaching severe." (http://www.weather.gov/glossary/index.php?letter=s)

Impact:

- **High**: Catastrophic/Critical. Both experts and citizens feel that the consequences will be significant in terms of building damage and loss of life.
- **Medium**: Limited. Consequences are thought to be modest in terms of building damage and loss of life, limited either in geographic extent or magnitude.
- **Low**: Negligible

The hazard assessments for the thirteen (13) hazards identified by the Planning Team are summarized below:

Wildfire: *Probability*—High, *Impact*-High

Wildfires present a significant potential for disaster in San Bernardino County, a region with relatively high temperatures, low humidity, and low precipitation during the summer, followed by a fall season that includes high velocity, very dry "Santa Ana" winds. Between 2005 and 2009, 23 wildfires burned over 168,000 acres in San Bernardino County. Wildfires have the potential to cause significant damage and potential loss of life, as demonstrated by the 2005 Sawtooth Complex Fires which resulted in $16.8 million in damage and one fatality, and the Grass Valley and Slide Fires of 2007 whose costs, including both property loss and fire suppression, totaled more than $177 million. The Planning Team agreed that the probability of future wildfire events was High, with the potential for very significant impacts.

Flood: *Probability*—High, *Impact*—High

Destructive flooding is a common occurrence in San Bernardino County; severe storms and heavy rainfall have caused 15 flood events since 2004. Most of the County has the potential for flooding, as shown by the Flood Hazard Areas mapped by FEMA in the recently updated Flood Insurance Rate Map (FIRM), **Figure 19**. In addition, much of the county is expected to be at risk for alluvial fan flooding, as mapped by the Alluvial Fan Task Force (**Figure 20**). Consequently, the Planning Team determined that the Probability of future flood events is High, with the potential for very significant (High) impacts.

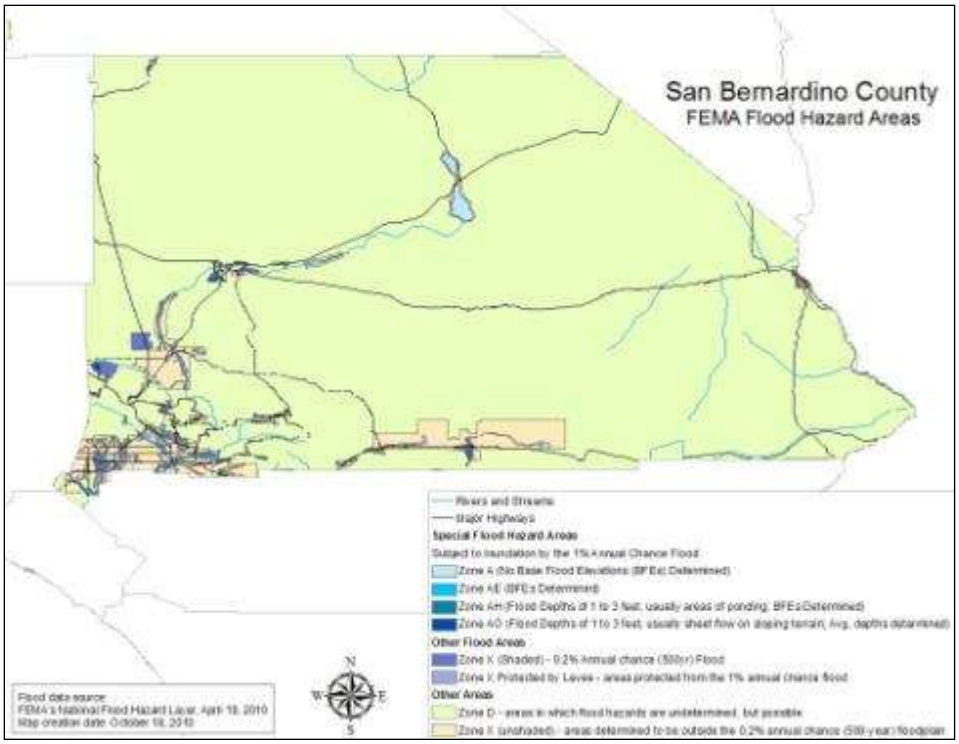


Figure 19. FEMA Flood Hazard Areas for San Bernardino County

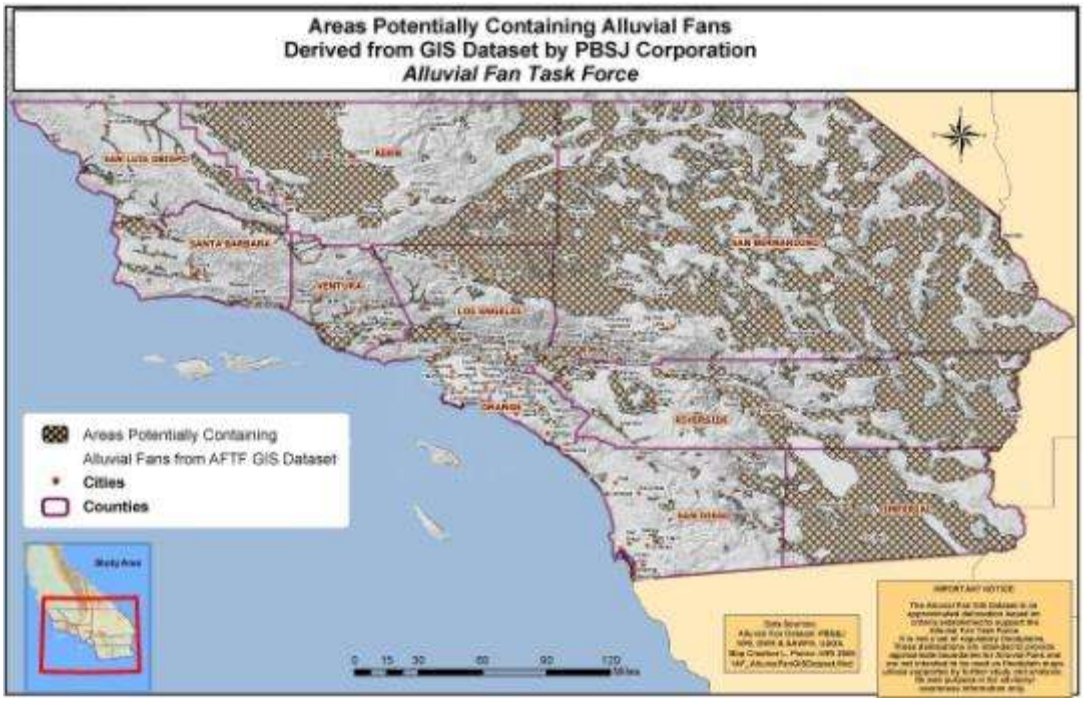


Figure 20. Areas Potentially Containing Alluvial Fans as mapped by the Alluvial Fan Task Force (2010)

Earthquake/Geologic Hazards: *Probability*—High, *Impact*—High

The County lies in a seismically active region of southern California that has been subjected to earthquakes in the past and will be subject to earthquakes in the future. Numerous known active and potentially active faults traverse the County. An earthquake occurring on one or more of these faults is perhaps the most threatening geologic hazard to the County with respect to life and property loss. Seismic hazards resulting from earthquakes include ground shaking, ground surface rupture, landslides and slope instability, liquefaction, differential seismic settlement, seiche, and dam inundation.

The probability of a significant (M6.7 or greater) earthquake occurring in Southern California in the next 30 years has been estimated to be 97% by the 2007 California Working Group on Earthquake Probabilities[2], as shown in **Figure 21**. Earthquakes have the potential to cause widespread building damage, economic loss, and population impacts such as injury, death, and displacement. For the M7.8 "ShakeOut" scenario earthquake on the Southern San Andreas Fault, building damage in San Bernardino County is expected to exceed $21 billion, with losses in the unincorporated parts of the County totaling approximately $2.3 billion (see Section 4.4 for additional information on the ShakeOut and other earthquake scenarios modeled for the risk assessment). Accordingly, the Planning Team agreed that the probability of future earthquake events is High, with the potential for catastrophic impacts.

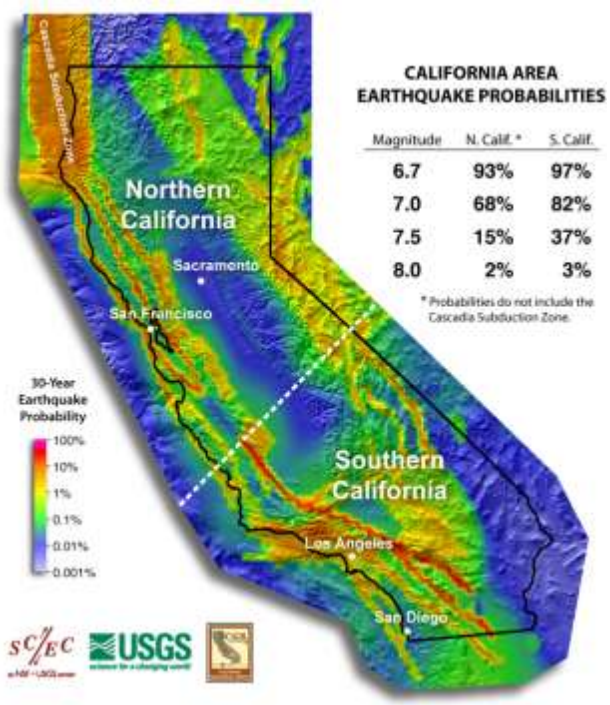


Figure 21. California Area 30-Year Earthquake Probabilities (USGS Open-File Report 2007-1437)

[2] 2007 Working Group on California Earthquake Probabilities (2007 WGCEP), 2008, ***The Uniform California Earthquake Rupture Forecast, Version 2 (UCERF 2)***: U.S. Geological Survey Open-File Report 2007-1437 and California Geological Survey Special Report 203 [http://pubs.usgs.gov/of/2007/1437/].

Dam Inundation: *Probability*—Low, *Impact*—High

As mapped for San Bernardino County's General Plan, there are a number of areas of dam inundation potentially impacting the unincorporated areas of San Bernardino County, as shown in **Figure 22**. However, there were no significant dam inundation occurrences in San Bernardino County between 2005 and 2010. Accordingly, dam failure or inundation resulting from over-topping was considered by the Project Team to be unlikely (Low Probability), with the resulting potential impacts assumed to be severe (High Impact).

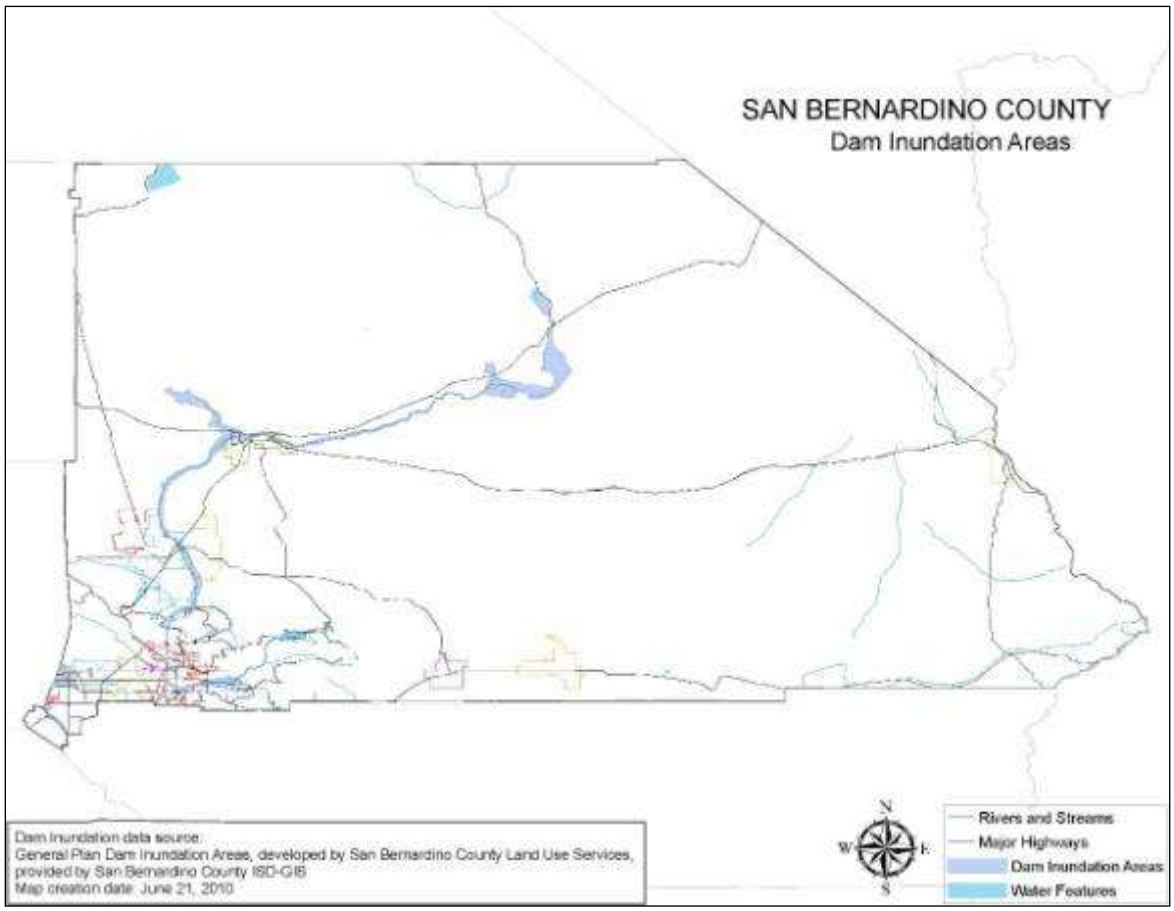


Figure 22. Dam Inundation Areas in San Bernardino County

Infestation: *Probability*—Medium, *Impact*—Medium

Emergencies related to insect infestation have impacted San Bernardino County in the last decade, including an increased fire risk due to Bark Beetle infestation of trees in 2003, and mosquito-borne West Nile Virus in 2007. Since 2002, the Bark Beetle infestation has required removal of 99,500 acres of affected trees in the San Bernardino National Forest, as well as on private lands, at a cost of $86.65 million in grants and matching funds.

Future infestation issues were determined by the Planning Team to be possible, with the impact generally expected to be moderate (Medium Impact).

Drought: *Probability*—High, *Impact*—Medium

Drought emergencies have been declared in California as recently as 2009, but have primarily affected the Central Valley. . There were no significant drought events in San Bernardino County between 2005 and 2010. The Planning Team decided that while the potential for future drought events was High, the local impact of drought is expected to be limited (Medium Impact).

High Winds/Straight Line Winds: *Probability*—High, *Impact*—Medium

Straight-line winds are any winds not associated with the rotation of a tornado. Straight-line winds are responsible for most thunderstorm wind damage[3]. Straight-line winds can exceed 125 mph, and knock down trees and power lines. Damaging high wind events occurred in the County's Valley communities in 2007, when high winds and thunderstorms brought down trees and fences, and in 2010, when straight-line winds exceeding 60 miles per hour felled trees and damaged power lines.

Another type of high winds are the "Santa Ana" winds, which commonly occur between October and February, and can reach speeds of more than 100 miles per hour. Santa Ana winds are warm, dry winds which descend from the high desert, down the mountains into the Southern California Basin[4]. The most significant hazard associated with Santa Ana winds is an increased wildfire danger, but Santa Ana winds can also cause downed trees and power lines, and property damage, as well as causing potentially hazardous conditions for aircraft and boaters.

The Planning Team concluded that the probability of experiencing future damaging winds is High, with Medium potential for Impacts.

Lightning: *Probability*—High, *Impact*—Medium

Relative to most of the U.S., lightning strikes occur less frequently in Southern California, as shown in the annual lightning incidence map available from the National Weather Service (see **Figure 23**). The average lightning flash density in the San Bernardino County area is very low, between 0.0 and 1.0 flashes per square kilometer per year. In 2009, there were 2 fatalities from lightning strikes statewide, of the 34 total throughout the US[5]. Although there were no significant lightning events in San Bernardino County between 2005 and 2010, the Planning Team determined that the probability of future lightning events was High, but that such events would have only limited impacts (Medium Impact).

[3] "Thunderstorms, Tornadoes, Lightning… Nature's Most Violent Storms", NOAA/NWS, http://www.weather.gov/os/severeweather/resources/ttl7-09.pdf
[4] http://www.theweatherprediction.com/weatherpapers/049/index.html
[5] http://www.nws.noaa.gov/om/hazstats.shtml

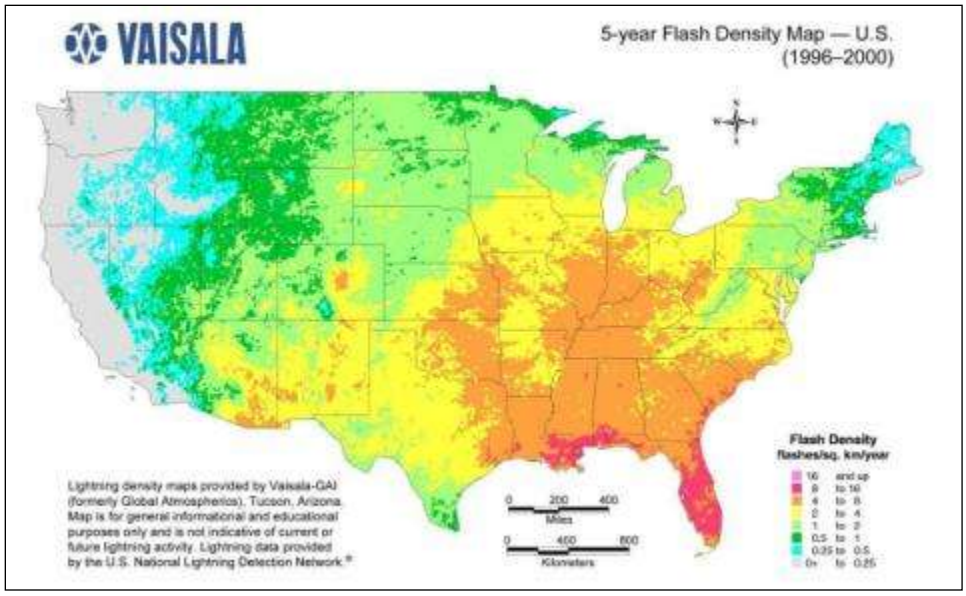


Figure 23. Lightning Flash Density Map 1996 – 2000 (National Weather Service, http://www.lightningsafety.noaa.gov/lightning_map.htm)

Extreme Heat: *Probability*—High, *Impact*—Medium

According to the CDC[6], "…conditions of extreme heat are defined as summertime temperatures that are substantially hotter and/or more humid than average for location at that time of year." Exposure to extreme heat can result in illness (such as heat stroke or heat exhaustion) or death for those at greatest risk, including[7]:

- Infants and children up to four years of age;
- People who overexert during work or exercise;
- People 65 years of age or older;
- People who are ill or on certain medications; and
- People who are overweight

While extreme heat can occur virtually anywhere in the county, measures to prevent illness are generally common sense, including staying cool indoors, keeping hydrated, limiting physical activity, and monitoring those at highest risk.

Recent extreme heat events within San Bernardino County include a 2006 Excessive Heat & Power Outage event affecting the Valley communities, which escalated to a Stage One CAISO Power Emergency, and a 2010 incident impacting the Southeastern Desert Region. Therefore, the Planning Team determined that the probability of future Extreme Heat events was High, with the potential for Medium impacts.

[6] http://www.bt.cdc.gov/disasters/extremeheat/heat_guide.asp
[7] California Department of Health Services "Fast Facts – Preventing Summer Heat Injuries", PS18, http://www.cdph.ca.gov/Pages/NR2009-60.aspx

Extreme Cold: *Probability*—Medium, *Impact*—Low

Extreme cold can result in damage to crops, damage to homes and businesses (e.g., from burst pipes), and can cause significant health problems, such as hypothermia and frostbite. Recent extreme cold events in within the County include the January 2007 Extreme Cold Emergency and the January 2008 Winter Weather Event. Both events damaged crops in the agricultural region of San Bernardino County, and caused burst pipes in numerous residences, businesses, and public facilities. The Planning Team concluded that future Extreme Cold events were possible (Medium Probability), and that the overall expected impact would be negligible (Low Impact).

Hail: *Probability*—Medium, *Impact*—Low

Hail causes approximately $1 billion in damage in the US each year[8]. Much of the damage inflicted by hail is to crops, but vehicles, roofs, and landscaping also suffer hail damage.

Figure 24 shows the mean number of hail days per year (with hail of ¾" diameter[9] or greater, or causing damage) within 25 miles of a given point, using data from 1995 – 1999. As shown the threat of hail in the San Bernardino County area is very low. There were no significant hail events in San Bernardino County between 2005 and 2010. Accordingly, the Planning Team determined that future hail events were possible (Medium Probability), but would be expected to have negligible (Low) impacts.

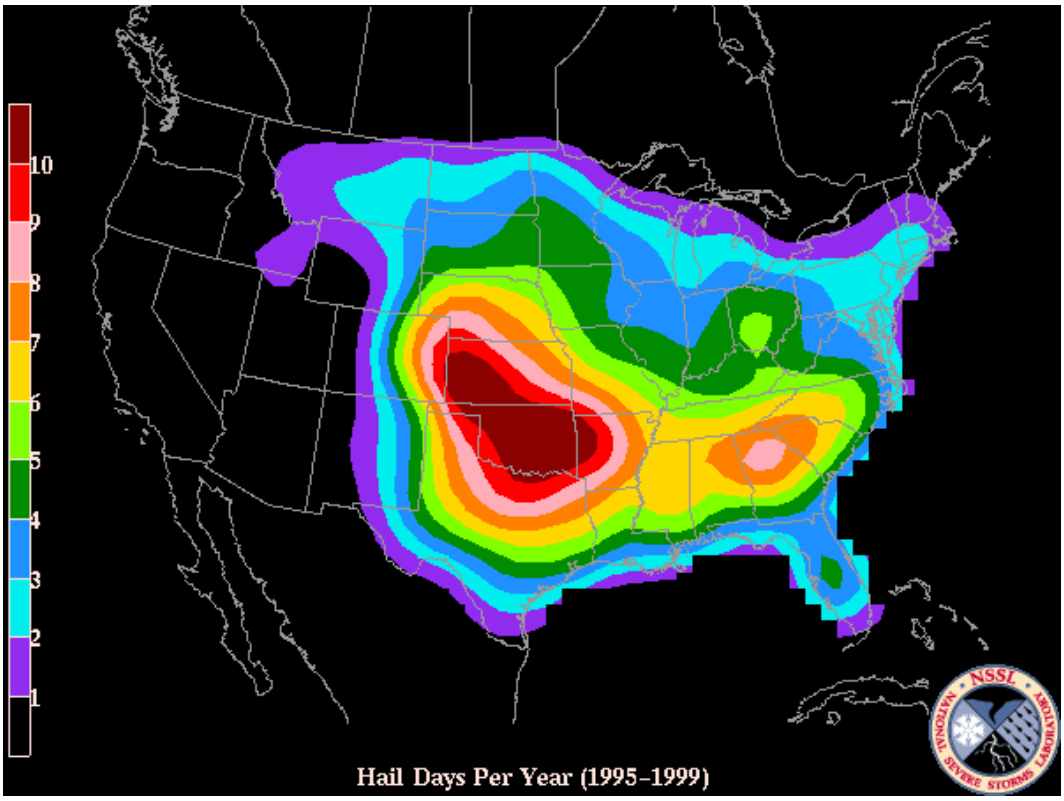


Figure 24. Hail Threat 1995 – 1999 (NOAA National Severe Storm Laboratory

[8] http://www.nssl.noaa.gov/primer/hail/hail_damage.html

[9] Hail that is 3/4 inch in diameter or larger is considered severe, http://www.nssl.noaa.gov/primer/hail/hail_climatology.html#

Tornado: *Probability*—Low, *Impact*—Low

Tornadoes occur infrequently in California, which has a statewide average of just 5 tornadoes a year. This is significantly less than states located in the US' "tornado alley," which can experience as many as 50 – 100 tornadoes per year, as shown in **Figure 25**. In addition, most California tornadoes are considered "weak"; the historical average occurrence rate of Strong – Violent (F2-F5) tornadoes in California is zero, as shown in **Figure 26.** There were no significant tornado events in San Bernardino County between 2005 and 2010. Accordingly, the Planning Team concluded that the probability of future tornado events was unlikely (Low Probability), with an expectation of minimal impacts (Low Impact).

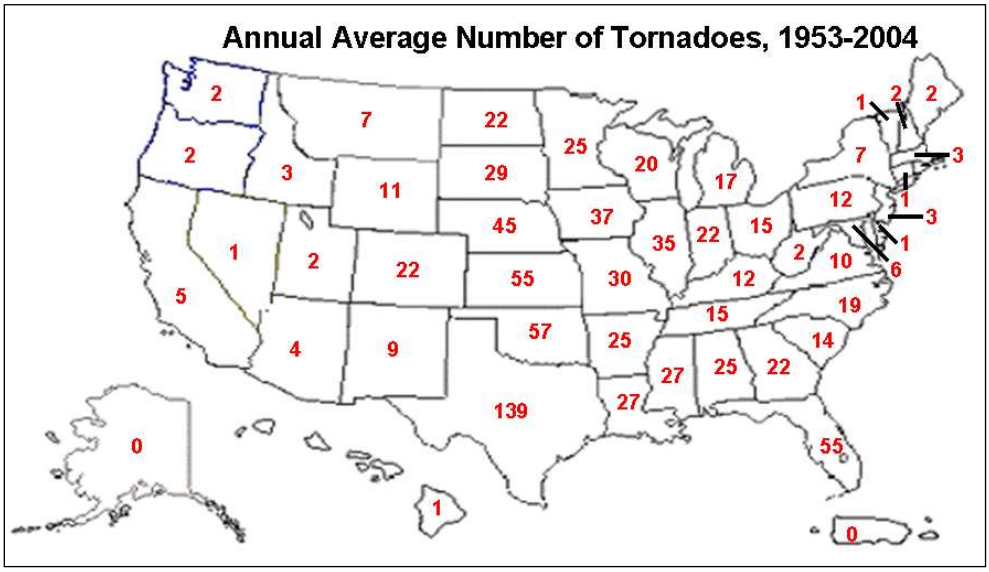


Figure 25. Average Annual Number of Tornadoes by State, 1953-2004 (National Climactic Data Center, 2008

Figure 26. Average Annual Number of Strong-Violent (F2-F5) Tornadoes by State, 1950–1995 (National Climactic Data Center, 2008

Winter Storm (Heavy Snowfall): *Probability*—High, *Impact*—Medium

Winter storms with heavy snowfall can result in road closures, power outages, and require significant snow removal efforts, typically in the Mountain regions of the County. Recent events include the January 2010 Winter Storms, and the Winter Weather Incidents of 2008 (which resulted in closure of Interstate 15 and the need to shelter stranded travelers).

The Planning Team determined that the probability of future occurrences is High, but that the Impacts are Medium.

Based on the above discussion by the Planning Team, the hazards were placed into the matrix. The resulting categorization of each hazard is shown in the Hazard Assessment Matrix given in **Table 1**.

Table 1. Hazard Assessment Matrix

		Impact		
		High	**Medium**	**Low**
Probability	**High**	• Wildfire • Flood • Earthquake/ Geologic Hazards	• Drought • High Winds/Straight Line Winds • Lightning • Extreme Heat • Winter Storm (Heavy Snowfall)	
	Medium		• Infestation	• Extreme Cold • Hail
	Low	• Dam Inundation		• Tornado

Hazard Prioritization

The Planning Team then determined that the County and its Special Districts should focus over the next five (5) years on hazards that fell within the HIGH "Probability" and "Impact" categories. While all the hazards present a potential problem in the County, the Planning Team felt that if they were able to reduce or eliminate the risk from these hazards, it would provide a greater serve to the people within the jurisdiction. The

Table 2 illustrates how the final prioritization of the hazard; the "Green" colored box represents the highest priority hazards; and the "White" colored boxes represent lower (second and third tier) priority hazards.

Table 2. Prioritized Hazard Assessment Matrix

		Impact		
		High	Medium	Low
Probability	High	• Wildfire • Flood • Earthquake/ Geologic Hazards	• Drought • High Winds/Straight Line Winds • Lightning • Extreme Heat • Winter Storm (Heavy Snowfall)	
	Medium		• Infestation	• Extreme Cold • Hail
	Low	• Dam Inundation		• Tornado

The following sections; profiles these higher priority hazards in more depth (Section 4.2), discuss the exposure of assets to these hazards in the unincorporated County (Section 4.3), and estimate losses or assess risk for significant events associated with these hazards (Section 4.4).

4.2. Hazard Profile

This section discusses the highest priority natural hazards the unincorporated County areas and Special District areas are expected to experience; wildfire, earthquake/geologic hazards, and flood.

Wildfires

Wildfires present a significant potential for disaster in the County, a region of relatively high temperatures, low humidity, and low precipitation during the summer. This long summer season is followed by a fall season that is famous for high velocity, very dry winds that come out of the desert. The Santa Ana winds very consistently arrive from the middle of October to the end of November. In and of themselves, these weather patterns would be of little significance without the un-naturally dense forest and the dense undergrowth that has been allowed to grow unabated for the last several decades. Compounding the vegetative growth that has occurred is the unchecked development of substantial housing and businesses in mountain communities. This urbanized growth has required parallel growth and sophistication in the fire service that responds to wildfires in the wild land urban interface. With immediate responses to initial fire starts, the vast majority of fires are successfully extinguished in short order. In doing so, this eliminates nature's way of thinning the forest through smaller fires.

Another factor that is a potential for disaster are the number of dead trees in the mountain region. Due to the over densification of the forest combined with drought conditions during the past ten years, trees in the local mountains have become weakened, creating a perfect environment for Bark Beetles to proliferate from 2003 to 2008. Combine these severe burning conditions with people or lightning and the stage is set for the occurrence of large, destructive wildfires. In addition, the forested areas of the County are not only the most popular, with the most visitors in the Nation, but are also the most

populated in residences and businesses in the Nation as well. The final element in this catastrophe waiting to happen is that because of the steep mountain terrain, there are only five routes in and out for almost 60,000 residents. On a holiday weekend though, this population can dramatically increase by 50,000 to 100,000 people as weekend vacationers.

In order to mitigate much of the wildfire danger resulting from bark beetle infestations and an overly dense forest, San Bernardino County and its Special Districts developed and implemented the Mountain Area Safety Task Force (MAST). MAST provides a single point of coordination for numerous Federal, State, and local agencies that perform a multitude of tasks related to creating fire safe mountain communities. MAST provides an extensive Fuels Reduction Program. The Fuels Reduction Program began with removal of dead hazardous trees from areas threatening electrical transmission lines, evacuation routes, and structures within the San Bernardino Mountains. As the program developed, additional hazards were identified, such as green fuel load density and wood shake roofs on structures within the San Bernardino Mountains.

The Fire Severity Zones for San Bernardino County identify areas of Very High, High, and Moderate fire hazard severity throughout the County (**Figure 27)** below - Map Data from Cal Fire and San Bernardino County Fire Protection District 2009). Fire Severity Zones are used in determining additional protective measures required when building new structures or remodeling older structures within the particular zone. Additional measures must be taken on the property around a structure in the higher ranked fire Severity Zones.

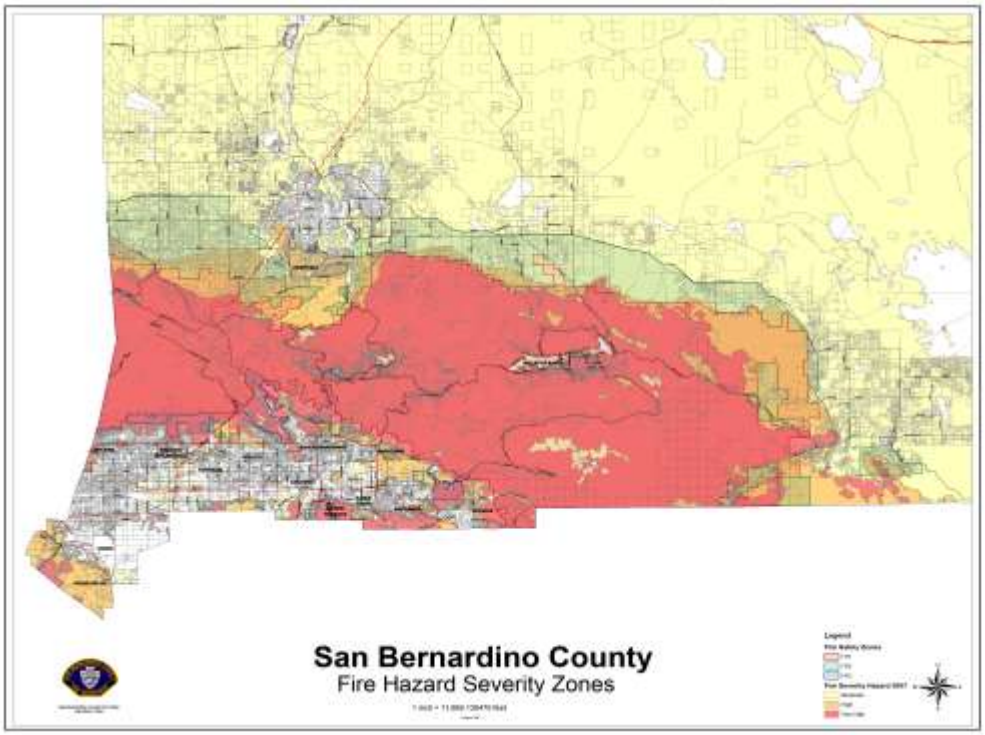


Figure 27. Fire Hazard Severity Zones

Wildfire Occurrences

Wildfire locations from 1900 – 2008 are shown in **Figure 28**. In the past five years (since the 2005 MJHMP was approved) there have been 23 significant wildland fires within San Bernardino County. These fires are listed in **Table 3**, and several of the more damaging fires are discussed below.

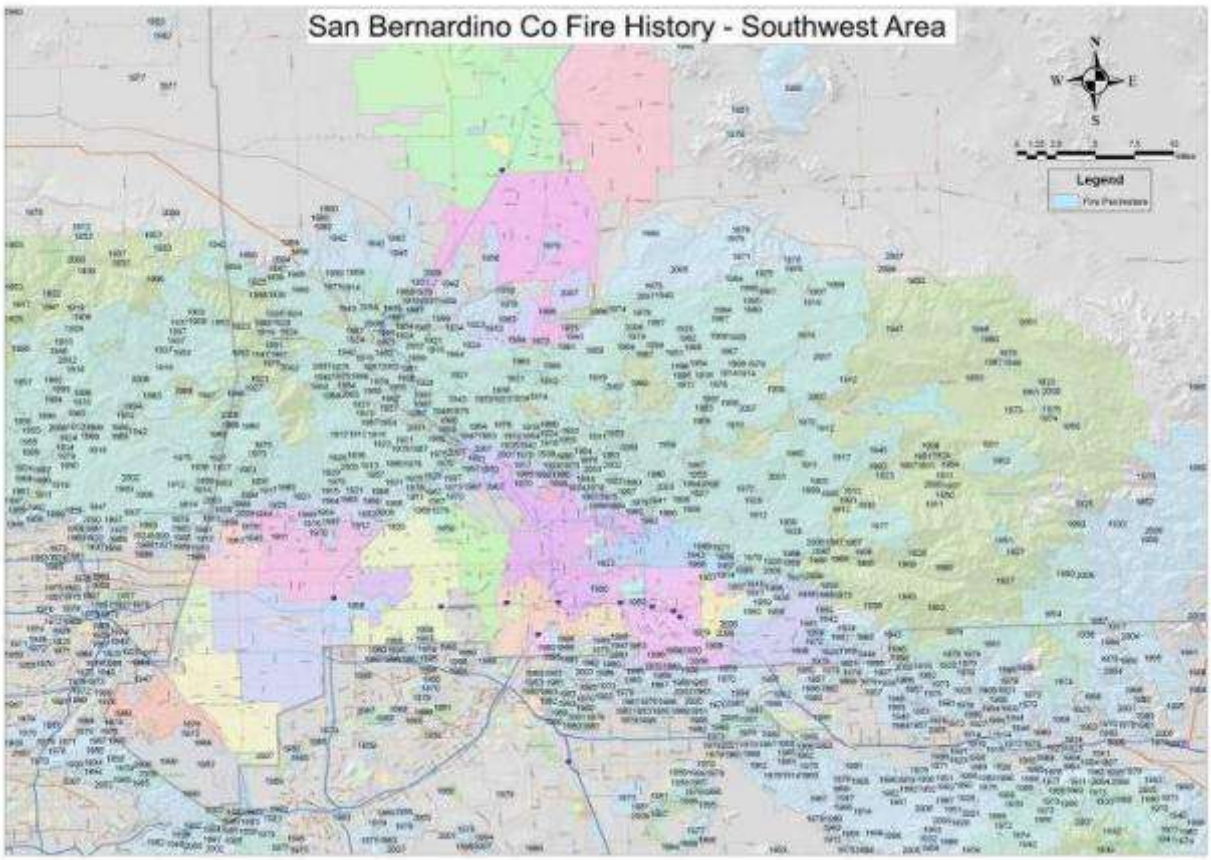


Figure 28. Wildfire History 1900 – 2008 (CalFire and USFS Data 2010)

Table 3. Wildfire Occurrences 2005–2010

Number	Date	Name	Acres
1.	6/22/2005	Paradise Fire	3,022
2.	1/23/2006	Plunge Fire	485
3.	7/9/2006	Sawtooth Complex	61,700
4.	7/9/2006	Millard Complex	24,210
5.	7/9/2006	Heart Fire	800
6.	7/22/2006	Whispering Pines Fire	1,050
7.	8/29/2006	Emerald Fire	2,000
8.	9/19/2006	Pinnacles Fire	2,370
9.	11/6/2006	Sierra Fire	300
10.	12/4/2006	Citrus Fire	525
11.	3/31/2007	Las Flores Fire	4,100
12.	9/14/2007	Butler II Fire	14,089
13.	9/17/2007	Hay Fire	75
14.	10/21/2007	Sierra/Glen Helen / Devore Fires	430
15.	10/22/2007	Grass Valley Fire	1,247
16.	10/22/2007	Slide Fire	12,789
17.	10/13/2008	Interstate 215 Fire	250
18.	10/14/2008	Little Mountain Fire	225
19.	10/22/2008	Foxborough Fire	250
20.	10/23/2008	San Antonio Fire	200
21.	11/15/2008	Freeway Fire	28,889
22.	8/30/2009	Oak Glen-Pendleton Fires	2,019
23.	10/4/2009	Sheep Fire	7,128
			168,153

The Sawtooth Complex Fires in 2005 and the Grass Valley and Slide Fires of 2007 demonstrate that wildfires are a significant threat to lives and property in the unincorporated San Bernardino County area. The Sawtooth Complex Fires burned 61,700 acres, destroyed 50 homes, 8 mobile homes, 13 garages, 171 outbuildings, 191 cars and pickups, 3 R.V's, 27 trailers, 2 railcars, and 9 tractors. 12 residences were damaged. The cost of this fire exceeded $16.8 million. One civilian was killed in this fire.

The Grass Valley Fire burned 1,247 acres with 174 homes, 2 outbuildings destroyed, and damaged 22 structures. A recently completed Fuel Reduction Project on the southwest flank of the fire prevented the fire from spreading south and west into the communities of Twin Peaks, Lake Gregory, and Crestline. The Slide Fire burned 12, 789 acres and destroyed 273 homes, 3 outbuildings, and damaged 45 structures. Fuel Reduction Projects and aggressive code enforcement in this area to provide proper fuels reduction around homes prevented a much higher property loss. Both fires were wind driven by high Santa Ana winds in the area. Total costs of the Grass and Slide fires including property loss and suppression costs was $177,240,550.

The Sawtooth, Grass, and Slide Fires all occurred in the County's mapped Very High Fire Severity Zone. Mitigation efforts have reduced but not eliminated the threat from wildfire. The strong fall winds that are capable of creating firestorms cannot be controlled. Drought cannot be controlled. Fuels reduction programs reduce the potential spread of fire, upgraded Building Codes make structures more fire resistant, and public education prepares residents for wildfires. However, the threat of wildfire remains. The continuing goal is to reduce the threat from wildfire wherever possible.

Earthquake/Geologic Hazards

An earthquake is a sudden, rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. For hundreds of millions of years, the forces of plate tectonics have shaped the earth as the huge plates that form the earth's surface move slowly over, under, and past each other. Sometimes the movement is gradual. At other times, the plates are locked together, unable to release the accumulating energy. When the accumulated energy grows strong enough, the plates break free, causing the ground to shake. Most earthquakes occur at the boundaries where the plates meet; however, some earthquakes occur in the middle of plates.

Ground shaking from earthquakes can collapse buildings and bridges; disrupt gas, electric, and phone service; and sometimes trigger landslides, avalanches, flash floods, fires, and huge, destructive ocean waves (tsunamis). Buildings with foundations resting on unconsolidated landfill and other unstable soil, and trailers and homes not tied to their foundations are at risk because they can be shaken off their mountings during an earthquake. When an earthquake occurs in a populated area, it may cause deaths and injuries and extensive property damage.

Earthquakes can strike suddenly, without warning. Earthquakes can occur at any time of the year and at any time of the day or night. On a yearly basis, 70 to 75 damaging earthquakes occur throughout the world.

Figure 29 shows the locations of major faults in California, including the four (4) major faults in Southern California in relation to San Bernardino County. These faults are the Southern San Andreas, the San Jacinto, the Elsinore, and the Garlock Faults. There are also many smaller faults within San Bernardino County capable of producing significant earthquakes. However, these four faults are considered by the United States Geological Survey (USGS) and the California Geological Survey (CGS) to be the most dangerous in the County. (California Geological Survey Special Publication 42, Interim Revision 2007, "Fault-Rupture Hazard Zones in California" - Alquist-Priolo Earthquake Fault Zoning Act)

Other geologic hazards include liquefaction and landslides. Both occur during and after earthquakes.

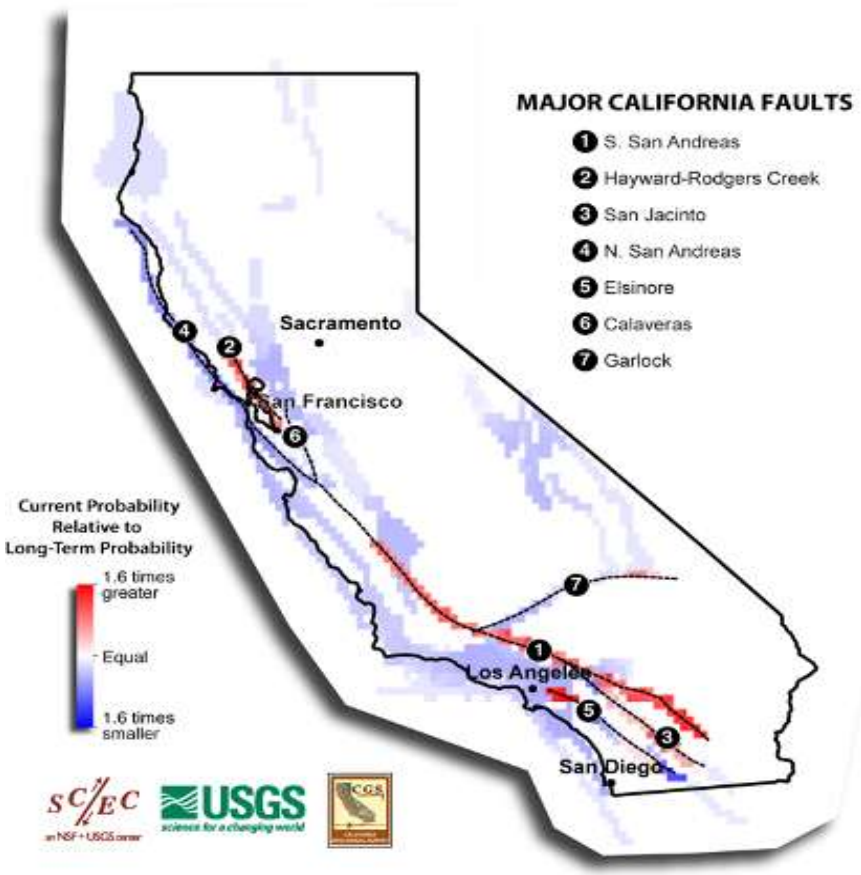


Figure 29. Major California Faults

Table 4 shows earthquakes greater than Magnitude 4.0 that have been felt within the San Bernardino County area in the last five years. None caused notable damage in San Bernardino County.

Table 4. Earthquakes: 2005–2010 San Bernardino County

Date	Name
6/12/2005	Anza 5.2
6/16/2005	Yucaipa 4.9
7/29/2008	Chino Hills 5.4
12/6/2008	Ludlow 5.1
1/9/2009	San Bernardino 4.5
3/16/2010	Chino Hills 4.4
4/4/2010	El Mayor-Cucapah Earthquake 7.2
6/15/2010	El Centro 5.7
7/7/2010	Borrego Springs 5.4

There are hundreds more small (M<4.0) earthquakes that have occurred within San Bernardino County during this same time frame. Those with a magnitude of below 4.0 are not listed. None of these earthquakes occurred on one of California's Major faults.

Several of the major Southern California faults have a high probability of experiencing a Magnitude 6.7 or greater earthquake within the next 30 years **(Figure 30**); 59% probability of a M6.7 or greater on the Southern San Andreas Fault, 31% probability on the San Jacinto Fault, and 11% probability on the Elsinore Fault. These probabilities were determined by the USGS and CGS in a 2008 study (2007 Working Group on California Earthquake Probabilities, 2008, *The Uniform California Earthquake Rupture Forecast, Version 2 (UCERF 2)*: U.S. Geological Survey Open-File Report 2007-1437 and California Geological Survey Special Report 203 [http://pubs.usgs.gov/of/2007/1437/]).

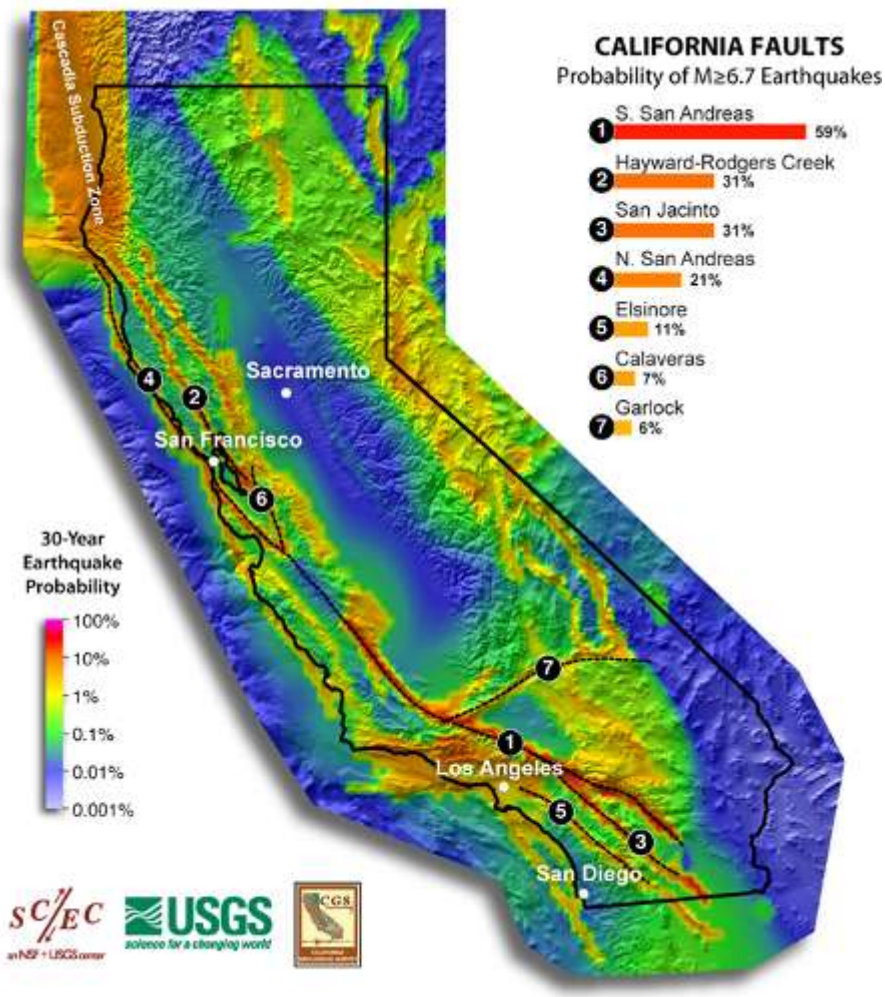


Figure 30. California Faults - Probability of ≥M6.7 Earthquake

As shown in **Figure 31**, the probability of an earthquake with a Magnitude 6.7 or greater occurring somewhere in Southern California within the next 30 years are estimated to be 97% (2007 Working Group on California Earthquake Probabilities, 2008). As can be seen in the table, earthquake probabilities in Southern California are higher than those for Northern California.

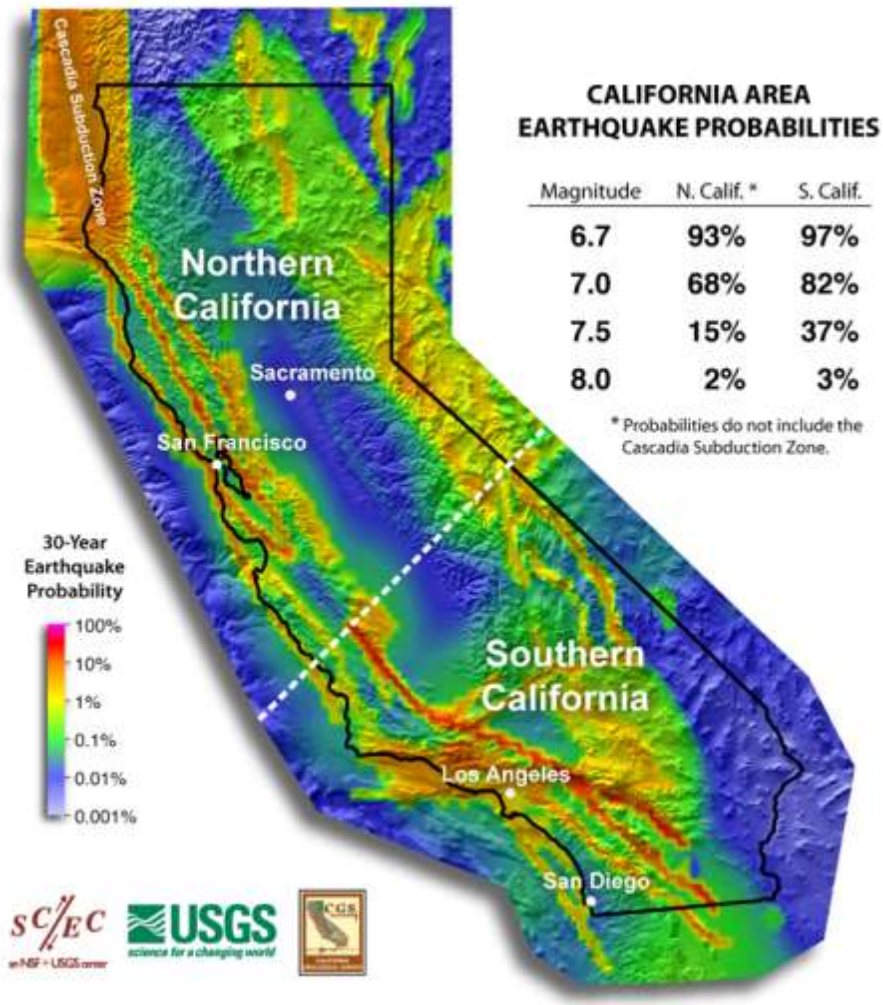


Figure 31. California Area Earthquake Probabilities By Magnitude By Probability

Liquefaction of the ground occurs when the groundwater table is high and soil conditions are favorable. Liquefaction Susceptibility Zones as mapped by the USGS for the 2008 ShakeOut Scenario[10] (**Figure 32)** shows areas of the County susceptible to liquefaction during an earthquake.

[10] As documented in USGS Open File Report 2008-1150, Chap. 3C (p. 48-87), available from: http://pubs.usgs.gov/of/2008/1150/

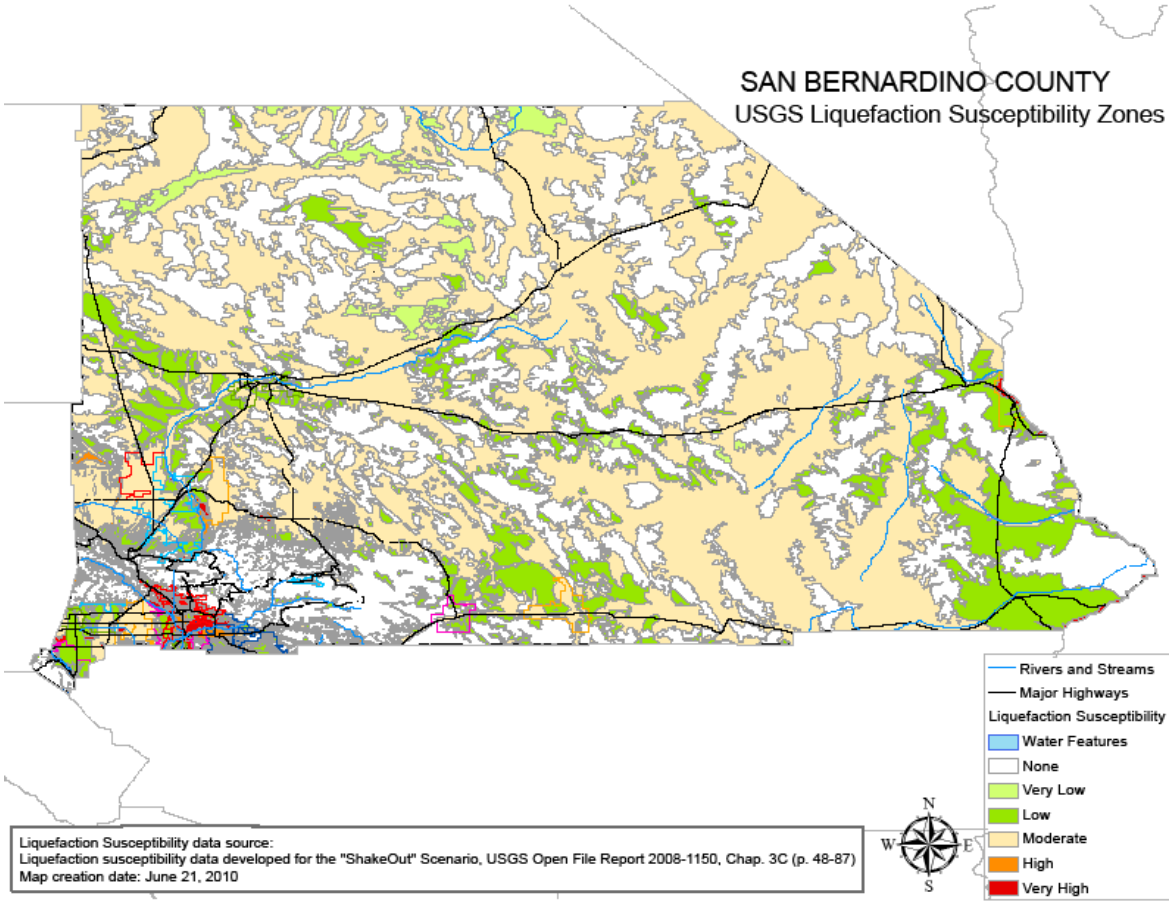


Figure 32. USGS Liquefaction Susceptibility Zones

Flood

Floods are the second most common and widespread of all natural disasters faced by the County and its Special Districts. Most communities in the United States have experienced some kind of flooding during or after spring rains, heavy thunderstorms, winter snow thaws, or summer thunderstorms.

A flood, as defined by the National Flood Insurance Program is: "A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties (at least one of which is the policyholder's property) from:

- Overflow of inland or tidal waters, or
- Unusual and rapid accumulation or runoff of surface waters from any source, or
- Mudflow, or
- Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels."

Floods can be slow or fast rising but generally develop over a period of hours or days. Mitigation includes any activities that prevent an emergency, reduce the chance of an emergency happening, or

lessen the damaging effects of unavoidable emergencies. Investing in mitigation measures now, such as: engaging in floodplain management activities, constructing barriers, such as levees, and purchasing flood insurance will help reduce the amount of structural damage to structures and financial loss from building and crop damage should a flood or flash flood occur.

The standard for flooding is the 1% annual chance flood, commonly called the 100-year flood, the benchmark used by the Federal Emergency Management Agency (FEMA) to establish a standard of flood control in communities throughout the country. The 1% annual chance flood is also referred to as the base flood.

The 1% annual chance flood is the flood that has a 1% chance of being equaled or exceeded in any given year and it could occur more than once in a relatively short period of time. By comparison, the 10% flood (10-year flood) means that there is a 10% chance for a flood of its size to occur in any given year.

Figure 33 provides flood hazard data for San Bernardino County as mapped in FEMA's National Flood Hazard Layer for California (April, 2010). Mapped areas include areas subject to inundation by the 1% Annual Chance Flood (also referred to as the 100-year flood), and areas subject to inundation in the 0.2% Annual Chance Flood (500-year flood).

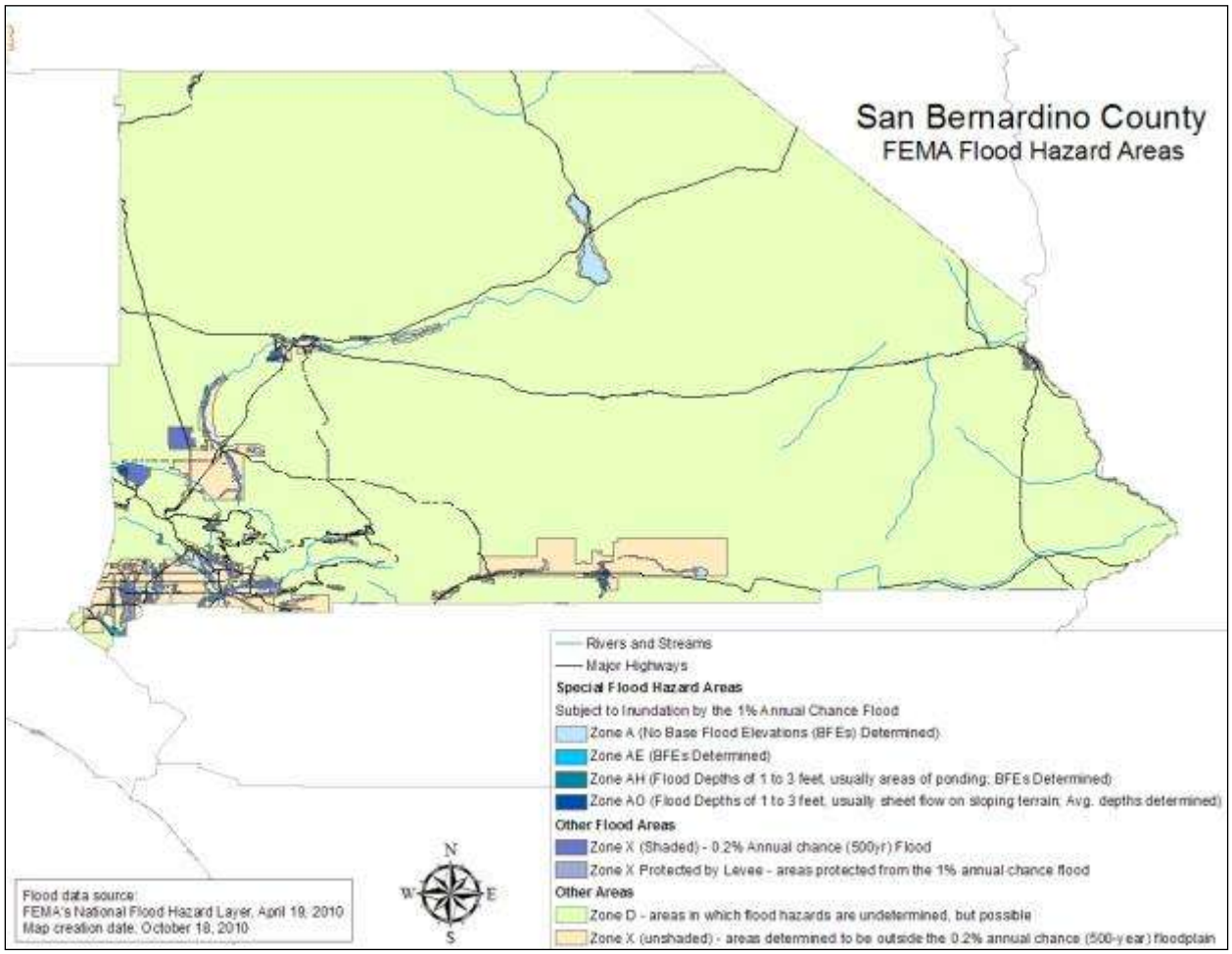


Figure 33. FEMA's National Flood Hazard Layer for San Bernardino County

Flash Flooding

Flash flooding tends to occur in the summer and early fall because of the monsoon rains and is typified by increased humidity and high summer temperatures.

The desert area contains many mountain ranges that are steep and experience summer thunder storms causing flash floods in many dry washes on the desert floor. The water collects in dry lake beds throughout the desert area. Environmental permit processing has delayed or prohibited work in the washes to provide flow lines to many bridges on county highways. Many highways do not have bridges but convey water across the road with dip crossings. Flash flooding causes road and bridge wash outs and erosion of earthen channels and basins when they occur near these facilities. Cities and towns often experience street closures for several days due to sediment transport and road damage. Because of the sheet flow character of the desert, many private properties experience erosion and sediment deposits. The urban valley also can experience flash flooding in its narrow canyons and within the many unimproved creeks and interim channels feeding the Santa Ana River. The valley floor in many areas is very flat so even minor rain events can produce flooding of roads and private property. In coordination with local jurisdictions, the County of San Bernardino Flood Control District has prepared Master Drainage plans for many cities and towns to provide a plan for reducing flooding due to minor storms. However, local resources are not sufficient to cover the cost of the construction of the drainage systems. The densely populated (75% of the county population) urban valley region contains the headwaters of the Santa Ana River. The San Gabriel and San Bernardino Mountains border the North side of the valley are steep reaching 5,000 feet with alluvial fans which are developed and densely populated.

As cited in the County General Plan, the County has experienced severe and widespread flooding throughout its history. Several major drainage basins have the potential to subject residents and structures to a high risk of flooding. The County has entered into an agreement to participate in the National Flood Insurance Program (NFIP), which provides flood insurance within designated floodplains.

StormReady

San Bernardino County became a “StormReady” County on July 2, 2009. To become StormReady, the County coordinated with three National Weathers Service Offices that cover the County. This is the only jurisdiction in the United States covered by three separate NWS Forecast Offices. Through the StormReady program, the County demonstrated the ability to properly prepare for and respond to flooding and flash flooding incidents that may threaten the County and its residents.

Alluvial Fan Taskforce

In December of 2002, the California Floodplain Management Task Force Report recommended that “The State should convene a task force specifically for alluvial fans, with stakeholder participation, to review the state of knowledge regarding alluvial fan floodplains, determine future research needs, and, if appropriate, develop recommendations relating to alluvial fan floodplain management, with an emphasis on alluvial fan floodplains that are being considered for development.”

In September of 2004, Governor Arnold Schwarzenegger signed Assembly Bill 2141, which recommended the creation of the Alluvial Fan Task Force (Task Force). The Director of the Department of Water Resources (DWR) convened the Task Force in December of 2007 after funding to support Task Force activities was secured from a Pre-Disaster Mitigation Planning Grant from the Federal Emergency Management Agency (FEMA) and a state match was authorized by Assembly Bill 466. Funding supported the tasks charged to the Task Force including:

1. Review the state of knowledge regarding alluvial fan floodplains;
2. Determine future research needs;
3. Develop a voluntary locally-adopted model ordinance for communities subject to alluvial fan flooding that supports land use decisions on alluvial fans;
4. Develop local planning tools to assist local communities evaluate development on alluvial fans; and
5. Prepare recommendations relating to alluvial fan floodplain management.

Appointments to the Task Force by DWR Director Lester Snow represented a broad range of interests. Members included elected officials, represented by five Supervisors from Kern, Los Angeles, Riverside, San Diego, and San Bernardino County where future alluvial fan development is projected. Appointments also included representatives of the development and environmental community, local floodplain managers and associated state and federal agencies, including the Federal Emergency Management Agency (FEMA), plus at-large members representing other issues related to future development on alluvial fans. The entire process was coordinated by the Water Resources Institute at California State University San Bernardino.

The primary purpose of the Alluvial Fan Taskforce Findings and Recommendations Report (July 2010) and The Integrated Approach for Sustainable Development on Alluvial Fans (July 2010) documents are to provide a non-prescriptive and flexible model that local governments can use at their own discretion, adapting to local conditions and needs, that supports wise future land use decisions associated with development on alluvial fans.

The County of San Bernardino and its Special Districts will review and analyze the findings and recommendations from the recently released Alluvial Fan Taskforce reports, provided that funding for this task is available. The review and analysis would determine whether or not additional amendments to development standards or polices are merited.

As one of the ten Southern California counties studied by the Task Force, the County may review the development of the suite of local planning tools for pre-project screening for future development proposals on alluvial fans. If funding allows for the review, these planning tools may be useful as an optional database reference for project management. Additionally, the flood management tools designed to analyze alluvial fan flood hazards and formulate flood hazard protection, which were developed to be consistent with FEMA guidelines, may provide an optional data source for project development. Long term funding for updating and maintaining the pre-project screening tools data base is a concern regarding the reliability for current data.

If funding exists, for the implementation of the Integrated Approach for Sustainable Development on Alluvial Fans, the methods contained therein may be used as some of the approaches for planning and evaluating the suitability of development on alluvial fans. During the analysis and review, if budgets allow, the long term ecological and financial sustainability issues would also be evaluated.

Severe weather events leading to flooding are listed in **Table 5**; several major events are discussed below.

Table 5. Severe Weather Events 2005-Present

Date	Type
7/7/2006	Thunderstorms-Flooding
10/13/2006	Thunderstorms and Flooding
11/30/2007	Heavy Rains
8/30/2008	August Thunderstorms
1/18/2010	January 2010 Winter Storms
12/17/2010	December 2010 Winter Storm Event

Other Hazards

As mentioned earlier, lower priority hazards are addressed at a lesser level of detail due to their relatively fewer impacts, as identified in the preceding hazard assessment section. The lower priority hazards for the unincorporated area are:

- Severe Thunderstorm
- Infestation
- Drought
- High Winds/Straight Line Winds
- Lightning
- Extreme Heat
- Hail
- Tornado

Although not part of the MJHMP, the remaining hazards are a part of the San Bernardino County 2007 General Plan and are addressed in the County Building Codes and Ordinance.

4.3. Inventory Assets

The third step in the Risk Assessment process is to describe the various assets exposed to the identified hazards, including residential, commercial, and industrial buildings throughout the impacted area, critical facilities, as well as critical infrastructure.

Buildings

Table 6 provides an estimate of the number and size of buildings in the County's unincorporated areas and its Special Districts, as well as the replacement value of the buildings and their contents. The table provides information by occupancy class (e.g., residential, commercial, etc.), as well as by construction type (e.g., concrete, wood frame, etc.).

This information was derived from a database generated for the FEMA-funded "San Bernardino County Essential Facilities Risk Assessment (SBEFRA)" project, completed in 2009. The project utilized Assessor's data to create updated building inventory databases for use in HAZUS-MH, FEMA's GIS-based earthquake, flood and hurricane loss assessment software. In addition, the SBEFRA project also collected and synthesized improved data for essential facilities countywide. These data were used to estimate economic and population impacts for selected earthquakes and floods using FEMA's HAZUS-MH program.

Table 6. Building/Contents Replacement Value

Building Inventory Information by General Occupancy	Building Replacement Value ($1,000)	Contents Replacement Value ($1,000)	Building Square Footage (1,000 Sq. Ft.)	Building Count
Residential	17,630,690	8,815,001	179,425.4	121,205
Commercial	3,671,489	3,707,900	45,052.4	1,891
Industrial	772,054	1,158,070	10,045.8	526
Other	1,536,187	952,946	8,956.0	2,463
TOTAL	**$23,610,420**	**$14,633,917**	**243,480**	**126,085**

Selected Building Inventory Data by General Building Type	Building Replacement Value ($1,000)	Building Replacement Value (%)	Estimated Building Count*	% of Building Count
Concrete	$1,439,257	6.1%	671	1%
Manufactured Housing	$551,464	2.3%	12,162	10%
Precast Concrete	$916,833	3.9%	374	0%
Reinforced Masonry	$1,641,095	7.0%	1,614	1%
Steel	$218,426	0.9%	270	0%
Unreinforced Masonry	$124,071	0.5%	82	0%
Wood Frame (Other)	$2,235,322	9.5%	2,380	2%
Wood Frame (Single-family)	$16,483,951	69.8%	108,533	86%
TOTAL	**$23,610,420**		**126,085**	

Critical Facility List

As stated in the San Bernardino County Emergency Operations Plan (EOP), the San Bernardino County Sheriff's Department (Sheriff) is the lead County agency in identifying critical infrastructure in the County and its Special Districts. A Sheriff's Department Working Group was established to identify Critical Facilities throughout San Bernardino County. Due to Homeland Security and issues related to terrorism, this list is not included in the MJHMP, but is available through the Sheriff's Department.

The Sheriff's Department maintains a Critical Infrastructure Database listing the site name, location, critical level, threat level, site type, and contact information. This database was created for the 2005 MJHMP and has been updated regularly by the Intelligence Division. The Sheriff's Intelligence Division has created Emergency Response Folders (Folders) on each of the locations. The Folders contain site-specific information needed by emergency personnel to respond to any type of emergency. The Folders contain floor plans, photographs, entry/exit points, utility locations, ingress and egress locations, known hazardous materials on site, and emergency contact information for the responsible persons of the site. The Sheriff's Department maintains control and transport of this information to an Incident Command Post/Department Operations Center/Emergency Operations Center when needed.

Table 7 represents only a general list of County Unincorporated Area and special District critical facilities and their critical rank. Due to on-going security concerns, specific information regarding County Critical Facilities is maintained by the County Sheriff's Department (as stated above) and will not be listed in this section.

Table 7. Critical Facility List

Name	Facility Type	Critical Rank
Hospitals	Medical Facilities	Critical
Public Health Facilities	Medical Facilities	Critical
Fire Stations	Fire Stations	Critical
Sheriff/Police Stations	Police Stations	Critical
Radio/Communication Towers	Other	Critical
Schools	Other	High
Sewage Treatment Plants	Water and Sewer	High
County Buildings	Government Facilities	Average

For the current risk assessment, selected critical facilities (as modeled in the 2009 SBEFRA study, and identified on map layers available through the County's GIS department) have been located relative to available hazard maps. The results are provided in **Table 8.**

Table 8. Hazard Identification for Selected Essential Facilities

		OWNER	San Bernardino County Fire Protection District	San Bernardino County	San Bernardino County Sheriff		San Bernardino County Superintendent of Schools	San Bernardino County Special Districts Dept., Water & Sanitation Division	San Bernardino County - County Buildings
		FACILITY TYPE	Fire Stations	EOCs	Detention Centers	Stations & Other Facilities	School Buildings	Wastewater Treatment Plants	All
		Total # of Buildings	69	1	35	23	21	4	1251
Fire Hazards	Fire Hazard Severity Zones - Local Responsibility Area	Very High	2	0	0	1	0	0	21
	Fire Hazard Severity Zones - State Responsibility Area	Very High	12	0	23	1	0	0	208
		High	3	0	0	0	0	0	7
		Moderate	5	0	0	1	0	0	41
Flood Hazards	Special Flood Hazard Areas Subject to Inundation by the 1% Annual Chance (100-year) Flood	Zone A - no base flood elevations determined	2	0	1	0	0	0	31
		Zone AE - base flood elevations determined	1	0	0	0	0	0	47
		Zone AH - Flood depths of 1 - 3 feet (usually areas of ponding); base flood elevations determined	0	0	0	0	0	0	1
		Zone AO - Flood depths of 1 - 3 feet (usually sheet flow on sloping terrain); average depths determined.	0	0	0	1	0	0	10
	Other flood areas	Zone X (Shaded) - areas of 0.2% annual chance (500 yr) flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile.	5	0	2	0	0	0	105
		Zone X Protected by Levee - areas protected by levees from the 1% annual chance flood	2	0	0	0	13	0	53

		OWNER	San Bernardino County Fire Protection District	San Bernardino County	San Bernardino County Sheriff		San Bernardino County Superintendent of Schools	San Bernardino County Special Districts Dept., Water & Sanitation Division	San Bernardino County - County Buildings
		FACILITY TYPE	Fire Stations	EOCs	Detention Centers	Stations & Other Facilities	School Buildings	Wastewater Treatment Plants	All
	Other Areas	Zone D - areas in which flood hazards are undetermined, but possible	27	0	0	3	1	4	439
		Zone X (Unshaded) - areas determined to be outside the 0.2% annual chance (500-year) floodplain	32	1	32	19	7	0	565
Dam Inund.	Dam Inundation Areas	In mapped dam inundation area	4	0	0	0	0	0	25
Earthquake Hazards	Liquefaction Susceptibility	None	7	0	0	1	1	1	176
		Very Low	1	0	0	0	0	0	0
		Low	15	0	9	6	8	1	453
		Moderate	39	1	25	12	5	2	415
		High	4	0	0	0	2	0	53
		Very High	3	0	1	4	5	0	154
	Alquist-Priolo Earthquake Fault Zone	Inside mapped fault zone	2	0	19	1	0	1	109

Utility Agencies

The utilities and transportation infrastructure is another significant concern for the County and its Special Districts. Various laws, ordinances, regulations, standards, and guidelines have been established to ensure proper and thorough mitigation measures to decrease the effects of hazards.

The following are two of the major utility agencies:

Southern California Edison (SCE) has undertaken an all-hazards approach to planning for an emergency event. SCE has developed an Emergency Response and Recovery Plan to provide a safe and reliable electric service. SCE also has a long-standing relationship with the County and is an active member of several local, state, and federal organizations. According to SCE they have acted to mitigate the impacts of hazards on their electrical system.

Southwest Gas Corporation (SWG) has also coordinated with the County, maintains a natural gas high-pressure system within the County, and consists of approximately 100 miles of underground pipelines. The system also includes some above ground facilities. The total replacement cost for the entire system is approximately $40,000,000. Southwest Gas conducts annual training for the first responders within their service territories to teach the proper methods of responding to and working with natural gas leaks. Staff from SWG serves on local emergency management committees within their service territory.

4.4. Vulnerability Assessment

This section presents the results of the vulnerability assessment, estimating potential losses or impacts to buildings, infrastructure, and population for the various identified hazards.

Methodology

Identified risks included in the 2005 MJHMP were reviewed. Frequency of occurrence and magnitude of each type of event for the five years since the 2005 MJHMP were added to the databases. These databases of frequency and severity were considered in the update of the estimated hazard impacts.

Results for Wildfire

a. **Population**: Approximately 30% of the population in the County Unincorporated Area's population is vulnerable.

b. **Critical Facilities:** Approximately 85% of the County Unincorporated Area's critical facilities are vulnerable. The numbers of County critical facilities vulnerable in County Area are summarized in **Table 9**.

Table 9. Critical Facilities within Wildfire Hazard Area

Name	# of Facilities
Hospitals	1
Public Health Facilities	2
Fire Stations	22
Sheriff/Police Stations	3
Radio/Communication Towers	8
County Supt. Of Schools	0
Sewage Treatment Plants	0
County Buildings	277
Total	**313**

Source: County GIMS 2010

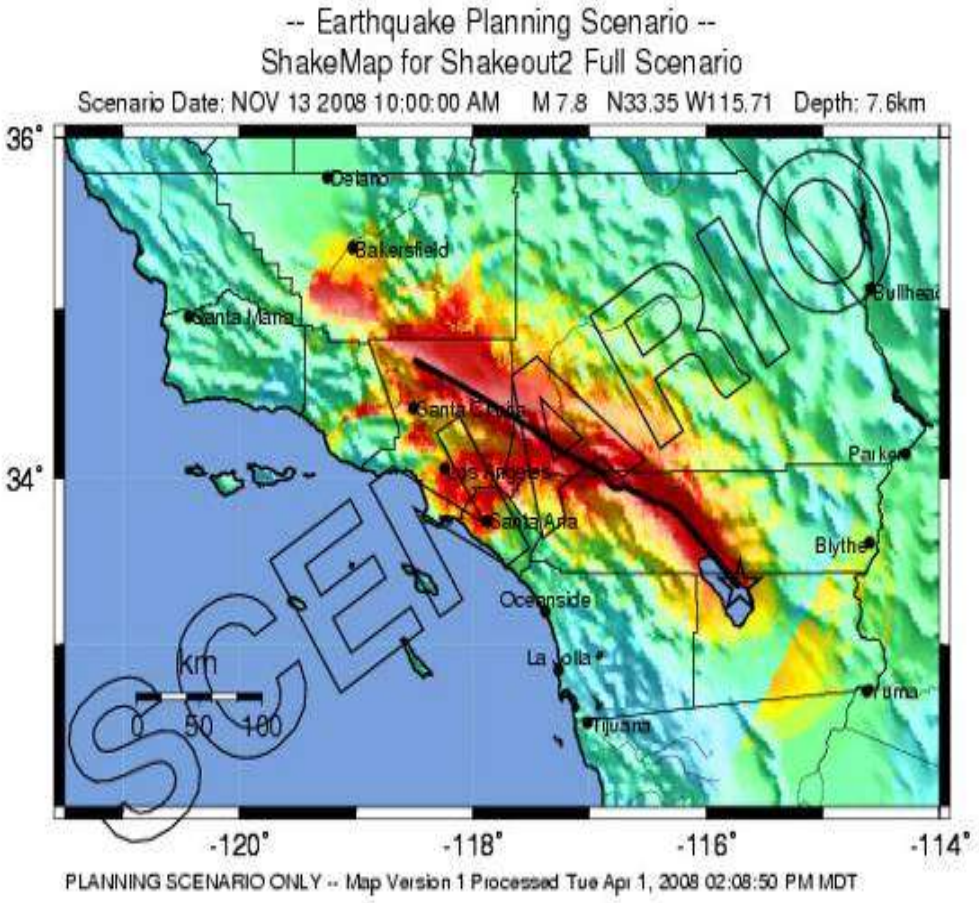
Results for Earthquake

Below are USGS ShakeMaps for three scenario earthquakes simulated for the 2010 Multi-Jurisdictional Hazard Mitigation Plan. The three scenarios are:

- Magnitude 7.8 "ShakeOut" Scenario on the Southern San Andreas Fault (**Figure 34**)
- Magnitude 6.7 San Jacinto Fault (**Figure 35**
- Magnitude 6.7 Chino Hills Fault (**Figure 36**).

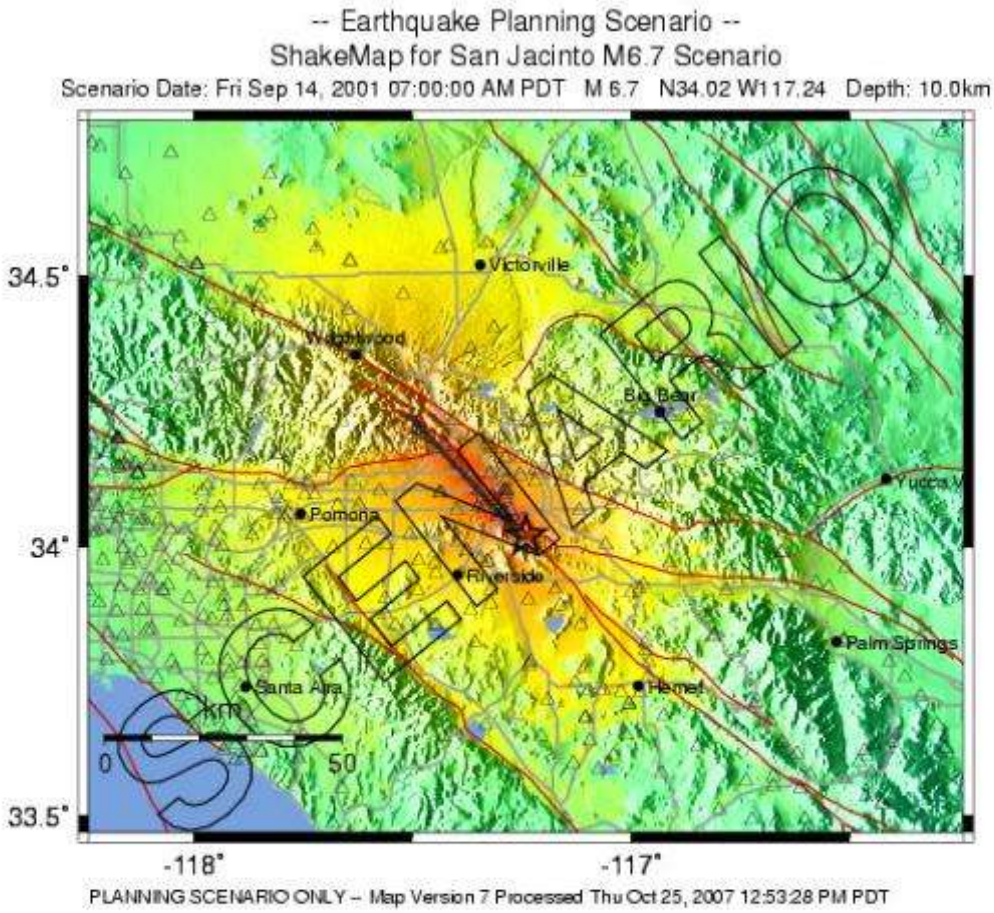
For the unincorporated areas of the County, earthquake loss estimates and critical facility damage and functionality have been estimated using the latest version of HAZUS (HAZUS-MH MR-4), with the improved regional building and essential facility inventory databases developed under FEMA funding for the San Bernardino County Essential Facilities Risk Assessment (SBEFRA) Project. The risk assessment of critical facilities considers those essential facilities (fire stations, police facilities, EOCs, and schools) for which HAZUS-compatible databases have been developed.

Table 10 summarizes HAZUS-estimated Direct Economic Loss, Casualties, and Building Damage by General Building Type for buildings located in the Unincorporated County areas in the three earthquake scenarios. As noted above, these statistics were developed using HAZUS-MH MR-4 with the updated inventory databases developed for the 2009 SBEFRA Project.



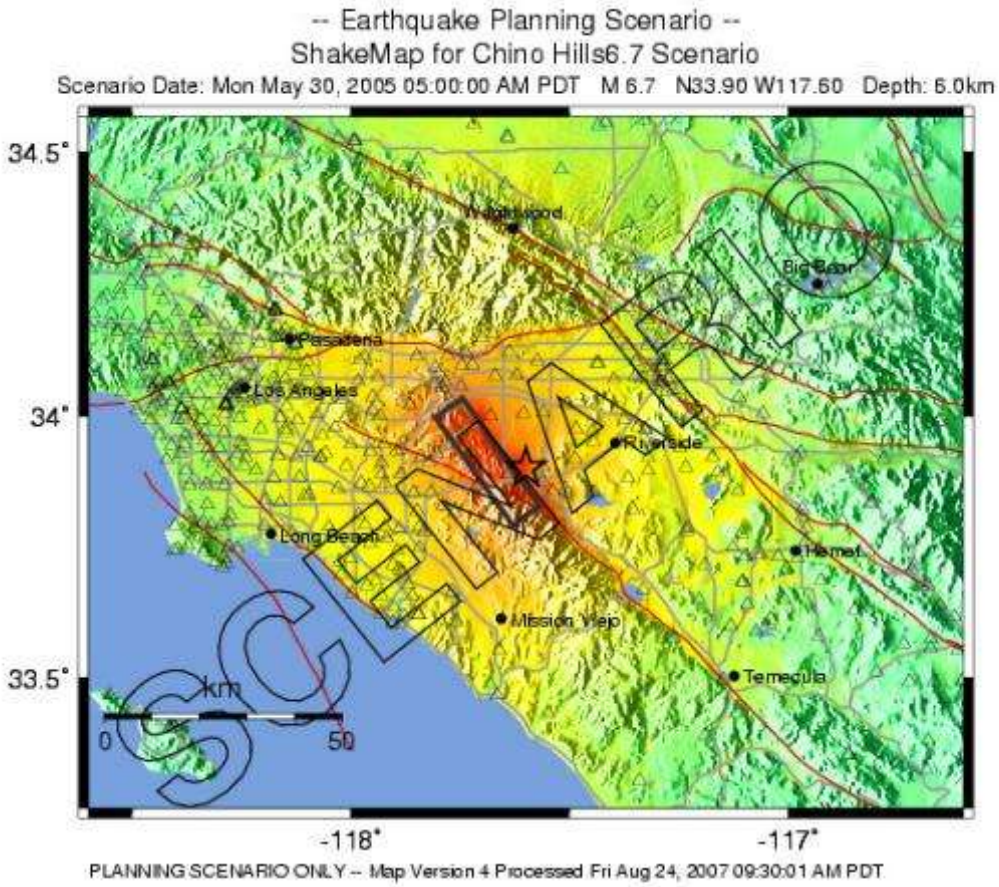
PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<.17	.17-1.4	1.4-3.9	3.9-9.2	9.2-18	18-34	34-65	65-124	>124
PEAK VEL.(cm/s)	<0.1	0.1-1.1	1.1-3.4	3.4-8.1	8.1-16	16-31	31-60	60-116	>116
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Figure 34. Scenario 1: Magnitude 7.8 Earthquake - Southern San Andreas Fault



PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<.17	.17-1.4	1.4-3.9	3.9-9.2	9.2-18	18-34	34-65	65-124	>124
PEAK VEL.(cm/s)	<0.1	0.1-1.1	1.1-3.4	3.4-8.1	8.1-16	16-31	31-60	60-116	>116
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Figure 35. Scenario 2: Shakemap for Magnitude 6.7 Earthquake San Jacinto Fault



PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<.17	.17-1.4	1.4-3.9	3.9-9.2	9.2-18	18-34	34-65	65-124	>124
PEAK VEL.(cm/s)	<0.1	0.1-1.1	1.1-3.4	3.4-8.1	8.1-16	16-31	31-60	60-116	>116
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Figure 36. Scenario 3: Shakemap for Magnitude 6.7 Earthquake Chino Hills Fault

Table 10. Direct Economic Loss, Casualties, and Building Damage by General Building Type for the Unincorporated Areas of San Bernardino County

		Earthquake Scenario		
		M7.8 ShakeOut Scenario (including Liquefaction)	**M6.7 San Jacinto Fault (including Liquefaction)**	**M6.7 Chino Hills Fault (including Liquefaction)**
Direct Economic Losses for Buildings ($1,000)				
	Total Building Exposure Value	23,610,420		
Capital Stock Losses	Cost of Structural Damage	351,937	47,335	27,060
	Cost of Non-Structural Damage	1,131,985	211,498	100,187
	Total Building Damage (Str. + Non-Str.)	**1,483,921**	**258,833**	**127,247**
	Building Loss Ratio %	6.3%	1.1%	0.5%
	Cost of Contents Damage	429,552	95,855	53,633
	Inventory Loss	22,383	5,379	4,191
Income Losses	Relocation Loss	173,691	23,250	14,125
	Capital-Related Loss	26,522	2,812	3,613
	Rental Income Loss	67,956	9,677	6,723
	Wage Losses	52,735	5,784	6,196
	Total Direct Economic Loss	**2,256,762**	**401,590**	**215,728**
	% Of Countywide Loss	10.5%	7.9%	7.1%
Casualties				
Day Casualties	**Casualties - 2 pm**			
	Fatalities	16	0	1
	Trauma injuries	5	0	0
	Other (non-trauma) hospitalized injuries	33	0	0
	Total hospitalized injuries	**38**	**0**	0
	Injuries requiring Emergency Department Visits	831	65	49
	Injuries treated on an Outpatient basis	1,468	129	90
	Total injuries	**2,353**	**194**	140
	Hospital visits requiring EMS transport	59	3	3
Night Casualties	**Casualties - 2 am**			
	Fatalities	10	0	0
	Trauma injuries	3	0	0
	Other (non-trauma) hospitalized injuries	20	0	0
	Total hospitalized injuries	**23**	**0**	**0**
	Injuries requiring Emergency Department Visits	1,262	130	23
	Injuries treated on an Outpatient basis	2,314	260	48
	Total injuries	**3,609**	**390**	**71**
	Hospital visits requiring EMS transport	78	5	1

		Earthquake Scenario		
		M7.8 ShakeOut Scenario (including Liquefaction)	M6.7 San Jacinto Fault (including Liquefaction)	M6.7 Chino Hills Fault (including Liquefaction)
Shelter				
Shelter	Number of Displaced Households	2,547	408	95
	Number of People Requiring Short-term Shelter	1,015	205	34
Debris (thousands of tons)				
Debris	Brick, Wood & Other (Light) Debris	360	48	23
	Concrete & Steel (Heavy) Debris	616	49	46
	TOTAL	**976**	**97**	**69**
Building Damage Count by General Building Type				
Concrete	None	232	486	570
	Slight	163	130	50
	Moderate	165	50	34
	Extensive	80	4	15
	Complete	30	0	3
	TOTAL	**671**	**671**	**671**
Manuf. Housing	None	3,503	7,356	10,285
	Slight	1,199	1,901	1,407
	Moderate	1,885	2,165	458
	Extensive	1,614	598	12
	Complete	3,960	142	0
	TOTAL	**12,162**	**12,162**	**12,162**
Precast Concrete	None	153	239	307
	Slight	128	100	50
	Moderate	83	34	16
	Extensive	9	1	2
	Complete	1	0	0
	TOTAL	**374**	**374**	**374**
Reinforced Masonry	None	799	1,278	1,485
	Slight	392	245	77
	Moderate	298	83	40
	Extensive	97	7	11
	Complete	28	0	1
	TOTAL	**1,614**	**1,614**	**1,614**

		Earthquake Scenario		
		M7.8 ShakeOut Scenario (including Liquefaction)	M6.7 San Jacinto Fault (including Liquefaction)	M6.7 Chino Hills Fault (including Liquefaction)
Steel	None	111	215	250
	Slight	61	38	10
	Moderate	65	15	6
	Extensive	25	1	2
	Complete	7	0	0
	TOTAL	**270**	**270**	**270**
Unreinforced Masonry	None	19	49	63
	Slight	13	16	9
	Moderate	19	12	5
	Extensive	15	4	3
	Complete	15	1	2
	TOTAL	**82**	**82**	**82**
Building Damage Count by General Building Type (Continued)				
Wood Frame (Other)	None	1,177	1,856	2,251
	Slight	727	429	95
	Moderate	312	88	30
	Extensive	103	7	4
	Complete	61	0	0
	TOTAL	**2,380**	**2,380**	**2,380**
Wood Frame (Single-family)	None	63,018	93,573	104,911
	Slight	35,989	13,922	3,182
	Moderate	8,750	1,005	402
	Extensive	672	30	34
	Complete	105	4	3
	TOTAL	**108,533**	**108,533**	**108,533**
ALL BUILDING TYPES	None	69,012	105,053	120,122
	Slight	38,671	16,781	4,881
	Moderate	11,578	3,453	990
	Extensive	2,616	651	82
	Complete	4,207	147	10
	TOTAL	**126,085**	**126,085**	**126,085**

It should be noted that the estimates of damage by building construction type are based on distributions of expected construction type by occupancy, and are not based on building-specific data. The results are intended to provide a sense of relative risk across construction types, and highlight those construction types of the greatest concern. Should building specific lists exist, these would potentially supersede the estimates provided in the tables.

For example, in the 1990's, the County of San Bernardino compiled a master list of suspected Unreinforced Masonry Buildings within the unincorporated areas. Several buildings located at sites within recently incorporated cities have since been removed from the list as they are no longer under the Unincorporated County's jurisdiction. In addition, several appear to have been demolished or retrofitted since the 1990's. The Land Use Services Department's Building and Safety Division is currently in the process of re-evaluating the URM list. Re-evaluation will include a field visit to each site photographing the structure and verifying the construction as unreinforced masonry. This process is scheduled to be completed by the end of the 2010. There are no large publically utilized URM structures currently on the list. These types of structures are typically restricted to the incorporated areas of the County.

Expected damage and functionality in the three scenario earthquakes have been estimated for those essential facilities addressed in FEMA's SBEFRA study. Results are provided in **Table 11** below.

Table 11. Direct Economic Loss, Casualties, and Building Damage by General Building Type for the Unincorporated Areas of San Bernardino County

		Earthquake Scenario (Including Impacts of Liquefaction)		
	FACILITY TYPE	**M7.8 ShakeOut Scenario**	**M6.7 San Jacinto Fault**	**M6.7 Chino Hills Fault**
Fire Stations	**San Bernardino County Fire**			
	Total Number of Buildings	**69**		
	Damage:			
	# Buildings with >50% Probability of Moderate or Greater Damage	5	1	0
	# Buildings with >50% Probability of Complete Damage	0	0	0
	Functionality:			
	Functionality < 50 % on Day 1	19	2	0
	Functionality 50 - 75% on Day 1	12	9	1
	Functionality >75% Day 1	38	58	68

		Earthquake Scenario (Including Impacts of Liquefaction)		
	FACILITY TYPE	**M7.8 ShakeOut Scenario**	**M6.7 San Jacinto Fault**	**M6.7 Chino Hills Fault**
EOCs	**San Bernardino County (Note: EOC building model does not reflect recent mitigation)**			
	Total Number of Buildings	**1**		
	Damage:			
	# Buildings with >50% Probability of Moderate or Greater Damage	1	1	0
	# Buildings with >50% Probability of Complete Damage	0	0	0
	Functionality:			
	Functionality < 50 % on Day 1	1	1	0
	Functionality 50 - 75% on Day 1	0	0	0
	Functionality >75% Day 1	0	0	1
Police Facilities	**San Bernardino County Sheriff - Detention Centers**			
	Total Number of Buildings	**35**		
	Damage:			
	# Buildings with >50% Probability of Moderate or Greater Damage	26	10	0
	# Buildings with >50% Probability of Complete Damage	20	0	0
	Functionality:			
	Functionality < 50 % on Day 1	30	25	1
	Functionality 50 - 75% on Day 1	5	5	0
	Functionality >75% Day 1	0	5	34
Police Facilities	**San Bernardino County Sheriff - Stations**			
	Total Number of Buildings	**23**		
	Damage:			
	# Buildings with >50% Probability of Moderate or Greater Damage	7	3	0
	# Buildings with >50% Probability of Complete Damage	2	0	0
	Functionality:			
	Functionality < 50 % on Day 1	12	7	1
	Functionality 50 - 75% on Day 1	3	1	0
	Functionality >75% Day 1	8	15	22

		Earthquake Scenario (Including Impacts of Liquefaction)		
	FACILITY TYPE	**M7.8 ShakeOut Scenario**	**M6.7 San Jacinto Fault**	**M6.7 Chino Hills Fault**
Schools	**San Bernardino County Superintendent of Schools**			
	Total Number of Buildings	**21**		
	Damage:			
	# Buildings with >50% Probability of Moderate or Greater Damage	2	0	0
	# Buildings with >50% Probability of Complete Damage	0	0	0
	Functionality:			
	Functionality < 50 % on Day 1	7	5	0
	Functionality 50 - 75% on Day 1	12	2	0
	Functionality >75% Day 1	2	14	21

Results for Dam Inundation

Dam Inundation Zones for San Bernardino County are shown in **Figure 37**. Data have been compiled from plans and information provided by the dam operators in San Bernardino County and Cal EMA. The data were compiled by the San Bernardino County Information Services Department, Geographic Information Systems 2009.

Dam Inundation Zones are areas subject to flooding should a dam upstream break during an earthquake or as the result of flooding.

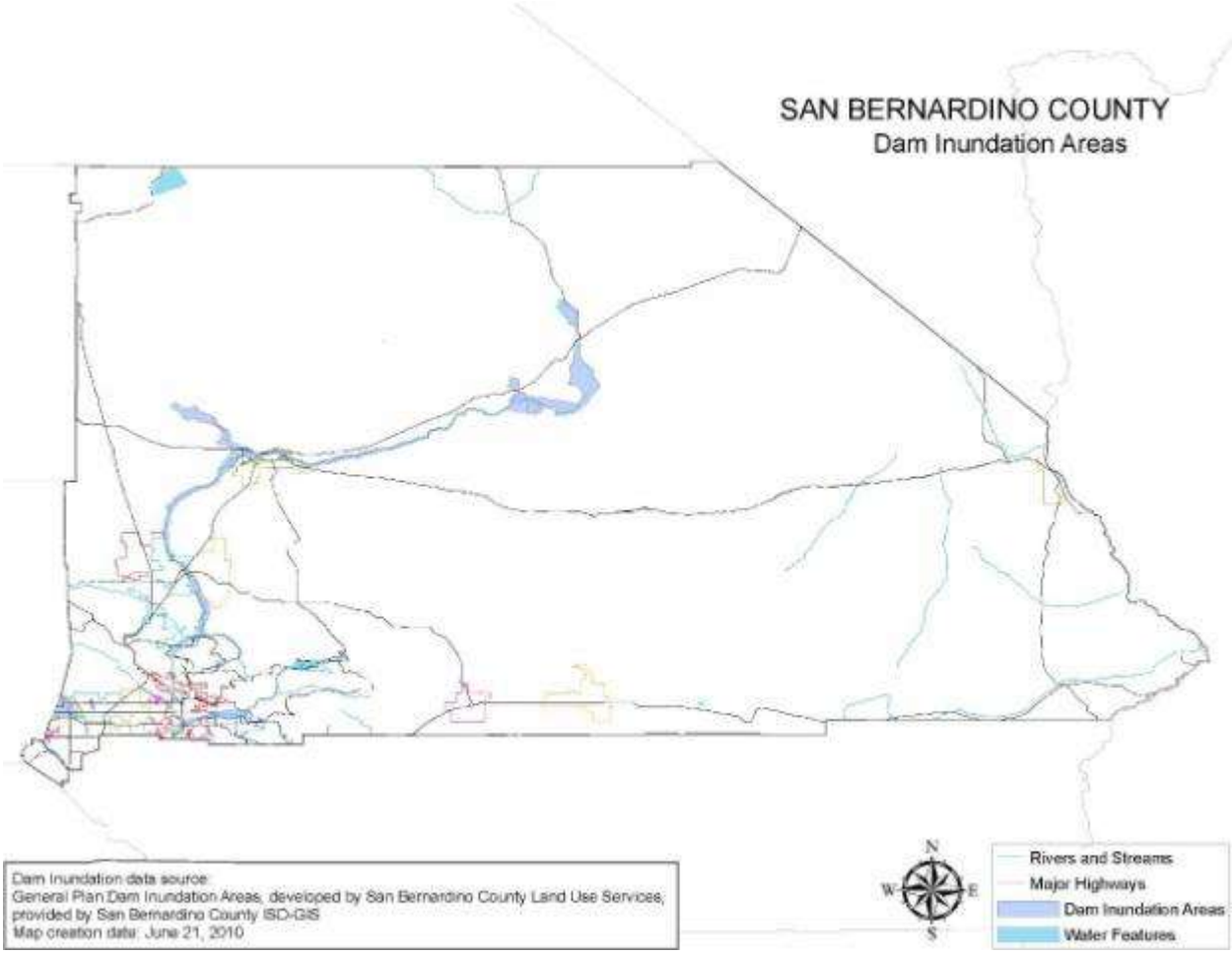


Figure 37. Dam Inundation Zones

Results for Flood

Figure 38 through Figure 42 show FEMA National Flood Hazard Layer for San Bernardino County. The National Flood Hazard Layer provides data from the Digital Flood Insurance Rate Maps (DFIRMs), updated by FEMA for San Bernardino County in 2008.

The SBEFRA project incorporated these newly updated DFIRM data into HAZUS to assess potential losses in the mapped 100-year (with and without levee protection) and 500-year flood zones. The countywide results are provided in **Table 12**. (Similar results are not available for just the unincorporated county areas).

Table 12. HAZUS-Estimated Flood Losses for San Bernardino County

		Flood Scenario		
	Regional Risk Assessment Results	**100-year Flood (1% Annual Chance Flood)**	**100-yr Flood (without levee protection)**	**500-year Flood (0.2% Annual Chance Flood)**
Regional Risk	Economic loss due to building damage ($B)	0.46	1.6	2.7
	Total building-related direct economic loss ($B)	1.4	5.4	8.6
	Number of buildings in the Complete Damage State	345	350	1,105
	Total # Displaced Households	14,828	52,856	86,062
	Total # people needing short-term shelter	32,095	138,991	231,452
	Debris Generated (million tons)	0.1	0.23	0.37
Essential Facilities	Fire Stations - # Non-functional buildings	2	5	12
	EOCs - # Non-functional buildings	0	0	2
	Police facilities - # Non-functional buildings	0	0	1
	Schools - # Non-functional buildings	149	466	791

Source: FEMA's San Bernardino County Essential Facilities Risk Assessment (SBEFRA) Study (2009) http://www.fema.gov/library/viewRecord.do?id=3804

Table 13 shows the number of county-owned buildings in each of the different FEMA Flood Zones. **Figure 39** is a detail map of FEMA's Flood Zones in the southwest corner of the County. This map includes the Valley Region and the western end of the San Bernardino Mountain Range.

The maps show that a considerable portion of San Bernardino County is vulnerable to flooding. The vulnerable areas are addressed in the County's General Plan. See Sections 5 and 6 for additional information. San Bernardino County has seven (7) properties listed in the Repetitive Loss and Severe Repetitive Loss properties. All of the properties are single-family residences. The properties are located in:

- Barstow – 2 properties (1999 and 2005)
- Crestline (1980 and 1982)
- Forest Falls (1995 and 1999)
- Lake Arrowhead (1998 and 2005)
- Lytle Creek (1998 and 2005)
- Sugarloaf (1993 and 1995)

These properties were damaged during unusual storms and/or immediately after a wildfire in the area and are isolated properties in widely scattered areas of the County. The properties were not damaged during the 2009 or 2010 winter storm events. Property addresses are not listed to comply with privacy laws.

The areas are now covered by the County General Plan and County Ordinance. These are in compliance with the National Flood Insurance Program.

The County has experienced severe and widespread flooding throughout its history. Several major drainage basins have the potential to subject residents and structures to a high risk of flooding. In addition, the cumulative increase in impervious surfaces has increased problems related to surface run-off. While complete avoidance or protection through control facilities is not practical, considerable improvement can be made through both structural and non-structural methods. The County currently utilizes land use zoning districts to prohibit habitable structures in floodways as defined by the federal requirements necessary to participate in the National Flood Insurance Program. The consistent adoption of overlays is needed to require special review, conditions, and the prohibition of some uses in floodplain areas (areas subject to 100-year floods), including dry lakes. In addition, there are land use policies and development standards that can be implemented, including reduction of impervious surfaces; increase of percolation, infiltration, and recharge; and the control of urban run-off. There is a need for the County to identify all areas of flood and drainage hazards, especially in the Desert Region where mapping is sparse, as well as areas with a heavy concentration of debris or the potential for dam inundation. Flood hazards are more comprehensively discussed in the Safety Background Report.

County of San Bernardino 2007 General Plan (Effective April 12, 2007) Section VIII. Safety Element – Flood Hazards, Goal S 5, Policy S 5.1 and S 5.2.

Table 13. County Buildings in FEMA Flood Hazard Zones

		OWNER	County Fire Protection District		County		County Sheriff				County Superintendent of Schools		County Special Districts Dept., Water & Sanitation Division		County - County Buildings	
		FACILITY TYPE	Fire Stations		EOCs		Detention Centers		Stations & Other Facilities		School Buildings		Wastewater Treatment Plants		All	
			#	%	#	%	#	%	#	%	#	%	#	%	#	%
		Total # of Buildings	**69**		**1**		**35**		**23**		**21**		**4**		**1251**	
Flood Hazards	Special Flood Hazard Areas Subject to Inundation by the 1% Annual Chance (100-year) Flood	Zone A - no base flood elevations determined	2	3%	0	0%	1	100 %	0	0%	0	0%	0	0%	31	2%
		Zone AE - base flood elevations determined	1	1%	0	0%	0	0%	0	0%	0	0%	0	0%	47	4%
		Zone AH - Flood depths of 1 - 3 feet (usually areas of ponding); base flood elevations determined	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	0%
		Zone AO - Flood depths of 1 - 3 feet (usually sheet flow on sloping terrain); average depths determined.	0	0%	0	0%	0	0%	1	4%	0	0%	0	0%	10	1%
	Other flood areas	Zone X (Shaded) - areas of 0.2% annual chance (500 yr) flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile.	5	7%	0	0%	2	200 %	0	0%	0	0%	0	0%	105	8%
		Zone X Protected by Levee - areas protected by levees from the 1% annual chance flood	2	3%	0	0%	0	0%	0	0%	13	62%	0	0%	53	4%
	Other Areas	Zone D - areas in which flood hazards are undetermined, but possible	27	39%	0	0%	0	0%	3	13%	1	5%	4	100%	439	35%
		Zone X (Unshaded) - areas determined to be outside the 0.2% annual chance (500-year) floodplain	32	46%	1	100 %	32	320 0%	19	83%	7	33%	0	0%	565	45%

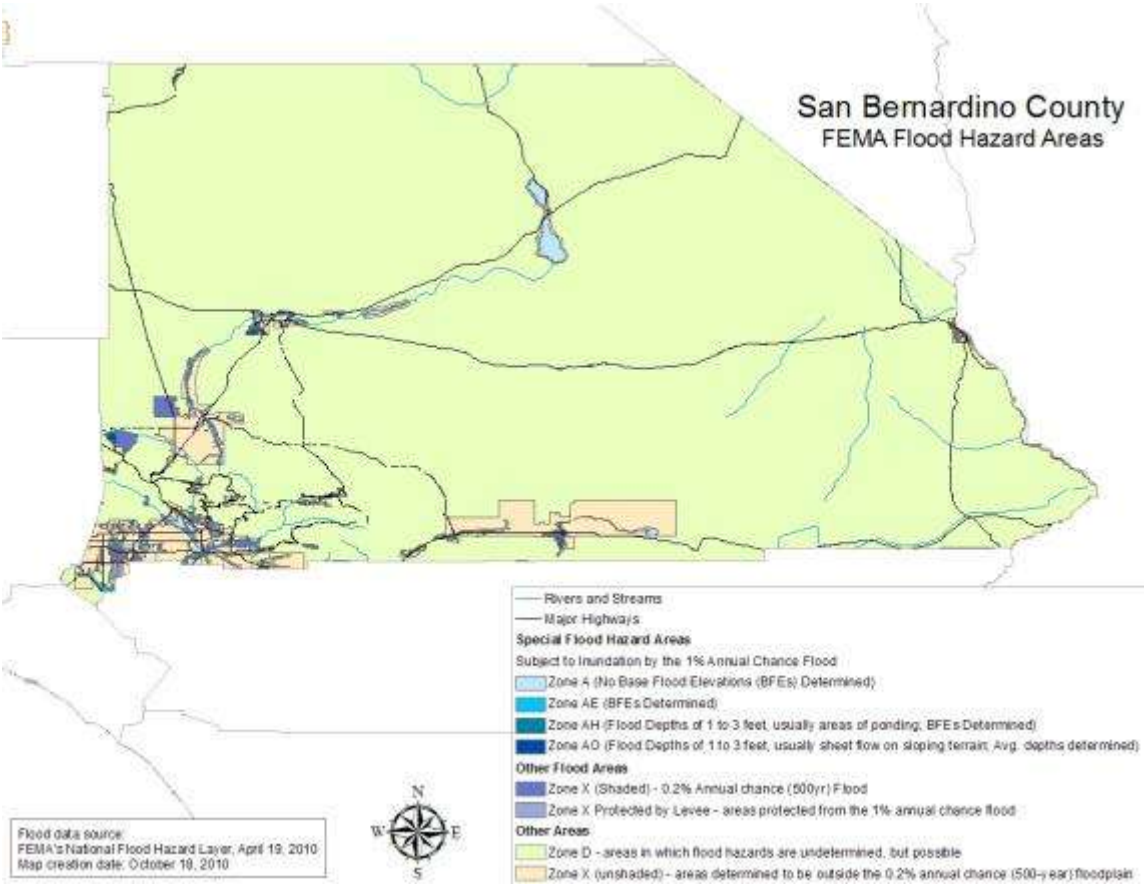


Figure 38. FEMA Flood Hazard Areas

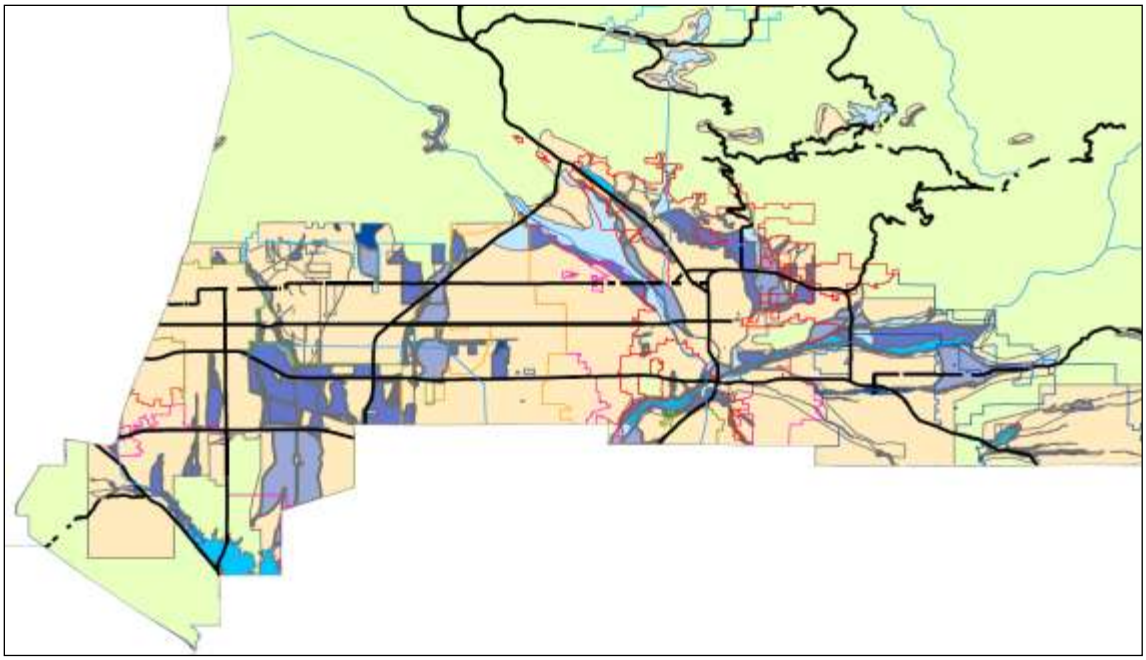


Figure 39. Southwest Corner of San Bernardino County Showing FEMA Flood Zones (FEMA National Flood Hazard Layer, April 10, 2010)

Rivers and Streams
Major Highways
Special Flood Hazard Areas
Subject to Inundation by the 1% Annual Chance Flood
Zone A (No Base Flood Elevations (BFEs) Determined)
Zone AE (BFEs Determined)
Zone AH (Flood Depths of 1 to 3 feet, usually areas of ponding; BFEs Determined)
Zone AO (Flood Depths of 1 to 3 feet, usually sheet flow on sloping terrain; Avg. depths determined)
Other Flood Areas
Zone X (Shaded) - 0.2% Annual chance (500yr) Flood
Zone X Protected by Levee - areas protected from the 1% annual chance flood
Other Areas
Zone D - areas in which flood hazards are undetermined, but possible
Zone X (unshaded) - areas determined to be outside the 0.2% annual chance (500-year) floodplain

Figure 40. FEMA Flood Hazard Area Map Legend

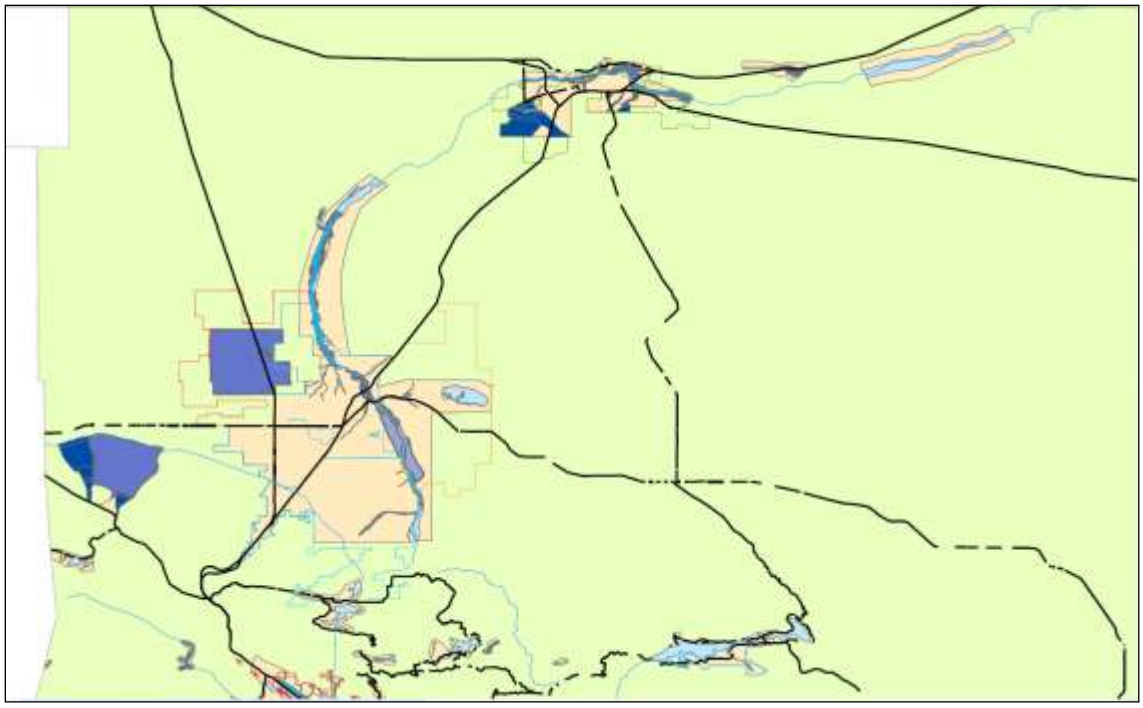


Figure 41. High Desert Region of San Bernardino County Showing FEMA Flood Zones (FEMA National Flood Hazard Layer, April 10, 2010, See Figure 34 for Map Legend)

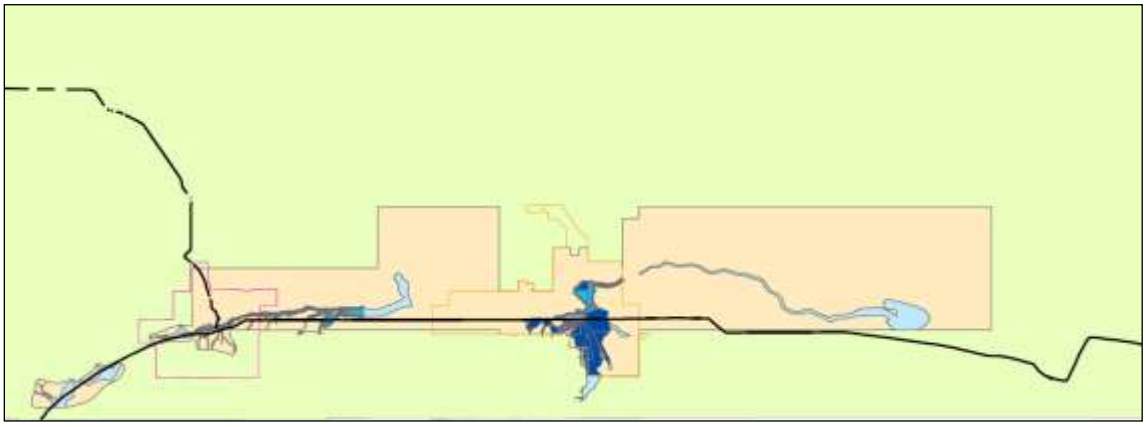


Figure 42. Low Desert Region of San Bernardino County Showing FEMA Flood Zones (FEMA National Flood Hazard Layer, April 10, 2010, See Figure 34 for Map Legend)

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Section 5. Community Capability Assessment

5.1. Agencies and People

The County of San Bernardino is governed by five (5) Supervisors; one for each supervisorial district who collectively make up the County Board of Supervisors. The Board of Supervisors is responsible for the County department and agencies, including Board Governed Special Districts, providing services to the unincorporated area.

The Board of Supervisors acts as the Board of Directors for the County Fire Protection District, the County Flood Control District, the Big Bear Valley Recreation and Parks District, the Bloomington Recreation and Parks District and the Special Districts Department as part of their responsibilities as an elected member of the County of San Bernardino Board of Supervisors.

Below is an organizational chart of the County of San Bernardino departments, special districts and agencies:

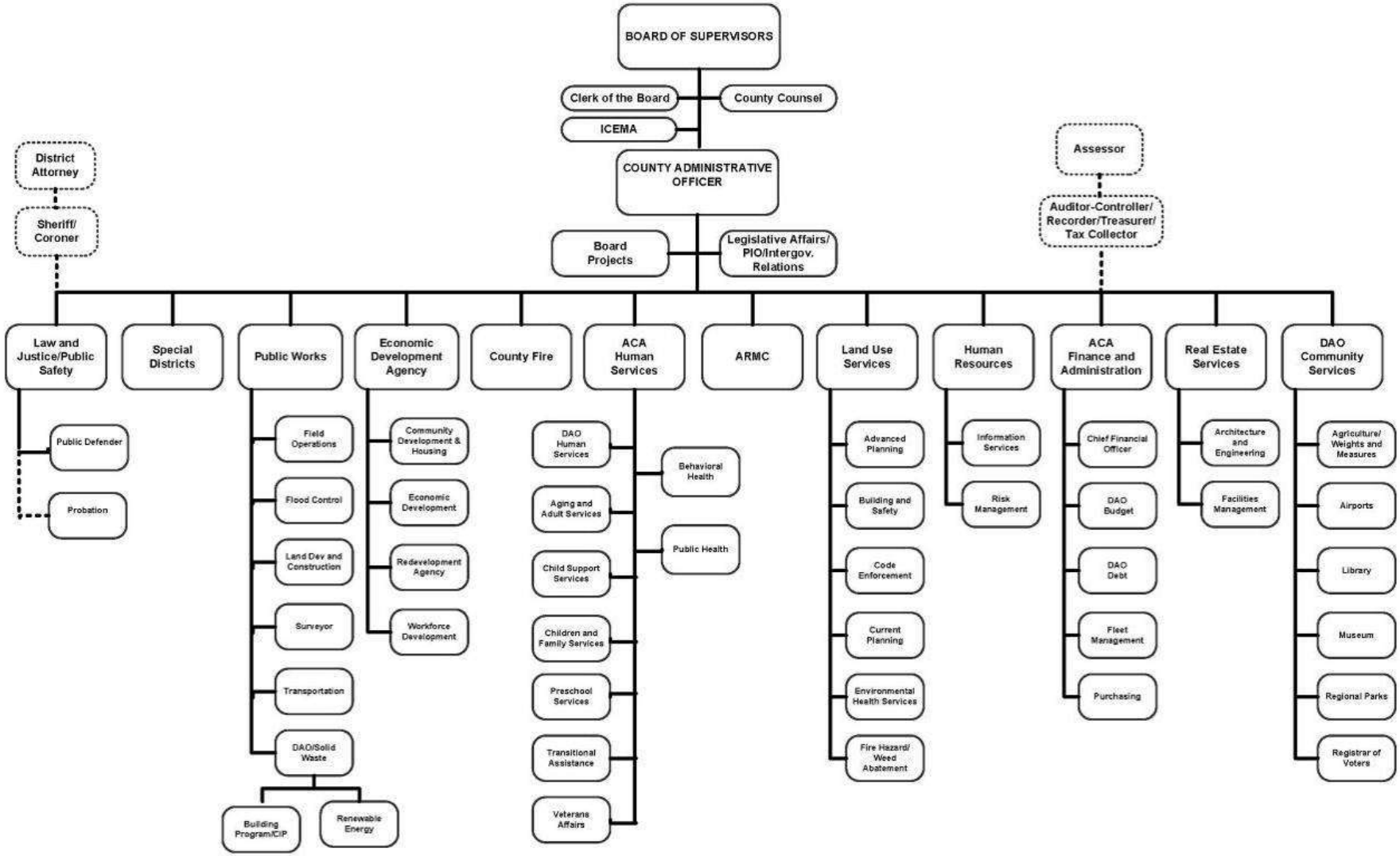

Figure 43 - Organizational Chart - County of San Bernardino

5.2. Existing Plans

San Bernardino County is encouraging all departments, special districts, and agencies to share reports and common information. This sharing and exchanging of ideas has led to more coordinated efforts and better planning. The driving document in the County of San Bernardino is the County's General Plan. The County General Plan provides the foundation on which all development and future programs are built upon.

San Bernardino County General Plan

The State of California recommends that the General Plan is updated every 10-20 years; depending mostly on whether or not the plan is meeting the community's needs. The San Bernardino County General Plan was last updated and adopted in 2007. There are seven (7) mandatory elements in a General Plan:

- Circulation Element,
- Conservation Element,
- Housing Element,
- Land Use Element,
- Noise Element,
- Open Space Element, and
- Safety Element.

However, there are several optional elements. The County of San Bernardino General Plan includes an optional element, the Economic Development Element.

The Land Use Element of the General Plan establishes 18 land use zoning districts that apply only to lands governed by the County; not for lands controlled by other jurisdictions or lands controlled by federal and state government (see Section 1.3.5, page 8 for a listing of the 18 Land Use districts in the Land Use Element). The Land Use Element also describes land use compatibility for the primary three (3) hazards: Geologic; Flood; and, Wildfire. Because of these commonalities between the General Plan and the MJHMP, the county Board of Supervisors has adopted the MJHMP as part of the County's General Plan.

5.3. Regulations, Codes, Policies, and Ordinances

The following titles of the San Bernardino County Code (http://sbcounty.gov/countycodes/) include regulations and ordinances on the following issues and topics related to hazard mitigation:

- **Title 2**
  Emergency Services
  Uniform Fire Code and related miscellaneous fire regulations
  Police Regulations and Public Protection

- **Title 3**
  Emergency Medical Services
  Domestic Water Sources and Systems
  Hazardous Materials and Toxics Control
  Waste Management
- **Title 6**
  California Building Code
  California Electrical Code
  California Plumbing Code
  California Mechanical Code
- **Title 7**
  Airport Rules and Regulations
- **Title 8**
  Development Code
  Includes regulations relative to land use, development standards, safety standards, and environmental protection.

The County has also adopted Zoning Ordinances that are not part of the County Code but are part of the General Plan. These ordinances regulate land use, map the official land use, and hazard overlay districts, to include safety hazard and environmental protection areas.

5.4. Mitigation Programs

Wildfire Programs

San Bernardino County has one of the most comprehensive set of programs to mitigate the potential for catastrophic wildfires in the Nation. There is no other jurisdiction that has the comprehensive, multi-agency cooperation and coordination as is found in San Bernardino County. This was accomplished when the Board of Supervisors established the Mountain Area Safety Task Force (MAST) in 2003. Since its beginnings, it has been the Unified Command that has successfully implemented and completed numerous programs leading to safer communities, a more educated public and an improved environment.

Mountain Area Safety Taskforce MAST

MAST was formed to mitigate the region wide risk of a catastrophic wildfire due to dead and dying trees in the mountain communities. The mission of the MAST is to facilitate a coordinated effort by cities, county, state, federal, and non-profit agencies to provide for the protection of property owners, residents, and property subject to the risk of catastrophic wildfire that could occur in San Bernardino County with an initial emphasis on the threat resulting from the Old and Grand Prix fires in 2003.

The MAST Unified Command identified the following objectives as their focus and direction:

- Provide for Community Safety.

- Develop Coordinated Public Information Dissemination Between Cities, County, Special Districts, State, Federal, and Non-Profit Agencies.
- Develop Immediate, Mid-range and Long-range Coordinated Agency Plans.
- Identify and Secure Potential Funding Resources to Provide Protective Measures.
- Document Task Force Activities Including Mission, Goals and Objectives, Policies, Procedures, and Outcomes.

Prior to any type of flood threat, the following precautionary measures may be taken by MAST members to reduce the impact of impending fires:

- Review mutual aid agreements
- Define evacuation areas and trigger points
- Review the use of alert and warning systems
- Provide information to the public of fire prone areas and protective measures in progress or planned for those areas
- Educate public on emergency self-help and preparedness
- Develop and maintain emergency notification procedures and checklists

The MAST group includes:

- San Bernardino County Board of Supervisors
- County Administrative Office
- County Public Works-Flood Control/ Transportation/Solid Waste
- County Fire Protection District
- County Fire Protection District/Office of Emergency Services (OES)
- County Sheriff's Department
- Southern California Edison
- Bear Valley Electric
- Arrowbear Lake Fire Department
- Big Bear City Fire Protection District
- City of Big Bear Lake Fire Department
- Crest Forest Fire Protection District
- Running Springs Fire Department
- USFS
- San Bernardino National Forest Association
- Forest Care
- Cal Fire
- Caltrans
- California Highway Patrol
- Inland Empire Fire Safe Alliance
- Angelus Oaks Fire Safe Council
- Arrowhead Communities Fire Safe Council
- Bear Valley Fire Safe Council
- Lytle Creek Fire Safe Council
- Mill Creek Fire Safe Council
- Mountain Rim Fire Safe Council
- Wrightwood Fire Safe Council

Mountain Mutual Aid

Mountain Mutual Aid is an operational group of emergency responders. It is comprised of all of the agencies and volunteer relief groups that would be and have been involved in any and all disasters on the mountain. It is of note to that their main and most frequent call to service is in response to a wildfire. They meet monthly and maintain themselves in a constant state of readiness.

Community Based Fuels Reduction Program

The Fuels Reduction Program is designed to create community based fuel modification programs across the mountain communities. These projects are selected specifically to reduce the potential for catastrophic wildfires and the damage that they can do to the communities. Project design, contracting, and operations are managed by the County's Public Works Department with priorities set by local fire chiefs in monthly MAST Operations Meetings. This program is the oldest and most significant for reducing wildfire threat on a mountain wide basis.

In May of 2005 the San Bernardino County Fire Protection District and the San Bernardino County Flood Control District formed a partnership to implement the Hazardous Tree Removal Program, later the Fuels Management Program. In this endeavor the Flood Control District formed the Hazardous Tree Removal Operations Division which was tasked with developing, bidding and administering Tree Removal and Fuel Reduction Contracts funded by various grants. Contracts originally focused on removing dead, dying, and diseased trees caused by the drought conditions and the bark beetle infestation. The program has evolved to include fuel modification projects which remove hazardous vegetative fuels through the thinning of live vegetation. In addition the location of the fuel reduction projects are moving beyond the limits of the San Bernardino Mountains and into the interface between the Mountain foothills and the high desert.

The following are the types of programs/projects included in the Fuels Management Program:

- Emergency Tree Removal Projects consist of the removal of a tree (or trees) that poses an immediate threat to safety, a structure, or the public right-of-way.
- Block Projects are dead dying diseased tree removal projects on multiple parcels which are located in close proximity to one another.
- Large Urban Parcel Projects are dead dying diseased tree removal projects on a single or multiple large parcels.
- Fuel Modification Projects focus on the removal of hazardous fire fuels in the wildland/urban interface. The fuels removed in these projects are both live and dead vegetation. The goal of these projects is to reduce a future forest fire's intensity as well as the removal of ladder fuels which carry the fire from the forest floor to the forest canopy and result in a crown fire.
- In addition to the Hazardous Tree Removal Operations Division, the San Bernardino County Fire Fuels Management Crews are also funded by the same grant sources. The primary focus of the crews is to create and maintain fuel modification projects in the vicinity of communities at risk and

construct fuel breaks. In addition the crews assist the public with curb side chipping programs throughout local partner jurisdictions.

Cal Fire

Cal Fire provides programs to increase fire safety in high fire hazard severity zones. It funds and staffs programs from public education activities to performing fuel modifications with inmate crews. One example is the active Re-Leaf program where mountain residents are educated about drought tolerant and fire resistive landscaping that is available and sustainable. Cal Fire is also the lead agency on reforestation after a wildfire to ensure the stability of the environment. Cal Fire Foresters are active participants in the MAST process helping educate citizens and leading forestry activities on private lands within the USFS boundary.

Forest Care

Forest Care is a program dedicated to creating a healthier forest. This program provides foresters to assess individual properties for thinning the vegetation and then provides 75% of the funding to do so. Funding originates at the Federal level but is passed through Cal Fire and it employs Cal Fire Foresters as well as staff from the National Forest Association.

County Fire Hazard Abatement

Land Use Services Department, Environmental Health Division is responsible for Fire Hazard Abatement (FHA). Fire Hazard Abatement works to reduce the potential for an individual's property to be the source of fire and structural ignitability. Failing to maintain private property in a fire safe condition is seen as a fire threat and is considered a threat to neighbor's property rights. To obtain compliance, FHA issues notices of violation to properties that have dry vegetation and flammable green vegetation. If the property owner doesn't comply with the notice, FHA then obtains a warrant to go onto the property and abate the fire hazard.

Contractor Certification

The City of Big Bear Lake created a program to train and certify landscape contractors to provide a qualified workforce to conduct fuels reduction activities on individual properties. The contractors are trained to comply with the new Fire Hazard Abatement Code that exists both in the City of Big Bear and the County unincorporated area. The City of Big Bear Lake Fire Department conducts the classes for landscapers and handy persons. This provides an incentive for the contractors and provides a level of certification that the homeowner can rely on when they are deciding to hire a landscape contractor to conduct fuels abatement around their home.

Red Cross Grant

The American Red Cross (ARC) collected more donations during the 2007 Slide and Grass Valley Fires than they were able to use to provide much needed services to the victims of the fire. Red Cross then implemented a national policy in which they give back excess donations to the geographic area in which they were donated. In December of 2009, the San Bernardino County Fire Protection District met with the American Red Cross to strategize as to how that funding could be best utilized in a grant format. Fuel

modification and evacuation signage were determined to be an effective way of ensuring that evacuees during a fire could safely travel to an ARC evacuation center. In many cases where a home is cited with a Fire Hazard Abatement notice the owner can avail themselves of the Forest Care Program but they don't have the income to provide the 25% match. One portion would be used to assist low income housing with compliance with the new County Fire Hazard Abatement Code. Since the ARC is a private institution, and not federal, donations can legally be used as a match. This is also a successful way to get people to engage with Forest Care and get their property fire safe.

Southern California Edison (SCE)

A significant number of fires across the State are caused by trees falling into power lines. When the forests in the mountain communities became infested with bark beetles the pine tree die off was unprecedented. Thousands of these dead trees were standing precariously close to power lines. Early in the Bark Beetle Emergency in 2004, Southern California Edison swiftly initiated a program to remove all trees that were dead, dying, and/or diseased that had the potential to fall into any SCE power lines.

Wood Shake Roof Replacement

In the winter of 2008 the County Board of Supervisors approved an amendment to the County Building Code that requires that all Wood Shake Roofs in the Fire Safety Overlay, as defined in the Development Code, must be replaced by 2014.

The Inland Empire Fire Safe Alliance (IEFSA)

The Inland Empire Fire Safe Alliance was created to act as a forum for all Fire Safe Councils in San Bernardino County. Some of the benefits are developing a consistent and comprehensive message to citizens about fire safety; coordinating efforts for grant administration, writing, and reporting; a one-stop shop for information, resources and research; and a centralized source for sharing of updates from cooperating governmental agencies. There are approximately 20 Fire Safe Councils active in San Bernardino County.

Community Wildfire Protection Plans (CWPP)

Community Wildfire Protection Plans are designed to provide a means for a community, usually through the Fire Safe Council, to have input into and actively participate in the planning, strategy, goals, and objectives of creating a fire safe community. CWPPs are ultimately reviewed and approved by the local Fire Chief, Cal Fire, USFS, and the local Board of Supervisors. The plan must include a review of structure ignitability but also must show that there was collaboration not only with the agency but within the community as well. Grant applications to the State Fire Safe Council will not be approved unless the project is listed in a community CWPP.

Public Education Programs

MAST has a substantial public education component. All agencies participate with the goal to have no one on the mountain uneducated about creating a thinner forest which is a more fire safe forest.

Additional components of the educational program include how to prepare for an emergency and knowing how to properly evacuate.

Ready-Set-Go is a new public education program designed to teach residents within the Fire Hazard Overlay on how to prepare for and when to leave in the event of a wildfire in their area.

Organized Group Volunteer Activities

Mountain communities are populated by several volunteer citizen groups that are capable of providing significant resources that are not provided by traditional governmental agency services. Most notable is Mountain Hearts and Lives. They were instrumental in both the fire sieges of 2003 and 2007 where they provided all of the resources for citizens to put their lives back together when they were burned out.

Community Emergency Response Teams (CERT)

The Community Emergency Response Team (CERT) Program educates people about disaster preparedness and trains them in basic response skills. Following a catastrophic event CERT Members can assist themselves, their families, and others in their neighborhood or workplace until professional responders arrive.

Sixteen (16) CERT programs, administered by San Bernardino County Fire Protection District, are in the communities of:

- Angelus Oaks
- Big Bear City/Fawnskin
- Green Valley Lake
- Helendale
- Lake Arrowhead
- Lucerne Valley
- Lytle Creek
- Mill Creek Canyon
- Morongo Basin
- Oak Hills
- Phelan/Pinon Hills
- Running Springs
- San Antonio Heights
- Silver Valley
- Spring Valley Lake
- Wrightwood

San Bernardino County Fire Protection District Office of Emergency Services has sworn in over 700 CERT participants as California Disaster Service Workers. These participants have gone on to receive a Sheriff's Department background check to become members of their community's CERT.

The program receives guidance and resources from Department of Homeland Security, FEMA, Citizen Corps, and CaliforniaVolunteers. The program is administered locally by the San Bernardino County Fire Protection District Office of Emergency Services.

Community Based AM Radio Transmitters

The Fire Safe Councils discovered the existence of very inexpensive but very effective community based AM radio transmitters. The transmitters are very effective for providing information and updates to a

community that is either preparing for a community emergency or just had one. As a delivery modality they are extremely reliable because in most all emergencies the AM radio in your car is likely to be operational particularly when the electricity is out in your house.

Telephone Emergency Notification System (TENS)

During an emergency, public safety can be a direct function of the speed and accuracy of the dissemination of information. This is particularly important during emergencies that require evacuations. To that end the Board of Supervisors dedicated General Fund money in 2003 to the implementation of an automated phone dialing system that calls telephones in specific geographic areas of concern. All areas of San Bernardino County have all been preprogrammed so that during an emergency, the specific target group can be notified as quickly as possible.

Emergency Communications Services

The Emergency Communications Service (ECS) consists of over 200 volunteers that can provide sophisticated interoperable communications services to support any emergency. They have responded to numerous emergencies throughout the County. ECS has also prepared communities for large events and supported agencies and the public with sophisticated radio communication systems. Amateur radio frequencies are the radio of choice for most ECS operations.

Earthquakes/Geologic Hazards Programs

San Bernardino County's seismic mitigation programs focus on two areas that have historically resulted in the greatest amount of damage and life loss from major earthquakes in California.

Bridge Retrofit Program

Caltrans inspects County and City bridges yearly for structural sufficiency (which applies to earthquake) and functional obsolescence (which applies to floods). Caltrans provides reports that include recommended repairs or replacement. The County and Cities make the repairs and/or apply for bridge replacement funds thru the Federal Highway Bridge Program (HBR). Currently the County has 5 funded HBR replacements due to structural deficiencies:

- Dola Ditch,
- Lanzit Ditch
- Garnett at Mill Creek
- Yermo Rd at Manix Wash
- Baker Blvd west of SR127.

An additional bridge, Glen Helen at Cajon Creek is being replaced with HBR funds due to functional obsolescence, and the design and environmental work has been started for Rock Springs Road, another functionally obsolete bridge.

The County is also in the process of locally funding the Daggett Road at Daggett Ditch Bridge.

The County has completed the design of the Alabama Street at Plunge Creek bridge replacement using Federal Emergency Relief funds.

The County has also replaced numerous outdated retaining walls in the Mountain areas over the past several years with new walls which adhere to new design standards and is in the process of constructing additional walls to be completed by summer 2011.

Unreinforced Masonry Building Program

In the 1990's, the County of San Bernardino compiled a master list of suspected Unreinforced Masonry Buildings within the unincorporated areas. Since that time, several sites have been incorporated and therefore, are now removed from County jurisdiction. In addition, several appear to have been demolished or retrofitted since the 1990's. The Land Use Services Department's Building and Safety Division is currently in the process of re-evaluating the URM list. Re-evaluation will include a field visit to each site photographing structures and verifying the occurrence of unreinforced masonry. This process is scheduled to be completed by the end of the 2010.

There are no large publically utilized URM structures currently on the list. These types of structures are typically restricted to the incorporated areas of the County. There are only twenty-two (22) structures remaining on the list. The HAZUS-MH number of 82 structures is an estimate derived through a FEMA approved formula and should be disregarded. (Table 5)

Park Moabi Mobilehome Retrofit Program

The Mobilehome Parks Act is codified in Part 2.1 of the Health and Safety Code. In Chapter 2 of that part, Section 18303 exempts the entire Act from the authority of the Department of Housing and Community Development when the park is owned, operated, and maintained by any federal, state, or local government or any political subdivision thereof. The County owns and operates Park Moabi through the Regional Parks Department and therefore retained control over that park when the transition occurred on August 8, 2008. The County Regional Parks Department obtains permits for manufactured homes, mobilehomes, and additions thereto from the Building and Safety Division to assure a safe and code compliant installation.

Geologic Hazard Mapping

The Seismic Hazards Mapping Act (Public Resources Code, Chapter 7.8, Section 2690-2699.6) directs the Department of Conservation, California Geological Survey (CGS) to identify and map areas prone to liquefaction, earthquake-induced landslides and amplified ground shaking. Although the San Bernardino area has a full spectrum of geologic hazards, CGS does not have adequate funding to complete the hazard mapping within the County.

Flood Programs

The flood mitigation projects are programs that were established by San Bernardino County Flood Control District to protect life and property. These projects are typically designed to convey 1% annual chance or greater storm flows in order to mitigate danger to life and property, and critical infrastructure consisting of existing, new and future structures. Also, these projects include revisions to local land use

and building codes where analysis or experience shows the need for code revisions or amendments to meet previously unidentified circumstances.

Because the County has entered into an agreement to participate in the National Flood Insurance Program (NFIP) which provides flood insurance within designated floodplains, the following goals, policies and programs shall apply:

As stated in the San Bernardino County General Plan Safety Element:

GOAL S 5.
The County will provide adequate flood protection to minimize hazards and structural damage.

Policy S 5.1
Participate in the National Flood Insurance Program (NFIP), which provides flood insurance within designated floodplains.

Programs
Designate Floodway and Floodplain areas, as identified by the Federal Emergency Management Agency (FEMA) on flood insurance rate maps and flood boundary maps, as Floodway (FW) on the Land Use Maps and Floodplain Overlays on the Hazards Overlay Maps.

Designated floodway areas will be preserved for non-structural uses through restrictions of the FW Land Use Zoning District.

All new development, including filling, grading, and construction, proposed within designated floodplains, will require submission of a written assessment prepared by a qualified hydrologist or engineer, in accordance with the latest "San Bernardino County Hydrology Manual" and the various detention basin policies [see Existing Policy FL-11], to determine whether the development will significantly increase flood hazard and to show that all new structures will be adequately protected. Development will be conditioned on receiving approval of this assessment by the San Bernardino County Surveyor Division of the Public Works Department. All new construction in a Floodplain Overlay area will be required to be flood-proofed, located, and designed to allow unrestricted flow of floodwaters.

The Land Use Compatibility Chart for 100-Year Flood Plains (Table S-1) will apply to County reviews of all discretionary and ministerial actions in County-designated floodplains.

Lands within floodplain areas may be developed with non-critical and non-essential uses if mitigation measures are incorporated to ensure that the proposed development will not be hazardous, increase flood depths or velocities downstream, or degrade water quality, especially uses such as parks, trails, and open space.

Provide known flood hazard information with every discretionary or ministerial application.

When no mapped data exist, existing topographical, watershed, and drainage course data will be evaluated for a determination of potential flood hazard for every discretionary and ministerial action.

Policy S 5.2
Update data and maps with newly identified flood hazard areas in the County, as new information becomes available.

Programs
As new overflow studies and mapping are completed and approved by either the County's Land Development Engineer or the San Bernardino County Flood Control District, they will supplement the FEMA mapping and will be incorporated into Flood Hazard Overlay mapping.

Initiate and finance programs for the continuous evaluation and designation of floodway, floodplain, and drainage areas.

Timely application for FEMA mapping changes will be initiated to reflect any additions to or alterations in identified Floodways or Floodplains by the County Floodplain Management Administrator.

Table 14. Land Use Compatibility Chart for 100-Year Flood Plains (General Plan Table S-1)

Land Uses	Compatibility in 100-Year Floodplains
Critical Nuclear related systems; explosives or hazardous materials/ manufacturing, handling or storage; hospitals and other emergency medical facilities.	Restricted
Essential Police, fire and communications systems; Emergency Operations Centers (EOC's); electric power inter-tie systems; power plants; utility substations; sewage treatment plants; water-works; local gas and electric distribution lines; aqueducts; major pipelines; major highways, bridges and tunnels; ambulance services; public assembly sites with 300 or more capacity; schools.	Restricted
High Occupancy Multi-family residential of 20 or more units; major commercial including large shopping centers; office buildings; large hotels; health care clinics and convalescent homes; heavy industry; gas stations.	Generally Incompatible
Normal-Low Risk Single-family and two-family residential; multi-family of less than 20 units; small scale commercial; small hotels, motels; light industry; warehousing.	Generally Incompatible
Restricted *Restricted unless alternative sites are not available or feasible and it is demonstrated that, although mitigation may be difficult, hazards will be adequately mitigated.*	
Generally Incompatible *Restricted unless site investigation demonstrates that site is suitable or that hazards will be adequately mitigated.*	

Alluvial Fan Task Force

In December of 2002, the California Floodplain Management Task Force Report recommended that "The State should convene a task force specifically for alluvial fans, with stakeholder participation, to review the state of knowledge regarding alluvial fan floodplains, determine future research needs, and, if appropriate, develop recommendations relating to alluvial fan floodplain management, with an emphasis on alluvial fan floodplains that are being considered for development."

In September of 2004, Governor Arnold Schwarzenegger signed Assembly Bill 2141, which recommended the creation of the Alluvial Fan Task Force (Task Force). The Director of the Department of Water Resources (DWR) convened the Task Force in December of 2007 after funding to support Task Force activities was secured from a Pre-Disaster Mitigation Planning Grant from the Federal Emergency Management Agency (FEMA) and a state match was authorized by Assembly Bill 466. Funding supported the tasks charged to the Task Force including:

1. Review the state of knowledge regarding alluvial fan floodplains;
2. Determine future research needs;
3. Develop a voluntary locally-adopted model ordinance for communities subject to alluvial fan flooding that supports land use decisions on alluvial fans;
4. Develop local planning tools to assist local communities evaluate development on alluvial fans; and
5. Prepare recommendations relating to alluvial fan floodplain management.

Appointments to the Task Force by DWR Director Lester Snow represented a broad range of interests. Members included elected officials, represented by five Supervisors from Kern, Los Angeles, Riverside, San Diego and San Bernardino County where future alluvial fan development is projected. Appointments also included representatives of the development and environmental community, local floodplain managers and associated state and federal agencies, including the Federal Emergency Management Agency (FEMA), plus at-large members representing other issues related to future development on alluvial fans. The entire process was coordinated by the Water Resources Institute at California State University San Bernardino.

Primarily, the purpose of the Alluvial Fan Taskforce *Findings and Recommendations Report* (July 2010) and *The Integrated Approach for Sustainable Development on Alluvial Fans* (July 2010) documents are to provide a non-prescriptive and flexible model that local governments can use at their own discretion adapting to local conditions and needs that supports wise future land use decisions associated with development on alluvial fans.

As one of the ten Southern California counties studied by the Task Force, the County may review the development of the suite of local planning tools for pre-project screening for future development proposals on alluvial fans. If funding allows for the review, these planning tools may be useful as an optional database reference for project management. Additionally, the flood management tools

designed to analyze alluvial fan flood hazards and formulate flood hazard protection, which were developed to be consistent with FEMA guidelines, may provide an optional data source for project development. Long term funding for updating and maintaining the pre-project screening tools database is a concern regarding the reliability for current data.

If funding exists, for the implementation of the *Integrated Approach for Sustainable Development on Alluvial Fans*, the methods contained therein may be used as some of the approaches for planning and evaluating the suitability of development on alluvial fans. During the analysis and review, if budgets allow, the long term ecological and financial sustainability issues would also be evaluated.

Based on the Findings from the Alluvial Fan Task Force process, recommendations were made for specific future actions that the State and other public agencies should consider regarding alluvial fans. The County of San Bernardino has completed recommendation 1 and may consider other listed recommendations as follows:

Recommendation 1:

In February 2010, a General Plan Amendment (GPA) to the Safety Element of the 2007 General Plan was adopted to amend the Flood Plain Safety Overlay District to incorporate revised FEMA (Federal Emergency Management Agency) Flood Plain data, modifying 47 detail and seven regional General Plan Quad Maps. The GPA also adopted the FEMA Digital Flood Insurance Rate Map database as released by FEMA as it currently exists and as updated in the future for the County allowing for automatic map updates as new data are published by FEMA. This action by the County of San Bernardino Board of Supervisors implements the portion of the first recommendation from the Alluvial Fan Task Force by working with FEMA to continue updating flood insurance rate maps.
In addition, the GPA for the Safety Element in 2010 (a) amended the Generalized Landslide Susceptibility layer, modifying 17 General Plan Quad Maps and one regional Quad Map, to incorporate updated existing landslide data published by the U. S. Geological Survey for the Mountain area; (b) amended the Fire Safety Overlay District, modifying four General Plan Quad Maps to incorporate updated fire safety mapping published by Cal Fire for the Valley area; and (c) amended the Generalized Liquefaction Susceptibility layer, modifying four General Plan Quad Maps to incorporate new liquefaction data in the Big Bear Lake area designated by the County Geologist for the Big Bear Lake area.

Recommendation 2:

The County will coordinate with the California Geological Survey (CGS) and the United States Geological Survey (USGS) to review any newly developed Quaternary geologic maps in alluvial fan areas in order to identify potential hazards in areas projected for future development

Recommendation 4:

Historical, documentation of flooding occurrences are preserved by the County's Flood Control District that would review the recommendation to identify flooding events that were associated with alluvial fans.

Recommendation 6:

The increased severity and intensity of wildfires in Southern California increase flood risk because the same structures subject to fire risk are also prone to post-fire debris flows. Many of the debris basins that were constructed some time ago did not anticipate the increased severity and intensity of wildfires or the additional developments that would follow. The California Emergency

Management Agency projects that climate change will further increase the severity of storms, wildland fires, flooding, mudslides and landslides in areas of Southern California where existing debris basins are located.

All of San Bernardino County Flood Control District's Debris Basins in the valley area; from the Los Angeles County Line to Yucaipa, were analyzed after the Grand Prix and Old Fires. Flood Control District Safety Assessment Teams utilized the Corps of Engineers' Los Angeles District methodology to determine debris production, the same methodology the Corps uses when designing debris basins. In many cases basins were physically expanded and additional measures such as K-rails and debris racks were installed. The understanding of post-fire debris flows continues to evolve; we work closely with the USGS as they develop Post Wildfire Debris Flow Hazard Assessments. The rainfall "Trigger Points" in our FAST CONOPS is a result of the USGS assessments. All Flood Control Basins are also studied on an annual basis to determine existing capacity.
Any additional funding to support our efforts will meet the intent of recommendation #6 which states that the State and local agencies should conduct assessments of the adequacy of strategically located debris basins under a range of scenarios in urbanized areas in light of increased fire and post-fire debris-flow events.

Recommendation 8:
When funding sources become available for the maintenance and further development of the database for the web-based portal; which would be utilized as a pre-project screening and flood management tool for special alluvial fan areas, the County may evaluate the benefits of its use in the planning process.

Recommendation 9:
As financial resources are allocated, the County will consider the analysis of the Integrated Approach tools to be studied for use in land use planning for development on alluvial fans.

Recommendation 10:
If funding is provided, the County will review and propose for adoption a model ordinance tailored for the specific needs of the County.

Recommendation 12:
The County's Office of Legislative Affairs, after consulting with the appropriate departments and staff, may explore supporting the economic strategies recommended in the Integrated Approach regarding future maintenance of flood management infrastructure.

Flood Area Safety Taskforce (FAST)

During the devastating fires in the fall of 2003, there was great concern of what the ramifications might be for flooding in the burned areas, as well as in the valleys. In response to these concerns, an organization was established that mirrored the Mountain Area Safety Taskforce (MAST), mentioned above, which played a key role in minimizing damage.

While the fires were ravishing the countryside, representatives from multiple agencies met often to address potential issues associated with flood, mud and debris flows develop a strategy and to protect communities from flooding incidents. These agencies united together to become the Flood Area Safety Taskforce (FAST). FAST is structured as an ICS/SEMS Organization for managing incident activities both readiness and response. The FAST Organization stresses liaison with the communities, provides for community education and information, and places emphases on Community and city partnerships.

The FAST group includes:

- Elected State officials
- Representatives from all five (5) County Supervisorial Districts
- State Office of Emergency Services
- County Administrative Office
- County Public Works-Flood Control/ Transportation/Solid Waste
- County Fire Protection District
- County Fire Protection District/Office of Emergency Services (OES)
- County Sheriff's Department
- Representatives from the cities of Fontana, Highland Rancho Cucamonga, Rialto, and San Bernardino.
- USFS
- Caltrans
- CHP

The mission of the FAST is to facilitate a coordinated effort by cities, county, state, federal, and non-profit agencies to provide for the protection of property owners, residents, and property subject to the risk of erosion, mudflows, and flooding that could occur in San Bernardino County with an initial emphasis on the threat resulting from the Old and Grand Prix fires in 2003.

The FAST Unified Command identified the following objectives as the focus and direction of the FAST:

- Provide for Community Safety.
- Develop Coordinated Public Information Dissemination Between Cities, County, State, Federal and Non-Profit Agencies.
- Develop Immediate, Mid-range and Long-range Coordinated Agency Plans.
- Identify and Secure Potential Funding Resources to Provide Document Task Force Activities Including Mission, Goals and Objectives, Policies, Procedures, and Outcomes.

Prior to any type of flood threat, the following precautionary measures may be taken by FAST members to reduce the impact of impending flooding:

- Review mutual aid agreements
- Define evacuation areas and trigger points
- Review the use of alert and warning systems
- Provide information to the public of potentially susceptible flooding areas and protective measures in progress or planned for those areas
- Educate public on emergency self-help and preparedness
- Develop and maintain emergency notification procedures and checklists.

A FAST Concept of Operations (CONOPS) was developed to provide activity guidelines for pre-flood activities related to National Weather Service (NWS) watches and warnings. Due to the unstable condition of the burned areas, activities and coordination needed to be established and implemented between departments.

The CONOPS is "situation" and "incident" driven and subject to revision by the Unified Command which includes County Flood Control District & Co Roads, County Fire Protection District, United States Forest Service (USFS), California Department of Transportation (Caltrans), California Highway Patrol (CHP), County Sheriff, City of Fontana, City of Highland, City of Rancho Cucamonga, City of Rialto, and City of San Bernardino. The Unified Command has the ability to modify activities in these guidelines in response to current situations and predicted changes. Currently, the CONOPS includes both summer and Winter Storm Event Readiness.

In addition, the CONOPS includes the San Bernardino County Flood Area Safety Taskforce Paging Network and a draft of the Alert Communication Matrix by Rain Amount / NWS Warning.

Over the past 5 years, the County has used the FAST CONOPS many times, greatly enhancing the County's ability to respond to flash flood in the desert and foothill areas. The CONOPS activity coordination between the agencies has been very successful. Because of the great success of the CONOPS, State Emergency Management Agency (Cal EMA) is using the CONOPS as a model for other agencies throughout the State.

In addition, San Bernardino County was recognized for its success of the FAST organization and CONOPS by the National Weather Service (NWS) and was presented with a Gold Award recognizing this achievement at the 2004 California Emergency Services Association (CESA) held in Sacramento.

StormReady

On July 29, 2009, the National Weather Service recognized San Bernardino County as a "StormReady County. This recognition is valid until July 29, 2012 when the National Weather Service will review the County's weather related planning and notification procedures prior to renewing the "StormReady County" status.

San Bernardino County is the only StormReady jurisdiction in the United States covered by three Weather Forecast Offices. The NWS Offices are:

- San Diego, CA;
- Las Vegas, NV; and
- Phoenix, AZ.

This NWS Recognition may provide the County residents with a discount on their Flood Insurance premiums.

Extreme Heat, Extreme Cold, and Drought Programs

California Land Conservation Act of 1965, the Williamson Act

Known formally as the California Land Conservation Act of 1965, the Williamson Act has been part of the County of San Bernardino since 1968. This act has been a way in which to provide an incentive to retain prime agricultural land and open space in agricultural use, thereby slowing its conversion to urban and suburban development. The program entails a 10-year contract between the County and an owner of land in an unincorporated area whereby the land is taxed on the basis of its agricultural use rather than the market value. The land becomes subject to certain enforceable restrictions, and certain conditions need to be met prior to approval of an agreement. Preservation of prime and statewide important soils types, as well as areas exhibiting viable agricultural operations will be considered as an integral portion of the Open Space element when reviewing development proposals.

Since 2005, the effects of extreme cold, extreme heat and drought on agriculture land have diminished by approximately 25% in the unincorporated areas of the County. This is reflected in the number of parcels that have terminated their Land Conservation Contracts through the non-renewal ten (10) year process. After termination, the parcels usage is not obligated to be actively engaged in agricultural activities or provide open space. Depending on the land use zoning designation and future proposed projects, the terminated parcels may be developed for uses other than prescribed in the Land Conservation Contract they had with the County. Through the loss of agriculturally designated land in an Agricultural Preserve the extreme cold, extreme heat and drought impacts were partially mitigated.

Land within the County under an Open Space Contract (also known as a Land Conservation Contract) associated with the Williamson Act or California Land Conservation Act of 1965 has diminished in total acreage, which includes prime and non-prime, over the past five (5) years by 24.82 %.

Prime acres under an Open Space Contract have experience a loss of 11.42% from the last of December in 2004 to the end of December 2009. Nonprime acres have declined by 37.02% during the same period. During this time frame there have been several contracts initiated in the Agricultural Preserve.

In 2009, the County has 25% of its current enrollment under non-renewal and is ranked second in the State in largest percentage of enrollment under non-renewal. This indicates that within the next nine years another 25% of the agriculturally designated prime or non-prime land under an Open Space Contract will be terminated. In addition, its usage may change from producing crops, supporting livestock or providing open space depending on the land use zoning provisions. Therefore, through thinning of open space enrollment the effects of extreme cold, extreme heat and drought on crops and livestock will also be diminished over the next nine years.

Annually the County provides the State of California with a subvention report that describes the forgone property tax revenues from the state via the Open space subvention Act of 1971.

Subvention Report – # of types of Agricultural Acres under Open Space Contract with the Unincorporated potions of the San Bernardino County

Types of Land Conservation Contract	Prime – acres	Nonprime – acres	Total acres of prime and non prime under Land Conservation Contract	Non-renewal expirations	Non-renewal expirations	Non-renewal expirations 10 year phase out Prime	Non-renewal expirations 10 year phase out Non -Prime	Adjusted or New Contract data
12-31-2004	2161.86	2371.41	4533.27	75.50	31.00			
12-31-2005	2149.01	1267.60	3416.61	88.35	1134.81			
12-31-2006	2149.01	1267.60	3416.61	0	0			
12-31-2007	1914.65	1493.42	3408.07	0	0	255.59 (1)	877.99 (1)	255.59
12-31-2008	1914.65	1493.42	3408.07	0	0	255.59 (2)	877.99 (2)	
12-31-2009	1914.65	1493.42	3408.07	0	0	255.59 (3)	877.99 (3)	
% of loss LCC	**11.42%**	**37.02%**	**24.82%**					

Top 10 Counties with the Largest Percentage of Enrollment Under Nonrenewal

2008				2009			
Ranking		County	%	Ranking		County	%
2007	2008			2008	2009		
1	1	Orange	97%	1	1	Orange	67%
2	2	Placer	30%	3	2	San Bernardino	25%
3	3	San Bernardino	25%	2	3	Placer	24%
4	4	Imperial	16%	4	4	Imperial	16%
5	5	Tuolumne	12%	48	5	Mariposa	10%
n/a	6	Riverside	11%	7	6	Santa Barbara	8%
7	7	Santa Barbara	8%	9	7	Plumas	8%
8	8	San Joaquin	8%	8	8	San Joaquin	8%
9	9	Plumas	8%	12	9	Madera	6%
10	10	Lake	7%	13	10	Butte	6%

5.5. Fiscal Resources

The current 2009–2010 budget included $60.2 million of deductions or discretionary general funding. The 2010–2011 Recommended Budget required an additional reduction of $89.4 million in discretionary general funding. For the next five years, it is expected that this pressure on discretionary general funding will continue due to increased cost of contractual obligations such as salary, retirement, and health care benefit costs.

For 2010–2011, recommended measures to close the $89.4 million gap include measures that have no departmental or special district impact, such as: debt savings, reduced obligations to the Courts, use of additional available revenue, and other program and funding changes. Recommended measures that have departmental impacts are reduced allocation of discretionary general funding, department and special district specific savings, the retirement incentive plan, programmed salary savings, and absorbing employee related health costs. Discretionary general funding allocations are being recommended to be reduced for all departments with some non-law and justice departments facing reductions up to 40%. The largest cost reduction measure affecting all departments is the delay of all formerly contracted salary increases for 2010–2011.

The 2010–2011 Recommended Budget includes 482 general fund positions that are slated for deletion, most of which are a result of continued program-specific funding reductions; of these, 85 are currently filled. It is county practice to try to place these 85 incumbents in vacant budgeted positions for which they qualify.

The largest single-cost reduction measure for the 2010–2011 Recommended Budget is the delay of all formerly contracted salary increases. Negotiations with labor unions are still in progress, and if the delay of salary increases is not agreed to, there is a potential that 410 additional positions (including sheriff positions for contract cities) will not be funded for a potential reduction total of 872 general fund positions.

The Budget in Brief

This budget book collectively presents the general fund, special revenue funds, capital project funds, internal service funds, and enterprise funds for the county and its Special Districts. The total spending authority for these funds in 2010–2011 is $3.77 billion. The general fund spending authority totals $2.2 billion and is funded by countywide discretionary revenues (primarily property taxes), departmental revenues, the use of reserve solely to defease debt, and the beginning fund balance of the General Fund. Of this $2.2 billion, only $598.5 million is truly discretionary, which is a decrease of $48.9 million.

	Spending Authority (in Millions)		
	2008–2010	2010–2011	Change
General Fund	$ 2,340.4	$ 2,231.5	$ (108.9)
Restricted Funds	48.4	43.3	(5.1)
Capital Project Funds	165.2	93.8	(71.4)
Special Revenue Funds	445.6	630.8	185.2
Enterprise Funds	553.8	612.3	58.5
Internal Service Funds	160.7	159.7	(1.0)
	$ 3,714.1	$ 3,771.4	57.3

Budgeted staffing for these funds in 2010–2011 is 19,397, a total decrease of 273 positions from 2009–2010. General Fund staffing has been reduced by 462 positions, form 13,863 to 13,401, primarily due to

the decline in countywide discretionary revenues. The majority of these reductions are vacant, with only 85 positions filled. The staffing in all other funds has been increased by 189 positions, from 5,807 to 5,996, primarily due to increased state and federal funding in Human Services and Preschool Services.

	Budgeted Staffing		
	2008–2010	2010–2011	Change
General Fund	13,863	13,401	(462)
Other Funds	5,807	5,996	189
	19,670	19,397	(273)

2010–2011 Budget Highlights

Health

- The Arrowhead Regional Medical Center (ARMC), Department of Public Health, and Department of Behavioral Health, are focused on the concept of "co-location," whereby all three county health departments are centrally located and easily accessed in one building in order to provide a one-stop venue for county health services. These services would include primary care from ARMC, comprehensive out-patient mental health services for the Department of Behavioral Health, and immunizations and other key Public Health services. The co-location approach will allow these three organizations to provide the full range of health services in a more customer-friendly, efficient, cost-effective, and comprehensive manner. Given the current economic climate and the upcoming reform in health care, this concept provides the county with the most financially viable approach to providing services, and allows the three health departments to maximize their clinical strengths in one setting.
- The Capital Improvement Program includes funding for construction of the Transitional Assistance Youth (TAY) Center, which will serve youth with mental illness between 16 and 25 years of age, and will include a 14-bed Crisis Residential Program.

Safety

- The Sheriff's Department anticipates beginning construction on the Adelanto Jail Expansion Project, which is projected to add 1,368 jail beds to the county's Adelanto Detention Center by June 2013. In order to help fund the $150 million project, the Sheriff's Department pursued and was conditionally awarded $100 million from the state as part of its Assembly bill (AB) 900 County Jail Release-Revenue Funding Program.
- Due to continued suspension of certain SB 90 reimbursements and reduced grant funding from the state, the District Attorney's Office deleted 34 budgeted positions. The impacts from reduced staffing include elimination of the Gang Injunction Unit, Cold Case Unit, ID Theft Prosecution Unit, and approximately 50% reduction of the vertical prosecution units (specialized attorneys who handle cases during all stages), including the following: family violence unit, gang prosecutions, narcotics enforcement, auto theft, and mentally disordered offender prosecution. In addition, the reduction in support staff will result in a larger backlog of case filings and a reduced level of service to victims.

- The Public Defender is deleting 39 positions due to the continued suspension of SB 90 reimbursement and a significant reduction in general fund financing. These staffing reductions will severely impact operations of the Adult Defense program, management of Juvenile/Civil Commitment cases, and the department's ability to effectively defend its clients, as high average caseloads and processing times will likely increase.
- The Probation Department is planning to close six housing units system-wide to meet budget requirements. This action will require shifting to a system-wide detention classification system rather than maintaining a full complement of classifications at each detention center. For example, all girls would be detained a single detention center rather than having a girls' unit at each facility. This will result in minors being potentially placed farther from their families and increased travel time and costs for both families and staff.

New Funding for Safety

Department	Funding	Benefits
Probation	Edward Byrne Memorial Justice Assistant Grant (ARRA funds) **$1.4 million**	• Assistance to victims of crime • Provide drug abuse/crime prevention • Provide youth mentoring
Sheriff-Coroner/ Public Administrator	Bureau of Justice Assistance Congressionally Selected Award **$1.4 million**	• Augment regional identification program
Sheriff-Coroner/ Public Administrator	Southwest Border Prosecution Initiative Funds **$1.4 million**	• Resident deputy housing for the Colorado River Station • Funding for Crime Lab • Security enhancements for West Foothill Station • Equipment and improvements for Adelanto Detention Center disaster recovery room • Purchase electronic report writing system
Public Defender	Southwest Border Prosecution Initiative Funds **$0.2 million**	• Purchase imaging project

- The Capital Improvement Program includes funding for the construction of a new fire station for the Ludlow/Amboy area and—pending Federal Aviation Authority approval—for airfield improvements and the Taxiway B extension at the Barstow-Daggett Airport, which features significant military activity and supports the Fort Irwin National Training Center.

Well-Being

- Human Services (HS) continues to provide quality service to its clients despite the tremendous burdens brought upon by the economic downturn. As a result, state and federal funding increase in the HS-Administrative Claim, mostly in Transitional Assistance programs, and subsistence programs

of CalWORKs, AFDC-Foster Care, Seriously Emotionally Disturbed, and Aid to Adoptive Children were made to assist residents in need. Human Services departments have been able to serve an additional 3,871 CalWORKs cases (9% increase), 10,084 Medi-Cal cases (10.5% increase), and 22,539 Food Stamp cases (42% increase) over the prior year.

New Funding for Well-Being

Department	Funding	Benefits
Traditional Assistance and Workforce Development	American Recovery and Reinvestment Act (ARRA) **$27.5 million**	• Assist clients in job seeking, training, and job supportive services (1,650 clients) • Enhance Summer Youth Employment Program (serve 535 youth)
Preschool Services	American Recovery and Reinvestment Act (ARRA) **$5.8 million**	• Expand services for Head Start and Early Head Start programs • Opening 3 new preschool facilities • New Baker Family Learning Center in Muscoy (joint venture with County Library)
Veterans' Affairs	Mental Health Services Act (MSHA) **$0.1 million**	• New peer counseling program for veterans, active military personnel, and families

Quality of Life

- The County Library is forecasting a budgetary shortfall due to significant losses in property taxes, which account for approximately 75% of its budget. To address the shortfall, the County Library proposes to close most branches one day per week, resulting in salary, janitorial, and utilities cost savings. Under the proposed plan, all part-time staff position will be reduced, but there are no proposed layoffs.

New Funding for Quality of Life

Department	Funding	Benefits
Regional Parks	Discretionary General Funding **$0.7 million**	• Lake Gregory Zero Depth Water Playground
Regional Parks	Proposition 40 **$0.4 million**	• Prado Regional Parks Shelters

Section 6. Mitigation Strategies

6.1. Mitigation Overview

The San Bernardino County Multi-Jurisdictional Hazard Mitigation Plan (2005) focused on integrating the LMJHMP with the County General Plan goals and policies as well as incorporating specific flood mitigation projects that were programmed for completion over the five (5) year period. The Plan did not clearly identify mitigation projects the County would focus on for all priority hazards identified in the plan. However, the County has been very active and engaged in implementing and supporting projects and programs designed to reduce and/or eliminate risk in the County. The list of projects in Section 6.2 represents the activities that the County has undertaken and/or supported to reduce the risks from wildfire, earthquake and flood hazards.

6.2. Mitigation 5 Year Progress Report

This section serves to identify the completed and on-going actions and projects in the County Unincorporated Area.

Wildfire

County Fire Reorganization *Complete*

On July 1, 2008, twenty-seven separate fire districts were merged into one single board governed fire protection district with four regional service zones. The reorganization was not only an administrative advancement but a significant advancement in operations and delivery of emergency response services. It has resulted in simplified budgeting and fiscal operations, greater flexibility in the use in the use of department resources and assets and more effective use of day-to-day operations. The reorganization will continue to improve the delivery of fire services and overall operating efficiency.

Fire Safety Overlay District Mitigation *Complete*

A General Plan Amendment to the Safety Element of the County of San Bernardino 2007 General Plan updated the Fire Safety Overlay District effective March 11, 2010. The Safety Element includes several hazard overlays that are included in the General Plan mapping system to inform the public of potential hazards to development of property within certain areas of the County and to enable the County to mitigate the risks presented to property owners by these hazards. These overlays include potential fire hazards. Over the past twenty years, certain federal and state agencies have been in the process of digitizing much of this hazard data. The digitization of this data has allowed for greater accuracy as well as more timely updates. In recognition of the new data from various federal and state agencies, the County updated the Fire Safety Overlay District contained within the Safety Element of the General Plan. The Fire Safety Overlay District is amended by modifying four General Plan Quad Maps to incorporate updated fire safety mapping published by CalFire for the Valley area.

As new information is received, the overlay maps are updated to reflect changes. These updates are made by the Land Use Services Department in collaboration with County Fire Protection District.

Mountain Area Safety Taskforce (MAST) *Complete*

Since 2004, MAST members have significantly reduced the fire hazard in the San Bernardino National Forest and neighboring jurisdictions, removing more than 1.5 million dead, dying or diseased trees, more than half of them on private property.

Dead and dying trees pose an extreme fire danger, and MAST members began removing these trees under state and federal grants, including a $70 million grant from the USDA Natural Resources Conservation Service.

Participants in the tree removal program included the County of San Bernardino Fire Protection District and the San Bernardino County Flood Control District, Department of Forestry and Fire Protection (Cal Fire), the U.S. Forest Service, the Natural Resources Conservation Service, Caltrans, and Southern California Edison. At the height of the program, Southern California Edison contractors were taking out 650 trees a day.

The MAST mission has expanded to include reducing green fuel by thinning live trees in densely wooded areas. Property owners also are being urged to thin the live trees and vegetation on their property to gain an upper hand on the bark beetle infestation and reduce the risk of catastrophic wildfires like the Grand Prix and Old fires in 2003.

Other MAST Achievements include:

- Increasing awareness of the drought-related bark beetle emergency and the threat of catastrophic wildfires
- Distributing fire safety and prevention information to the public
- Developing evacuation plans and distributing emergency planning information to the public
- Developing commercial use or disposal options for waste wood products.

Mountain Mutual Aid *Complete*

The Zone 3 Operational Area Chiefs who participate in Mountain Mutual Aid (MMA) revised the Community Safety and Structure Protection Plan. This plan was created in 2003 before the Old and Grand Prix Fires. It was conceptualized specifically to provide intelligence and background of the mountain areas to emergency responders from outside of the area. The map book portion of the plan provides not only a street network of the area but more importantly it provides the locations of strategic and critical resources for fire fighters. These include but are not limited to safe zones, open areas, locations for refuge. They also identify areas within communities that have narrow and steep winding streets and or with limited ingress and egress. The document is handed out to all responding strike teams from out of the area and has proved invaluable in directing and coordinating an effective fire-fighting response and reduces the potential for life loss and property damage.

Community Based Fuels Reduction Program *Complete*

San Bernardino County was the recipient of 72 million dollars that were granted from the National Resource Conservation Service (NRCS) to San Bernardino County Fire Protection District to reduce the amount of fuel and the potential for ignitability. In February of 2010, the grant was successfully closed out one month in advance of the target date. The $72,000,000 provided for almost 1,000 projects substantially reducing heavy fuels on tens of thousands of properties at risk across all mountain communities. Within that grant, $6.7million was provided to the USFS to conduct fuel modifications on Federal land and $7.2 million was provided to Cal Trans to remove fuels along evacuation routes. An additional $2 million was forwarded to San Diego to assist them. The activities funded under this program represent the first of their kind to be accomplished by local/state governments with federal grant funding.

To date the Fuel Management Program has removed over 450,000 trees, improving the overall health of the forested areas in the San Bernardino Mountains and reduced the overall fire threat. On several occasions completed projects have resulted in assisting fire suppression efforts and allowing fire to be contained before it threatens a local community, including Deer Lodge Park in Lake Arrowhead and Nob Hill in Running Springs during the Grass Valley and Slide Fires of 2007.

USFS Grants ARRA and Otherwise and Chipping Programs *On Going*

San Bernardino County and its Special Districts were successful in obtaining $3 million in American Recovery and Reinvestment Act funding to support ongoing fuel reduction programs and to create new jobs for the recovering economy. The USFS also funded an additional $13 million to carry on after the NRCS projects were closed out.

Cal Fire *Complete*

Numerous fuels projects have been completed by State inmate crews that do significant hand work in dense fuels adjacent to communities. Cal Fire has also led the way in countless re-forestation projects that ensure that new stands of the same trees will repopulate an area and that the original forest won't be overtaken by a different type of replacement forest.

Forest Care *On Going*

Forest Care recently reported that it has contracted with its 1,000th customer. They have been very successful in public outreach and in cooperation with County Fire Hazard Abatement programs have successfully completed a community block demonstration program twice in every major community across the mountain. They have also made two mass mailings to all property owners on the mountain. They are currently negotiating with the Lake Arrowhead Village Association to open an office to create a walk through diorama that explains their programs and the programs of all of the MAST cooperators. They are the leaders in working with Cal Fire foresters to consult with private property owners to make their forested properties healthy and fire safe.

Red Cross Grant Fuel Reduction *On Going*

Although this grant was just recently started, the ARC has successfully removed and reduced fuels on several properties. They have also met with County Roads Sign Division and created the correct number of evacuation directional signs. Fifty signs will be posted in the Moon Ridge area of Big Bear Lake in 2010 and 2011. During an emergency, these directional signs will direct people out of a very confusing network of streets.

Southern California Edison Tree Removal *On Going*

The role of Southern California Edison was critical to the success of MAST both operationally and financially. Edison still removes the most difficult trees, the most costly trees; and the ones that are most likely to be the source of ignition for a wild land fire. They are also removing the trees that are immediately threatening homes. As of July of 2010 Southern California Edison (SCE) has spent $179,758,978 to remove dead dying and diseased trees. They have removed 118, 305 trees since the inception of the program in 2004. They also provided reimbursements to people that removed their own trees.

Wood Shake Roof Replacement *Complete*

The County successfully passed an ordinance that requires the replacement of wood shake roofs by 2014. MAST has successfully mapped all of the wood shake roofs in the fire safety overlay and has created a strategy as to which roofs will be selected to participate in the FEMA funded project.

Fire Hazard Abatement *Complete*

The Fire Hazard Abatement portion of the County Code was completely rewritten and redesigned around real flammable fuels. The most significant change was to include certain types of green fuels as flammable vegetation. Following in the City of Big Bear Lake's path, the County adopted the new code in the fall of 2008. In January of 2010 the County amended the Hazard Overlay maps.

Fire Safe Councils (FSC) Fuel Reduction Program *Complete*

Fire Safe Councils have received and implemented millions of dollars in grant money for fuels reduction and for public education. Of note recently the Arrowhead Communities FSC developed a grant that did fuels reduction but used the existing staff at the County Tree Removal Program rather than pay additional consultants to do the same work. The benefit of this is that the FSC was able to maximize their expenditure and give the contractor a check upon completion of the project. This way 100% of their grant money went directly to the contractor and none went to administrative overhead.

Inland Empire Fire Safe Alliance (IEFSA) *Complete*

IEFSA has held bimonthly meetings for over 5 years and have been the focal point for all regional Fire Safe Councils including some from Riverside County. They have also held numerous workshops and seminars regarding fire resistive construction, and materials, BAER reports, CWPPs and grant writing. The IEFSA was the focal point for FSCs that were working on completing their CWPPs and created a focus group and a steering committee to accomplish these critical plans. To support public education

and involvement, IEFSA created the web site www.fireinformation.com as well as participated in countless safety fairs and fire wise awareness activities. They also conducted a Public Education Media Exchange where all FSC and Agencies got together to share educational modalities and create common thought and educational threads. They have reached out to thousands of mountain residents in preparing them for wildfires.

Community Wildfire Prevention Plans (CWPP) *Complete*

All of the Community Wildfire Prevention Plans that were completed by the Fire Safe Councils were completed in the last 5 years. The CWPPs were reviewed and approved by Cal Fire, the USFS, the County Board of Supervisors and the local Fire Chief of Jurisdiction. CWPPs are completed and active in Wrightwood, Mt Baldy, Arrowhead Communities, the Big Bear Valley (includes Big Bear Lake, Big Bear City and Fawnskin) Angelus Oaks and Mill Creek (which includes Forest Falls and Mill Creek) and Oak Glen.

Public Education Programs *Complete*

The County through MAST conducted a comprehensive mountain-wide multi-modality Public Outreach Program from 2006 to 2008. It can be found at www.CalMAST.org. The program in both English and Spanish created and presented multiple public educational meetings, newsletters, brochures, calendars, and posters. Because of the large number of visitors to the forest, MAST also created Emergency Information Visitors brochure and glove box sized Emergency Response Evacuation maps for the mountain communities. The program won national awards for advertising and public relations. Other jurisdictions initiated their own public education activities but brought them back through MAST so that the entire group could receive the benefit. The City of Big Bear Lake Fire Department was the most prolific in developing innovative and creative educational programs. They developed the Thin-is-In website at www.thinisin.org that is an excellent site for citizens and agencies as well. Since the Big Bear Valley is served by an excellent radio station KBHR (k-bear) they have posted numerous public safety messages. Also during the Butler, Butler II and Slide Fires, KBHR provided constant updates to the community regarding the fire.

Organized Group Volunteer Activities *Complete*

Volunteer groups particularly “Mountain Hearts and Lives” (MHL) responded to numerous emergencies particularly of note the Grass Valley and Slide Fires. These groups have also spent significant time working to prepare citizens for disasters. MHL has coordinated CERT training as well as HAM radio operator training. Other activities can be found at www.heartsandlives.org. Other partners that assist in coordinated endeavors for disaster preparedness and disaster relief are Rim Family Services and the Rim Resource Community Network. Members of these and other groups work very closely with MAST, Mountain Mutual Aid and the American Red Cross.

CERT: Community Based AM Radio Transmitters *Complete*

The Wrightwood Fire Safe Council set up and operates a local AM radio transmitter. It has been brought into use during local incidents including a power outage where it is very useful. In power outages, the AM radio in a person’s car still works. It was also used to provide preparatory information to the citizens

of Wrightwood as the Station Fire was approaching the community from the west. It is also used extensively during the Wrightwood Fire Wise Awareness Days to keep citizens apprised of community events.

Telephone Emergency Notification System (TENS) Implementation *Complete*

Emergency service agencies like the Sheriff's Office have implemented TENS on numerous occasions to notify residents in specified areas to evacuate. Most recently it was used to evacuate hundreds of homes in the eastern portion of Yucaipa during the Pendleton Fire and in Wrightwood during the Sheep Fire when the entire community was ordered evacuated.

Emergency Communications Services (ECS) *Complete*

The ECS program provided support to all major and minor incidents in the last 5 years. The most significant event was the Grass Valley and Slide Fires in October of 2007 and they also provided critical support on the Oak Glen/Pendleton and the Sheep fires. They provided communications and logistical support to 18 public safety and disaster preparedness events in 2009 alone. They have also set up a training program for other County Departments, that are not typical emergency responders but provide support in an emergency. ECS delivered and set up amateur radio equipment for Department of Public Works, Department of Public Health, Preschool Services Department, and Department of Behavioral Health and provided training for the employees.

Earthquake/Geologic Hazards

Geologic Hazard Mitigation Goal *Completed*

A General Plan Amendment to the Safety Element of the County of San Bernardino 2007 General Plan updated the Geologic Hazard Overlay Maps which became effective on March 11, 2010. The Safety Element includes several layers of hazard overlays that are included in the General Plan mapping system to inform the public of potential hazards to development of property within certain areas of the County and to enable the County to mitigate the risks presented to property owners by these hazards. These overlays include potential geologic hazards. Over the past twenty years, certain federal and state agencies have been in the process of digitizing much of this hazard data. The digitization of this data has allowed for greater accuracy as well as more timely updates. In recognition of the new data from various federal and state agencies, the County updated the geologic hazard overlay maps, specifically the Generalized Liquefaction Susceptibility layer and the Generalized Landslide Susceptibility layer, contained within the Safety Element of the General Plan.

The Generalized Liquefaction Susceptibility layer was amended to modify four General Plan Quad Maps to incorporate new liquefaction data in the Big Bear Lake area designated by the County Geologist for the Big Bear Lake Valley. This information was then incorporated into the County-designated Geologic Hazard Overlay District.

The Generalized Landslide Susceptibility layer was amended by modifying 17 General Plan Quad Maps and one regional Quad Map, to incorporate updated existing landslide data published by the U. S. Geological Survey for the Mountain area. The County Geologist updated the landslide inventory within

the Geologic Hazard Overlay District by incorporating new geologic mapping by the U.S. Geological Survey.

The following is a list of the updated General Plan Geologic Hazard Overlay Maps effective on March 11, 2010.

Map #	Quad Name
FH08C	Fifteen Mile Valley
FH11C	Mt. San Antonio
FH12C	Telegraph Peak
FH13C	Cajon
FH14C	Silverwood Lake
FH15C	Lake Arrowhead
FH16C	Butler Peak
FH19C	Mt. Baldy
FH20C	Cucamonga Peak
FH21C	Devore
FH22C	San Bernardino N.

Map #	Quad Name
FH24C	Keller Peak
FH27C	Ontario
FH30C	San Bernardino S.
FH31C	Redlands
FH32C	Yucaipa
FI09C	Fawnskin
FI10C	Big Bear City
FI17C	Big Bear Lake
FI18C	Moonridge
EH/FH C	SW Portion of County
FH23C	Harrison Mtn.

Flood

Flood Hazard Mitigation Goal *Complete*

A General Plan Amendment to the Safety Element of the County of San Bernardino 2007 General Plan amended the Flood Plain Overlay District, which became effective on March 11, 2010. The Safety Element includes several layers of hazard overlays that are included in the General Plan mapping system to inform the public of potential hazards to development of property within certain areas of the County and to enable the County to mitigate the risks presented to property owners by these hazards. These overlays include potential flood hazards. Over the past twenty years, certain federal and state agencies have been in the process of digitizing much of this hazard data. The digitization of this data has allowed for greater accuracy as well as more timely updates. In recognition of the new data from various federal and state agencies, the County updated the Flood Hazard Overlay Maps contained within the Safety Element of the General Plan. The Flood Plain Safety Overlay District is amended to incorporate revised FEMA (Federal Emergency Management Agency) Flood Plain data, modifying 47 detail and seven regional General Plan Quad Maps. The FEMA Digital Flood Insurance Rate Map database was adopted in the General Plan Amendment as released by FEMA as it exists as of February 9, 2010 and will updated in the future for the County, by integrating automatic map updates as new data is published by FEMA.

Below is a list of the updated Flood Plain Safety Overlay District Maps effective March 11, 2010.

Map #	Quad Name	Map #	Quad Name	Map #	Quad Name
DI16B	Baker	FH12B	Telegraph Peak	FH21B	Devore
EH07B	Hinkley	FH13B	Cajon	FH22B	San Bernardino N.
EH14B	Wild Crossing	FH14B	Silverwood Lake	FH23B	Harrison Mtn.
EH15B	Hodge	/FJ B	S Portion of County	FH28B	Guasti
EH16B	Barstow SE	FH11B	Mt. San Antonio	FH29B	Fontana
EH22B	Helendale	CK/DK B	NE Portion of County	FH30B	San Bernardino S.
EH29B	Adelanto	EH/FH B	SW Portion of County	FH31B	Redlands
EH30B	Victorville	EI/FI B	S Portion of County	FH32B	Yucaipa
EH31B	Apple Valley N.	EK/FK B	SW Portion of County	FI09B	Fawnskin
EI01B	Nebo	FH06B	Hesperia	FI10B	Big Bear City
EI02B	Yermo	FH07B	Apple Valley S.	FI17B	Big Bear Lake
EI03B	Harvard Hill	CH/DH B	NW Portion of County	FI18B	Moonridge
EI04B	Manix	CI/DI B	N Portion of County	FH15B	Lake Arrowhead
EI09B	Daggett	FH03B	Mescal Creek	FH19B	Mt. Baldy
EK03B	Needles NW	FH04B	Phelan	FH20B	Cucamonga Peak
EK11B	Needles SW	FI30B	Joshua Tree S.	FI23B	Sunfair
EK12B	Needles	FI32B	Queen Mountain	FI25B	Forest Falls
EK20B	Whale Mountain	FI28B	Morongo Valley		

Table 15. Completed Flood Control Projects

	Completion Date	Percent Mitigation	Total Cost	Total Funding
1-F02094	2010	50	$7,770,000	$7,700,000
954101	2005	50	$195,000	$195,000
F01087-3	2005	25	$3,974,000	$3,974,000
F01363	2009	10	$2,500,000	$2,500,000
F01363-2	2007	15	$7,800,000	$7,800,000
F01363-3	2007	15	$18,500,000	$18,500,000
F01389-2	2008	50	$1,300,000	$1,300,000
F01545	2009	50	$1,500,000	$1,500,000
F01566-2	2010	25	$3,300,000	$3,300,000
F01573	2005	30	$10,090,000	$10,090,000
F01646	2005	100	$57,500,000	$57,500,000
F01577	2005	100	$2,825,000	$2,825,000
F01087-3	2005	50	$3,970,000	$3,970,000
F01686	2006	30	$375,000	$475,000
2-209	2006	20	$337,000	$337,000
F01646	2005	30	$57,500,000	$57,500,000
F01649	2005	50	$1,200,000	$1,200,000
F02105	2007	100	$720,000	$720,000

Further details of the above projects are located in **Annex 1**.

Table 16. On-Going Projects to Mitigate the Flooding Hazard

Project No.	Completion Date	Percent Mitigation	Total Cost	Total Funding
F01363	2009	30	$2,500,000	$0
F01649	2005	50	$1,200,000	$0
F01545	2009	50	$1,500,000	$675,000
F1363-B	2007	15	$7,800,000	$0
F1363-B	2007	15	$18,500,000	$0
F01566-2	2010	25	$3,300,000	$11,428,000
F01566-2	2011	40	$6, 300,000	
F01566-2	2011	35	$4, 900,000	

Further details on the above projects are located in **Annex 1.**

6.3. Mitigation Goals, Objectives, and Projects

The following section provides an overview of the Mitigation Goals and Objectives for the primary three hazards, Wildfire, Earthquake, and Flood for the County Unincorporated Area and the County's Special Districts. These goals were compiled from various sources including the County of San Bernardino 2007 General Plan. (See Section 3.5 for a detailed description of the process used by the County Planning Team.)

Wildfires

GOAL: Continue to reduce fire hazards in the unincorporated areas of San Bernardino County and for its Special Districts.

OBJECTIVE 1: General Plan. Amend, as appropriate, the County of San Bernardino 2007 General Plan with applicable requirements for the Fire Hazard Overlay and the associated Fire Safety District Maps.

- Incorporate as appropriate state of the art codes and ordinances pertaining to fire safety into the County General Plan.

OBJECTIVE 2: **MAST.** Continue the cooperation and coordination of Fire Hazard Mitigation efforts with all stakeholders in the mountain areas of San Bernardino County through participation in MAST.

OBJECTIVE 3: Mountain Mutual Aid. Continue development of and continue the mission of mutual aid between the first responders in the County mountain areas.

- Continue to meet monthly and maintain a constant state of readiness.
- Update Community Structure Protection Plans as necessary.

OBJECTIVE 4: Community Based Fuels Reduction Program. Continue the community based Fuels Reduction Program through community based programs, both volunteer and government funded. These projects are selected by MAST partners specifically to reduce the potential for catastrophic wildfires and the damage that they can do to the communities. Project design, contracting and operations are managed by the County's Public Works Department but the priorities are set by local fire chiefs in monthly MAST Operations Meetings. It is the oldest and most significant program for reducing wildfire threat on a mountain wide basis. **Table** 17 shows current and planned fuels reduction Projects for the San Bernardino County Mountain areas.

- Implement identified community based fuels reduction projects as outlined in Table 17 below.
- Initiate a maintenance program to continue the fuels reduction program by obtaining participation from citizens and/or homeowners associations.

Table 17. Hazardous Tree Removal Project and Fuel Modification Projects

Project Name	Contract No	Funding	Cost	Project Stage
Mojave view	FM179USFS	USFS	$23,840.00	Under Contract

Project Name	Contract No	Funding	Cost	Project Stage
Strawberry Lodge	n/a	USFS	n/a	Out to Bid August 31st
Harich	n/a	USFS	n/a	Planning
Camp Oaks	n/a	USFS	n/a	Out to Bid August 31st
Swinson/Arrowbear	n/a	USFS	n/a	Under Lay Out
Osito Rancho/Cedar Lake	n/a	USFS*	n/a	Under project Development
BBV286SP	n/a	USFS	n/a	Bid development
BBV287SP	n/a	USFS	n/a	Bid development
BBV280SP	n/a	USFS	n/a	Out to Bid September 7 2010
FF288SP	n/a	USFS	n/a	Out to Bid September 7 2010
LA291SP	n/a	USFS	n/a	Out to Bid August 24 2010
RS292SP	n/a	USFS	n/a	Out to Bid September 7 2010
GVL293SP	n/a	USFS	n/a	Out to Bid September 7 2010
AB294SP	n/a	USFS	n/a	Out to Bid September 7 2010
BBV295SP	n/a	USFS	n/a	Bid development
Green Briar	FM100ARRA	ARRA**	$88,000.00	Under Contract
West Hook Creek	n/a	ARRA	$14,700.00	Under Contract
Silverwood Lake	n/a	ARRA	$21,000.00	Under Contract
Weesha	n/a	ARRA	n/a	Under Layout for Arch
Erwin Lake	n/a	ARRA	n/a	In Planning and development phase Fall project
Wrightwood	n/a	ARRA	n/a	Out to Bid August 24th
Camp Tahquitz	n/a	ARRA	n/a	Under Layout
West Cajon	n/a	ARRA	n/a	Under Layout for Arch
LA285SP	n/a	ARRA	n/a	Bid Due 9/1/2010
WW290SP	n/a	ARRA	n/a	Bid Due 9/1/2010
CL289SP	n/a	ARRA	n/a	Bid Due 9/1/2010
Rob Roy	n/a	ARRA	n/a	Under project Development
Santa's Village	n/a	ARRA	n/a	Planning
Saw Pitt II	n/a	ARRA	n/a	Planning
Oak Hills	n/a	ARRA	n/a	Planning
Fawnskin	n/a	ARRA	n/a	Under Layout needs Arch
Heaps Peak	n/a	ARRA	n/a	Out to Bid September 7th
Houston	n/a	ARRA	n/a	Out to Bid September 7th
Calvary	n/a	ARRA	n/a	Under Layout
WW298SP	n/a	ARRA	n/a	Project Layout
LG299SP	n/a	ARRA	n/a	Project Layout

Project Name	Contract No	Funding	Cost	Project Stage
Waterman Canyon	n/a	ARRA	n/a	In Planning and development phase Fall project
Willow Creek	FM6501AFSC	ACFSC***	$11,900.00	Under contract
LA191EVA	EVA191AFSC	ACFSC	n/a	Under contract
NorthBay	FM192AFCS	ACFSC	n/a	Out to Bid
LA215EVA	n/a	ACFSC	n/a	Bid development

** Funded by United States Forest Service*
*** Funder by American Reinvestment and Recovery Act of 2009*
**** Funded by Arrowhead Communities Fire Safe Council*

OBJECTIVE 5: Forest Care. Continue providing assistance to homeowners by expanding services to all communities in the Mountain areas of the County.

- Triple services to over 4,000 mountain residents in the next 3 years.

OBJECTIVE 6: County Fire Hazard Abatement. Overcome funding shortfalls while improving service delivery.

- Inspect every residence in the mountain communities within the next two years to enforce the new Fire Hazard Abatement code that addresses green fuels.
- Continue to collaborate with Forest Care, Red, Cross and Cal Fire to overcome increased costs of enforcement.

OBJECTIVE 7: Contractor Certification. Certify landscape contractors and experts who provide services to the mountain communities of San Bernardino County.

- Collaborate with MAST to conduct classes in communities outside the City of Big Bear Lake to train and certify landscape contractors and experts.
- Train and certify 90% of landscape contractors by 2015.

OBJECTIVE 8: Shake Wood Roof Replacement. Continue to implement the Shake Wood Roof Replacement program within the Fire Safety Overlay in compliance with the County ordinance.

- Replace all non-Class A Rated roofs within the Fire Safety Overlay (CalFire Fire Hazard Severity Zone) by 2014.

OBJECTIVE 9: Community Wildfire Protection Plans. Continue to improve CWPP's in cooperation with Cal Fire, the IEFSA and individual Fire Safe Councils.

- Modify all of the independent and unique CWPPs into a more common framework making them similar but leaving room to provide the specific character of each community to be very visible.

Earthquake/Geologic Hazards

GOAL: Minimize exposure to hazards and structural damage from geologic and seismic conditions. (General Plan, Section VIII, Safety Element (Goal S 7)

OBJECTIVE 1: Unreinforced Masonry Buildings. Re-evaluate structures within the unincorporated areas of the County that were previously identified as a potential Unreinforced Masonry Structure (URM).

- Assess each previously identified structure and determine if a potential hazard exists.
- If a URM hazard is suspected, issue notifications to retrofit the structure and post the building as required.

OBJECTIVE 2: Alquist-Priolo Earthquake Fault Zoning Act. Protect occupants and structures from high level of risk caused by ground rupture during earthquake. (General Plan, Section VIII, Safety Element Policy S 7.4)

OBJECTIVE 3: Liquefaction. Minimize damage caused by liquefaction, which can cause devastating structural damage and a high potential for saturation exists when the groundwater level is within the upper 50 feet of alluvial material. (General Plan, Section VIII, Safety Element Policy S 7.5)

- Based on the technical report by URS Corp. supporting the EIR for the General Plan Update, include identified areas outside of the currently designated zone of liquefaction susceptibility within the Geologic Hazard Overlay District.

OBJECTIVE 4: Landslide. Protect life and property from risks resulting from landslide, especially in San Bernardino and San Gabriel Mountains that have high landslide potential. . (General Plan, Section VIII, Safety Element Policy S 7.6)

- Require development on hillsides to be sited in such a manner that minimizes the extent of topographic alteration required to minimize erosion, to maintain slope stability, and to reduce the potential for offsite sediment transport. (General Plan, Section VIII, Safety Element Policy S 6.1)
- Finalize the draft Drainage Feasibility Study to evaluate the continuing landslide hazard within Rimforest and the role of concentrated storm runoff in propagating slope failure.

Flood

GOAL: Provide adequate flood protection to minimize hazards and structural damage. (General Plan, Safety Element, Goal S 5)

OBJECTIVE 1: National Flood Insurance Program. Participate in the National Flood Insurance Program (NFIP), which provides flood insurance within designated floodplains. (General Plan, Safety Element, Policy S 5)

OBJECTIVE 2: Alluvial Task Force. Review and analyze the findings and recommendations from the recently released Alluvial Fan Task Force reports, as funding permits.

- Determine whether or not additional amendments to development standards or policies are merited, based on the completed analysis.

OBJECTIVE 3: Flood Hazard Reduction. Reduce flood hazards through development standards and policies stated in the County of San Bernardino General Plan and County of San Bernardino 2007 Development Code.

- Amend the Flood Plain Safety Overlay District through automatic map updates as new data is released and published by the Federal Emergency Management Agency. The amendment will incorporate revised FEMA Flood Plain data, modifying the detail and regional General Plan Quad Maps.
- Review development plans to ensure compliance with ordinances.
- Inspect construction to ensure compliance with approved development plans.

OBJECTIVE 4: Future Flood Mitigation Projects. Improve existing facilities and construct new facilities to mitigate flooding with the County.

- In each flood control zone, construct facilities identified in those zones by the Flood Control Advisory Committee.

Table 18 is a list of the proposed projects to mitigate the Flood hazard within the County Unincorporated Area. A description of these projects is in **Annex 1**.

Table 18. Proposed Flood Control Mitigation Projects

Project No.	Completion Date	Percent Mitigation	Total Cost	Total Funding
F00282	2011	20	$4,100,000	$4.14 million
2-308	10-year plan	100	$27,000,000	$19.31 million
F02094	2011	0	$4,000,000	$4.8 million
F02225	16/17	40	$3,000,000	$3.65 million
952101	15/16	85	$500,000	$0
F01767	14/15	20	$5,200,000	$5.2 million
F02230	10-year plan	20	$6,700,000	$7.07 million
F01609	10-year plan	30	$20,000,000	$1.04 million
F01650	16/17	20	$4,500,000	$3.44 million
F1452-2	14/15	35	$9,500,000	$1.17 million
F1452-3	16/17	20	$5,000,000	See above
F01087-3	17/18	50	$9,142,300	$12.87 million
F01666	2012	20	$9,183,000	$9.98 million
F01667	10-year plan	40	$21,650,000	$0
F01582	14/15	50	$4,700,000	$5.5 million
F01584	09/10	50	$9,050,000	$12.07 million
F01284	15/16	100	$4,020,000	$4.03 million
F01911	11/12	100	$3,137,000	$3.14 million
F01312	2011	5	$2,185,000	$2.19 million
F02126	10-year plan	100	$8,500,000	$0
F01417	13/14	80	$39,500,000	$21.15 million
F01761	10-year plan	100	$4,000,000	$160 thousand
F01389-2	10-year plan	50	$1,200,000	$1.43 million
F01336	10-year plan	20	$13,740,000	$13.74 million
F02228	11/12	50	$1,450,000	$1.46 million
F01272	16/17	20	$10,180,000	$0
F02243	10-year plan	20	$2,400,000	$0
F01473	18/19	30	$4,500,000	$5.01 million
F01850	2011	50	$1,500,000	$1.5 million
F02201	10-year plan	30	$2,000,000	$2.0 million
F02129	10-year plan	30	$3,500,000	$1.24 million
F02234	10-year plan	25	$744,000	$745 thousand
Totals:			**$245,781,300**	**$148,035,000**

Additional Proposed Projects with Mitigation Benefits

While not designed or proposed specifically as mitigation projects, the County undertakes many activities that incorporate mitigation elements and integrate risk reduction as an additional benefit. The following list includes a number of these projects that exemplify how the County integrates hazard mitigation into county- wide programs. Projects have been grouped by the following categories: Studies/Plans, Codes/Ordinances, Infrastructure and Preparedness/Response.

Project Category	Activity	Hazard Mitigated
Studies/Plans	Desert Area Groundwater Inventory & Atlas	Flood/Drought/Liquefaction
	Drainage Studies	Flood
Codes/Ordinances	2010 Building Code Adoption	All
	Water Efficient Landscape Ordinance	Drought
Infrastructure	Critical Route Planning	All
	Arrowbear Drive Realignment and Widening	Fire/Flood
	Cedar Glen Fire Access	Wildfire
	Institution Road Improvements	Flood
Preparedness/Response	California Disaster Corps	All
	Mass Care & Shelter	All
	2012 Golden Guardian Exercise	Earthquake

6.4. Mitigation Priorities

Prioritization Process

A general description of the methodology used to review potential mitigation projects and to establish priorities for inclusion in this plan was presented in Section 3.6. In addition to following the STAPLEE process and reviewing each potential project based on the criteria presented. the County also utilized existing prioritization processed previously established on a county-wide basis for wildfire and flood projects. Those processes are described below.

Wildfire

Mountain Area Safety Taskforce

The Mountain Area Safety Taskforce (MAST) Operations Section meets monthly. MAST Ops Section determines project priorities based on the benefit cost analysis of the projects and the effect of the project on the overall goals of the MAST organization.

Goals can change as detailed Benefit Cost Analysis is conducted and CEQA/NEPA reviews are completed.

MAST priorities are to continue reducing fire hazards through fuel reduction programs and hazard abatement though enforcement of county ordinances.

MAST is the central point of coordination for all projects related to the reduction of the potential for catastrophic wildfires. There are numerous participants and all levels of government. MAST partners collaborate to provide multi-agency technical support to ensure project success. Economic impacts are considered and the result has been significant increase in economic activity through thoughtful application of grant funding. MAST has been so successful in the environmental management of projects that all of the local environmental groups including national affiliates are now supporters of MAST fuels projects.

Community Based Fuels Reduction Program

Priorities of the Fuels Reduction Program are to continue to create community based fuel modification programs across the mountain communities. These projects are selected specifically to reduce the potential for catastrophic wildfires and the damage that they can do to the communities. Project design, contracting and operations are managed by the County's Public Works Department. Priorities are set by local fire chiefs in monthly MAST Operations Meetings. See Table 14 for current and planned projects and their priority ranking established by the MAST Operations. The goal is to prevent repetitive losses from wildfires in addition to preventing any additional losses due to wildfire.

Flood

Project Prioritization and Zone Advisory Committees

The Local Priority project rankings utilize the same format as the 2005 Multi-Jurisdictional Hazard Mitigation Plan, and rankings are based on the current project funding status as shown on the County Flood Control District's 10-year Plan. A 'High' Local Priority, or (3), indicates that project funding is expected to be complete within about the next three years, depending on the Flood Zone and its' available revenue. A 'Medium' Local Priority (2) indicates that project funding is expected to be complete within about four to seven years. A 'Low' Local Priority (1) indicates that the project is on the 10-Year Plan but complete funding is likely eight to ten years or more in the future.

The task of determining local project priority is the responsibility of the County Flood Control District's staff and Zone Advisory Committees (ZAC). Each of the six zones of the District is represented by a Citizens Advisory Committee, composed of eleven members and serving by appointment of the Board of Supervisors without compensation. Each committee is formed of spirited citizens and public officials with unselfish and devoted interests, organized to meet annually or on call to afford recommendations to the Board of Supervisors on matters of tax levies, budgets, work programs, priority of projects, ventures and other counsel. The Mayor of each incorporated city in the District is a committee member with full standing for the appropriate zone.

County Flood Control District staff and the ZACs meet twice per year to discuss future project needs and current project status. Projects are proposed based on the public safety needs within the particular zone. In addition to public safety, other issues are considered in the prioritization process such as grant

funding, environmental reviews and approvals, and other impediments that may cause construction of the project to be delayed. . (See Table A-2 in Annex 1 for examples of how these prioritization factors are applied to proposed projects.)

Almost without reservation, the recommendations of these organized committees have been accepted by the Board of Supervisors in its administration of County Flood Control District functions.

Each flood control zone constructs facilities identified in those zones by the Flood Control Advisory Committee. The Zone Flood Control Advisory Committee establishes Project Priorities based on Benefit Cost Analysis, Community input, and fiscal resources available for the project in addition to any other noted factors.

The following three tables illustrate priority rankings based on three key factors: Total Cost, Hazard Assessment, and Potential Fatalities.

The proposed projects are prioritized purely on the basis of Total Cost.

Table 19. Flood Control Projects Prioritized by Total Cost

Project No.	Local Priority	Primary Hazard	Deaths	Total Cost	Total Funding
F02230	3	Flooding	0	$6,700,000	$7,000,000
F02217	3	Flooding	0	$1,500,000	$2,000,000
2-308	2	Flooding	0	$27,000,000	$19,300,000
F01609	2	Flooding	0	$20,000,000	$1,030,000
F1087-3	2	Flooding	0	$9,142,300	$9,142,300
F02225	1	Flooding	0	$3,000,000	$3,650,000
F1452-2	1	Flooding	0	$9,500,000	$1,170,000
F1452	1	Flooding	0	$5,000,000	
Totals:				**$81,842,300**	**43,292,000**

The proposed projects are prioritized purely on the basis of the Hazard Assessment Matrix.

Table 20. Proposed Projects Prioritized by Hazard Assessment Matrix

Project No.	Local Priority	Primary Hazard	Deaths	Total Cost	Total Funding
2-308	2	Flooding	0	$27,000,000	$19,300,000
F01609	2	Flooding	0	$20,000,000	$1,030,000
F1452-2	1	Flooding	0	$9,500,000	$1,170,000
F1087-3	2	Flooding	0	$9,142,300	$9,142,300
F02230	3	Flooding	0	$6,700,000	$7,000,000
F1452	1	Flooding	0	$5,000,000	Same as F1452-2
F02225	1	Flooding	0	$3,000,000	$3,650,000
F02217	3	Flooding	0	$1,500,000	$2,000,000
Totals:				**$81,842,300**	**$43,292,000**

The proposed projects are prioritized purely on the basis of the potential fatalities from the Primary Hazard.

Table 21. Proposed Projects Prioritized by Potential Fatalities

Project No.	Local Priority	Primary Hazard	Deaths	Total Cost	Total Funding
2-308	2	Flooding	0	$27,000,000	$19,300,000
F01609	2	Flooding	0	$20,000,000	$1,030,000
F1452-2	1	Flooding	0	$9,500,000	$1,170,000
F1087-3	2	Flooding	0	$9,142,300	$9,142,300
F02230	3	Flooding	0	$6,700,000	$7,000,000
F1452	1	Flooding	0	$5,000,000	Same as F1452-2
F02225	1	Flooding	0	$3,000,000	$3,650,000
F02217	3	Flooding	0	$1,500,000	$2,000,000
Totals:				**$81,842,300**	**$43,292,000**

6.5. Implementation Strategy

Table 22 summarizes the implementation strategies for categories of projects addressing the top hazards in the San Bernardino County Unincorporated Area Multi-Jurisdictional Hazard Mitigation Plan. The Table includes implementation strategies for the wildfire, earthquake/geologic hazards and flood.

Table 22. Implementation Strategy Summary

Action	Lead Agency	Hazard	Funding Source
Code Development – Prevention Develop additional code requirements to further reduce or eliminate damages from the identified hazards.	Land Use Services	All Hazards	General Fund
Natural Resource Protection To locate and protect natural and cultural resources at risk from the identified hazards.	MAST	Natural and Cultural Resources	General Fund, Grants
Property Protection To enhance property protection from wildfire through fuel reduction programs that target fire prone vegetation on private property.	Fire Protection District.	Wildfire	General Fund, Grants
Public Education To continue and develop new public education programs targeting the top identified hazards.	Fire Protection District.	All Hazards	General Fund, Grants
Structure Protection – Flooding To continue to identify, fund, and build projects that reduce or eliminate flood hazards in the County.	Flood Control District	Flooding Hazards	General Fund, Special District Funds, Grants
Structure Protection – Geological Hazards To identify unknown hazards and develop additional new and retrofit requirements or programs to reduce or eliminate damage from geological hazards.	Land Use Services	Geological Hazards	General Fund, Grants
Structure Protection – Wildfire To further protect structures at risk from wildfire through education, building, and enforcement codes and actions.	MAST	Wildfire	General Fund, Special District Funds, Grants

Wildfire

The MAST structure provides the most effective means available to the County to identify, review, prioritize and implement fire prevention and fuel reduction projects. The greatest focus of MAST is implementing programs in the most effective way possible taking advantage of the inter-related activities of the MAST partners and maximizing funding sources

Earthquake/Geological Hazards

All earthquake mitigation activities are implemented through the San Bernardino County 2007 General Plan, County Ordinance, and County Building Codes in coordination with State law.

Flood

All flood control mitigation activities are implemented through the San Bernardino County 2007 General Plan, County Ordinance, County Building Codes in coordination with State law and federal laws, rules, and regulations relating to waterways and water.

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Section 7. Plan Maintenance

7.1. Monitoring, Evaluating and Updating the Plan

The San Bernardino County Fire Protection District Office of Emergency Services (OES) is the custodian of the MJHMP. In the 2005 MJHMP, County of San Bernardino indicated that the MJHMP would be reviewed annually. Although no formal meetings were held, OES reviewed the plan annually and collected new hazard mitigation information and mitigation efforts throughout the county. Additionally, OES referenced/reviewed the MJHMP before submitting grant applications to ensure the project was captured in the plan when applying for all grants to assist their mitigation efforts.

There are three (3) main components to the MJHMP: hazards, projects, and stakeholder involvement (public, as well as, county staff). The County and its Special Districts have focused on these components and over the last 5 years have made steady improvements in all areas. The County and its Special Districts participated and facilitated several meetings and established several tasks forces to help advance the understanding of hazards in the community. This information was shared with other county personnel and the general public. OES believes that this sharing of information leads to a more informed community, thus a more robust MJHMP.

Departments and Special Districts with projects track the status of the projects through the entire life cycle from concept to completion. Projects in progress are tracked to ensure all milestones are met and payments are made in a timely manner. Each year proposed projects are reviewed during budget development every spring and selected projects are submitted for funding to the appropriate funding source. These funding sources include but are not limited to grant funding, General Fund funding, and Special District funding.

Because the MJHMP is a living document that reflects ongoing hazard mitigation activities, the process of monitoring, evaluating, and updating will be critical to the effectiveness of hazard mitigation within the County Unincorporated Area. The County and its Special Districts will hold internal planning meetings to discuss current projects and evaluate newly proposed projects resulting from internal staff meetings and input from the public. The results of these Departmental/Special District meetings will be presented to the Multi-Jurisdictional Planning Team meetings at their annual meetings. To facilitate the Multi-Jurisdictional Hazard Mitigation Planning process, OES is proposing to conduct these annual meeting with the Multi-Jurisdictional County Planning Team where the Team Members will discuss the projects, priorities, and goals in the current plan and from individual Special District meetings and suggest any necessary changes. Results of the annual meeting will be retained and compiled for the 2016 update.

The County Planning Team will continue to support focused outreach for county Departments and Districts as well as support County-wide activities.

7.2. Implementation through Existing Programs

The knowledge gained from the MJHMP has helped the county enhance other planning efforts. One of the biggest results from the 2005 MJHMP efforts was the incorporation of the MJHMP into the 2007 General Plan's Safety Element. This merging of plans has help ensure development decisions are considering the most recent hazard information. It is the County's intent to incorporate by reference the updated MJHMP into the County General Plan upon approval from FEMA.

The MJHMP has also led to the strengthening and improvement of several County Ordinances, which are designed to ensure proper fuels reduction was completed in the Severe Fire Hazard Zones. Two new ordinances were passed requiring replacement of wood shake roofs in the Severe Fire Hazard Severity Zones by 2014 and the reduction of live fuel loads around structures in the Very High Fire Hazard zone.

The MJHMP goals and actions will be incorporated into various general operations of government. For example, much of the information from the MJHMP will be included in the County Operational Area Emergency Operation Plan (EOP). As any future County plans are developed, the Multi-Jurisdictional Hazard Mitigation Plan will be a great asset in any plan development efforts. As noted earlier, much of the information contained in this MJHMP is from the County General Plan and is already part of the planning process.

Additional benefit is gained from the County and its Special Districts reviewing existing mitigation projects and development of additional mitigation projects at their internal annual Planning Team meetings. This input includes comments and suggestions from the public as well as from the internal planning process of each County department and District.

7.3. Continued Public Involvement

As indicated earlier, the county has taken many steps to engage the general public. In addition to the San Bernardino County Board of Supervisor meetings, the actions include:

- Municipal Advisory Communities throughout the unincorporated County area,
- Flood Zone Advisor Committees,
- Special District Advisory Committees,
- Public hearings for County General Plan updates held four times a year,
- MAST and FAST meetings,
- Fire Safe Council meetings,
- Community Emergency Response Team meetings, and
- Public events where educational efforts are undertaken in the unincorporated areas.

Additionally, the public will be kept involved through annual programs such as the Great Shakeout held annually in October, SKY Warn events sponsored by the National Weather Service, and other monthly

safety programs. The County will continue to use several different methods to reach out to the public: mailers, cable TV, website, social networks, e-mail, posting in public libraries, and fairs.

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Section 8. Annex

Annex 1 – San Bernardino County Flood Control District Projects

Annex 2 – Other Proposed Projects with Mitigation Benefits

Annex 3 –Special Districts Department Generalized Projects

Annex 4 –Special Districts Department

Annex 5 –Operational Area stakeholders

Annex 6 –HMP Web Pages

Annex 7 –HMP Press Release

Annex 8 –HMP Newspaper Clipping

Annex 9 – HMP PowerPoint

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8.1. Annex I -- San Bernardino County Flood Control District Projects

Table A-1: Flood Projects—Completed

Flood Control Project #	Details
1-F01601	*Name:* **San Sevaine turnout to Victoria Basin** *Description:* Construction of turnout from San Sevaine Channel to divert flows to Victoria Basin *Status:* **Complete** *Completion Date:* 1/1/2007 *Local Priority:* Medium *Total Cost:* $1,500,000 *Funding Description:* San Bernardino County Flood Control
2-209	*Name:* **Muscoy Groin at Devil Creek** *Description:* Repair damaged section of rock slope embankment/groin *Status:* **Complete** *Completion Date:* 2006 *Total Cost:* $337,000 *Funding Description:* San Bernardino County Flood Control
954101	*Name:* **Mojave River Erosion Repair** *Description:* Repairs at Sixth Street, Spring Valley Lake, Vista Road, and Soap Mine Road damaged due to extreme runoff and flooding. *Status:* **Complete** *Completion Date:* 2005 *Total Cost:* $195,000 *Funding Description:* San Bernardino County Flood Control
F01087-3	*Name:* **West State Street Storm Drain, Segment 3** *Description:* Jacking of reinforced concrete pipe as part of a larger storm drain project to reduce flooding in an industrial area. *Status:* **Complete** *Completion Date:* 2005 *Total Cost:* $3,974,000 *Funding Description:* San Bernardino County Flood Control
F01363	*Name:* **Etiwanda/San Sevaine Middle Reach** *Description:* Construction of concrete channel improvements and double box structure at Foothill Boulevard confluence of Etiwanda & San Sevaine Channel to increase capacity of the channel and increase the width of the road crossing the channel. *Status:* **Complete** *Completion Date:* 2009 *Local Priority: Total Cost:* $2.5 million *Funding Description:* San Bernardino County Flood Control
F01363-2	*Name:* **San Sevaine Channel, Jurupa Avenue to Philadelphia Avenue** *Description:* Construction of channel improvements to increase capacity and improve flows. *Status:* **Complete** *Completion Date:* 2007 *Total Cost:* $7.8 million *Funding Description:* San Bernardino County Flood Control

Flood Control Project #	Details
F01363-3	*Name:* **San Sevaine Channel, Slover to Jurupa Basin** *Description:* Channel Improvements to increase capacity and improve safety of the area. *Status:* **Complete** *Completion Date:* 2007 *Total Cost:* $18.5 million *Funding Description:* San Bernardino County Flood Control
F01389-2	*Name:* **Mojave River Phase I** *Description:* Construction of levee with ungrouted rip-rap, from I-15 to Sixth Street to reduce flooding of a commercial/industrial area *Status:* **Complete** *Completion Date:* 2008 *Total Cost:* $1.3 million *Funding Description:* San Bernardino County Flood Control
F01545	*Name:* **Randall Basin** *Description:* Improvements to the basin; new inlet will accept flows from the west, thereby reducing flooding to downstream areas. *Status:* **Complete** *Completion Date:* 2009 *Total Cost:* $1.5 million *Funding Description:* San Bernardino County Flood Control
F01566-2	*Name:* **Sultana Cypress Storm Drain, Phase 2A** *Description:* Jacking RCP under Highway 60 as part of a larger storm drain project to eliminate flooding of a local mobile home park and residential areas downstream. *Status:* **Complete** *Completion Date:* 2010 *Total Cost:* $3.3 million *Funding Description:* San Bernardino County Flood Control, NRCS
F01566-2	*Name:* **Sultana Cypress Storm Drain, Phase 2B** *Description:* Construction of storm drain from Highway 60 to Euclid Avenue to increase capacity and reduce flooding potential in a residential neighborhood. *Status:* **On-going** *Completion Date:* Estimated 2011 *Local Priority:* High *Total Cost:* $6.3 million *Funding Description:* San Bernardino County Flood Control, NRCS
F01566-2	*Name:* **South Sultana Cypress Storm Drain, Phase 2C** *Description:* Storm Drain construction north of Highway 60 to reduce flooding in a residential neighborhood. *Status:* **Construction to begin September 2010** *Completion Date:* Estimated 2011 *Local Priority:* High *Total Cost:* $4.9 million *Funding Description:* San Bernardino County Flood Control, NRCS

Flood Control Project #	Details
F01573	*Name:* **Riverside Dr Storm Drain #2** *Description:* Construction of 144-inch RCP storm drain to lower Cucamonga Spreading Grounds to protect Dairy areas from flood flows. *Status:* **Complete** *Completion Date:* 2005 *Total Cost:* $10,090,000 *Funding Description:* San Bernardino County Flood Control, State Proposition 13 bond, Dept of Agriculture (NRCS) and City of Ontario
F01577	*Name:* **County Line Channel** *Description:* Constructed concrete channel improvements *Status:* **Complete** *Completion Date:* 2005 *Total Cost:* $2,825,000 *Funding Description:* San Bernardino County Flood Control
F01646	*Name:* **San Timoteo Creek Basins** *Description:* Constructed channel improvements and 18 basins along the creek *Status:* **Complete** *Completion Date:* 2005 *Total Cost:* $57.5 million *Funding Description:* San Bernardino County Flood Control
F01649	*Name:* **Linden Avenue Storm Drain** *Description:* Construct RCB, catch basins, and inlet to basin to reduce downstream flooding *Status:* **Complete** *Completion Date:* 2005 *Total Cost:* $1.2 million *Funding Description:* San Bernardino County Flood Control, NRCS
F01686	*Name:* **Houston Creek** *Description:* Repair of two existing pipes and installation of two new pipes to reduce flooding in a commercial area. *Status:* **Complete** *Completion Date:* September 2006*Total Cost:* $375,000 *Funding Description:* San Bernardino County Flood Control
F02094	*Name:* **Cucamonga Basin #6** *Description:* Improvements included outlet structure, drop structures, downstream channel, and increased basin depth to increase capacity. *Status:* **Complete** *Completion Date:* 2010 *Local Priority:* High *Total Cost:* $7,700,000 *Funding Description:* San Bernardino County Flood Control

Table A-2: Flood Projects—Proposed

Project #	Title	Sponsor	Description
F00282	Alabama at City Creek	County Flood Control	Construct RCB and channel improvements to increase capacity and minimize the possibility of road closures and flood damage. *Status:* Proposed Completion Date: Estimated 2011 *Local Priority:* High *Total Cost:* $4.1 million *Funding Description:* San Bernardino County Flood Control Tax Revenues *Project Selected for:* Public safety & convenience *Hazard Mitigated:* Flooding, flood damage, road closures and road damage *Resources to Implement:* Low *Cost to Implement:* High *Time to Implement:* Medium
2-308	Cable Creek Channel	County Flood Control	Channel improvements *Status:* Proposed Completion Date: On 10-year plan *Local Priority:* Low *Total Cost:* $27 million *Funding Description:* San Bernardino County Flood Control Tax Revenues *Project Selected for:* Compliance with FEMA Levee Certification program *Hazard Mitigated:* Reduction of floodplain; reduction of potential for major flooding. *Resources to Implement:* High *Cost to Implement:* High *Time to Implement:* High
F02094	Cucamonga Basin #6, Phase II	County Flood Control	Landscaping improvements *Status:* Proposed Completion Date: Estimated 2011 *Local Priority:* High *Total Cost:* $4.0 million *Funding Description:* San Bernardino County Flood Control Tax Revenues *Project Selected for:* Environmental compliance & aesthetics *Hazard Mitigated:* *Resources to Implement:* Low *Cost to Implement:* High *Time to Implement:* Low

Project #	Title	Sponsor	Description
F02225	Del Rosa Channel Repair	County Flood Control	Construct concrete channel improvements between Pacific Street and Del Rosa Avenue *Status:* Proposed Completion Date: 10-year plan *Local Priority:* Medium *Total Cost:* $3.0 million *Funding Description:* San Bernardino County Flood Control *Project Selected for:* Public safety; residential area with school nearby *Hazard Mitigated:* Flooding and pedestrian hazards *Resources to Implement:* Medium *Cost to Implement:* High *Time to Implement:* High
952101	East Fontana Storm Drain	County Flood Control	Construct concrete channel improvements to increase capacity and reduce flooding. *Status:* Proposed Completion Date: 10-year plan *Local Priority:* Low *Total Cost:* $500,000 *Funding Description:* San Bernardino County Flood Control *Project Selected for:* Public safety & convenience *Hazard Mitigated:* Flooded roads, flooded railroad and Metrolink tracks *Resources to Implement:* Medium *Cost to Implement:* Medium *Time to Implement:* High
F01767	Lytle Cajon	County Flood Control	Replacement of damaged concrete invert *Status:* Proposed Completion Date: Estimated FY 14/15 *Local Priority:* High *Total Cost:* $5.2 million *Funding Description:* San Bernardino County Flood Control *Project Selected for:* Public safety and to prevent additional channel damage *Hazard Mitigated:* Additional damage to invert and walls; potential flooding and washouts of nearby area. *Resources to Implement:* Medium *Cost to Implement:* High *Time to Implement:* High

Project #	Title	Sponsor	Description
F02230	Mountain View Acres Line E-05	County Flood Control	Construct channel improvements to reduce downstream flooding *Status:* Proposed Completion Date: 10-year plan *Local Priority:* High *Total Cost:* $6.7 million *Funding Description:* San Bernardino County Flood Control, City of Victorville *Project Selected for:* Public safety: history of flood damage at this location *Hazard Mitigated:* Local flooding due to rapid development *Resources to Implement:* High *Cost to Implement:* High *Time to Implement:* High
F01609	Ranchero Basin	County Flood Control	Construct detention basin *Status:* Proposed Completion Date: 10-year plan *Local Priority:* High *Total Cost:* $20 million *Funding Description:* San Bernardino County Flood Control *Project Selected for:* Public safety and reduction of peak Q *Hazard Mitigated:* Potential damage to bridges and roads downstream due to high flows. *Resources to Implement:* Low *Cost to Implement:* High *Time to Implement:* High
F01650	Sand Creek/ Warm Creek Channels	County Flood Control	Construct confluence of Sand Creek and Warm Creek Channels *Status:* Proposed Completion Date: 10-year plan *Local Priority:* Medium *Total Cost:* $4.5 million *Funding Description:* San Bernardino County Flood Control *Project Selected for:* channel improvements to interim storm drain system *Hazard Mitigated:* Potential damage to infrastructure. *Resources to Implement:* High *Cost to Implement:* High *Time to Implement:* High

Project #	Title	Sponsor	Description
F01452-2	West Fontana Channel, Phase I	County Flood Control	Construction of concrete channel from Cherry Avenue west to Banana Basin *Status:* Proposed Completion Date: 10-year plan *Local Priority:* Medium *Total Cost:* $10.5 million *Funding Description:* San Bernardino County Flood Control Taxes, City of Fontana *Project Selected for:* Public safety & convenience *Hazard Mitigated:* Flooding of railroad & Metrolink tracks; road damage & closure *Resources to Implement:* Medium *Cost to Implement:* High *Time to Implement:* High
F01452-3	West Fontana Channel, Phase II	County Flood Control	Construction of concrete channel from Cherry Avenue east to Beech Avenue *Status:* Proposed Completion Date: 10-year plan *Local Priority:* Medium *Total Cost:* $5.0 million *Funding Description:* San Bernardino County Flood Control, City of Fontana *Project Selected for:* Public safety & convenience *Hazard Mitigated:* Flooding of railroad & Metrolink tracks; road damage & closure *Resources to Implement:* Medium *Cost to Implement:* High *Time to Implement:* High
F01666	Cactus Basin #3/ Expansion of Basin #3	County Flood Control	*Status:* Proposed Completion Date: Estimated 2012 *Local Priority:* High *Total Cost:* $9.183 million *Funding Description:* San Bernardino County Flood Control Property Taxes, City of Rialto *Project Selected for:* Public safety & improved future development; protection of water filtration plant across the street; reduction of peak Q downstream. *Hazard Mitigated:* Flooding of immediate area and downstream along Rialto Ch. *Resources to Implement:* Low *Cost to Implement:* High *Time to Implement:* Medium

Project #	Title	Sponsor	Description
F01667	Cactus Basins #4 & 5	County Flood Control	Construction of detention basins to mitigate downstream flooding of Rialto Channel. Work includes inlet/outlet structures *Status:* Proposed Completion Date: 10-year plan *Local Priority:* Low *Total Cost:* $21.65 million *Funding Description:* San Bernardino County Flood Control, City of Rialto *Project Selected for:* Ability to reduce downstream peak Q *Hazard Mitigated:* flooding of nearby area *Resources to Implement:* High *Cost to Implement:* High *Time to Implement:* High
F01582	Desert Knolls II	County Flood Control	Construct flood control channel from Apple Valley Road to Tuscola Road *Status:* Proposed Completion Date: Estimated FY 14/15 *Local Priority:* High *Total Cost:* $4.7 million *Funding Description:* San Bernardino County Flood Control *Project Selected for:* Public safety/future development *Hazard Mitigated:* Potential localized flooding due to increased development *Resources to Implement:* Low *Cost to Implement:* High *Time to Implement:* High
F01584	Desert Knolls III	County Flood Control	Construct channel improvements from the Mojave River to Phase I Strategy: Construct concrete lined channel to provide for 100-year storm flows and debris flows. *Status:* Proposed Completion Date: Estimated FY 12/13 *Local Priority:* High *Total Cost:* $9,050,000 *Funding Description:* San Bernardino County Flood Control Tax Revenues *Project Selected for:* Environmental requirements *Hazard Mitigated:* This project is the mitigation aspect of Phase II *Resources to Implement:* Low *Cost to Implement:* High *Time to Implement:* Medium

Project #	Title	Sponsor	Description
F01284	Donnell Basin	County Flood Control	Construct detention basin. *Status:* Proposed Completion Date: 10-year plan *Local Priority:* Medium *Total Cost:* $4.02 million *Funding Description:* San Bernardino County Flood Control Property Taxes *Project Selected for:* Public Safety; roadway protection; Safe Routes To School Program (SR2S) *Hazard Mitigated:* Flood protection for homes, infrastructure, and pedestrians *Resources to Implement:* Low *Cost to Implement:* High *Time to Implement:* High
F01911	Elder Gulch	County Flood Control	Construct trapezoidal rock-lined channel *Status:* Proposed Completion Date: Estimated FY 11/12 *Local Priority:* High *Total Cost:* $3.137 million *Funding Description:* San Bernardino County Flood Control Property Taxes *Project Selected for:* Public safety *Hazard Mitigated:* Flooding of local area *Resources to Implement:* Low *Cost to Implement:* High *Time to Implement:* Medium
F01312	English Channel/ Peyton Drive	County Flood Control	Construct triple RCB and channel upstream and downstream of Peyton Drive. *Status:* Proposed Completion Date: Estimated 2011 *Local Priority:* High *Total Cost:* $2.185 million *Funding Description:* San Bernardino County Flood Control Property Taxes *Project Selected for:* Public safety & convenience *Hazard Mitigated:* Flooding of roads in residential area *Resources to Implement:* High *Cost to Implement:* High *Time to Implement:* Medium

Project #	Title	Sponsor	Description
F02126	Francis Street Storm Drain	County Flood Control	Construct ultimate storm drain improvements from Sultana Avenue east to beyond Grove Avenue *Status:* Proposed Completion Date: 10-year plan *Local Priority:* Low *Total Cost:* $8.5 million *Funding Description:* San Bernardino County Flood Control Property Taxes *Project Selected for:* Public safety & convenience *Hazard Mitigated:* Existing storm drain is undersized/interim; local flooding *Resources to Implement:* Medium *Cost to Implement:* High *Time to Implement:* High
F01417	Hesperia Detention Basin	County Flood Control	Construction of detention basin, inlet/outlet facilities, fencing to attenuate 10-year storm flows adjacent to California Aqueduct and downstream residential and commercial properties developments. *Status:* Proposed Completion Date: On 10-year plan *Local Priority:* Low *Total Cost:* $39.5 million *Funding Description:* San Bernardino County Flood Control Property Taxes, City of Hesperia *Project Selected for:* To protect the State water aqueduct *Hazard Mitigated:* Flood damage to aqueduct & local area *Resources to Implement:* Low *Cost to Implement:* High *Time to Implement:* High
F01761	Kitchen Wash	County Flood Control	To intercept flows upstream of Rimrock Road to capture headwaters and re-route them to the Mojave River *Status:* Proposed Completion Date: On 10-year plan *Local Priority:* Low *Total Cost:* $4.0 million *Funding Description:* San Bernardino County Flood Control Property Taxes *Project Selected for:* Public safety; protection of commercial center *Hazard Mitigated:* local flooding, road damage *Resources to Implement:* Low *Cost to Implement:* High *Time to Implement:* High

Project #	Title	Sponsor	Description
F01389-2	Mojave River Phase II	County Flood Control	Construct earthen levee lined with 1/2 ton rock slope protection between Oro Grande Wash and Mojave River Phase I *Status:* Proposed Completion Date: On 10-year plan *Local Priority:* Low *Total Cost:* $1.2 million *Funding Description:* San Bernardino County Flood Control Property Taxes, City of Victorville *Project Selected for:* To finalize levee improvement construction; protection of Amtrak station *Hazard Mitigated:* Local flooding, railroad flooding *Resources to Implement:* Low *Cost to Implement:* High *Time to Implement:* High
F01336	Oro Grande Detention Basin	County Flood Control	Construct a detention basin at Amethyst and Sycamore *Status:* Proposed Completion Date: On 10-year plan *Local Priority:* High *Total Cost:* $13.74 million *Funding Description:* San Bernardino County Flood Control Property Taxes, City of Victorville *Project Selected for:* Public Safety; protection of local and downstream infrastructure by reducing peak Q *Hazard Mitigated:* downstream flooding *Resources to Implement:* Low *Cost to Implement:* High *Time to Implement:* High
F02228	Plunge Creek	County Flood Control	Repair of severe damage caused by storms in 2005 *Status:* Proposed Completion Date: On 10-year plan *Local Priority:* High *Total Cost:* $1.45 million *Funding Description:* San Bernardino County Flood Control Property Taxes *Project Selected for:* Necessary repairs due to previous flood damage *Hazard Mitigated:* Potential failure & flooding downstream *Resources to Implement:* Low *Cost to Implement:* High *Time to Implement:* High

Project #	Title	Sponsor	Description
F01272	Rialto Channel, Etiwanda Avenue to Willow Avenue	County Flood Control	Construct Rialto channel to ultimate condition *Status:* Proposed Completion Date: On 10-year plan *Local Priority:* Low *Total Cost:* $10.8 million *Funding Description:* San Bernardino County Flood Control Property Taxes, City of Rialto *Project Selected for:* Public Safety & convenience *Hazard Mitigated:* Residential area flooding and road closures due to wash-outs *Resources to Implement:* Low *Cost to Implement:* High *Time to Implement:* High
F02243	Rialto Channel Priority Crossings	County Flood Control	Completion Date: On 10-year plan *Local Priority:* Low *Total Cost:* $2.4 million *Funding Description:* San Bernardino County Flood Control Property Taxes, City of Rialto *Project Selected for:* Public Safety & convenience *Hazard Mitigated:* Elimination of flooding at intersections *Resources to Implement:* Low *Cost to Implement:* High *Time to Implement:* High
F01473	Rialto Channel	County Flood Control	Construct channel improvements south of Interstate 10 *Status:* Proposed Completion Date: On 10-year plan *Local Priority:* Medium *Total Cost:* $4.5 million *Funding Description:* San Bernardino County Flood Control Property Taxes, City of Rialto *Project Selected for:* Public Safety *Hazard Mitigated:* Existing channel is interim and undersized *Resources to Implement:* Medium *Cost to Implement:* High *Time to Implement:* High
F02201	Extension of Victorville Line E-01	County Flood Control	Completion Date: Estimated FY 10/11 *Local Priority:* High *Total Cost:* $2.0 million *Funding Description:* San Bernardino County Flood Control Property Taxes, City of Victorville *Project Selected for:* Public safety of commercial area *Hazard Mitigated:* local flooding; road closure/road damage (State Hwy.) *Resources to Implement:* High *Cost to Implement:* High *Time to Implement:* Low

Project #	Title	Sponsor	Description
F02129	Wildwood Creek Detention Basin	County Flood Control	Completion Date: Funding complete FY 10/11 *Local Priority:* High *Total Cost:* $3.5 million *Funding Description:* San Bernardino County Flood Control Property Taxes, City of Yucaipa *Project Selected for:* History of flooding due to high debris flows *Hazard Mitigated:* reduction in size of floodplain; minimized flooding *Resources to Implement:* Low *Cost to Implement:* High *Time to Implement:* Low
F02234	Wilson Creek	County Flood Control	Completion Date: On 10-year plan *Local Priority:* Low *Total Cost:* $744,000 *Funding Description:* San Bernardino County Flood Control Property Taxes, City of Yucaipa *Project Selected for:* public safety and infrastructure protection *Hazard Mitigated:* attenuation of high velocities (50 fps); slope protection *Resources to Implement:* Low *Cost to Implement:* High *Time to Implement:* High

8.2. Annex II - Other Proposed Projects with Mitigation Benefits

Other Proposed Projects with Mitigation Benefits

While not designed or proposed specifically as mitigation projects, the County and its Special Districts undertakes many activities that incorporate mitigation elements and integrate risk reduction as an additional benefit. The following describes a number of these projects which exemplify how the County integrates hazard mitigation into county- wide programs. Projects have been grouped by the following categories: Studies/Plans, Codes/Ordinances, Infrastructure and Preparedness/Response.

Studies/Plans

Title: San Bernardino County Desert Area Groundwater Inventory and Atlas.

***Sponsor*:** San Bernardino County Fire Protection District Office of Emergency Services.

Description: As of January 2011, the California Department of Water Resources anticipates releasing the Final Local Groundwater Assistance (LGA) Guidelines later this calendar year. In December 2009, the draft LGA Guidelines and Proposal Solicitation Package (PSP) was available for public comment. The comment period ended on January 12, 2010.

Local public agencies with authority to manage groundwater resources are encouraged to apply Examples of projects that may be considered are: Groundwater data collection, modeling, monitoring and management studies; monitoring programs and installation of equipment; basin management; development of information systems; and other groundwater related work.

The County of San Bernardino Board of Supervisors may consider an action directing staff to apply for the grant when it becomes available for a Desert Area Groundwater Inventory (DGI) and Atlas. The DGI falls within the scope of the Local Groundwater Assistance (LGA) Program, which is funded with Prop 84 IRWM funds anticipated to be available for fiscal year 2010-2011. Grants are limited to $250,000 per recipient, and total funding is $4.7 million.

California Department of Water Resources will give priority to local agencies with adopted groundwater management plans (SB1938 compliant), and which demonstrate collaboration with other local agencies in managing groundwater basins. County's groundwater management ordinance satisfies this requirement.

By having a Desert Area Groundwater Inventory and Atlas, this would enable the County to have a database providing locational and water depth information for specific regions of the County that currently do not have a groundwater inventory. This Inventory and Atlas would provide information applicable for flood mitigation or ground water availability for usage during severe drought. The location and water depth in the inventory are important for an earthquake hazard analysis, if liquefaction potential exists. Since there is not a Desert Area Groundwater Inventory currently, and if liquefaction is a concern in a specific region of the County, then the water depth data would estimate the vertical distance from the land surface to the top of the groundwater aquifer (i.e., the groundwater-saturated layer.)

Tentative Schedule for the LGA Grant

Date	Event
TBD	Release Final LGA Guidelines and PSP
TBD	Proposal Applications Due
TBD	Public Release of Draft Award Recommendations

Fund Source: *Proposition 84*

Title: Drainage Studies

Sponsor: Department of Public Works - Solid Waste Management Division

Description: Drainage studies including review of upstream properties, site drainage area, potential upstream development, and site-specific development will help to mitigate damage from future storm events. San Bernardino County owns landfill sites, transfer stations and closed disposal sites where combined site property totals several hundred acres. Landfills and disposal site properties include acreage that has been constructed to design grades and may include improved drainage systems. Also, within most landfill and disposal site properties there are many acres of property that remain in its natural state including native vegetation and natural grades. During severe weather events, both engineered areas and undisturbed areas are subject to erosion from storm run-off. The erosion can range from minor to severe depending on the storm event and amount of precipitation. Most sites where engineered drainage systems are in place hold up well experiencing only minor erosion and debris flow. However, during major storm events, runoff from native and unimproved areas carrying solids and debris flow may compromise downstream drainage systems and overwhelm system facilities. Much of the damage to landfill and disposal sites during the December 2010 Winter Storm event was caused by erosion with sediment carried from undeveloped/undisturbed areas or where no improved drainage system is in place.

Other events that may cause damage to property and structures include earthquakes, wildfires, high winds, extreme freezes, and lightning storms.

- Earthquakes have the potential of causing damage to site roadways, structures, and systems including concrete drainage systems, Landfill Gas systems (LFG) and Leachate Collection Recovery Systems (LCRS). With earthquakes, there is always the potential of slope failure and slides on the landfill surface. Damage to any of these facilities has the potential to result in an inability to temporarily service the community.
- Many of the County's landfills, transfer stations, and closed disposal sites are situated in areas subject to wildfires. In 2003, the Old Fire burned through three separate sites and caused major damage at the Heaps Peak Transfer Station when the fire burned through the office building and Transfer Station site.
- High Winds can cause damage to temporary drainage structures, fencing, and metal structures. During past high wind events, Transfer Stations have experienced roof panels being torn from the beams. Landfill sites with exposed geo-synthetic liners may experience damage if the winds lift and tear the liners.

- In January 2007, the County experienced a loss of over $21,000 in damage when water pipes at three separate Transfer Stations froze, then burst, causing damage to offices and electrical equipment.
- Lightning storms have the potential to damage electrical components in scale houses, in-ground scales, LFG, and LCRS.

Codes/Ordinances

Title: Amendment to Title 6 County Code to Adopt by Reference the 2010 Editions of the California Building Standards Codes

Sponsor: All Departments

Description: An amendment to Title 6 of the County of San Bernardino Code to adopt by reference the 2010 Editions of the California Building Standards Codes went before the Board of Supervisors on November 2, 2010 and was continued for a second reading on November 16, 2010 and approved unanimously. The amendment became effective on January 1, 2011.

The County of San Bernardino amendment to Title 6 of the County Code to adopt by reference the 2010 Editions of the California Building Standards Codes repealed the current chapters of Division 3 of Title 6 that reflect the 1994/1995 editions of the California Building Standards Codes and adopt the 2010 editions of these codes by reference.

The California Building Standards Commission approved the California Building Standards Code (Code) for a statewide effective date of January 1, 2011 and requires this Code apply in all parts of the state. This Code consists of the California Building, Residential, Plumbing, Mechanical, Electrical, Energy, Historical Buildings, Existing Building (Unreinforced Masonry) and the Green Building Standards Codes. Since this 2010 Edition was adopted by local ordinance, the prior editions of this code will be repealed and the most recent editions of the codes with applicable amendments requiring express findings and certain appendices necessary for the health and safety of the citizens of this County will be in effect within the unincorporated areas of San Bernardino County. The benefit of adopting this Code is that it provides consistency and clarification for the building community as well as building inspectors and plans examiners. State law (Health & Safety Code 18941.5 and 17958.7) requires the local government make express findings in order to amend building standards and the amendments must be necessary due to local climatic, geological, or topographical conditions.

Those amendments and findings are included in the County's ordinance and were filed with the California Building Standards Commission.

The recommended modifications not requiring express findings are administrative or procedural in nature and concern the local implementation issues that are not covered by building standards.

An example of this type of modification is to the California Residential Code, Section R105.3.1.1 which requires the Board of Appeals to confirm substantial valuations in the flood plain. The traditional

purpose of the Board of Appeals has been reserved for a contested decision of the Building Official, and it is felt that it should remain as such.

With respect to grading and excavation regulations found in Appendix J of the 2010 State published code, the 2001 California Building Code dealt with grading with more clarity in regards to what activities require a permit and set forth rules to ensure large grading projects are scrutinized in greater detail than smaller projects by requiring more reporting and inspection of such work. The grading chapter in the 2001 Code has been trusted and in use in its primary form for years. The 2010 Appendix J grading chapter needs substantial amendment and modification to address all grading issues and is not recommended for adoption in its present form. The Board adopted the 2001 Appendix Chapter 33 regulations as part of this proposed ordinance. Relocation permit requirements have been moved to a new section of the Code, and it retains specific standards for relocation procedures in details not found in the 2010 State-published code. Clarification of the types of buildings affected by the new regulations has also been made.

Administrative changes to the 2010 California Existing Building Code (Part 10 of Title 24) were approved to outline the procedures required to set allowable time limits for the retrofit and repair of unreinforced masonry buildings. Staff is also recommending that authorization be given to the Building and Safety Division of the Land Use Services Department to issue Administrative Citations as an alternative means of enforcement of the County Code provisions.

Express findings are made for changes to the California Plumbing Code, Appendix K regarding the soil conditions that exist in this county. These changes are supported by the Environmental Health Division. These express findings are iterated in the ordinance and will be filed with the Building Standards Commission as required by law in order to become effective.

Title: Water Efficient Landscape Ordinance

Sponsor: All Departments

Description: Over the years, the State of California has been promoting water conservation for all new development within the State. In a drought-prone California, where approximately 60 percent of all residential water is used in landscape applications, California lawmakers have adopted such legislation as Assembly Bill (AB) 325 (1990), AB 2717 (2004), and AB 1881 (2006) that outline, and in some instances mandate, the practice of water conservation in landscape applications. As part of AB 325, the Department of Water Resources (DWR) was charged to assemble a task force of stakeholders representing the landscape, water, and building industries as well as cities, counties, and other agencies that would help DWR prepare and promote the State's first Model Water Efficient Landscape Ordinance (MWELO).

While AB 325 did not require cities, counties, and other agencies within the State to comply with the first adopted MWELO, it did encourage local agencies to implement water conservation techniques into their local ordinances and codes. The County adopted Administrative Guidelines that were amended several times and ultimately given the status of "regulation" when they were incorporated into the Development Code (Chapter 83.10) during the 2007 General Plan Update process.

In 2006, State lawmakers adopted AB 1881, which gave guidelines and timelines for revision of the State's MWELO and mandated that every city, county, or other agency within the State of California adopt the State's revised MWELO, or be in compliance with it through their own ordinance, by January 2010. Local agencies are required to report their final action, along with findings of ordinance effectiveness, to DWR by January 2011. While this process was underway, Senate Bill X7-7 was enacted (2009). This bill requires the State of California to achieve a 20 percent reduction in urban per capita water use by December 31, 2020; additionally, it requires the State to make incremental progress towards this goal by reducing per capita water use by at least 10 percent by December 31, 2015. These requirements were incorporated into the MWELO and, in February 2008, DWR made a draft of the State's revised MWELO available to all cities, counties, and other agencies within the State. The final version of the revised MWELO was released in September 2009.

Upon review of the final version of the State's MWELO and the provisions of AB 1881, staff determined the County would need to revise Development Code Chapter 83.10 which sets forth landscaping and irrigation standards within the unincorporated areas of the County. This would in part, become a mitigation measure to assist with any drought hazard the County may encounter. In the meanwhile, the County began enforcing the State's revised MWELO in January 2010, as required by law. Once the proposed changes to the Development Code have been adopted by the Board of Supervisors, staff will notify and forward all required information regarding the adoption and effectiveness of the County's Water Efficient Landscaping Ordinance to the State DWR as required by January 2011.

The proposed Development Code Amendment will revise the landscaping standards to reflect the changes governed by and to be as effective as, the State of California's revised Model Water Efficient Landscape Ordinance, while continuing to recognize the unique character of the regions that make up the County of San Bernardino.

The ***proposed revisions*** will require the applicant/developer to:

- Design and install systems that meet more effective and efficient water conservation standards in all landscaped areas on a project site, including residential;
- Comply with the revised standards for all new and rehabilitated landscape areas regardless of square footage for projects that are not homeowner installed and for all new and rehabilitated landscape areas, that are homeowner installed, that are 5,000 square feet or greater. This includes the following:
  - Submit a comprehensive Landscape Documentation Package, which has been prepared by a landscape architect licensed to work in the State of California or other licensed professional authorized to design and prepare Landscape Plans within the State of California;
  - Submit estimated annual water budget calculations for compliance with water conservation practices and the efficient use of water for each new or rehabilitated landscape. Calculations for the annual water budget for a project/site specific landscape shall use the formulas for the Maximum Applied Water Allowance (MAWA) and the Estimated Annual Water Use (EAWU) outlined in the ordinance;

- Submit a Landscape Certificate of Compliance prepared by the landscape professional who prepared the Landscape Documentation Package conveying the project's compliance with the requirements of Development Code prior to final inspection;
- Planting material within landscaped areas shall be chosen based on the information found in the Water Use Classification of Landscape Species, third edition (WUCOLS III) and the climate zone for the region based on information found in Sunset Western Garden Book;
- Irrigation systems shall be equipped with a "smart" irrigation controller, which automatically adjusts the frequency and/or duration of irrigation events in response to changing environmental conditions.
- Submit a rough and/or precise grading plan on all projects proposing more than 50 cubic yards of grading;
- Submit a soil management report, that includes recommendations for soil modification and/or amendment;
- Submit a project-specific regular maintenance schedule and two project-specific irrigation schedules for those projects subject to the ordinance.

Other provisions of the new regulations include standards for non-potable/recycled water use where it is available and new enforcement standards for compliance with water conservation practices.

Since the State law became effective on January 1, 2010, the Landscape Plan Review Fee was adjusted (Ordinance #4412, June 22, 2010) to reflect the increase in staff time necessary to meet these additional requirements.

The Planning Commission considered this ordinance on October 21, 2010. There was no one at the hearing who wished to address the Commission on this issue. The Commission recommended that the Board adopt the ordinance as presented on a vote of four commissioners in favor and one absent.

The proposed amendment is exempt from the California Environmental Quality Act (CEQA) in accordance with Section 15061(b)(3) of the CEQA Guidelines as the proposed change does not have the potential to cause a significant effect on the environment.

The proposed Ordinance is to be presented to the County of San Bernardino Board of Supervisors for adoption in the first quarter of 2011. Utilizing either the State Water Efficient Landscape Ordinance, which is in effect currently, or the County's specific Water Efficient Landscape Ordinance; the drought mitigation for this hazard is positive.

Infrastructure

Title: **Critical Route Planning Committee**

Sponsor: San Bernardino County Fire Protection District Office of Emergency Services

Description: San Bernardino County Fire Protection District Office of Emergency Services has a "Critical Route Planning Committee" that is developing countywide routes and alternate routes for use in evacuating residents from a disaster area while simultaneously allowing first responders' access into a disaster area without congestion and gridlock. The Committee members are from County departments, City and Town representatives, and key state and federal agencies. The Critical Route Planning effort is being coordinated with surrounding counties to prevent congestion and gridlock at the County boundaries. The Critical Route Planning Committee Routes and maps should be completed in 2011.

Title: **Arrowbear Drive Realignment and Widening**

Sponsor:

Description: The Arrowbear community off State Highway 18 has limited access to State Highway 138. The existing bridge/spillway and road needs to be realigned and widened to facilitate access by emergency personnel during wildfires and flooding.

Strategy: Remove and replace existing bridge/spillway, realign and widen the road

Status: Proposed

Completion Date: Future project

Local Priority:

Total Cost: $2,000,000

Funding Description: Seek grant funding

Title: **Cedar Glen Fire Access**

Sponsor:

Description: Lack of paved roads inhibits traffic circulation and the ability to enter and exit the area without backtracking during wildfire emergencies.

Strategy: Construct road and drainage improvements to Little Bear Creek Road and Elder Drive

Status: Proposed

Completion Date: Future project

Local Priority:

Total Cost: $2,500,000

Funding Description: Seek grant funding

Title: Institution Road

Sponsor:

Description: Institution Road is the only paved access road for the Glen Helen Rehabilitation Facility and is often closed due to flooding and debris flows

Strategy: Create an all-weather access road for the Glen Helen Rehabilitation Facility, by constructing pipes, arch culverts or other bridge structures

Status: Proposed

Completion Date: Future project

Local Priority:

Total Cost: $6,000,000

Funding Description: Seek grant funding

Preparedness/Response

Title: California Disaster Corps

Sponsor:

Description: San Bernardino County is one of five counties in the State of California that received a grant from CaliforniaVolunteers to develop a "first-in-the-nation" Disaster Corps Program. The grant provides for materials and two grant-funded contract positions to coordinate and administer the new program. California Disaster Corps is the realization of a vision by Governor Arnold Schwarzenegger "to professionalize, standardize and coordinate highly trained disaster volunteers statewide."

The San Bernardino County Disaster Corps Program will help mitigate the effects of a major disaster, such as an earthquake, by insuring members are prepared to care for themselves, those in their home and others in their immediate neighborhood. This will relieve the need for response by professional rescuers and allow them to focus much-needed resources on more critical life-saving needs. Disaster Corps Members will participate in educating the community in personal preparedness as well. Once fully trained, Disaster Corps Members will act as a valuable, well-trained volunteer resource to assist professional responders in extinguishing small fires, light search and rescue, and disaster medical operations during a large incident. Additional Disaster Corps abilities may include mass-care and shelter operations. The San Bernardino County Office of Emergency Services plans to complete the training, preparation and organization of the initial 200-member Disaster Corps Program in 2012.

Title: Mass Care and Shelter

Sponsor:

Description: After the 2003 Wildland Fires, the County and American Red Cross recognized the need to provide services beyond basic care and short-term sheltering, especially during large fires, floods, and

earthquakes. Under the 2007/2008 City of Los Angeles Regional Catastrophic Planning Grant Program (RCPGP), three employees were hired to address the issue and support mass care projects.

The Mass Care & Shelter Plan and Concept of Operations, outlines the framework of a new one-stop shelter concept, Shelter Operations Compound (SHOC). It combines a shelter, a Local Assistance Center (LAC) and a Non- LAC Unit in one easy location. Residents can access public information and referral services through the LAC, and then take a short walk to the Non-LAC Unit for communication, postal services, and other private organizations/business at little to no cost. The completion of the Plan in 2012 will help to sync local resources, encourage local self-sufficiency, foster partnership between public and private agencies, and serve as a reference document for the region.

To increase Mass Care and Shelter capability of the County, grants from 2008-2009 Homeland Security Grant Program (HSGP) and 2009 Riverside Regional Urban Area Security Initiative (UASI) funded the Mass Care and Shelter Trailer/Cache Program. By 2012, the program will have 36 trailers/caches equipped with mass care and shelter supplies, strategically placed throughout the County and ready for rapid deployment. It is expected to serve over 7,200 residents. In addition to enhancing the comfort levels of shelter residents, the program will produce standardized documents and protocols for procuring and maintaining Mass Care and Shelter trailers/caches. These plans and programs will help the County prepare for and mitigate damages from hazards.

Title: 2012 Golden Guardian Exercise

Sponsor: San Bernardino County Operational Area

Description: The San Bernardino County Operational Area will be participating in the 2012 Golden Guardian Exercise (GG12) which will focus on the Southern California Regional Catastrophic Plan (SCRCP). This plan is based on a 7.8 magnitude earthquake scenario along the southern section of the San Andres Fault.

The purpose for participation in the 2012 Golden Guardian Exercise is to address the County's potential to respond to a catastrophic earthquake event based on the plan, and to better prepare for such an occurrence. The goal of the exercise will be to conduct an effective multiagency/multi-jurisdictional evaluation of the Regional Catastrophic Plan with our Operational Area response partners.

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8.3. Annex -- Special Districts Department Generalized Projects

Special Districts Department Generalized Projects

Special Districts Department Planning Process:

The County of San Bernardino Special Districts Department (Department) has historically identified goals, objectives, and projects to mitigate the negative effects of hazards. The Special Districts Department continues to work with various Advisory Commissions and the public to identify and mitigate the impacts of hazards to the various services that the Department provides, including: cemetery operations, dam operations, detention basin operations, landscaping services, open space, parks and recreation, refuse services, roads, streetlights, television translator, water distribution and treatment system operations, sewer collection system operations, and wastewater treatment and recycling plant operations.

The Department diligently identifies the hazards that each service district or County Service Area and their zones (CSA) face, and has assessed the vulnerability according to the potential event. Hazards, whether they are technological or natural, affect CSAs with varying frequency and can cause injury, impose monetary losses, and the disruption of services, affecting the Department's mission as a public agency service provider. Losses can be substantially reduced or eliminated through comprehensive pre-disaster planning and mitigation actions.

Many groups and individuals have contributed to the Department's planning for Disasters and the necessary hazard mitigation efforts. Advisory Committees, located in the Department's various CSAs, have provided input and support for the various aspects of hazard mitigation, including identifying persistent hazards that develop after storm events and options for mitigation. Department staff participates in the hazard mitigation process by completing semi-annual audits of various CSAs, recommending temporary fixes and/or permanent solutions. CSA customers and the public have also participated in hazard mitigation planning by approaching staff in the field, contacting the office, and/or attending public meetings to identify temporary and ongoing hazards that need to be addressed. These resources have proved valuable to the Department in identifying and mitigating potential hazards. The Department also uses the following process to prepare hazard mitigation plans:

- Identify and prioritize disaster events that are most probable and destructive,
- Identify critical facilities,
- Identify areas within communities that are most vulnerable,
- Develop goals and objectives for reducing the effects of a disaster event,
- Develop specific projects to be implemented for each goal,
- Identify funding sources,
- Develop procedures for monitoring progress, and

- Mitigate identified potential hazards.

The Special Districts Department has identified areas for mitigation projects within the Special Districts of San Bernardino County as a result of their internal planning processes.. These projects, shown below, are organized by type of special district:

- Water Distribution Systems
- Sewer Collection Systems
- Wastewater Treatment Plants
- Road Districts
- Television Translator Districts
- Park Districts
- Big Bear Recreation and Park District
- Lucerne Valley Recreation and Park District

These proposed projects are in the conceptual stage and detailed planning will be done in the future as funding becomes available. Prioritization of projects will be done in the planning stages, based on the risk prioritizations developed for the current Multi-Jurisdictional Hazard Mitigation Plan.

WATER SYSTEMS (Distribution Systems):

Fire:

1. Rockscape or pave property grounds which have structures located in wilderness and or areas prone to wildfires. Double the width of external fire breaks.
2. Re-roof buildings and structures with tile or fire resistant material.

Flood:

1. Add drainage, elevate facilities and adjust sloping for facilities in low-lying areas and in natural waterways or floodplains.
2. Conduct hydrologic and hydraulic studies for all facilities located near flood plains/natural waterways.
3. Encase water pipelines with specific sized rock, gravel, and road base in natural waterways to prevent continual washout or exposure during heavy storm events/floods.

Earthquake:

1. Retrofit structures to higher seismic standards.
2. Purchase portable containers (Conex containers) to stage emergency supplies and equipment for the first responders (i.e. water, food, small off road vehicles, fuel, cots, toiletries, communication devices, blankets, wet weather gear, etc.) at strategic water system locations throughout County of San Bernardino. Conex containers can be

relocated if necessary to assist field staff during a disaster to maintain the operations of water systems.

General Hazard (Fire/Flood/Earthquake):

1. Retrofit existing buildings and facilities with connectors/ATS for emergency generators and/or install permanent emergency generators at critical facilities, including wells and booster station locations.
2. Develop a plan for speeding the repair of and functional restoration of water and wastewater systems through stockpiling of shoring materials, temporary pumps, surface pipelines, portable hydrants, and other supplies.
3. Develop a plan for areas subject to high ground shaking, earthquake-induced ground failure, and surface fault rupture to determine a replacement schedule for pipelines (along with importance, age, type of construction material, size, condition, and maintenance or repair history).
4. Develop a plan for short-term and intermediate-term sheltering of employees.
5. Develop a plan to work with local agencies that handle hazardous materials to coordinate mitigation efforts for the possible release of these materials due to a natural disaster such as an earthquake, flood, fire, or landslide.

SEWER SYSTEMS (Collection Systems):

Fire:

1. Rockscape or pave property grounds which have structures located in wilderness and or areas prone to wildfires. Double the width of external fire breaks.
2. Re-roof buildings and structures with tile or fire resistant material.

Flood:

1. Add drainage, elevate facilities and adjust sloping for facilities in low-lying areas and in natural waterways or floodplains.
2. Conduct hydrologic and hydraulic studies for all facilities located near flood plains/natural waterways.
3. Encase sewer pipelines with specific sized rock, gravel, and road base in natural waterways to prevent continual washout or exposure during heavy storm events/floods.

Earthquake:

1. Develop a plan for short-term and intermediate-term sheltering of employees.
2. Retrofit structures to higher seismic standards.
3. Purchase portable containers (Conex Containers) to stage emergency supplies and equipment for the first responders (i.e. water, food, small off road vehicles, fuel, cots, toiletries, communication devices, blankets, wet weather gear, etc.) at strategic sewer system locations throughout County of San Bernardino. Conex containers can be relocated if necessary to assist field staff during a disaster to maintain the operations of sewer systems.

General Hazard (Fire/Flood/Earthquake):

1. Retrofit existing buildings and facilities with connectors/ATS for emergency generators and/or install permanent emergency generators.
2. Develop a plan for speeding the repair and functional restoration of water and wastewater systems through stockpiling of shoring materials, temporary pumps, surface pipelines, portable hydrants, and other supplies.
3. Develop a plan for areas subject to high ground shaking, earthquake-induced ground failure, and surface fault rupture to determine a replacement schedule for pipelines (along with importance, age, type of construction material, size, condition, and maintenance or repair history).

WASTEWATER TREATMENT PLANTS:

Fire:

1. Rockscape or pave property grounds which have structures located in wilderness and or areas prone to wildfires. Double the width of external fire breaks.
2. Purchase and store water pumps capable of suppressing fire.

Flood

1. Purchase and maintain a stock of k-rails; to be moved for use during storm events to divert water and mud flows.
2. Add drainage, elevate facilities and adjust sloping for facilities in low-lying areas and in natural waterways or floodplains.
3. Conduct hydrologic and hydraulic studies for all facilities located near flood plains/natural waterways.

Earthquake:

1. Develop a plan for short-term and intermediate-term sheltering of employees.

ROADS:

Fire:

1. Install generators at all road facilities. This will allow uninterrupted communications and provide power to refuel critical emergency response equipment.
2. Purchase emergency water supply or water purification devices to ensure uninterrupted supply of water to emergency response personal.
3. Clear vegetation from Road District facilities/yards.

Flood:

1. Install four full roadway width gates in CSA 70 Zone G on the following roadways, Desert Front Rd. (2 required) and Quail Haven Rd. (2 required). This will prevent people from attempting to cross the Sheep Creek water crossings on these roadways during heavy water and debris flow.
2. Install pre-fabricated bridges in CSA 70 Zone G on the following roadways, Desert Front Rd. and Quail Haven Rd. at the Sheep Creek water crossing areas. This will allow safe egress and ingress during heavy water and debris flow.
3. Upgrade culverts in all flood prone areas. Most existing culvert sizes were never designed for high water volume. Upgrading will prevent roadway washouts caused by water bypassing existing culverts.
4. Upgrade culvert sizes in Main Channels and replace old culverts in Main Channels as required.
5. Slope stabilization at water crossing areas along roadways. This will prevent the loss of the roadways at these areas by preventing undermining by the water.
6. Install generators at all road facilities. This will allow uninterrupted communications and provide power to refuel critical emergency response equipment.
7. Purchase emergency water supply or water purification devices to ensure uninterrupted supply of water to emergency response personal.
8. Soil stabilization on roadway shoulders. This will prevent erosion caused by flood conditions.
9. Soil stabilization of dirt roadways. This will help mitigate the loss of material from the roadway during flooding conditions.

Earthquake:

1. Install generators at all road facilities. This will allow uninterrupted communications and provide power to refuel critical emergency response equipment.
2. Purchase emergency water supply or water purification devices to ensure uninterrupted supply of water to emergency response personal.

TELEVISION TRANSLATOR DISTRICTS:

General Hazard (Fire, Flooding, Earthquake):

1. Install and maintain emergency generators at all TV Translator sites. Newberry Springs, Lucerne Valley, and Morongo Valley TV Transmitter sites are in need emergency generators. Pinto and Elephant Mountain sites have existing generators. Installing emergency generators at these sites will enable emergency information to be disseminated to the residents living in these remote locations.
2. Establish a centralized communications network to monitor channel output for TV Districts and provide emergency information by way of character generator tied to channel transmissions.
3. Conduct annual tower and guide wire inspections to mitigate storm/wind/earthquake hazards from knocking out communications.
4. Install poly insulators on power poles with high voltage power lines for Pinto Mountain. Establish an open purchase order for a High Voltage Electrician to provide annual inspections of power poles and service lines.

5. Upgrade wood power poles to metal poles that could withstand fire, wind, and flood damage.
6. Maintain roadways on mountaintops and within washes leading to remote tower sites. Earthquakes and flash floods can block roadways, making them impassable to restore emergency communications.

PARK DISTRICTS:

General Hazard (Fire, Flooding, Earthquake):

1. Trim large trees in parks to avert limb breakage and toppling during storm events.
2. Establish emergency centers to ration drinking water at various County Park Community Centers.
3. Establish community garden plots in designated County Park areas as an ongoing and emergency food source, including planting fruit bearing trees.
4. Conduct an inventory or list of County Park Facilities and Community Centers to establish a list of pre-designated emergency operations or disaster relief sites. Not all Community Centers are an appropriate size to accommodate large numbers of evacuees and may only serve as command and control centers or distribution centers.
5. Establish small solar energy fields or other forms of renewable power at County Community Centers to facilitate stand-alone emergency operations for the community.
6. Conduct repair and replacement of old roofs, and clearing of gutters and roof drains to minimize potential damage from major storm events.
7. Establish designated sites (County Parks or Community Centers) where sandbags can be obtained for major storm events to help in the mitigation of damage due to flooding.
8. Conduct an evaluation or study of County Park and Community Center facilities to install curbs, retaining walls, and drains to carry or divert water away from buildings.

BIG BEAR RECREATION AND PARK DISTRICT:

General Hazard (Fire, Flooding, Earthquake):

1. Retrofit existing buildings and facilities with connectors/ATS for emergency generators and/or install permanent emergency generators at critical facilities.
2. Re-roof buildings and structures with tile or fire resistant material.
3. Installation of a generator at Meadow Park Gymnasium for emergency and medical services.

LUCERNE VALLEY RECREATION AND PARK DISTRICT:

General Hazard (Fire, Flooding, Earthquake):

1. Retrofit existing buildings and facilities with connectors/ATS for emergency generators and/or install permanent emergency generators at critical facilities.
2. Re-roof buildings and structures with tile or fire resistant material.

8.4. Annex – Special Districts Department

Special Districts Department

Below is a listing of the Special Districts in the Special Districts Department listed by Department Type:

Special Revenue Districts

1. CSA 40 Elephant Mountain Television Repeater services
2. CSA 70 Countywide General Provides centralized mechanism for administration of personnel who serve all board governed special districts.
3. CSA 70 D-1 Lake Arrowhead Dam Provides for maintenance of the Papoose Lake Dam at Lake Arrowhead
4. CSA 70 DB-1 Bloomington provides for maintenance of two detention basins and four landscaped intersections in the Bloomington area.
5. CSA 70 DB-2 Big Bear maintains a detention basin, open space and storm drain conveyances in the Maple Ave area of Big Bear Lake.
6. CSA 70 EV-1 East Valley provides for the maintenance of the Alabama Street storm drain in the Redlands Plaza area.
7. CSA 70 TV-2 Morongo Valley provides television translator services to the Morongo Valley area.
8. CSA 70 TV-4 Wonder Valley provides television translator services to the Wonder Valley area.
9. CSA 70 TV-5 Mesa provides television translator services to the Copper Mesa, Desert Heights, Flamingo Heights, Landers and Yucca Mesa areas.
10. CSA 120 North Etiwanda Preserve provides for the management, protection and operation of 762 acres of a preserved Riversidian Coastal Sage Habitat located north of Rancho Cucamonga and east of Day Creek Boulevard.
11. CFD 2006-1 Lytle Creek is responsible for the maintenance of open space and storm drain protection services in the Glen Helen area.

Enterprise Funds – Airport - Refuse

1. CSA 60 Apple Valley Airport Operations, capital projects, maintenance
2. CSA 60 Apple Valley Airport Capitol Improvement Fund
3. CSA 70 HL Havasu Lake provides for refuse collection in the community of Havasu Lake

Parks Districts

1. CSA 20 Joshua Tree provides funding for four parks, three ball fields, one recreation center building, a water playground, a skateboard park, and a 12,000 square foot community center. The District also provides maintenance for area streetlights.
2. CSA 29 Lucerne Valley provides ambulance services, park and recreation services, a cemetery, television translators, and street lighting to the community of Lucerne Valley.
3. CSA 42 Oro Grande provides water, sewer, park, refuse collection and street lighting services to the community of Oro Grande.
4. CSA 56 Wrightwood provides park and recreation services along with one community center and one senior center for the community of Wrightwood.

5. CSA 63 Oak Glen/Yucaipa maintain a 19-acre park site which contains a historical schoolhouse, tennis court, playground, picnic area and paved parking lot for unincorporated areas in Yucaipa and Oak Glen.
6. CSA 70 M Wonder Valley provides park services to the community of Wonder Valley.
7. CSA 70 P-6 El Mirage provides park and recreation services for the area of El Mirage.
8. CSA 70 P-8 Fontana provides park maintenance for the community of Fontana.
9. CSA 70 P-10 Mentone to provide park maintenance, landscaping, and street lighting services.
10. CSA 70 P-12 Montclair provide landscaping, graffiti removal, block wall maintenance,
11. and street lighting services to Tract 17509 in the Montclair area.
12. CSA 70 P-13 El Rancho Verde provides landscape improvements to the Riverside Avenue median in the unincorporated area of El Rancho Verde.
13. CSA 70 P-14 Mentone provides landscape maintenance, street lighting services and a detention basin to Tract 16602 in the Mentone area.
14. CSA 70 P-16 Eagle Crest provides landscape maintenance and street lighting services to Tract 16756 in the Mentone area.
15. CSA 70 W Hinkley provide park services and a community center to the community of Hinkley.
16. CSA 82 Searles Valley covers maintenance costs for the roadside park in Searles Valley.
17. Big Bear Valley Recreation and Park currently maintains 6 developed parks, 2 undeveloped parks, several community buildings including the Big Bear Valley Senior Center, 3 ball fields, and a swim beach.
18. Moonridge Animal Park is administered by the Big Bear Valley Recreation and Park District. The Zoo is open year round for visitors to see alpine species on exhibit. The Zoo receives approximately 99,600 visitors annually.
19. Bloomington Recreation and Park maintains two community parks, an equestrian arena, sports fields, and a community center.

Road Districts

1. CSA 18 Cedar Pines maintain paved and dirt roadways, one community center and one five-acre park.
2. CSA 59 Deer Lodge Park maintains paved roads.
3. CSA 68 Valley of the Moon maintains paved roads.
4. CSA 69 Lake Arrowhead maintains paved roads.
5. CSA 70 G Wrightwood maintains paved and unpaved roads.
6. CSA 70 M Wonder Valley provides road maintenance for the community of Wonder Valley.
7. CSA 70 PRD G-1 Wrightwood provides funding for a road improvement project in County Service Area 70, Improvement Zone G (Wrightwood).
8. CSA 70 R-2 Twin Peaks provides road maintenance and snow removal services for Twin Peaks area.
9. CSA 70 R-3 Erwin Lake to maintain paved roads.
10. CSA 70 R-4 Cedar Glen provides road maintenance and snow removal services.
11. CSA 70 R-5 Sugarloaf provides road maintenance and snow removal services.
12. CSA 70 R-7 Lake Arrowhead provides road maintenance and snow removal services.
13. CSA 70 R-8 Riverside Terrace Road provides road maintenance.
14. CSA 70 R-9 Rim Forest provides road maintenance and snow removal services.
15. CSA 70 R-11 provides road maintenance and snow removal services.
16. CSA 70 R-12 Baldwin Lake provides road maintenance and snow removal services.

17. CSA 70 R-13 Lake Arrowhead North Shore provides road maintenance and snow removal services.
18. CSA 70 R-15 Landers provides road grading and road maintenance services.
19. CSA 70 R-16 Running Springs provides road maintenance and snow removal services.
20. CSA 70 R-19 Copper Mountain provides road maintenance services.
21. CSA 70 R-20 Flamingo Heights provides road maintenance services.
22. CSA 70 R-21 Mountain View provides road maintenance and snow removal services.
23. CSA 70 R-22 Twin Peaks provides road maintenance and snow removal services.
24. CSA 70 R-23 Mile High Park provides road maintenance and snow removal services.
25. CSA 70 R-25 Lucerne Valley maintains an unpaved road in the community of Lucerne Valley.
26. CSA 70 R-26 Yucca Mesa provides road maintenance and road grading services.
27. CSA 70 R-29 Yucca Mesa provides road maintenance and road grading services.
28. CSA 70 R-30 Verdemont provides road maintenance and road grading services.
29. CSA 70 R-31 Lytle Creek provides road maintenance.
30. CSA 70 R-33 Big Bear City provides road maintenance and snow removal services.
31. CSA 70 R-34 Big Bear Road provides road maintenance and snow removal services.
32. CSA 70 R-35 Cedar Glen provides road maintenance and snow removal services.
33. CSA 70 R-36 Pan Springs provides road maintenance and snow removal services.
34. CSA 70 R-39 Highland Estates - Phelan provides road maintenance.
35. CSA 70 R-40 Upper North Bay-Lake Arrowhead provides road maintenance and snow removal services.
36. CSA 70 R-41 Quail Summit provides road maintenance.
37. CSA 70 R-42 Windy Pass provides road paving and maintenance services.
38. CSA 70 R-44 Saw Pit Canyon provides road improvement and maintenance, including: several large culverts; headwall installations and maintenance; land slide restoration; snow removal; and road grading services.
39. CSA 70 R-45 Erwin Lake maintains a dirt road in the Erwin Lake area on the east end of Big Bear Valley.
40. CSA 70 R-46 South Fairway Drive provides road improvement and maintenance, including: several large culverts; headwall installations and maintenance; land slide restoration; snow removal; and road grading services.
41. CSA 79 R-1 Green Valley Lake provides road maintenance, paving, and snow removal services.

Enterprise Funds - Sewer

1. CSA 42 Oro Grande provides sewer services to 178 Equivalent Dwelling Units.
2. CSA 53 B Fawnskin provides sewage collection system, which includes an innovative vacuum system, service 1,289 Equivalent Dwelling Units.
3. CSA 64 Spring Valley Lake provides sewer services to 4,280 Equivalent Dwelling Units and maintains three lift stations.
4. CSA 70 GH Glen Helen provides park and recreation, sanitation, and streetlight services to the Glen Helen area.
5. CSA 70 S-3 Lytle Creek provides sewer service to 794 Equivalent Dwelling Units.
6. CSA 70 S-7 Lenwood provide sewer services to the community of Lenwood.
7. CSA 70 SP-2 High Country provides service to 231 Equivalent Dwelling Units (EDUs) in the High Country Development tract of homes. Through an out-of-area service agreement with the City of Hesperia, the District also provides service to 286 EDUs within city boundaries.

8. CSA 79 Green Valley Lake maintains a sewer collection system and interceptor, with sewage treatment provided through a contract with Running Springs Water District.
9. CSA 82 Searles Valley provides sewage collection service to 768 Equivalent Dwelling Units as well as streetlight services.

Street Light Districts

1. CSA 30 Red Mountain provides for the maintenance and operation of streetlights in the community of Red Mountain.
2. CSA 53A Big Bear provide streetlight services to the community of Fawnskin in the Big Bear area.
3. CSA 54 Crest Forest provides streetlight services to the community of Crest Forest.
4. CSA 70 EV-1 Citrus Plaza provides streetlights in the Citrus Plaza area in Redlands.
5. CSA 70 GH Glen Helen provides streetlights in the development known as Lytle Creek North Development project
6. CSA 70 SL-2 Chino provides streetlights in the Chino area.
7. CSA 70 SL-3 Mentone provides streetlights in the community of Mentone.
8. CSA 70 SL-4 Bloomington provides streetlights in the community of Bloomington
9. CSA 70 SL-5 Muscoy provides streetlights in the community of Muscoy
10. CSA 73 Arrowbear Lake provides for the operation and maintenance of streetlights.
11. CSA SL-1 Countywide provides for the operation and maintenance of streetlights in communities throughout the County.

Enterprise Funds - Water

1. CSA 42 Oro Grande provides for the operation and maintenance of water connections for 139 customers.
2. CSA 64 Spring Valley Lake provides water services in the community of Spring Valley Lake.
3. CSA 70 CG Cedar Glen provides water service to the community of Cedar Glen.
4. CSA 70 F Morongo Valley provides water service to the community of Morongo Valley.
5. CSA 70 J Oak Hills provides service to 3,175 customers. The District also maintains four wells, five booster stations, nine water storage reservoirs and approximately 130 miles of water pipelines ranging from 6 inches in diameter to 16 inches.
6. CSA 70 W-1 Goat Mountain provides for the operation and maintenance of water connections for 646 customers.
7. CSA 70 W-3 Hacienda provides for the operation and maintenance of water connections for 169 customers. The District also maintains two wells, four booster stations and 110,000 gallons of reservoir storage.
8. CSA 70 W-4 Pioneertown provides for the operation and maintenance of 120 water connections. The District also maintains six wells and reservoir storage of 310,000 gallons.

8.5. Operational Area Stakeholders

Operational Area Stakeholders –

Stakeholders for the Multi-Jurisdictional Hazard Mitigation Plan Update for San Bernardino County are:

- San Bernardino County Unincorporated Area
- San Bernardino County Fire Protection District
- San Bernardino County Flood Control District
- San Bernardino County Special Districts Department
- Big Bear Valley Recreation and Parks District
- Bloomington Recreation and Parks District

These six stakeholders participated in the Update effort from the beginning of the Hazard Mitigation Plan Update Project. Representatives from the six stakeholders were on the County Planning Team and provided input throughout the entire time of the Update project. Participants representing the San Bernardino County Unincorporated Area included Land Use Services, Building and Safety, County Geologist, Economic Development Agency, Architecture and Engineering, Transportation, Sheriff-Coroner, Superintendent of Schools, San Bernardino County Museum, and Arrowhead Regional Medical Center. Participants from the County Fire Protection District included the Office of Emergency Services, Fire Suppression, and the Office of the Fire Marshall. Participants from the County Flood Control District included hydrologists, debris experts, design engineers and other support staff. Special Districts Department included the Deputy Chief and support staff for the Special Districts Department, the Bige Bear Valley recreation and Parks District, and the Bloomington Recreation and Parks District.

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8.6. HMP Web Pages

San Bernardino County Fire Office of Emergency Services Home Page 1 of 2

San Bernardino County Fire Department

Dan Wurl - Fire Chief

Emergencies: Dial 9-1-1 or 909.822.8071
909.355.8800

Incident Information:

News and Incident Information | Golden Guardian | Contacts/Directory

Fire Home
OES Home
Division Manager
OES Mission/Role/Goals
What is Emergency Management?
What is the Standardized Emergency Management System (SEMS)?
What is the Operational Area (OA)?
Emergency Alert System (EAS)
California Service Corps (CSC) and Community Emergency Response Teams (CERT)
Developing a Family Evacuation Plan
Emergency Planning Documents
Web Site Links

Office of Emergency Services

Printable Version

Disaster Preparedness and Recovery

San Bernardino County Fire Department/Office of Emergency Services (OES) is coordinating the update of the San Bernardino County Unincorporated Area Multi-Hazard Mitigation Plan. Hazard Mitigation Plans (HMP) must be updated, adopted and approved every five years; the existing County Plan was approved by FEMA in 2005.

The purpose of the update is to validate and incorporate new information into the plan and identify progress that has been made since the last approval of the plan. It should be noted that an approved HMP is required to receive federal assistance under the Hazard Mitigation Grant Program or Pre Disaster Mitigation grant programs.

Public input and comment is being sought on the 2010 update of the Multi-Hazard Mitigation Plan for the unincorporated area of San Bernardino County. Click here to view the Executive Summary of the Hazard Mitigation Plan. Please forward your comments to the Office of Emergency Services at sbcoa@oes.sbcounty.gov by September 7, 2010. Contact the Office of Emergency Services at (909) 356-3998 for additional information.

CERT COMMUNITY EMERGENCY RESPONSE TEAM

Community Emergency Response Teams are the neighborhood's first response in a major disaster. Click here to see video from the rollout of CERT Disaster Training and Preparedness trailers.

Office of Emergency Services

The Office of Emergency Services (County OES) is a Division of the San Bernardino County Fire Department. County OES is responsible for disaster planning and emergency management coordination throughout the San Bernardino County Operational Area (OA) by functioning as the Lead Agency for the OA. County OES serves a county population of over 1.8 million and over 20,100 square miles. While

http://sbcfire.org/oes/index.asp 9/1/2010

Figure 44 Web Page - Page One

County OES does not directly manage field operations, as does an Incident Command Post (ICP), it ensures coordination of disaster response and recovery efforts through day-to-day program management and during a disaster/emergency.

Other major areas of responsibility

- Initial staffing and coordination of the County Emergency Operations Center (EOC), which is the primary coordination point for disasters and major emergencies.
- Coordination of EOC Responders, who are pre-selected and trained individuals to perform specific functions in the EOC as designated under the Standardized Emergency Management System (SEMS).
- Development and coordination of annual exercises to test the readiness of various types of disasters and large-scale emergencies.
- Development and implementation of the OA Emergency Operations Plan (EOP). The EOP identifies hazards and response, roles and responsibilities, and other key activities of government during a disaster. County OES also maintains current copies of all San Bernardino County City/Town EOP's.
- Development and implementation of other Emergency Management documents to be used throughout the County by many agencies:
  - Annexes, such as the Terrorism, Citizen Corps Program and Multi-Jurisdictional Hazard Mitigation Plan Annexes.
  - Concept of Operations (CONOPS), such as the Flood Area Safety Taskforce (FAST) and Telephone Emergency Notification (TENS) CONOPS.
  - Standard Operating Procedures (SOPs), such as the EOC Section and Citizen Corps Program SOPs.

- Assistance in the development and coordination of the Mountain Area Safety Taskforce (MAST) and Flood Area Safety Taskforce (FAST) organizations.
- Coordination of many disaster-related Grant Programs for the County, such programs as Homeland Security Grant, Bark Beetle Emergency Grant, and OJP State Domestic Preparedness Equipment Program.
- Development and coordination of Emergency Alert System (EAS) notifications for countywide distribution, such as Evacuation Orders (both voluntary and mandatory).
- Assistance to County unincorporated communities and residents with local region preparedness.

↑Up

Figure 45 Web Page - Page Two

8.7. HMP Press Release

News Release

Contact: Cindy Serrano, Assistant Division Manager
(909) 356-3998

August 31, 2010

Denise L. Benson, Division Manager
San Bernardino County Fire Department
Office of Emergency Services

FOR IMMEDIATE RELEASE

San Bernardino County Fire Department/Office of Emergency Services (OES) is coordinating the update of the San Bernardino County Unincorporated Area Multi-Hazard Mitigation Plan. Hazard Mitigation Plans (HMP) must be updated, adopted and approved every five years; the existing County Plan was approved by FEMA in 2005.

The purpose of the update is to validate and incorporate new information into the plan and identify progress that has been made since the last approval of the plan. It should be noted that an approved HMP is required to receive federal assistance under the Hazard Mitigation Grant Program or Pre Disaster Mitigation grant programs.

Public input and comment is being sought on the 2010 update of the Multi-Hazard Mitigation Plan for the unincorporated area of San Bernardino County. An Executive Summary is posted on-line at http://www.sbcfire.org/oes. Please forward your comments to the Office of Emergency Services at sbcoa@oes.sbcounty.gov by September 7, 2010.

Contact the San Bernardino County Fire Department/Office of Emergency Services at (909) 356-3998 for additional information.

Dan Wurl
Fire Chief

Figure 46 Press Release

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8.8. Newspaper Clipping

S.B. County Fire seeks input in hazard mitigation plan update | San Bernardino County | P... Page 1 of 1

S.B. County Fire seeks input in hazard mitigation plan update

10:00 PM PDT on Wednesday, September 1, 2010

The San Bernardino County Fire Department is seeking public input into an update of its multi-hazard mitigation plan.

The update is required every five years for the county to continue to receive federal disaster mitigation assistance. It seeks to validate and incorporate new information into the plan and identify the county's progress since the last approval.

An executive summary of the plan can be viewed at www.sbcfire.org/oes. Comments may be submitted to sbcoa@oes.sbcounty.gov by Tuesday.

--Paul LaRocco

plarocco@PE.com

http://www.pe.com/localnews/sbcounty/stories/PE_News_Local_D_nb02_update.1b96c03.... 9/2/2010

Figure 47 Newspaper Clipping

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8.9. HMP PowerPoint Presentation

Figure 48 - HMP PowerPoint Slide 1

Figure 49 - HMP PowerPoint Slide 2

Figure 50 - HMP PowerPoint Slide 3

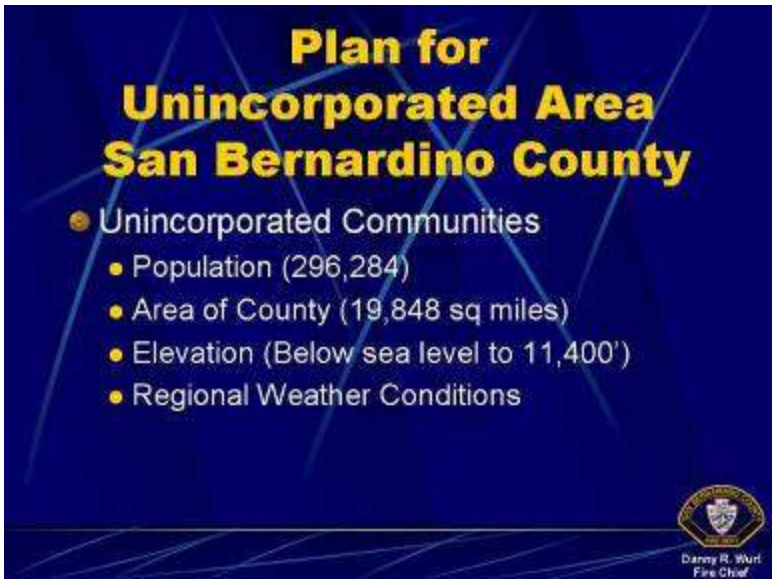

Figure 51 - HMP PowerPoint Slide 4

Figure 52 - HMP PowerPoint Slide 5

Figure 53 - HMP PowerPoint Slide 6

Figure 54 - HMP PowerPoint Slide 7

Figure 55 - HMP PowerPoint Slide 8

Figure 56 - HMP PowerPoint Slide 9

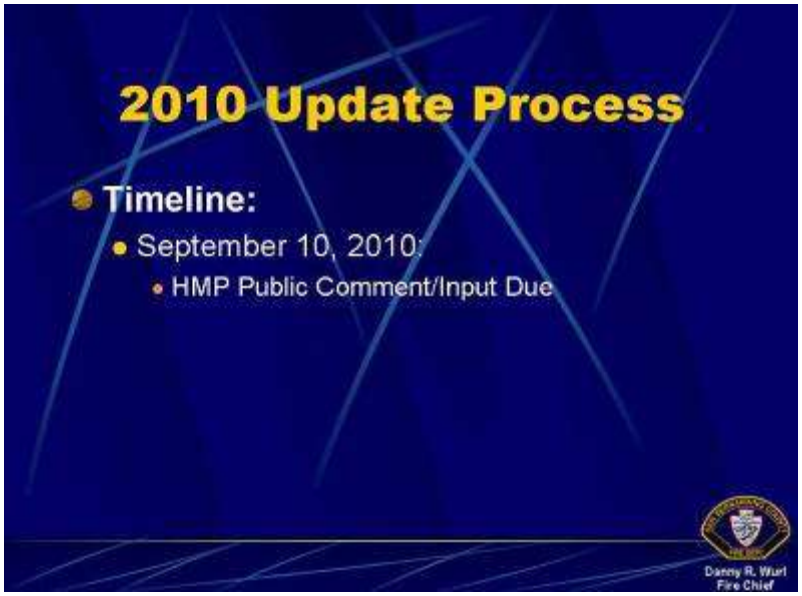

Figure 57 - HMP PowerPoint Slide 10

Figure 58 - HMP PowerPoint Slide 11