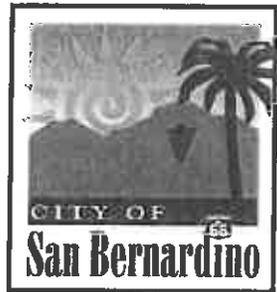


Hazard Mitigation Plan

City of San Bernardino , California



Preparation Date: March 1, 2005
Adoption Date: -- March 21, 2005

Prepared By/Point of Contact
Rick Blackburn, Disaster Management Coordinator
City of San Bernardino Fire Department
200 East 3rd Street, San Bernardino, California 92410
(909) 384-5115
blackburn_ri@sbcity.org

Planning Team

This Hazard Mitigation Plan for the City of San Bernardino was prepared by:

Signature: _____ Date: _____

Name: Teri Baker

Title: Senior Administrative Analyst

Organization: City of San Bernardino - City Administrators Office

Signature: _____ Date: _____

Name: Rick Blackburn

Title: Disaster Preparedness Coordinator

Organization: City of San Bernardino - Fire Department

Signature: _____ Date: _____

Name: Doug Dupree

Title: Fire Marshal

Organization: City of San Bernardino - Fire Department

Signature: _____ Date: _____

Name: Walt Goggin

Title: Lieutenant

Organization: City of San Bernardino - Police Department

Signature: _____ Date: _____

Name: Mark Lancaster

Title: City Engineer

Organization: City of San Bernardino - Development Services Department

Signature: _____ Date: _____

Name: Judi Penman

Title: Executive Director

Organization: San Bernardino Chamber of Commerce

Planning Team (continued)

Signature: _____ Date: _____

Name: Dennis Reichardt

Title: Deputy Fire Chief

Organization: City of San Bernardino - Fire Department

Signature: _____ Date: _____

Name: Valerie Ross

Title: City Planner

Organization: City of San Bernardino - Development Services Department

Signature: _____ Date: _____

Name: Gary Sturdivan

Title: Safety Manager

Organization: East Valley Water District

Signature: _____ Date: _____

Name: Jon Turnipseed

Title: Manager

Organization: San Bernardino Municipal Water Department

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Section 1 – Introduction

1.1 General Description

The City of San Bernardino has developed this Hazard Mitigation Plan, in response to the Disaster Mitigation Act of 2000 (DMA 2000), Section 322 (a-d). The City of San Bernardino has prepared this Hazard Mitigation Plan in accordance with the Federal Emergency Management Agency, the State of California Office of Emergency Services, and the San Bernardino County Office of Emergency Services.

Hazard mitigation reduces or eliminates losses of life and property from emergencies and disasters. Hazard mitigation ensures that costly cycles of paying recovery costs to recover from the same types of disasters year after year are broken and that post-disaster repairs and reconstruction result in a reduction in hazard vulnerability. While we cannot prevent disasters from happening, their effects can be reduced or eliminated through a well-organized public education and awareness effort, preparedness and mitigation.

1.2 Purpose and Authority

The Disaster Mitigation Act of 2000 (DMA 2000), Section 322 (a-d) requires that local governments, as a condition of receiving federal disaster mitigation funds, have a mitigation plan that describes the process for identifying hazards, risks and vulnerabilities, identify and prioritize mitigation actions, encourage the development of local mitigation, and provide technical support for those efforts. This mitigation plan serves to meet those requirements.

1.3 Community Information

The section is to provide a broad perspective, brief history and describe the makeup and development of the community.

1. Topography:

The City of San Bernardino is located in San Bernardino County at the base of the San Bernardino mountains, approximately 59 miles East of Downtown Los Angeles, approximately 58 miles West of Palm Springs, and approximately 11 miles North of the City of Riverside. The City of San Bernardino encompasses approximately 59 square miles (142.66 sq. kilometers). San Bernardino is positioned 34.13 degrees north of the equator and 117.29 degrees west of the prime meridian. The elevation in the area is approximately 1,046 feet above sea level.

2. Climate:

The San Bernardino Valley has a very temperate climate. The average mean temperature is 66.5 degrees F, with an average of 312 days of sunshine each year. The average annual rainfall is 15.12 (maximum yearly rainfall) inches per year. Temperatures range from the 30s to the 60s in January and from the 50s to high 90s in July. Nearly 15 inches of rain falls annually mostly from December to February. The average winter temperature is 53 degrees F. The average spring temperature is 68.7 degrees F. The average summer temperature is 80.6 degrees F.

3. Population/Demographics:

The population of San Bernardino is approximately 200,000. There are approximately 58,000 households in the City of San Bernardino. San Bernardino per capita income is approximately \$12,500, with an approximate median income of \$26,900. In addition, San Bernardino is home to many major businesses including educational institutions, medical centers/hospitals, and transportation companies.

5. Economy:

Since World War II, the San Bernardino area has grown considerably. Since coastal area congestion has caused land and space costs to rise, growth was forced into the Inland Empire. This began in the late 1970s as development entered the region along the I-10 and Route 60 freeways from Los Angeles County and Route 91 from Orange County into the West end of the Inland Empire. Since that time, the region has seen an explosion of home building as well as the creation of the associated population serving jobs in sectors like retailing, consumer services, finance and local government.

This pattern underlies the Inland Empire's aggressive employment performance. In the 1990s, Southern California lost 500,000 jobs with the end of the Cold War. Yet, there was no year when the Inland Empire's employment base stopped expanding. As a result, from 1990-2002, it has added 340,788 jobs. This was more than San Diego County, Orange County, or Los Angeles County. In 2002, the inland region (up 30,000) has led California in job growth despite the state and U.S. economic slowdowns.

6. Industry:

The Inland Empire industrial market of which San Bernardino is a part saw the development of 161.3 million square feet of industrial buildings from 1991-2001, representing 43% of Southern California's new space erected in this period. In mid-2002, estimates indicate that the Inland Empire's industrial market reached 277 million square feet of space (10,000 square feet & up). That is 30.8% of the 899 million square feet of inventory in giant Los Angeles County. Importantly, companies migrating to the inland region find that almost 60% of the area's industrial space is new, having been built since 1991. Industrial firms have flocked to the Inland Empire as the area's space is modern and less expensive and because its huge blue collar workforce will work for about 5% less than their colleagues in Southern California's coastal counties to avoid commuting. Since 1994, over 1,000 companies have either migrated to the region, or moved into new space locally in order to expand. As a result, the inland region's industrial vacancy rate has fallen from 23.1% in early 1991 to 7.6% in mid-2002 despite the very large amounts of new space that has been developed. Even before the Inland Empire's pattern of land usage began forcing industrial developers to look for sites deeper in the region, San Bernardino has seen 69 companies and agencies take 4.5 million square feet in the city to expand. Together, they added 7,985 jobs to its economic base at the time they opened. They represented 6.9% of the 1,000 major operations added in the Inland Empire during this period. A total of 47 of the cities' new firms were manufacturers, followed by eleven large service operations, four state and federal agencies and seven distributors.

Compared to the Inland Empire, the City of San Bernardino has added an unusually large share of service firms (17.1% vs. 10.7%) and agencies (5.7% vs. 0.9%). This is reflective of its status as a county seat and its large office complexes. The larger share of manufacturing operations (67.1% vs. 53.3%) and much smaller share of distribution firms (10.0% vs. 35.1%) are reflective of two facts. San Bernardino has several traditional manufacturing areas that firms have found attractive, at the same time, distributors have tended to congregate nearer to Los Angeles and Orange counties. This is also why its new distributors have tended to use much less space per worker (890 vs 2,007 square feet). The recent location of several large logistics operations in the East San Bernardino Valley indicates that the city will soon see more and more such operations heading its way now that the inland region's western zone is running short of land.

Section 2 - Jurisdiction Information

2.1 Adoption by local governing body

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

As required by the Federal Emergency Management Agency and the State of California Office of Emergency Services, the City of San Bernardino formally adopted the City of San Bernardino Hazard Mitigation Plan by a Resolution of the Mayor and Common Council of the City of San Bernardino on March 21, 2005, upon the initial review and subsequent guidance by the State of California Office of Emergency Services. The adopted Council Resolution is attached.

2.2 Multi-Jurisdictional plan adoption

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

The City of San Bernardino is adopting their Hazard Mitigation Plan as part of the County of San Bernardino's Multi-Jurisdictional Hazard Mitigation Plan, which is expected to be adopted by the County of San Bernardino Board of Supervisors on March 29, 2005.

Section 3 - Planning Process Documentation and Public Involvement

REQUIREMENT
IFR §201.6(c)(1): **An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: (1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval; (2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information. [The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.**

3.1 Planning Team Member Information

This Hazard Mitigation Plan was discussed and prepared by members of the following Planning Team:

Teri Baker
Senior Administrative Analyst
City of San Bernardino - City Administrators Office

Rick Blackburn
Disaster Management Coordinator
City of San Bernardino - Fire Department

Doug Dupree
Fire Marshal
City of San Bernardino - Fire Department

Walt Goggin
Lieutenant
City of San Bernardino - Police Department

Mark Lancaster
City Engineer
City of San Bernardino - Development Services Department

Judi Penman
Executive Director
San Bernardino Chamber of Commerce

Dennis Reichardt
Deputy Fire Chief
City of San Bernardino - Fire Department

Valerie Ross
City Planner
City of San Bernardino - Development Services Department

Gary Sturdivan
Safety Manager
East Valley Water District

Jon Turnipseed
Manager
San Bernardino Municipal Water Department

3.2 Multi-Jurisdictional Planning Team Information
Not Applicable

3.3 Public Involvement Items

Public Involvement in preparing this Hazard mitigation Plan consisted of the following items:

Meeting between Rick Blackburn, Disaster Management Coordinator, and Tom Marek, Information Services Director - 8/13/2004

City of San Bernardino Hazard Mitigation Plan Meeting - 8/12/2004

Meeting between Rick Blackburn, Disaster Management Coordinator, and Joe Lease, Building Official - 8/11/2004

Meeting between Rick Blackburn, Disaster Management Coordinator, and Mark Lancaster, City Engineer - 8/9/2004

City of San Bernardino Hazard Mitigation Plan Meeting - 8/5/2004

City of San Bernardino Hazard Mitigation Plan Meeting - 7/29/2004

City of San Bernardino Hazard Mitigation Plan Meeting - 7/20/2004

East Valley Water Local Mitigation Plan Committee Meeting – 7/7/2004

East Valley Water Local Mitigation Plan Committee Meeting - 6/30/2004

Redlands Local Mitigation Planning Committee Meeting - 6/3/2004

Redlands Local Mitigation Planning Committee Meeting - 5/12/2004

Meeting between Rick Blackburn, Disaster Management Coordinator, Larry Pitzer, Fire Chief, and Brian Preciado, Deputy Fire Chief - 4/28/2004

San Bernardino County Office of Emergency Services Mitigation.com Presentation - 4/12/2004

State of California Office of Emergency Services Hazard Mitigation Plan Training - 3/18/2004

Meeting with San Bernardino County Office of Emergency Services Staff - 3/16/2004

Redlands Local Mitigation Planning Committee Meeting - 3/10/2004

Initial Planning meeting between Rick Blackburn, Disaster Management Coordinator, and Larry Pitzer, Fire Chief, - 3/3/2004

Section 4 - Risk Assessment

A risk assessment is measuring 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 community could be affected by a hazard, and the impact on community assets. A risk assessment consists of three components: hazard identification, vulnerability analysis, and risk analysis.

Based on instruction and guidance from the San Bernardino County Office of Emergency Services, the City is identifying and assessing the top three Natural Hazards.

4.1 Hazard Identification

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

The following table represents the Critical Priority Risk Index for each hazard facing the City.

Hazard	Probability	Magnitude/Severity	Warning Time	Duration	Priority Risk Index
Wildfires	High Likely	Critical	Less than 6 Hours	Less than one week	3.6
Earthquake	High Likely	Critical	Less than 6 Hours	Less than one day	3.5
Flooding / Flash Flooding	Likely	Critical	12-24 Hours	Less than one week	2.85
Extreme Heat	Not Specified	Not Specified	Not Specified	Not Specified	0
Dam Failure	Not Specified	Not Specified	Not Specified	Not Specified	0
Landslide	Not Specified	Not Specified	Not Specified	Not Specified	0
Drought	Not Specified	Not Specified	Not Specified	Not Specified	0

The following is a list of each hazard/threat confronting the City of San Bernardino.

Natural Hazards

1. Wildfires

General Definition:

There are three different classes of wild land or wildfires. A surface fire is the most common type and burns along the floor of a forest, moving slowly and killing or damaging trees. A ground fire is usually started by lightning and burns on or below the forest floor. Crown fires spread rapidly by wind and move quickly by jumping along the tops of trees. Wildfires are usually signaled by dense smoke that fills the area for miles around. Wildfires present a significant potential for disaster in the southwest, a region of relatively high temperatures, low humidity, and low precipitation during the summer, and during the spring, moderately strong daytime winds. Combine these severe burning conditions with people or lightning and the stage is set for the occurrence of large, destructive wildfires.

Description:

Wildfires are a problem in the City of San Bernardino, based on the City's geographical location, topography, terrain, and climate.

Historical Profile:

Historically, the area of chaparral-urban interface in the north and northeast sections of the City are the areas most at risk. Fire season typically runs from early May through October. Compounding the problem are Santa Ana wind conditions frequently experienced during the autumn months.

2. Earthquake

General Definition:

An earthquake is a sudden, rapid shaking of the earth caused by the breaking and shifting of rock beneath the Earth's surface. Sometimes the movement is gradual. At other times, the Earth's tectonic 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. 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 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 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.

There are 45 states and territories in the United States at moderate to very high risk from earthquakes, and they are located in every region of the country. California experiences the most frequent damaging earthquakes; however, Alaska experiences the greatest number of large earthquakes—most located in uninhabited areas.

Description:

The City of San Bernardino fits this profile of an area likely to experience significant adverse effects as a result of a moderate to severe seismic event. This includes the likelihood to endure seismic phenomena such as surface rupture, ground shaking, liquefaction, and subsidence.

Historical Profile:

The San Bernardino area is one of the most seismically active areas in the state. The City of San Bernardino is particularly susceptible to the damaging effects of a moderate to severe earthquake because of three factors: regional seismic history and tectonics; proximity to active fault zones; and geological characteristics and hazards. The City is located in close proximity to the San Jacinto, Cucamonga, San Andreas, and Chino-Corona segment of the Elsinore fault zones.

3. Flooding / Flash Flooding

General Definition:

Floods are the most common and widespread of all natural disasters--except fire. Most communities in the United States have experienced some kind of flooding, after spring rains, heavy thunderstorms, or winter snow thaws. 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 your property) from: Overflow of inland or tidal waters or unusual and rapid accumulation or runoff of surface waters from any source, or a mudflow. The 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 that result in a flood."

The standard for flooding is the "100-year flood," a benchmark used by the Federal Emergency Management Agency to establish a standard of flood control in communities throughout the country. Thus, the 100-year flood is also referred to as the "regulatory" or "base" flood. Actually, there is little difference between a 100-year flood and the 10-year flood. Both terms are statements of probability that scientists and engineers use to describe how one flood compares to others that are likely to occur. In fact, the 500-year flood and the 10-year flood are only a foot apart on flood elevation—which means that the elevation of the 100-year flood falls somewhere in between. The term 100-year flood means that there is a one percent chance of a flood of that intensity and elevation happening in any given year. In other words, it is the flood elevation that has a one percent chance of being equaled or exceeded each year. By comparison, the 10-year flood means that there is a ten percent chance for a flood of its intensity and elevation to happen in any given year.

Description:

Flooding is a problem in the City of San Bernardino, based on the City's geographical location, topography, and terrain.

Historical Profile:

Historically, flooding has been a major problem in San Bernardino. Moderate to severe flooding typically causes road closure, disruption of utilities, contamination of the potable water supply, mudslides, and extensive property damage. Severe flooding usually requires evacuation of residents from inundation areas. Past and potential flooding areas have been determined, based on FEMA flood information and historical data. Flooding in San Bernardino is a problem due to the topography of the area and the proximity to the mountains north of the City.

4. Extreme Heat

General Definition:

Temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks are defined as extreme heat. Droughts occur when a long period passes without substantial rainfall. A heat wave combined with a drought is a very dangerous situation. In a normal year, approximately 175 Americans die from extreme heat.

5. Dam Failure

General Definition:

A dam is defined as a barrier constructed across a watercourse for the purpose of storage, control, or diversion of water. Dams typically are constructed of earth, rock, concrete, or mine tailings. A dam failure is the collapse, breach, or other failure resulting in downstream flooding. The hazard classification is not an indicator of the adequacy of a dam or its physical integrity. Dam failures typically occur when spillway capacity is inadequate and excess flow overtops the dam, or when internal erosion (piping) through the dam or foundation occurs.

6. Landslide

General Definition:

Landslides are a serious geologic hazard common to almost every state in the United States. It is estimated that nationally they cause up to \$2 billion in damages and from 25 to 50 deaths annually. Factors that allow the force of gravity to overcome the resistance of earth material to landslide movement include: saturation by water, steepening of slopes by erosion or construction, alternate freezing or thawing, earthquake shaking, and volcanic eruptions. Landslides are typically associated with periods of heavy rainfall or rapid snow melt and tend to worsen the effects of flooding that often accompanies these events. In areas burned by forest and brush fires, a lower threshold of precipitation may initiate landslides.

7. Drought

General Definition:

A drought is a period of drier-than-normal conditions that results in water-related problems. Precipitation (rain or snow) falls in uneven patterns across the country. When no rain or only a small amount of rain falls, soils can dry out and plants can die. When rainfall is less than normal for several weeks, months, or years, the flow of streams and rivers declines, water levels in lakes and reservoirs fall, and the depth to water in wells decreases. If dry weather persists and water supply problems develop, the dry period can become a drought. A period of below-normal rainfall does not necessarily result in drought conditions.

Technology Hazards

The City of San Bernardino was advised by the County of San Bernardino Office of Emergency Services that the City is not required to identify or address any technological hazards in the City at this time.

Human Hazards

The City of San Bernardino was advised by the County of San Bernardino Office of Emergency Services that the City is not required to identify or address any human hazards in the City at this time.

4.2 Hazard Profile

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

The Calculated Priority Risk Index (CPRI) factors the elements of risk: Probability (P), Magnitude/Severity (M), Warning Time (WT) and Duration to create an index which allows for the prioritization of mitigation activities based on the level of risk. The following hazards are listed in order of decreasing CPRI score.

Natural Hazards

The City of San Bernardino was advised by the County of San Bernardino Office of Emergency Services that the City is required to identify or address only the top three Natural Hazards in the City at this time.

Earthquake

Historical Events

The following section lists and describes the historical events associated with this hazard in City of San Bernardino.

1. Hector Mine Quake 10/16/1999

Hazard: Earthquake
Location: Mojave Desert, CA
Latitude: 34.59
Longitude: 116.27

2. Landers Quake 6/28/1992

Hazard: Earthquake
Location: Yucca Valley, CA
Latitude: 34.13
Longitude: 116.26

The following table summarizes the occurrences, impact and costs of this hazard.

(Dollar Amounts in Thousands)

Hazard: Earthquake		Response and Recovery Costs				
Name	Date	City	County	State	Federal	Total
Hector Mine Quake	10/16/1999	Unknown	Unknown	Unknown	Unknown	Unknown
Landers Quake	6/28/1992	Unknown	Unknown	Unknown	Unknown	Unknown
Totals:		Unknown	Unknown	Unknown	Unknown	Unknown

Calculated Priority Risk Index (CPRI)

Probability: **4 - Highly Likely**

Magnitude/Severity: **3 - Critical**

Warning Time: **4 - Less 6 Hours**

Duration: **2 - Less than one day**

The CPRI for the Earthquake hazard for City of San Bernardino is:

Probability + Magnitude/Severity + Warning Time + Duration = CPRI

$$4 \times .45 + 3 \times .30 + 4 \times .15 + 2 \times .10 = 3.5$$

Flooding / Flash Flooding

Historical Events

The following section lists and describes the historical events associated with this hazard in City of San Bernardino.

1. Winter Storms 2005 1/7-11/2005

Hazard: Flooding

Location: San Bernardino, CA

2. Christmas Day Floods 12/25/2003

Hazard: Flooding

Location: San Bernardino, CA

3. El Nino 2/23/1998

Hazard: Flooding

Location: San Bernardino, CA

4. Harrison Canyon Floods 1/11/1980

Hazard: Flooding

Location: San Bernardino, CA

The following table summarizes the occurrences, impact and costs of this hazard.

(Dollar Amounts in Thousands)

Hazard: Flooding		Response and Recovery Costs				
Name	Date	City	County	State	Federal	Total
Winter Storms 2005	1/7-11/2005	In progress	In progress	In progress	In progress	In progress
Christmas Day Floods	12/25/2003	Unknown	Unknown	Unknown	Unknown	Unknown
El Nino	2/23/1998	Unknown	Unknown	Unknown	Unknown	Unknown
Harrison Canyon Floods	2/23/1998	Unknown	Unknown	Unknown	Unknown	Unknown
Totals:		Unknown	Unknown	Unknown	Unknown	Unknown

Calculated Priority Risk Index (CPRI)

Probability: **3 - Likely**

Magnitude/Severity: **3 - Critical**

Warning Time: **2 - 12-24 Hours**

Duration: **3 - Less than one week**

The CPRI for the Flooding hazard for City of San Bernardino is:

Probability + Magnitude/Severity + Warning Time + Duration = CPRI

$$3 \times .45 + 3 \times .30 + 2 \times .15 + 3 \times .10 = 2.85$$

Wildfires

Historical Events

The following section lists and describes the historical events associated with this hazard in City of San Bernardino.

1. Old Fire 10/25/2003

Hazard: Wildfires

Location: San Bernardino, CA

2. Panorama Fire 11/24/1980

Hazard: Wildfires
 Location: San Bernardino, CA

The following table summarizes the occurrences, impact and costs of this hazard.

(Dollar Amounts in Thousands)

Hazard: Wildfires		Response and Recovery Costs				
Name	Date	City	County	State	Federal	Total
Old Fire	10/25/2003	Unknown	Unknown	Unknown	Unknown	Unknown
Panorama Fire	11/24/1980	Unknown	Unknown	Unknown	Unknown	Unknown
Totals:		Unknown	Unknown	Unknown	Unknown	Unknown

Calculated Priority Risk Index (CPRI)

Probability: 4 - **Highly Likely**

Magnitude/Severity: 3 - **Critical**

Warning Time: 4 - **Less 6 Hours**

Duration: 3 - **Less than one week**

4.3 Vulnerability Assessment

4.3.1 Asset Inventory

REQUIREMENT

§201.6(c)(2)(ii)(A):

" The plan Should describe the vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas ..."

4.3.1.1 Community Asset Overview

This section provides an overview of the assets in City of San Bernardino.

Critical Facilities:

The City of San Bernardino designates "critical facilities" as those facilities which the City "could not be without".

Non-Critical Facilities:

The City of San Bernardino designates "non-critical facilities" as those facilities which the City would not want damaged or destroyed, however, would not be devastating to the City if damaged or destroyed.

4.3.1.2 Critical Facility List

This section provides a listing of the Critical Facilities in City of San Bernardino.

San Bernardino Fire Headquarters

200 East 3rd Street, San Bernardino, CA 92410

Size: 22,600 square feet

San Bernardino Police Headquarters

710 North "D" Street, San Bernardino, CA 92401

Size: 68,000 square feet

San Bernardino City Hall

300 North "D" Street, San Bernardino, CA 92418

Size: 105,000 square feet

Fire Station #222

1201 West Ninth Street, San Bernardino, CA 92411

Size: 4,400 square feet

Fire Station #223

2121 North Medical Center Drive, San Bernardino, CA 92411

Size: 4,300 square feet

Fire Station #224

2641 North "E" Street, San Bernardino, CA 92405

Size: 5,500 square feet

Fire Station #225

1640 Kendall Drive, San Bernardino, CA 92407

Size: 4,300 feet

Fire Station #226

1920 Del Rosa Avenue, San Bernardino, CA 92404

Size: 4,300 square feet

Fire Station #227

282 West 40th Street, San Bernardino, CA 92407

Size: 3,300 square feet

Fire Station #228

3398 East Highland Avenue, San Bernardino, CA 92346

Size: 4,300 square feet

Fire Station #229

202 Meridian Avenue, San Bernardino, CA 92410

Size: 3,600 square feet

Fire Station #230

502 South Arrowhead Avenue, San Bernardino, CA 92346
Size: 3,200 square feet

Fire Station #231

450 Vanderbilt Way, San Bernardino, CA 92408
Size: 6,300 square feet

Fire Station #232

6055 Palm Avenue, San Bernardino, CA
(under construction)

Fire Station #233

165 South Leland Norton Way, San Bernardino, CA 92408

Fire Department Automotive Shop

1208 H Street, San Bernardino, CA 92405
Size: 5,500 square feet

City Yard

182 South Sierra Way, San Bernardino, CA 92408
Size: 127,100 square feet

San Bernardino Economic Development Agency

201 North E Street, San Bernardino, CA 92401

Community Hospital of San Bernardino

1805 Medical Center Drive, San Bernardino, CA 92411

St. Bernardine Medical Center

2101 North Waterman Avenue, San Bernardino, CA 92404

Arroyo Valley High School

(Potential Shelter Facility identified by San Bernardino Unified School District)
1881 West Baseline Street, San Bernardino, CA 92411

Cajon High School

(Potential Shelter Facility identified by San Bernardino Unified School District)
1200 Hill Drive, San Bernardino, CA 92407

Pacific High School

(Potential Shelter Facility identified by San Bernardino Unified School District)
1020 Pacific Street, San Bernardino, CA 92404

San Bernardino High School
(Potential Shelter Facility identified by San Bernardino Unified School District)
1850 North E Street, San Bernardino, CA 92405

San Gorgonio High School
2299 Pacific Street, San Bernardino, CA 92404

Summary of Critical Facilities

Name	Facility Type	Critical Rank
San Bernardino Fire Headquarters	Fire Stations	Critical
San Bernardino Police Headquarters	Emergency Response Facility	Critical
San Bernardino City Hall	Government Facility	Critical
Fire Station #222	Fire Stations	Critical
Fire Station #223	Fire Stations	Critical
Fire Station #224	Fire Stations	Critical
Fire Station #225	Fire Stations	Critical
Fire Station #226	Fire Stations	Critical
Fire Station #227	Fire Stations	Critical
Fire Station #228	Fire Stations	Critical
Fire Station #229	Fire Stations	Critical
Fire Station #230	Fire Stations	Critical
Fire Station #231	Fire Stations	Critical
Fire Station #232	Fire Stations	Critical
Fire Station #233	Fire Stations	Critical
Fire Dept. Automotive Shop	Emergency Response Facility	Critical
City Yard	Government Facilities	Critical
San Bernardino Economic Development Agency	Government Facilities	Critical
Community Hospital of San Bernardino	Critical Care Facility	Critical
St. Bernardine Medical Center	Critical Care Facility	Critical
Arroyo Valley High School	Identified Shelter Facility	Critical
Cajon High School	Identified Shelter Facility	Critical
Pacific High School	Identified Shelter Facility	Critical
San Bernardino High School	Identified Shelter Facility	Critical
San Gorgonio High School	Identified Shelter Facility	Critical

4.3.1.4 Individual Hazard Vulnerability Analysis

This section serves to identify each hazard confronting the community and its vulnerabilities to that hazard

Natural Hazards

1. Earthquake

- a. Population. Approximately 100 percent of the community's population is vulnerable.
- b. Critical Facilities.
 - (1) Approximately 100 percent of the City's critical facilities are vulnerable.
 - (2) The specific critical facilities vulnerable in City of San Bernardino are all critical facilities identified above.:

2. Flooding/Flash Flooding

- a. Population. Approximately 50 percent of the community's population is vulnerable.
- b. Critical Facilities.
 - (1) Approximately 4 percent of the City's critical facilities are vulnerable.
 - (2) The specific critical facilities vulnerable in City of San Bernardino are:
Fire Station #231

3. Wildfires

- a. Population. Approximately 59 percent of the community's population are vulnerable.
- b. Critical Facilities.
 - (1) Approximately 16 percent of the community's critical facilities are vulnerable.
 - (2) The specific critical facilities vulnerable in City of San Bernardino are:
Fire Stations #225, 227, 228.

4.3.2 Potential Loss Estimation

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

4.3.2.1 Facility Replacement Cost Estimation

This section describes the replacement costs/economic impacts from identified critical facilities:

San Bernardino Police Headquarters

Facility Replacement Cost: \$15,500,000

Fire Department Automotive Shop

Facility Replacement Cost: \$155,000

San Bernardino City Hall

Facility Replacement Cost: \$1,368,0000

City Yard

Facility Replacement Cost: \$421,6000

San Bernardino Economic Development Agency

Facility Replacement Cost: Unknown

San Bernardino Fire Headquarters

Facility Replacement Cost: \$2,140,000

Fire Station #222

Facility Replacement Cost: \$330,000

Fire Station #223

Facility Replacement Cost: \$320,000

Fire Station #224

Facility Replacement Cost: \$420,000

Fire Station #225

Facility Replacement Cost: \$320,000

Fire Station #226

Facility Replacement Cost: \$320,000

Fire Station #227

Facility Replacement Cost: \$261,000

Fire Station #228

Facility Replacement Cost: \$321,000

Fire Station #229

Facility Replacement Cost: \$253,000

Fire Station #230

Facility Replacement Cost: \$260,000

Fire Station #231

Fire Stations

Facility Replacement Cost: \$820,000

Fire Station #232

Facility Replacement Cost: Unknown

Fire Station #233

Facility Replacement Cost: Unknown

4.3.2.2 Individual Hazard Economic Loss Estimation

This section describes the potential losses due to each hazard confronting the community or jurisdiction:

Natural Hazards

1. Earthquake

Summary of Economic Losses

- a. The economic loss resulting from this hazard is significant, but unknown.
- b. The loss from damage to structures from this hazard is significant, but unknown.

2. Flooding / Flash Flooding

Summary of Economic Losses

- a. The economic loss resulting from this hazard is significant, but unknown.
- b. The loss from damage to structures from this hazard is significant, but unknown.

3. Wildfires

Summary of Economic Losses

- a. The economic loss resulting from this hazard is significant, but unknown.
- b. The loss from damage to structures from this hazard is significant, but unknown.

4.3.2.3 Individual Hazard Human Loss Estimation

Natural Hazards

1. Earthquake

Summary of Human Losses

- a. The estimated number of fatalities resulting from this hazard is unknown, but minimal.
- b. The estimated number of injuries resulting from this hazard is approximately 100.
- c. The estimated number of displaced people resulting from this hazard is approximately in the hundreds.
- e. Percent of community's population at risk: 100%.

2. Flash Flooding

(See Flooding below)

3. Flooding

Summary of Human Losses

- a. The estimated number of fatalities resulting from this hazard is unknown, but minimal.
- b. The estimated number of injuries resulting from this hazard is unknown, but minimal.
- c. The estimated number of displaced people resulting from this hazard is approximately 0 to several hundred.
- e. Percent of community's population at risk: 50%.

4. Wildfires

Summary of Human Losses

- a. The estimated number of fatalities resulting from this hazard is unknown, but minimal.
- b. The estimated number of injuries resulting from this hazard is unknown, but minimal.
- c. The estimated number of displaced people resulting from this hazard is approximately in the thousands.
- e. Percent of community's population at risk: 50%.

4.3.3 Analysis of Community Development Trends

REQUIREMENT [The plan should describe vulnerability in terms of]
§201.6(c)(2)(ii)(C): providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

4.3.3.1 Development History

This section describes the development history for City of San Bernardino.

Development History:

The City was incorporated in 1866, about 15 years after it was founded. The original City included about one square mile. In 1905 the City Charter was adopted. Also, in 1905 a single annexation more than quadrupled the City's area. Between 1905 and 1940, 25 more annexations added just under 12 square miles to the City. In the period of 1950's - 1970's, the number of annexations increased sharply. By the end of 1987 a total of 356 annexations had increased the size of the City to 55 square miles. Currently, the City encompasses 60 square miles.

Future Development:

The City of San Bernardino, along with the entire Inland empire region, is continually growing and expected to see substantial future development in the future. This is due to the overcrowding of the Los Angeles and Orange County areas, the high price of real estate, and the trend of people moving eastward to find affordable housing and jobs.

4.4 Multi-Jurisdictional Risk Assessment

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

4.4 Multi-Jurisdictional Risk Assessment

Not Applicable

Section 5 – Mitigation Strategy

5.1 Community Capability Assessment

Storm Water Management Ordinances: Yes

Stream Management Ordinances: Yes

Zoning Management Ordinances: Yes

Subdivision Management Ordinances: Yes

Erosion Management Ordinances: Yes

Floodplain Management Ordinances: Yes

Floodplain Management Plan Published Date: 1/1/1992

Floodplain Management Last Delineation Date: 1/1/1992

Elevation Certificates Maintained: Yes

National Flood Insurance Program Community: Yes

NFPI Number: 060281

Land Use Plan: Yes

Land Use Plan Last Update: 1/1/1992

Community Zoned: Yes

Zoned Date: 1/1/1992

Established Building Codes: Yes

Building Codes Last Updated: 1/1/1997

Type of Building Codes: UBC, UFC

Local Electric Utilities: Southern California Edison

Local Water Utilities: San Bernardino Municipal Water District, East Valley Water District

Local Sewage Treatment Utilities: San Bernardino Municipal Water District

Local Natural Gas Utilities: Southern California Gas Company

Local Telephone Utilities: GTE

Fire Insurance Rating: Class 3

Fire Insurance Rating Date: 2/1/2000

Previous Mitigation Plans: None.

5.1.1 Existing Plans, Policies, and Ordinances

This section describes the existing plans, policies, and ordinances for City of San Bernardino.

Existing Community Plans/Documents:

General Plan, Emergency Operations Plan, City Development Code, City Municipal Code

5.1.2 Prior Mitigation Actions and Projects

This section serves to identify the Previous Mitigation Plans, Projects and Actions:

Previous Mitigation Plans, Projects and Actions:

Municipal Code, Development Code, Foothill Fire Zones, Hillside Management Overlay District, and Building Safety Enhancement Zone.

5.1.2.1 Completed and On-Going Mitigation Projects

This section serves to identify the Completed and On-Going Projects in the community.

The guidelines developed and enforced through the Municipal Code, Development Code, Foothill Fire Zones, Hillside Management Overlay District, and Building Safety Enhancement Zone are intended to ensure that any real-property projects approved in the City consider mitigation efforts to reduce wildfires, flooding, and earthquakes.

5.1.3 Technical and Fiscal Resources

This section describes the technical and fiscal resources for City of San Bernardino.

The City of San Bernardino's technical resources include the knowledge-base of the City's employees, contractors, and consultants. The City's Fiscal Resources include its economic base, tax base, and City annual budget.

5.2 Mitigation Goals

REQUIREMENT §201.6(c)(3)(i):

[The hazard mitigation strategy shall include: a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

5.2 Mitigation Goals

The following section provides an overview of the Mitigation Goals and Objectives:

1. Community Earthquake Preparedness

Description:

Develop a public awareness campaign to implement public education and awareness to mitigate earthquakes in the community.

2. Community Flooding Preparedness

Description:

Develop a public awareness campaign to implement public education and awareness to mitigate flooding to the community.

3. Community Wildfires Preparedness

Description:

Develop a public awareness campaign to implement public education and awareness to mitigate wildfires to the community.

4. Equipment for emergency responders

Description:

Identify, assess, and purchase new technology/equipment applicable to emergency responders and managers, particularly the need for off-road and four-wheel drive vehicles for those first responders deemed necessary by Department Heads.

5. First Responder Flooding Preparedness

Description:

Prepare San Bernardino's first responders / emergency personnel to respond to and recover from future flooding.

Objectives:

1. Update City's Emergency Operations Center(s) with new equipment and resources.
2. Ensure first responders have all-terrain vehicle capabilities.
3. Ensure first responders are equipped with effective communications equipment.

6. First responder Earthquake preparedness

Description:

Prepare San Bernardino's first responders / emergency personnel to respond to and recover from future earthquakes.

Objectives:

1. Update City's Emergency Operations Center(s) with new equipment and resources.
2. Ensure first responders have all terrain vehicle capabilities.
3. Ensure first responders are equipped with effective communications equipment.

7. First Responder Wildfire Preparedness

Description:

Prepare San Bernardino's first responders / emergency personnel to respond to and recover from future wildfires.

Objectives:

1. Update City's Emergency Operations Center(s) with new equipment and resources.
2. Ensure first responders have all terrain vehicle capabilities.
3. Ensure first responders are equipped with effective communications equipment.

8. Reduce future earthquake vulnerability

Description:

Reduce future earthquake vulnerability by ensuring that all City facilities and necessary emergency care facilities are seismically sound facilities.

9. Reduce future flooding vulnerability

Description:

Reduce future flooding vulnerability by ensuring that all possible, practical, and economically feasible flood mitigation measures are taken to protect public and private facilities and property.

10. Swift Water Rescue Capabilities

Description:

Provide any necessary swift water rescue training for emergency personnel (fire, police, public works) to fill current training and equipment gaps, including purchasing of essential equipment.

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

5.3 Mitigation Actions/Projects

The mitigation goals referenced in Section 5.2 above are being considered to reduce the effects of those natural hazards facing the community. Specifically, mitigation projects are being/and will continue to be considered which emphasize new and existing buildings and infrastructure, when fiscally and politically possible.

5.4 Implementation Strategy and Analysis of Mitigation Projects

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

5.4 Implementation Strategy and Analysis of Mitigation Projects

After adoption of the City of San Bernardino's Hazard Mitigation Plan by the Mayor and Common Council of the City of San Bernardino, the City will review and prioritize those mitigation goals and projects identified above. This review and prioritization will include utilizing a cost-benefit analysis of the projects. After review and prioritization, an Action Plan will be developed.

5.5 Multi-Jurisdictional Mitigation Strategy

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

5.5 Multi-Jurisdictional Mitigation Strategy

Not Applicable

Section 6 – Plan Maintenance

6.1 Monitoring, Evaluating and Updating the Plan

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

6.1 Monitoring, Evaluating and Updating the Plan

Plan Last Updated On:

Description of Plan Maintenance Procedures:

The City's Disaster Preparedness Division will monitor and evaluate the City's Hazard Mitigation Plan on an annual basis. Updates to this Plan will be conducted and prepared when deemed necessary to update substantive changes in the Plan or when required by Federal, State, or Local regulation.

6.2 Implementation through Existing Programs

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

6.2 Implementation through Existing Programs

San Bernardino will continue to strive to mitigate various hazards through the City's General Plan, Development Code, Municipal Code, and associated mitigation strategies included in the above mentioned plans.

6.3 Continued Public Involvement

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

6.3 Continued Public Involvement

In addition to the community participation during this Plan's planning process, the community of San Bernardino will continue public involvement in the plan maintenance process through the Common Council meeting adopting this Plan, further Public Hearings regarding this Plan, and any future Hazard Mitigation Plan Planning meetings where public input is encouraged.