Big Bear City Community Services District Multi-Hazard Mitigation Plan

February 9, 2011

Primary Point of Contact:

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Section 1 Introduction

1.1 Purpose of the Plan

Disasters cannot always be prevented. However their effects can be greatly minimized through planning, preparation, and mitigation efforts. Attempts to pre-plan and mitigate hazards where possible can reduce the recovery time and economic consequences associated with disasters. Additionally, hazard mitigation can eliminate the cycle of damage, reconstruction, and repeated damage that is sometimes seen when hazards are left unmitigated.

Mitigation involves analyzing hazards associated with disasters and finding methods of reducing the risks of these hazards. Specifically, mitigation efforts should reduce or eliminate losses of life, property, or environmental stability associated with a disaster.

The Big Bear City Community Services District (District) Hazard Mitigation Plan will identify the types of disasters that could affect the citizens, properties, and environment within the District. Using these potential disasters as a starting point, the plan will analyze and prioritize mitigation projects that will reduce or eliminate the anticipated hazards. Ultimately, the purpose of the plan is to reduce or eliminate losses associated with disasters and to end the cycle of damage and reconstruction that can occur with repetitive, non-mitigated losses.

1.2 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 Profile

1.3.1 Physical Setting

The Big Bear City Community Services District is located near a mountain resort area in the southwest portion of San Bernardino County. The District encompasses 21.13 square miles. It is bordered on the south, north and east by the San Bernardino National Forest. To the west lies the incorporated community of Big Bear Lake. The elevation is approximately 6,750 feet, and the surrounding mountains rise from 7,800 – 8,600 feet. The District is traversed by several intermittent drainage courses, some of which flow to Baldwin Lake, while others flow to Big Bear Lake. The District has a climate with four distinct

seasons. Summer high temperatures average 82 degrees Fahrenheit with winter lows averaging around 21 degrees. Average annual precipitation in the form of rain and snow is 21.5 inches per year.

1.3.2 History

Big Bear City Community Services District is a special service district located in San Bernardino County. The District was formed by voter approval on August 23, 1966. Initially, the District was the result of consolidation of three separate agencies including the Big Bear City Sanitation District, which provided trash collection, the Big Bear Fire Protection District, and the Big Bear City Street Lighting District. In 1967, the shareholders of the former Big Bear City Mutual Service Company voted to relinquish ownership and operation of their water system to the District, adding potable water to the services provided. The District's commitment to providing clean, safe, drinking water eventually led to the development and construction of a District-wide sewer system.

Today, the District is governed by a locally elected five member Board of Directors and includes more than 65 full-time employees, in addition to paid-call fire fighters. The District consists of overlapping Fire, Water, Sewer, Solid Waste and Street Lighting service areas. One or more services are provided to approximately 16,400 customers.

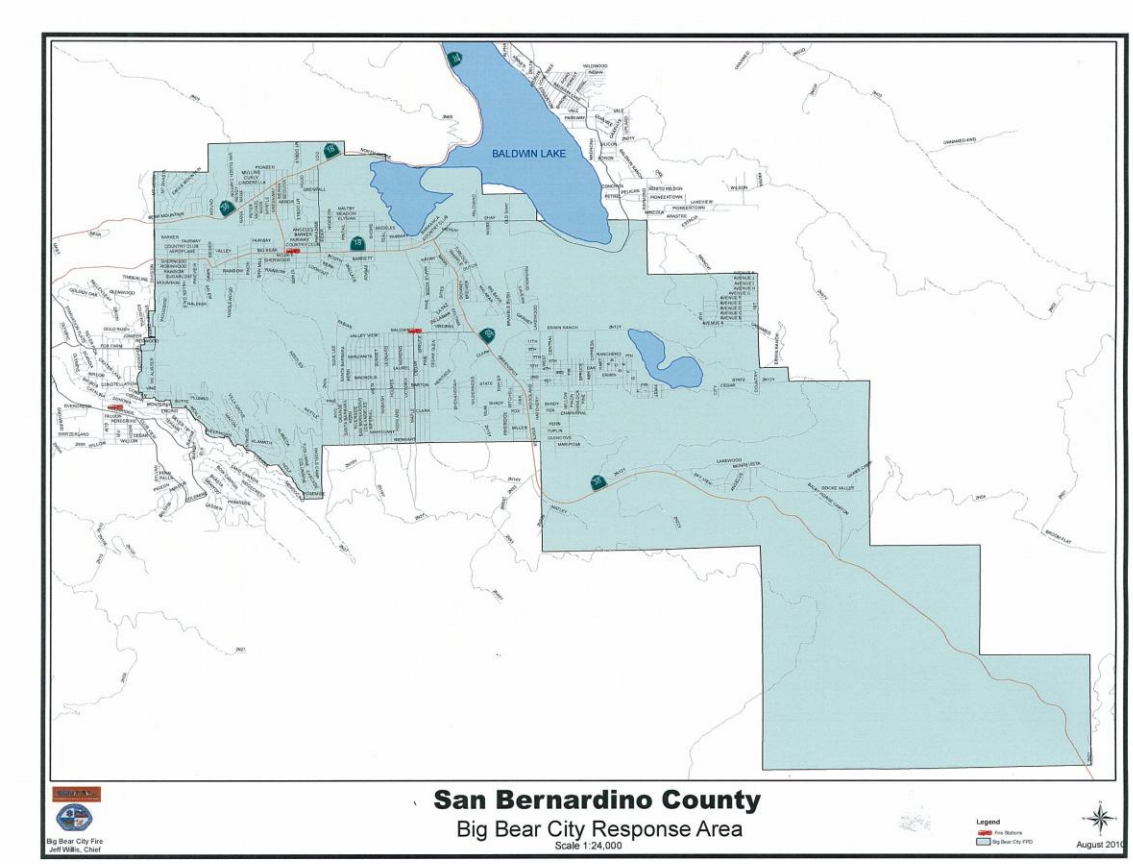
The Water Department's major facilities include 73 miles of pipeline ranging from 1.5 to 20 inches in diameter, 11 vertical wells, 2 slant wells, 2 springs, 4 tank reservoirs which store a total of 6.25 million gallons of water, and 6 water booster stations.

The Sewer Department maintains a transmission system consisting of approximately 115 lineal miles of sewer pipeline, 2,842 manholes, and 7 sewer lift stations. The Department services approximately 12,000 homes and businesses.

Solid Waste Department collects household and commercial refuse and transports it to the Big Bear Transfer Station. It has a fleet of 7 refuse- hauling and 4 support vehicles.

The Fire Department consists of 2 fully-staffed fire stations which house 11 major pieces of fire and medical apparatus. The Department is responsible for fire prevention and protection to more than 16,000 improved and unimproved properties. An additional function of the Fire Department includes paramedic and ambulance transport service for the entire mountain community.

The map below shows the boundaries of the Big Bear City Community Services District:



1.3.3 Demographics

The total population of the District is approximate 12,000.

Male population	49%
Female population	51%
Under 5 years	5%
6-17 years	9%
18-64 years	73%
65 + years	13%
Median age	40
White	90%
Hispanic or Latino	9%
All others	1%

Average household size	2.52
Average family size	2.96
Total housing units	9,240
Occupied housing units	3,918
Owner occupied units	2,917
Renter occupied units	1,001
Vacation housing units	5,322

1.3.4 Existing Land Use

Residential	85%
Commercial / Industrial / Institutional	5%
Agricultural / Open / Undeveloped	10%

1.3.5 Development Trends

Big Bear City has an economy that is based on the vacation and tourist industries. A high percentage of the residences are second homes, with approximately 61% of homes currently vacant. Big Bear City is currently experiencing a negative job growth rate and rising unemployment. The most common industries / occupations for males in Big Bear City include:

- Construction (19%)
- Accommodation and food services (18%)
- Public administration (9%)
- Educational services (7%)
- Arts, entertainment, and recreation (4%)
- Food and beverage stores (4%)
- Building material and garden equipment and supplies dealers (3%)

The most common industries / occupations for females include:

- ☐ Accommodation and food services (20%)
- ☐ Educational services (10%)
- ☐ Real estate and rental and leasing (9%)
- ☐ Health care (7%)
- ☐ Food and beverage stores (6%)
- ☐ Professional, scientific, and technical services (6%)
- ☐ Administrative and support and waste management services (5%)

Since the area economy is based on vacation and tourism, Big Bear City will reasonably experience a delayed economic recovery period compared to other San Bernardino County cities and special districts. This extended economic recovery period will be accompanied by reduced tax revenues and fewer

economic resources to be spent on all local area services, including hazard mitigation.

Section 2 Plan Adoption

2.1 Adoption by Local Governing Body

A (draft) Resolution of the Big Bear City Community Services District, adopting the Local Hazard Mitigation Plan as required by the Disaster Mitigation Act of 2000 is included in this Plan). Upon receipt of an "approvable pending adoption" status from FEMA, the District will formally adopt the resolution and forward the approved copy to the County of San Bernardino Office of Emergency Services and FEMA for filing.

2.2 Promulgation Authority

The Hazard Mitigation Plan will be reviewed by the following:

Jeffrey Newsome	President, Board of Directors
John Green	Board of Directors
Richard Ollilla	Board of Directors
James Smith	Board of Directors
Paul Terry	Board of Directors
Tim Moran	Interim General Manager
Jeffrey Willis	Fire Chief

2.3 Primary Point of Contact

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Section 3 Planning Process

3.1 Preparing for the Plan

Preparatory to the formulation of the plan, the District Hazard Mitigation Plan Point of Contact attended meetings, participated in conference calls, interfaced with local leaders and communicated with the public. Using the Plan Review Crosswalk as a guide, the plan was built starting in June of 2010 and completed in February of 2011.

The County of San Bernardino Office of Emergency Services brought together agencies from around the county in a united planning effort. Utilizing grant funding, the county was able to contract with ICF International. ICF set up a portal for all county participants to utilize during their planning process. The portal provided maps, charts, copies of previous plans, and links to FEMA guidance. Additionally, ICF moderated meetings and conference calls to provide participants with helpful guidance during the planning process. The District utilized these services throughout the planning process.

At the local level, planning committees were formed with the City of Big Bear Lake along with other local stakeholders including: Big Bear Lake Fire Protection District, Mountain Mutual Aid, Bear Valley Unified School District, Bear Valley Community Healthcare District, Bear Valley Electric, Department of Water and Power, and Southwest Gas. While only some of these entities were required to prepare their own hazard mitigation plan, each organization provided the District with information on their internal hazard mitigation planning processes. Understanding their hazards and planning efforts was of great value in the formulation of the District plan. Public input was sought at Mountain Mutual Aid meetings.

At the District level, the following documents were reviewed and taken into consideration: 2005 Hazard Mitigation Plan, District-Wide Emergency Operation Plan, Department Emergency Plans, Water Master Plan, Sewer Master Plan, Fire Protection Evaluation and Master Plan, and Community Wildfire Protection Plan. Public input was sought at several District Board Meetings, at staff meetings, and at department weekly safety meetings.

The most critical preparatory item was the review of the District's 2005 Hazard Mitigation Plan. Since very few members of the current planning team participated in the development of the previous Hazard Mitigation Plan, they initiated a review of the 2005 Hazard Mitigation Plan. All sections were reviewed. The previous plan had several weaknesses, including the following:

- The plan was too brief. In several sections, greater detail and analysis was needed.
- The plan listed a several hazards, but very few potential mitigation projects.
- The listed projects were not accomplished and were unknown to team members.
- The projects did not seem to match with the most emphasized hazards.

- Public input was minimal.

The 2011 Hazard Mitigation Plan attempts to correct each of these deficits.

After initial planning, the formulation of the Hazard Mitigation Plan followed the timeline established by the County of San Bernardino Office of Emergency Services, with the District participating in Group 2-B.

3.1.1 Planning Team

The local planning team consisted of the following:

Name	Title or Organization	Contact
Rachael Jahn	Safety Compliance Coordinator	(909) 585-2362
Jeff Willis	Fire Chief	(909) 585-2362
Tim Moran	Interim General Manager / Water Dept. Supt.	(909) 584-4008
Mike Johanson	Sewer Department Superintendent	(909) 584-4007
Mark Motherspaw	Solid Waste Superintendent	(909) 936-5341
Phil Mosley	Director of Community Services	(909) 572-2892
David Yegge	Big Bear Lake Fire Protection District	(909) 866-4668
Michael Clothier	Bear Valley Healthcare District	(909) 273-0318
Linda Oymaian	Bear Valley Unified School District	(909) 585-6842
Ken Markling	Bear Valley Electric Service	(909) 866-4678
Roy Meyers	Southwest Gas Corporation	(909) 866-7675
Steve Wilson	Department of Water and Power	(909) 866-5050

The following planning team meetings were held:

Date	Item	Location
7/23/2010	Local Area Planning Group Meeting	BBL City Hall
8/4/2010	Safety Concerns and Hazard ID	Sewer Department
8/5/2010	Safety Concerns and Hazard ID	Solid Waste Dept.
8/5/2010	Safety Concerns and Hazard ID	Water Department
8/10/2010	Mountain Mutual Aid Hazard ID	Emergency OP Ctr.
8/16/2010	Hazard ID / Analysis by Planning Group	District Board Room
8/17/2010	Hazards Classified per Department	District Board Room
8/18/2010	New Potential Projects	Sewer Department
8/19/2010	New Potential Projects	Solid Waste Dept.

8/19/2010	New Potential Projects	Water Department
8/24/2010	Mitigation Ideas per Department	District Board Room

3.2 Coordination with Other Jurisdictions, Agencies and Organizations

Disasters affect the entire community, not just government agencies. So it was vital to coordinate with other jurisdictions, businesses, utilities, and non-profit organizations. The Big Bear Valley has a bi-monthly meeting for these types of organizations through the Mountain Mutual Aid organization. The President of Mountain Mutual Aid spoke extensively about local hazard mitigation planning. Additionally, San Bernardino County Office of Emergency Services sent a representative to provide a presentation regarding hazard mitigation planning. The following organizations had the opportunity to learn about and comment on the Hazard Mitigation plan through Mountain Mutual Aid:

- American Red Cross
- Big Bear Area Regional Wastewater Association
- Bear Valley Community Hospital
- Bear Valley Electric Service
- Bear Valley Trauma Recovery Team
- Bear Valley Unified School District
- Big Bear Airport District
- Big Bear Chamber of Commerce
- Big Bear City Fire Department
- Big Bear Lake Department of Water and Power
- Big Bear Lake Fire Protection District
- Big Bear Lake Resort Association
- Big Bear Marina
- Big Bear Mountain Resorts
- Big Bear Municipal Water District
- Big Bear Valley Fire Safe Council
- Big Bear Valley Parks and Recreation
- Big Bear Valley CERT
- Cal Trans
- California Highway Patrol
- City of Big Bear Lake
- Civil Air Patrol
- Big Bear Grizzly
- KBHR Radio
- Mountain Area Regional Transit Authority
- San Bernardino County Department of Public Health
- San Bernardino County Sheriff Department
- San Bernardino County Transportation Department
- Southwest Gas Corporation

- Sugarloaf Road Commission
- TV 6
- United States Forest Service

In addition, the District participated in the San Bernardino County Fire Department Office of Emergency Services (OES) Stakeholder meetings. The meetings offered an opportunity to interface with other agencies involved in the planning process, San Bernardino County OES, ICF International, and other hazard mitigation specialists. Stakeholder meeting included:

Date	Item	Location
6/10/2010	Kick-Off Meeting	Ontario PD
7/1/2010	Portal Roll-Out	Ontario PD
7/7/2010	Portal Roll-Out (2)	Ontario PD
7/15/2010	Stakeholder Meeting	Ontario PD
7/29/2010	Stakeholder Meeting	Virtual
8/12/2010	Stakeholder Meeting	Virtual
8/19/2010	Stakeholder Meeting	Virtual
8/26/2010	Stakeholder Meeting	Virtual
9/9/2010	Stakeholder Meeting	Virtual
9/23/2010	Stakeholder Meeting	Virtual
10/7/2010	Stakeholder Meeting	Virtual
10/28/2010	Stakeholder Meeting	Virtual
12/2/2010	Stakeholder Meeting	Virtual
12/15/2010	Stakeholder Meeting	Virtual
1/11/2011	Stakeholder Meeting	Virtual
1/20/2011	Stakeholder Meeting	Virtual

Details of the Stakeholder Meetings follow:

- **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 HMP from the 2005 HMP. Timelines were presented as well as templates for use in updating the project. Copies of the 2005 HMP 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 HMP Update Project Portal Rollout participated in the Conference Call and Webinar to introduce HMP 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 HMP Update Project Portal Rollout participated in the Conference Call and Webinar to introduce HMP 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 HMP timeline by chapter, and confirmed who was in Group 1 and Group 2. The HMP 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 HMP progress of the HMP 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 HMP 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 HMP'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 HMP 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 HMP 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 HMP 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 HMP 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 HMP updates. Importance of Group 2 timelines and the importance of submitting the HMP with Group 2 were discussed. Questions from the participants on project development and prioritization were discussed and answered.

3.3 Public Involvement / Outreach

The following table is a synopsis of public outreach events. Further details follow.

Date	Item	Location
7/23/2010	Local Planning Meeting	BBL City Hall
8/10/2010	Mountain Mutual Aid Meeting	Emergency Op Ctr.
8/16/2010	District Board Meeting	District Board Room
8/23/2010	Big Bear Lake City Council Meeting	BBL City Hall
8/28/2010	Troop 49 Emergency Preparedness Fair	Convention Center
10/18/2010	District Board Meeting	District Board Room

The first public outreach event occurred on July 23, 2010 and was attended by a variety of organizations from the Big Bear Valley. Those present were asked to identify hazards present in the valley along with potential mitigation projects. Some of the agencies in attendance also provided copies of their emergency operation plans for inclusion in the planning process.

On August 10, 2010, Miles H. Wagner, from the San Bernardino County Office of Emergency Services presented information on the county-wide hazard mitigation planning efforts. He discussed the following topics:

- Introduction to hazard mitigation
- Disaster Mitigation Act of 2000

- Plan update process
- Public involvement
- Hazard identification
- Examples of existing mitigation efforts
- Plan update/submittal timelines

BBVMMAA members and members of the public in attendance were asked to comment on the natural hazards that have been identified as potentially having an impact on the community. Additionally, attendees were encouraged to assist in the identification of existing mitigation efforts and make proposals for potential future mitigation efforts. Phil Mosley, Director of Community Services for the City of Big Bear Lake announced that the City is involved in the same process of updating its Hazard Mitigation Plan and participated in the same public input and discussion session.

On August 16, 2010, Rachael Jahn made a presentation to the public at a regularly scheduled board meeting of the Big Bear City Community Services District. Utilizing Mr. Wagner's presentation, she presented the same topics. She solicited comment from Board members as well as the public.

The August 23, 2010 Big Bear Lake City Council offered another opportunity for public outreach, with Director of Community Services, Phil Mosley providing a similar presentation and asking for City Council and public input.

The Boy Scouts of America Troop 49 held its first annual Community Emergency Preparedness Fair on August 28, 2010. The District and the Fire Department sent representatives to interface with the public regarding hazard mitigation planning. This was an excellent opportunity to obtain public input since those in attendance were already interested in emergency planning.

At the October 18, 2010 Board Meeting, Rachael Jahn presented a quarterly safety award. In conjunction with that presentation she once again asked for public input for the Hazard Mitigation Plan.

3.4 Assess the Hazards

The first step that the planning team took in order to assess the potential hazards was to examine historical data. Many of the hazards that have existed historically still exist today. The second step was to review departmental and District Master Plans for any hazards and mitigation goals that might be included with those plans. Then, District employee and planning team suggestions were considered. Finally, public input was analyzed. The planning team also identified new and previously unrecorded hazards, obtained updated hazard maps, hazard probability research studies and reports.

To simplify the hazard assessment process, the planning team utilized a non-numerical hazard matrix, consisting of the terms "high", "medium", and "low". These three terms were used for both probability of a disaster occurring and also to assess the likely impact. The terms are defined below:

High Probability: Likely to occur
Medium Probability: Possible, but not likely to occur
Low Probability: Unlikely to occur
High Impact: Catastrophic / Critical
Medium Impact: Limited
Low Impact: Negligible

3.5 Goals

Goals were set based on a variety of factors, including hazard assessment, public input, economic feasibility, and overall potential effectiveness. Because the hazard mitigation goals that were listed in the prior plan were not achieved, the planning team also wanted to be sure that the current plan included some goals that were readily obtainable and gave the new plan forward momentum.

3.6 Review and Propose Mitigation Measures

After the goals were established, the Planning Team identified projects 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 HMP to determine which have been completed and which were deferred. For projects that were not completed the Planning Team validated whether or not the project was necessary.

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?
- Have benefits that 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 LHMP?
- 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 Hazard Mitigation Plan

Based on the overall weaknesses in the 2005 Hazard Mitigation Plan, the planning team decided that while they would take the previous plan under consideration, it would not be the model for the 2011 Hazard Mitigation plan. The new plan was drafted utilizing the latest version of the Hazard Mitigation Plan Crosswalk; guidance documents from FEMA, CalEMA, and San Bernardino County; and technical input from consultant ICF International. Stakeholder, community organization, and public input also played a critical part in the development of the Hazard Mitigation Plan.

3.8 Adopt the Plan

In early February, 2011, a hard copy and two electronic copies of the plan will be submitted to San Bernardino County Office of Emergency Services. These will then be forwarded to CalEMA for review. CalEMA will provide input directly to the Plan Point of Contact if necessary. After corrections are completed the plan will be sent to FEMA for review and approval. FEMA will provide an "Approval Pending Adoption" letter if the Hazard Mitigation Plan update meets all federal requirements. Upon receipt of this letter, the final plan will be submitted to the District's Board of Directors for adoption. Once adopted, the final Resolution will be submitted to FEMA for incorporation into the Hazard Mitigation Plan.

Section 4 Risk Assessment

The goal of mitigation is to reduce the potential impacts of a hazard including loss of life, property damage, and economic disruption. But with so many potential projects and limited financial resources, mitigation efforts must also be based on risk assessment. This Risk Assessment Section evaluates the potential loss from a hazard event by assessing vulnerabilities, identifying consequences of hazards, considering the effects, and understanding the potential impact. Per the FEMA model, there are four parts to this risk assessment as shown in the model below:

4.1 Hazard Identification

4.1.1 Hazard Screening Criteria

The first step in this process was to identify hazards that exist in the District. To assist with this identification, historic data and disasters were reviewed. Identifying new or emerging hazards, obtaining updated hazard maps, 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 HMP assisted with the hazard identification. The Planning Team identified the following hazards:

- Wildfire
- Earthquakes

- Flooding
- Winter Storms
- Insect Infestation
- Land / Rockslides
- Drought / Water Shortage
- High Winds
- Extreme Cold

4.1.2 Hazard Assessment Matrix

Rankings used for the hazard screening were defined as follows:

Probability		**Impact**	
High:	Highly Likely/Likely	High:	Catastrophic/Critical
Medium:	Possible	Medium:	Limited
Low:	Unlikely	Low:	Negligible

High- There has been historic occurrences of the hazard in the community or region and experts feel that it is likely that the hazard will occur again in the community. The risk is significant. Citizens feel that there is a likelihood of occurrence and the consequences will be significant in terms of economic impact, property damage and loss of life.

Medium- 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 but the consequences will be negligible in terms of economic impact, property damage and loss of life.

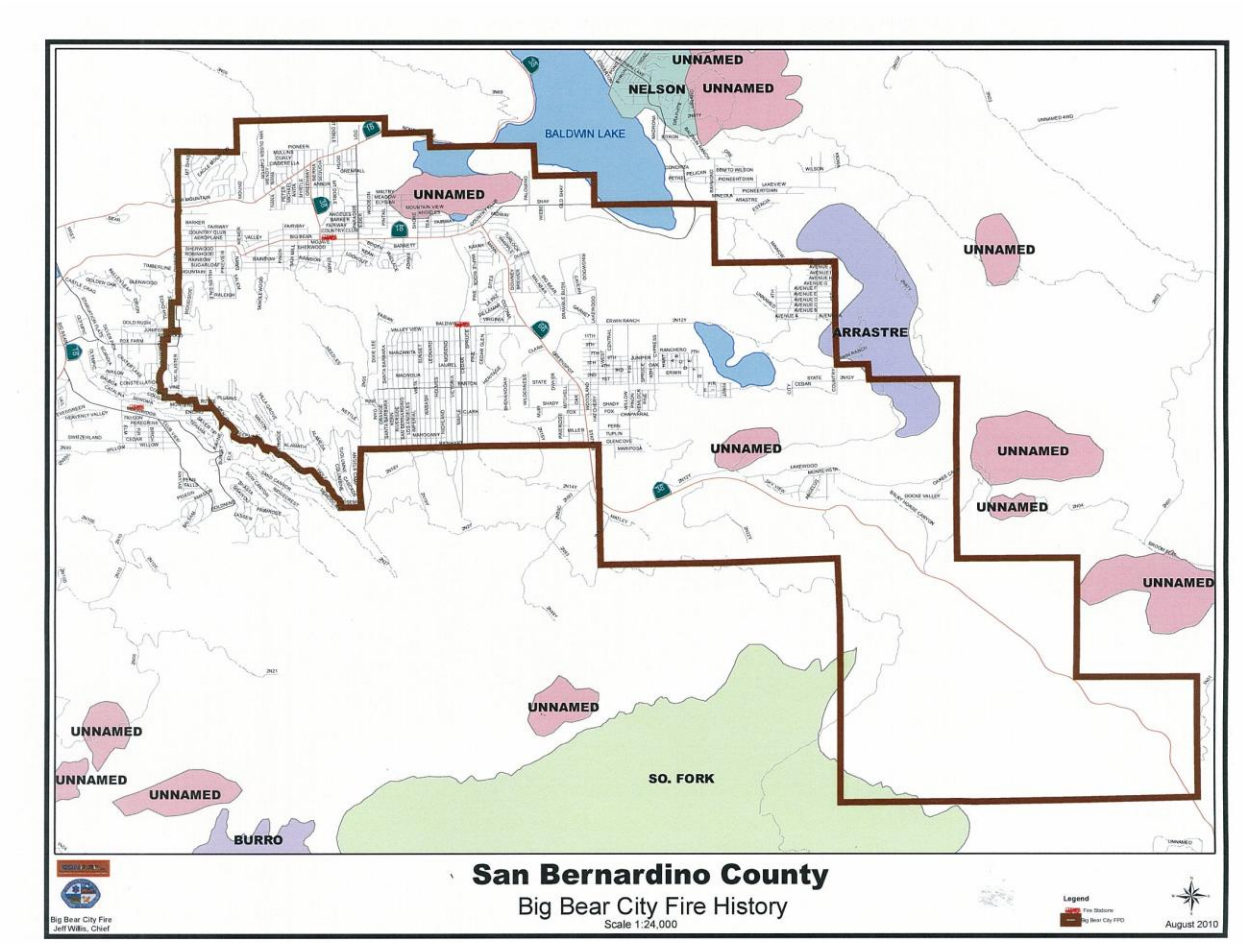
Low- There has been no historic occurrences of the hazard in the community or region and experts feel that it is unlikely that the hazard will occur in the community. The citizens agree.

Hazards Identified:

Wildfire: Probability -- High, Impact -- High

Wildfires present a significant potential for disaster in the District, 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.



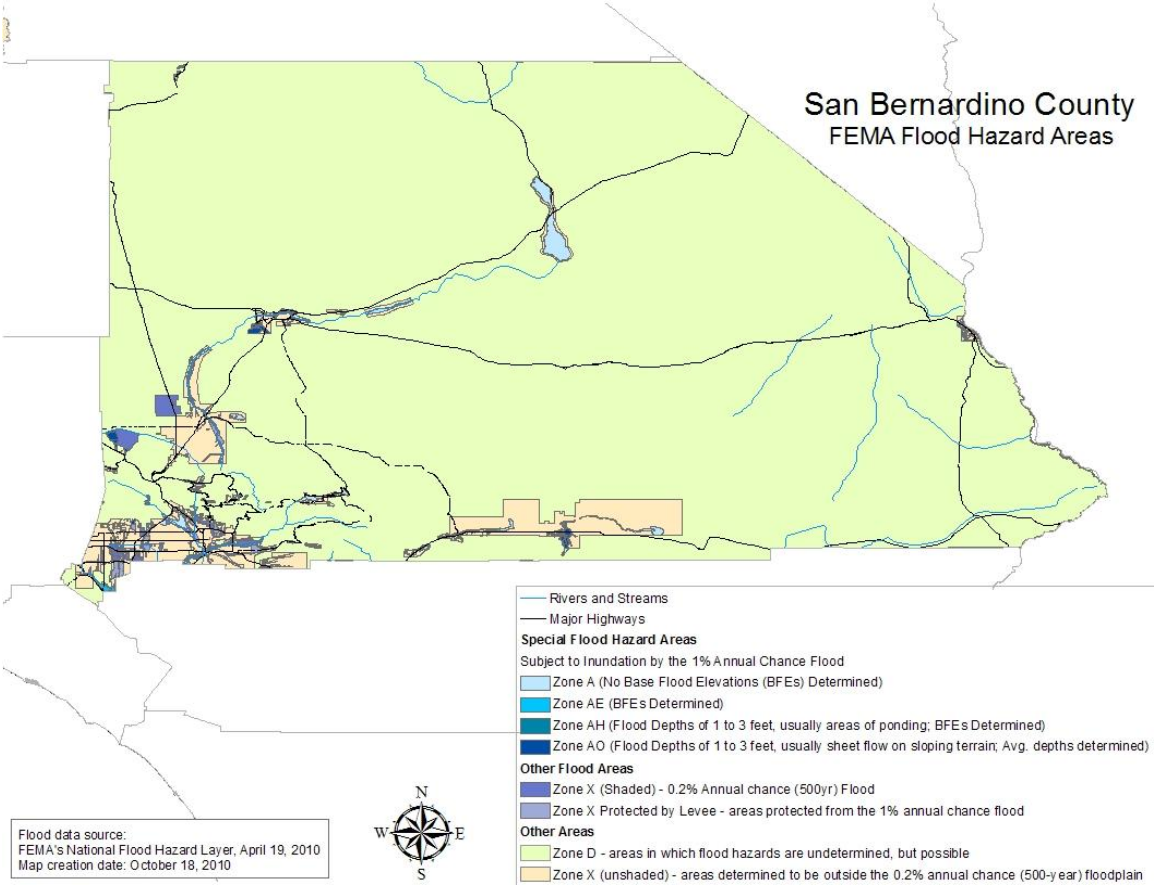
Earthquake: Probability – High, Impact – High

In 1992, The District suffered a magnitude 6.5 earthquake causing widespread structural damage and several fires. The District's water supply infrastructure was impacted by minor breaks and movement. Several aftershocks of this evens occurred causing additional damage. The District is located in a known seismically active area with close proximity to six major fault zones. Studies

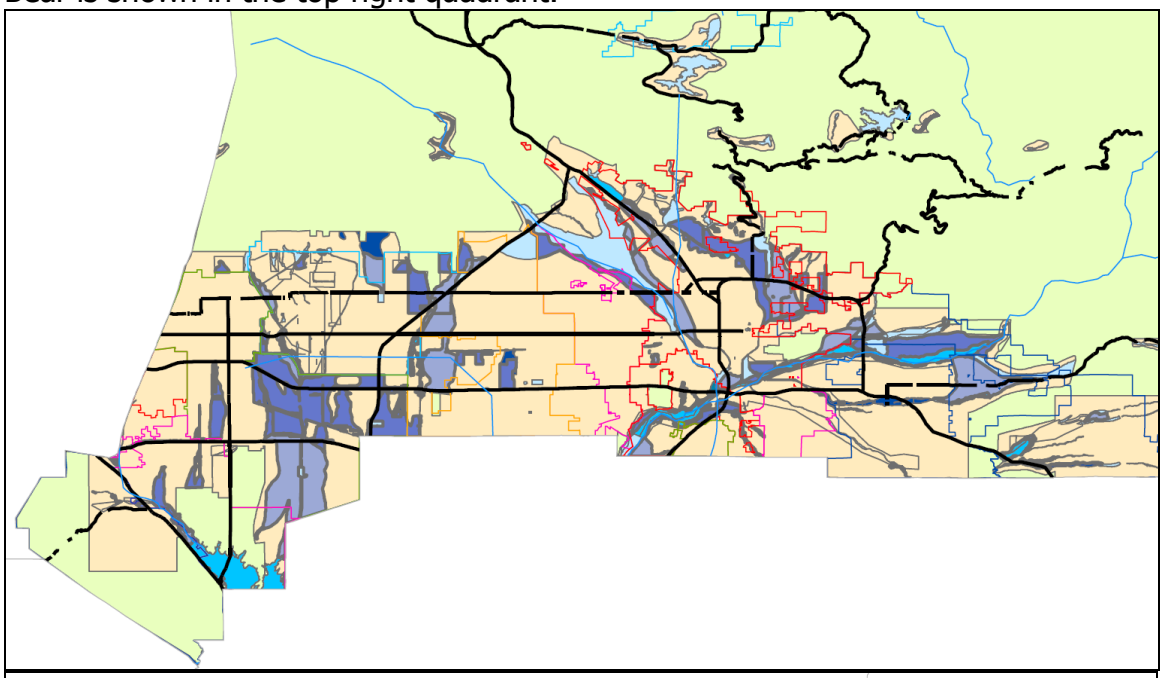
indicate that the southern California area is overdue for a major earthquake of magnitude 8.0 or higher along one of several faults.
Flooding: Probability – High, Impact -- High

Small, localized flooding occurs annually in the District. Generally these events are a minor inconvenience. However, during heavy storm events, flash flooding can occur. This causes property damage and makes local roads impassable. Additionally it overloads the sewer system causing localized environmental damage.

The following figures 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 maps show that a considerable portion of San Bernardino County is vulnerable to flooding. San Bernardino County has seven (7) properties listed in the Repetitive Loss and Severe Repetitive Loss properties. One of these properties, a single family home, is located in Sugarloaf. This area falls within the boundaries of the Big Bear City Community Services District.



The d-FIRM map below shows the southwest corner of San Bernardino County. Big Bear is shown in the top right quadrant.



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

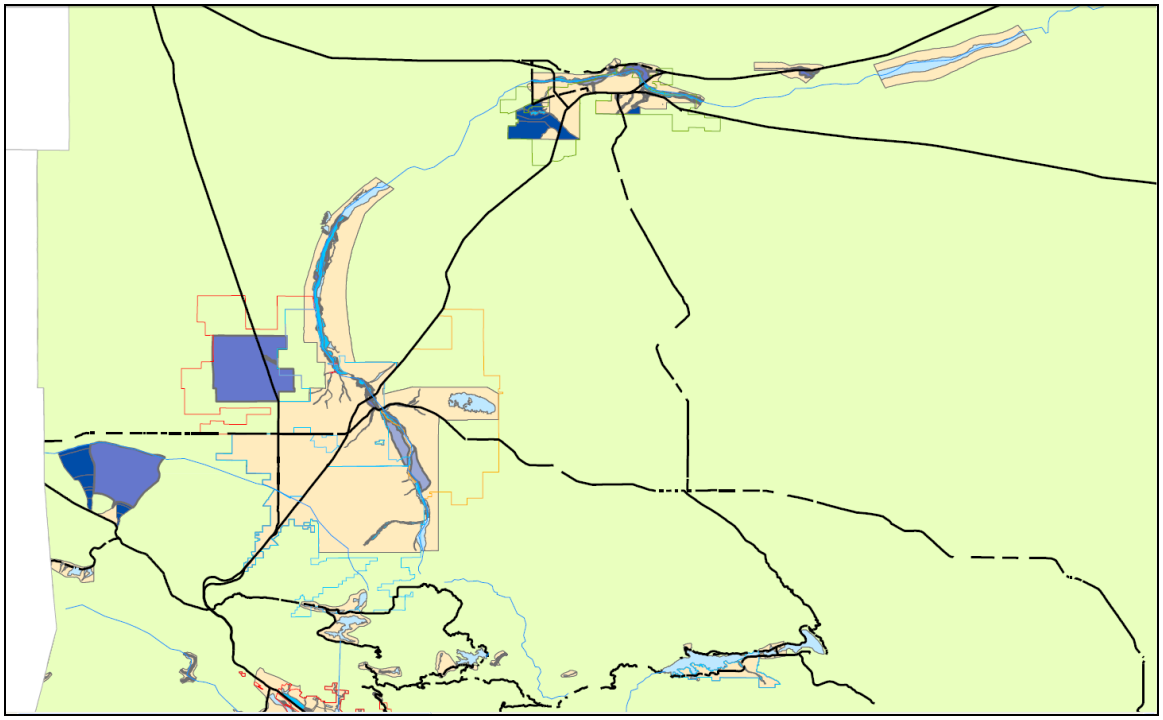
Zone X Protected by Levee - areas protected from the 1% annual chance flood

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

The following map shows the high desert region of San Bernardino County. Big Bear is shown near the bottom center section of the map.



Winter Storms: Probability – High, Impact – Medium

Located at 6,750 feet above sea level, the District is subject to winter snow storms annually. Severe winter storms can isolate the area and cause structural damage due to heavy snow loads and high winds. Flooding can also result from winter storms. During the 2009 – 10 winter season, heavy snowfall resulted in isolation of several neighborhoods. Additionally, there were several structure collapses caused by the heavy snow. Crews spent several days shoveling off roofs to prevent further collapse.

Insect Infestation: Probability – High, Impact – Medium

Emergencies related to insect infestation have impacted the District in the last decade, including an increased fire risk due to Bark Beetle infestation of trees in 2003. 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.

Locally, there is an emerging infestation of the tussock moth as well. The impacted species are blue spruce and white fir, with the caterpillars completely defoliating these trees. The rate of expansion is ¼ to1/2 mile per year. The infestation is expected to increase during the summer of 2011.

Rock / Landslide: Probability – Medium, Impact – Medium

While the District itself is not highly susceptible to rock or landslides, these events could occur on roads leading to / from the Big Bear Valley. Because the community is isolated, with only three routes of entry, a major rock or landslide could cause economic impacts to the area. For instance, the winter storms of 2010 caused a landslide on Highway 330, which will cause a road closure and repair for approximately two years. While the impact is not direct, this will definitely have an economic impact on businesses in the Big Bear Valley

Drought / Water Shortage: Probability – Medium, Impact – Medium

Historically, the District has experienced water shortages and drought conditions. These conditions have been dealt with by implementing conservation measures and limiting new construction. However during a serious drought, these measures might not provide adequate relief. The Big Bear Valley consists of a closed basin with no outside water resources. It depends solely on ground water wells and springs for water supply. In the event of a serious drought or water shortage, there would be no alternate water sources outside the local communities.

High Winds: Probability – Medium, Impact – Medium

High winds can result from thunderstorm inflow and outflow, or downburst winds when the storm cloud collapses, as well as from strong frontal systems, gradient winds (high or low pressure systems), or Santa Ana winds. High winds have speeds reaching 50 miles per hour or greater, either sustained or gusting. The District experiences high wind events several times each year. These events occasionally result in downed trees and power lines along with extensive power outages. When associated with wildfires, high wind events can cause rapid spreading of the fire and increased property destruction. In 2009 a local wind event caused a tree to fall directly on a moving vehicle, resulting in the loss of the driver's life.

Extreme Cold: Probability – Medium, Impact – Low

Extreme cold can result in damage to homes and businesses from burst water pipes and can cause significant health problems, such as hypothermia, carbon monoxide poisoning, and frostbite. Extreme cold can also increase fire activity when residents engage in risky behaviors in an attempt to warm their residences, such as using the stove as a heat source, leaving clothing and shoes on floor heaters, etc. The District experiences below-freezing temperatures for several months of the year and most residents are prepared for extreme temperatures.

However new residents and second home owners / vacationers may not have the knowledge or preparation to deal with extreme cold weather.

Based on the above discussion by the Planning Team, the target hazards were placed in a matrix, which is shown below:

		IMPACT		
		High	**Medium**	**Low**
PROBABILITY	**High**	Wildfire Earthquake Flooding	Winter Storms Infestation	
	Medium		Rockslide Drought High Winds	Extreme Cold
	Low			

4.1.3 Hazard Prioritization

Based on goals, and the hazard assessment, three items came up in the high probability section, including wildfire, earthquake, and flooding. The Planning team decided to concentrate on the high probability hazards. However, because the 2005 Hazard Mitigation Plan goals were not met, some items from the medium probability / medium impact hazard "Drought / Water Shortage" will also be addressed.

Based on discussion by the Planning Team, hazards were prioritized, as shown below:

		IMPACT		
		High	**Medium**	**Low**
PROBABILITY	**High**	Wildfire Earthquake Flooding	Winter Storms Infestation	
	Medium		Rockslide Drought High Winds	Extreme Cold
	Low			

4.2 Hazard Profile

This section will profile the hazards that are both high probability and high impact.

4.2.1 Wildfire

A wildland fire is a type of fire that spreads through all kinds of vegetation. It often begins unnoticed, spreads quickly, and is usually signaled by dense smoke that may be visible from miles away. Wildland fires can be caused by human activities (such as arson or campfires) or by natural events such as lightning. Wildland fires often occur in forests or other areas with ample vegetation. In addition to wildland fires, wildfires can be classified as urban fires, interface or intermix fires, and prescribed burns.

The following three factors contribute significantly to wildland fire behavior and can be used to identify wildland fire hazard areas:

- Topography: As slope increases, the rate of wildland fire spread typically increases. South facing slopes are also subject to more solar radiation, making them drier and thereby intensifying wildland fire behavior. However, ridge tops may mark the end of wildland fire spread, since fire spreads more slowly or may even be unable to spread downhill.
- Fuel: The type and condition of vegetation plays a significant role in the occurrence and spread of wildland fires. Certain types of plants are more

susceptible to burning or will burn with greater intensity. Dense or overgrown vegetation increases the amount of combustible material available to fuel the fire (referred to as the "fuel load"). The ratio of living to dead plant matter is also important. The risk of fire is increased significantly during periods of prolonged drought as the moisture content of both living and dead plant matter decreases. The fuel's continuity, both horizontally and vertically, is also an important factor.

- Weather: The most variable factor affecting wildland fire behavior is weather. Temperature, humidity, wind, and lightning can affect chances for ignition and spread of fire. Extreme weather, such as high temperatures and low humidity, can lead to extreme wildland fire activity. By contrast, cooling and higher humidity often signals reduced wildland fire occurrence and easier containment.

Wildfires present a significant potential for disaster in the District, since it is heavily forested and experiences low humidity, and low precipitation during the summer. The fall season frequently has high velocity, very dry winds that come out of the desert. The Santa Ana winds are usually present from the middle of October to the end of November. In and of themselves, these weather patterns would be of little significance without the dense forest and undergrowth that has grown, largely unabated, for the last several decades. Compounding the vegetative growth that has occurred is the development of substantial housing in the community, particularly in heavily forested areas. This growth has required parallel growth and sophistication in the fire service that responds to wildfires in the wildland urban interface.

Wildland fires are a threat in any fire season. Wildfires that have affected the District in the past 15 years include:

- Willow Fire: Started on September 2, 1999 and burned 61,774 acres.
- Old Fire: Started on October 23, 2003 and burned 91,281 acres.
- Sawtooth Complex: Started on July 9, 2006 and burned 61,700 acres.
- Hart Millard: Started on July 17, 2006 and burned 23,917 acres.
- Arraste Creek Fire: Statistics not available.
- Butler II Fire: Started September 14, 2007 and burned 14,000 acres.
- Slide Fire: Started October 22, 2007 and burned 1,247 acres.
- Grass Fire: Started October 22, 2007 and burned 12,759 acres.

In addition to the acreage that was burned, some of these fires resulted in loss of real property and even loss of life. Given the District's history of frequent wildfires, it is easy to see the potential for future wildfire events.

4.2.2 Earthquake

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; 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 fill 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 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. Estimates of losses from a future earthquake in the United States approach $200 billion.

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.

The earthquakes of California are caused by the movement of huge blocks of the earth's crust- the Pacific and North American plates. The Pacific plate is moving northwest, scraping horizontally past North America at a rate of about 50 millimeters (2 inches) per year. About two-thirds of this movement occurs on the San Andreas Fault and some parallel faults- the San Jacinto, Elsinore, and Imperial faults. Over time, these faults produce about half of the significant earthquakes of our region, as well as many minor earthquakes.

The last significant earthquake on the Southern California stretch of the San Andreas Fault was in 1857, and there has not been a rupture of the fault along its southern end from San Bernardino to the Salton Sea since 1690. It is still storing energy for some future earthquake. Southern California has thousands of smaller earthquakes every year. A few may cause damage, but most are not even felt. And most of these are not on the major faults listed above. Earthquakes can occur almost everywhere in the region, on more than 300 additional faults that can cause damaging earthquakes, and countless other small faults.

In 1992, Big Bear experienced a magnitude 6.5 earthquake, causing widespread structural damage and several fires. The District's water supply infrastructure was impacted by minor breaks and movement. Several aftershocks of this event occurred causing additional damage. The District is located in a known seismically active area with close proximity to six major fault zones. The following is a list of earthquakes that either have affected or had the potential to affect Big Bear since that time:

- 2009 05 18 - Greater Los Angeles Area, California - M 4.7
- 2009 01 09 - Greater Los Angeles Area, California - M 4.5
- 2008 07 29 - Greater Los Angeles area, California - M 5.5
- 2005 06 16 - Greater Los Angeles Area, California - M 4.9
- 2005 06 12 - Southern California - M 5.2
- 2003 03 11 - Twentynine Palms Base, California - M 4.6
- 2003 02 22 - Big Bear City, California - M 5.2
- 1999 10 16 - Hector Mine, California - M 7.1
- 1994 01 17 - Northridge, California - M 6.7 Fatalities 60
- 1992 06 28 - Landers, California - M 7.3 Fatalities 3
- 1992 06 28 - Big Bear, California - M 6.5

Locally smaller earthquakes are felt in Big Bear several times each year. Since we have historical documentation of a moderate earthquake in the area and several local faults, it is reasonable to expect future earthquakes as well.

4.2.3 Flooding

Except for fires, floods are the most common and widespread of all natural disasters. Most communities experience some kind of flooding after spring rains, heavy thunderstorms, or winter snow thaws. Big Bear City is certainly not an exception to that rule.

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 from:

Overflow of inland or tidal waters, 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."

Floods can be slow or fast rising but generally develop over a period of days. Flooding tends to occur in the summer and early fall because of the monsoon and is typified by increased humidity and high summer temperatures.

The standard for flooding is the so-called "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 what is known as the 10-year flood. Both terms are really statements of probability that scientists and engineers use to describe how one flood compares to others that are likely to occur. The term 100-year flood is often incorrectly used and can be misleading. It does not mean that only one flood of that size will occur every 100 years. What it actually means is 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. And it could occur more than once in a relatively short period of time. 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.

Typical areas of flooding within the District are located in the central portion of the valley in normal drainage areas. Beginning with the east in of the District and moving west, the following areas are subject to moderate to severe flooding:

- Teal Drive north of Big Bear Blvd: Flooding in this area impacts multiple cross streets and several hundred residential structures.

- Drake Avenue north of Big Bear Blvd: Flooding in this area impacts multiple cross streets and approximately fifty structures.

- Sawmill Canyon from Sugarloaf Blvd to the airport: Flooding in this area impacts the main thoroughfare of Big Bear Blvd, Fire Station 291, multiple side streets and approximately 50 other structures.
- Pineview Drive from Raleigh Drive to the airport property: Flooding impacts all residences on Pineview, causing major access issues and potentially disrupting emergency services. Flooding also impacts Big Bear Blvd, several side streets, and several hundred structures.

- Gildart Drive from Sugarloaf Blvd to the airport property: Flooding impacts multiple side streets and several hundred structures.

- Greenway Drive and Paradise Way: Flooding flows east / west on these two streets as the local drainage channels overflow, stopping traffic on both streets.

- Baldwin Lake also has the potential to flood during 100 year flood conditions.

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, as well as critical facilities and critical infrastructure.

4.3.1 Population

According to 2000 US Census Data, the population of Big Bear City was 5,779. In 2009, the population was 6,702; declining to 6,447 in 2010.

4.3.2 Buildings

The District contains approximately 11,350 residential dwellings with an average value of $220,000 for a total value of $2,497,000,000

There are approximately 175 commercial buildings with an average value of $300,000 for a total value of $52,500,000.

4.3.3 Critical Facilities

Fire Stations: The District is responsible for providing fire protection services. There are currently two fire stations located within the District .

- Fire Station 291 is located at 301 W. Big Bear Blvd, Big Bear City, CA 92314. The estimated replacement value of this facility is $1,665,666.

- Fire Station 292 is located at 501 Maple Lane, Sugarloaf, CA 92386. The estimate replacement value of this facility is $630,534.

Government Facilities: The following government facilities are located within the District boundaries.

- Big Bear City Community Services District is located at 139 E. Big Bear Blvd, Big Bear City, CA 92314. The estimated replacement value of this facility is $1,175,146.

- Paradise Maintenance Yard is located at 417 Grenfall Lane, Big Bear City, CA 92314. The estimated replacement of all buildings and facilities at this location is $4,046,997.

- The Valley-wide Emergency Operation Center is located at 501 W. Valley, Big Bear City, CA 92314. The estimated replacement cost of this facility is $750,000.

- The Big Bear City Airport is located at 501 W. Valley, Big Bear City, CA 92314. Estimated replacement cost for this facility is unknown.

- The Big Bear City Post Office is located at 120 W Country Club, Big Bear City, CA 92314. Estimated replacement cost for this facility is unknown.

- The Sugarloaf Post Office is located at 501 S Maple Lane, Sugarloaf, CA 92386. Estimated replacement cost for this facility is unknown.

Public Facilities: The following public facilities are located within the District boundaries.

- Big Bear High School is located at 351 N. Maple Lane, Sugarloaf, CA 92386

- Chautauqua High School is located at 525 N. Maple Lane, Sugarloaf, CA 92386

- Baldwin Lane Elementary School is located at 44500 Baldwin Lane, Sugarloaf, CA 92386

Major Roads: State Highways 18 and 38 are located within the District boundaries.

Utilities: Water, sewer, and trash services are provided by Big Bear City Community Services District. They have physical structures as well as infrastructure located within the District. Electric service is provided by Bear Valley Electric Service. Natural Gas service is provided by Southwest Gas. Telecommunication services are provided by Verizon and by Charter Communications.

The table below lists critical emergency facilities and vulnerabilities:

San Bernardino County Multijurisdictional Hazard Mitigation Plan: 6/21/2010
Hazard Identification - Big Bear City Community Services District

		OWNER	Big Bear City Fire Department	
		FACILITY TYPE	Fire Stations	
			#	%
		Total # of Buildings	2	
Fire Hazards	Fire Hazard Severity Zones - Local Responsibility Area	Very High	0	0%
	Fire Hazard Severity Zones - State Responsibility Area	Very High	1	50%
		High	0	0%
		Moderate	1	50%
Flood Hazards	Special Flood Hazard Areas Subject to Inundation by the 1% Annual Chance (100-year) Flood	Zone A - no base flood elevations determined	1	50%
		Zone AE - base flood elevations determined	0	0%
		Zone AH - Flood depths of 1 - 3 feet (usually areas of ponding); base flood elevations determined	0	0%
		Zone AO - Flood depths of 1 - 3 feet (ususally sheet flow on sloping terrain); average depths determined.	0	0%
	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 that 1 foot or with drainage areas less than 1 square mile.	0	0%
		Zone X Protected by Levee - areas protected by levees from the 1% annual chance flood	0	0%
	Other Areas	Zone D - areas in which flood hazards are undetermined, but possible	1	50%
		Zone X (Unshaded) - areas determined to be outside the 0.2% annual chance (500-year) floodplain	0	0%
Dam Inundation		In mapped dam inundation area	0	0%
Earthquake Hazards	Liquefaction Susceptibility	None	1	50%
		Very Low	0	0%
		Low	0	0%
		Moderate	1	50%
		High	0	0%
		Very High	0	0%
	Alquist-Priolo Earthquake Fault Zone	Inside mapped fault zone	0	0%

Page 1 of 1

4.4 Vulnerability Assessment

This section provides an assessment of vulnerability for wildfires, earthquakes, and flooding within the District. This is the final step in the four-step risk assessment process. The vulnerability assessment provides a basis for analyzing the risk, the potential exposure, and consequences to District operations and safety.

The following were taken into account when assessing the vulnerability:

- Updates to inventories of existing structures in hazard areas, including new development.
- Potential impacts of future land development.

4.4.1 Methodology

First, the risks that were included in the 2005 HMP were reviewed. Then the frequency and potential impact were considered. Historical occurrences were examined. New vulnerabilities in terms of population and development were looked at. Finally, current (past five years) occurrences were taken into consideration.

4.4.2 Results for Wildfire

Population: 100% of the population is vulnerable.
Critical Facilities: 100% of the critical facilities are vulnerable.
Potential Economic Loss: Including structures, facilities, equipment, and relocation costs, the economic loss is approximately $88,250,000. This assumes a loss of approximately 400 residential units at the wildland urban interface.
Human Losses: The estimated loss of life is 0, with 20 injuries and approximately 400 individuals displaced.

4.4.3 Results for Earthquake

Population: 100% of the population is vulnerable.
Critical Facilities: 100% of the critical facilities are vulnerable.
Potential Economic Loss: Including structures, facilities, equipment, relocation costs, and lost business the economic loss is approximately $100,250,000.
Human Losses: The estimated loss of life is 0 with 20 serious injuries and approximately 100 individuals temporarily displaced.

4.4.4 Results for Flooding

Population: 25% of the population is vulnerable.

Critical Facilities: 27% of the critical facilities are vulnerable, including Fire Station 291, the Emergency Operation Center, and the Paradise Maintenance Yard.
Potential Economic Losses: Including structure repair, road repair, relocation and mold abatement the economic loss is approximately $1,060,000.
Human Losses: The estimated loss of life is 0 with 0 injuries and approximately 50 individuals temporarily displaced.

4.4.5 Results for Winter Storms

Population: 100% of the population is vulnerable.
Critical Facilities: 100% of the critical facilities are vulnerable.
Potential Economic Losses: Including structure repair and excess snow removal, the economic loss is approximately $1,150,000.
Human Losses: The estimated loss of life is 0 with 3 injuries and 10 people displaced.

4.4.6 Results for Infestation

Population: 50% of the population is vulnerable.
Critical Facilities: None of the critical facilities are vulnerable.
Economic Losses: Including removal of trees and replanting, the economic loss is approximately $50,000.

4.4.7 Results for Rockslide

Population: 100% of the population is vulnerable.
Critical Facilities: None of the critical facilities are vulnerable.
Economic Losses: Economic losses could vary from negligible to extreme depending on the circumstances. If rockslides or landslides closed two or more routes into the valley, the economic losses would be extreme.

4.4.8 Results for Drought / Water Shortage

Population: 100% of the population is vulnerable.
Critical Facilities: 100% of the critical facilities are vulnerable.
Economic Losses: Including loss of landscaping and potential future development, the economic loss could vary from $25,000 to greater than $1,000,000.

4.4.9 Results for High Winds

Population: 50% of the population is vulnerable.
Critical Facilities: 100% of the critical facilities are vulnerable.

Economic Losses: Including damage to structures and loss of infrastructure, economic loss is estimated at approximately $20,000.

4.4.10 Results for Extreme Cold

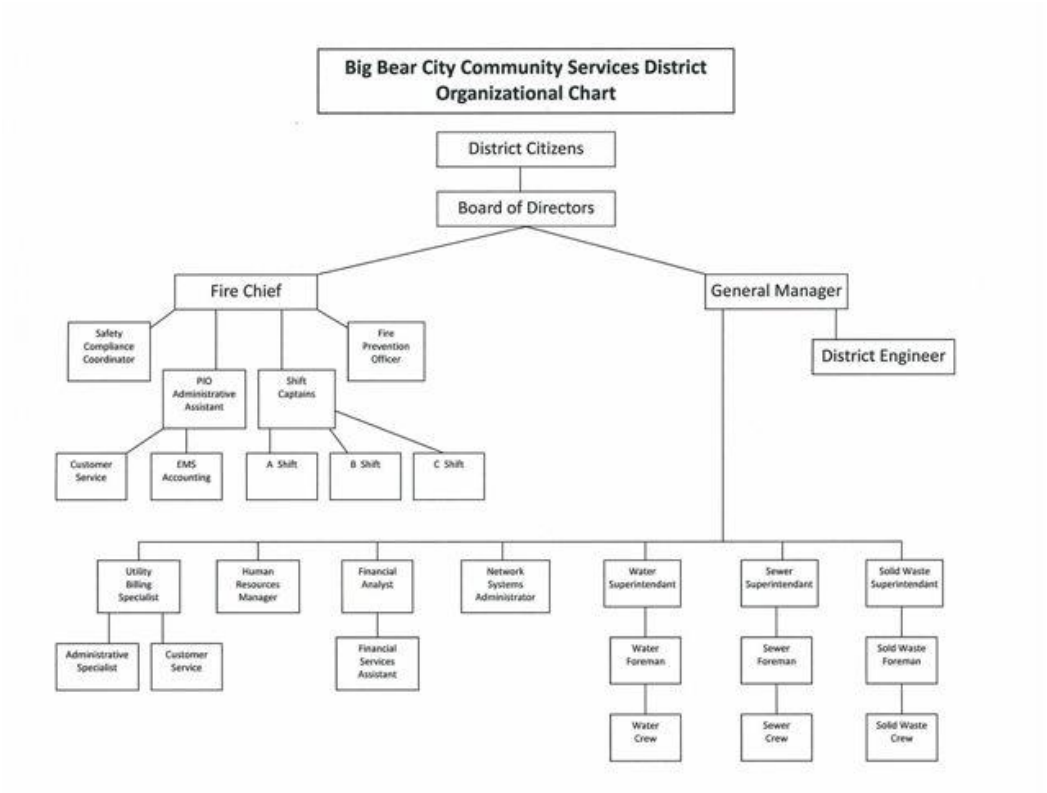
Population: 100% of the population is vulnerable.
Critical Facilities: 100% of the critical facilities are vulnerable.
Economic Losses: Including the loss of infrastructure and associated flooding, the economic loss is estimated at $250,000.

Section 5 Community Capability Assessment

5.1 Agencies and People

The Big Bear City Community Services District is a self-governing special service district which provides Water, Sewer, Solid Waste, Fire Protection, and Street Lighting services. The District is governed by a five member Board of Directors. Daily operations are supervised by the General Manager and the Fire Chief. The District has a Safety Compliance Coordinator, who reports to the Fire Chief and is responsible for emergency planning.

The District Organizational Chart follows:



Because the District is a very small agency, all personnel have a shared responsibility for emergency preparedness and response. All departments have received training in the Incident Command System and are trained to a minimum standard of ICS 200. Additionally all personnel are receiving National Incident Management System training at the 700 and 800 levels. In the event of a disaster, District personnel have been assigned positions in the Emergency Operation Center. Each individual has been trained to meet the needs of his / her assignment. A chart of the position assignments is shown below:

POSITION	PRIMARY	ALTERNATE
MANAGEMENT		
EOC Director	Fire Chief	General Manager
Public Information Officer	FD PIO	FD Admin Assistant
Liaison Officer	Fire Prevention Officer	Safety Comp Coord
Safety Officer	Safety Comp Coord	Fire Prevention Officer
Agency Representative	General Manager	FD PIO
Security Officer	Safety Comp Coord	Solid Waste Foreman
EOC Coordinator	Safety Comp Coord	Fire Prevention Officer
Board of Directors	Board President	Board Members
Legal Advisor	As Needed	As Needed
Legislative Liaison	Board President	Board Members
FINANCE		
Section Coordinator	Financial Analyst	HR Manager
Cost Recovery Unit	Financial Analyst	As Assigned
Time Unit	HR Manager	FD Admin Assistant
Purchasing Unit	Financial Analyst	General Manager
Compensation / Claims Unit	HR Manager	FD Admin Assistant
Cost Analysis Unit	Financial Analyst	General Manager
LOGISTICS		
Section Coordinator	Utility Billing Specialist	Fire Prevention Officer
Resources Unit	Water Services Worker	FD Admin Assistant
Information Systems Branch	IT Specialist	Water Services Worker
Communications Unit	IT Specialist	Water Services Worker
Computer Unit	IT Specialist	As Assigned
Transportation Unit	EMS Coordinator	Fire Prevention Officer
Personnel Unit	HR Manager	FD Admin Assistant
Procurement Unit	Utility Billing Specialist	Sewer Foreman
Facilities Unit	SW Superintendent	Solid Waste Foreman
OPERATIONS		
Section Coordinator	Fire Chief	EMS Coordinator
Fire Branch	Fire Chief	Fire Captain
Fire Branch Resources	Fire Chief	Fire Captain
Law Branch	SB County Sheriff	SB County Designee
Coroner Unit	SB County Coroner	SB County Designee
Medical / Health Branch	EMS Coordinator	Fire Captain
Care & Shelter Branch	Red Cross	EMS Coordinator
Public Works Unit	Sewer Superintendent	SW Superintendent
Water & Power Unit	Water Superintendent	Water Foreman
Building & Safety Branch	SB County B & S	SB County Designee

PLANNING

Section Coordinator	General Manager	Water Superintendent
Situation Status Unit	FD Admin Assistant	Fire Prevention Officer
Documentation Unit	FD Admin Assistant	HR Manager
Damage Assessment Unit	SB County B & S	Safety Comp Coord
Advance Planning Unit	Water Superintendent	Sewer Superintendent
Recovery Planning Unit	General Manager	Financial Analyst
Demobilization Unit	Fire Chief	Water Foreman
Technical Specialist	As Needed	As Needed

5.2 Existing Plans

The District has several existing plans that deal with hazard identification and mitigation in some form. These plans include the following:

- District Emergency Operation Plan
- Water System Emergency Response Plan
- Water System Master Plan
- Sewer System Management Plan
- Fire Protection Master Plan
- Spill Prevention Control & Countermeasure Plan
- Storm Water Pollution Prevention Plan
- Business Emergency Contingency Plan
- Capital Improvement Plan

5.3 Regulations, Codes, Policies, and Ordinances

The District has adopted the 2010 California Code, along with a recent revision of Ordinance 212, the District's internal fire code ordinance.

Other regulations involving hazard mitigation have been established at the San Bernardino County level. These include:

- **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 and map the official land use and hazard overlay districts, to include safety hazard and environmental protection areas.

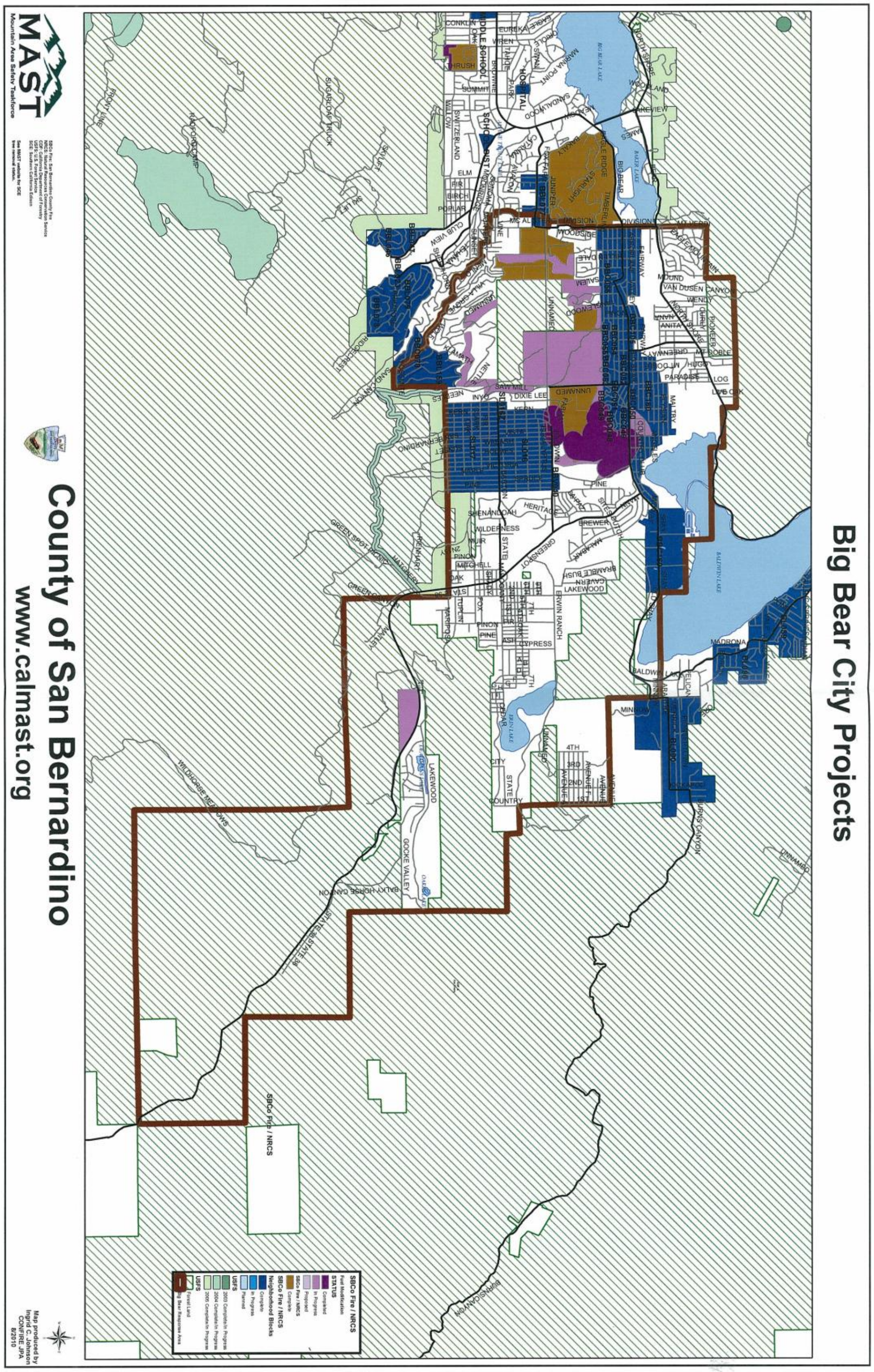
5.4 Mitigation Programs

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, 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.

Below is a map showing some of the MAST coordinated projects:


Big Bear City Projects
County of San Bernardino
www.calmast.org
MAST
Mountain Area Safety Taskforce
SBCo Fire / NRCS

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 in the Big Bear Valley. It is of note to that their main and most frequent call to service is in response to a wildfire. They meet bi-monthly and maintain themselves in a constant state of readiness.

Big Bear Valley Defensible Space Program

Big Bear City Community Services District and the Big Bear Lake Fire Protection District have joined forces and grant funding to provide on-demand chipping services throughout the Big Bear Valley. During the summer of 2010 they worked with County Code Enforcement to complete abatement projects at the Wildland Urban Interface area. The program has grown every year. During the 2010 season, the program has 4,217 calls for chipping, logged 7,171 hours of community involvement in defensible space projects, and picked up 1,004 tons of debris.

Wood Shake Roof Replacement

The Big Bear Lake Fire Protection District and the Big Bear City Community Services District have acquired a grant to replace wood shake shingle roofs in the Big Bear Valley. In the new grant period, unincorporated portions of the county that are also located in the Big Bear Valley have also been included.

Community Wildfire Protection Plans (CWPP)

The Big Bear Valley has established a Community Wildfire Protection Plan. Several of the goals listed in the plan have been successfully achieved. Additionally, both Big Bear City and Big Bear Lake have been established as Firewise Communities.

Ready, Set, Go

The Ready, Set, Go program provides public information and education regarding personal preparation for wildfires in the community. The District's Public Information Officer has presented the Ready, Set, Go information to a variety of local schools, service clubs, and community organizations.

Community Emergency Response Team

The Big Bear Valley CERT team has over 100 active members who are trained to respond to emergencies. The team meets monthly to train / refresh their skills. New member classes are offered in the community three times per year.

Community Organizations Active in Disaster

The Big Bear Valley is currently working to put together an effective COAD group so that all types of volunteer organizations will be trained and prepared to respond to disasters.

5.5 Fiscal Resources

District Revenues for 2010-11 were $12,517,065. The sources for this revenue were:

- Service Charges (Water, Sewer, Solid Waste) $7,481,565
- Patient Fees $1,450,000
- Fire Prevention Tax $1,475,000
- Property Tax (Fire) $2,050,000
- Life Care $ 50,000
- Cost Recovery $ 10,500

Of the total revenue, $1,374,826 was allocated to capital improvement projects.

Any mitigation projects would need to be part of the budgeting process and the District's five year plan. Additional funding could potentially come from hazard mitigation grants, such as the Hazard Mitigation Grant Program and the Pre-Disaster Mitigation Program.

Section 6 Mitigation Strategies

6.1 Overview

The District's overall mitigation strategy comes from the previous sections of this plan, the 2005 Hazard Mitigation Plan, and emerging mitigation projects. The measures were individually evaluated during discussions of mitigation alternatives and the conclusions used as input when priorities were set. All priorities are based on consensus of the Planning Team.

6.2 Mitigation 5-Year Progress Report

The Big Bear City Community Services District 2005 Hazard Mitigation Plan included only one mitigation project: Seismic retrofit of the Administration Building to reduce potential losses from earthquake. The estimated expenditure for the retrofit was $80,000, which was to be obtained through grant funding or rate increases. The project was not completed during the five year period. No grant applications were submitted nor was this project included in any annual or projected budget.

The biggest impediment to the mitigation effort was lack of knowledge. The individuals who were in a position to move this project forward were not aware of this mitigation plan or of the mitigation goals.

6.3 Mitigation Goals, Objectives, and Projects

The following section provides an overview of the Mitigation Goals, Objectives, and Projects for the three high priority, high impact hazards listed previously in this plan: Wildfire, Earthquake, and Flood.

6.3.1 Wildfire

Goal / Objective: Create Defensible Space throughout the community and particularly at the Wildland-Urban Interface Zone.

- Project: Work with San Bernardino County Code Enforcement to help property owners abate fuels and create defensible space on their properties.
- Project: Replace all shake shingle roofs within the District prior to 2014.
- Project: Re-establish fuel breaks between the San Bernardino National Forest and the Big Bear Valley communities.
- Project: Increase public awareness of defensible space and educate the public regarding forest health.

Goal / Objective: Improve access to isolated areas of the Big Bear Valley.

- Project: Develop forest land access in Sugarloaf via easement, land swap, or other reasonable means.

- Project: Work with land developer to complete a paved road interconnection between Moonridge and the Sugarloaf area

Goal / Objective: Enhance efficiency of local fire suppression efforts.

- Project: Reinforce connections to all water reservoirs, using a flexible of under tank connection.

- Project: Purchase a therma-gel dispensing fire vehicle for use in pre-treating residential structures.

Goal / Objective: Decrease response time for fire calls on the east end of the District.

- Project: Upgrade Station 292 living quarters to provide improved 24 hour staffing capabilities.

- Project: Plan and purchase land for a third fire station as recommended in the Fire Protection Master Plan.

6.3.2 Earthquake

Goal / Objective: Ensure access to emergency vehicles immediately after an earthquake.

- Project: Upgrade back garage door release mechanisms to allow for opening when electrical power is off.

Goal / Objective: Ensure multiple methods of communication between Fire Station 291 and Fire Station 292.

- Project: Purchase back-up generator for Fire Station 292 to run radios in the event of a power outage.

Goal / Objective: Legal compliance with debris removal regulations and continued health and safety of the community.

- Project: Mitigate public health hazards associated with debris accumulation by formulating a debris removal plan for the Solid Waste Department.

6.3.3 Flood

Goal / Objective: Continuity of emergency services during periods of flooding.

- Project: Work with San Bernardino County Flood Control to improve drainage in Sawmill Creek and Sawmill Canyon.

- Project: Work with San Bernardino County Roads to abandon Sawmill Drive between Big Bear Blvd. and Country Club Blvd. This drainage will then be re-routed away from Fire Station 291.

- Project: Work with San Bernardino County Flood Control to improve drainage on Pineview between Raleigh and Big Bear Blvd.

Goal / Objective: Improve health and safety and prevent flooding in low-lying areas near the main sewer treatment plant trunk line.

- Project: Work with San Bernardino County Flood Control and Big Bear Area Wastewater Agency (BBARWA) to improve drainage and sewage flow on Teal Drive and Drake Avenue.

- Project: Work with BBARWA to increase the size of the main trunk line.

Goal / Objective: Maintain continuity of sewer transmission lines.

- Project: Improve the drainage around the sewer easement line located at the corner of Moonridge and Villa Grove.

Note: The Big Bear City Community Services District does participate in the National Flood Insurance Program. In connection with that program, 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, 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 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.

6.4 Mitigation Priorities

Priority will be given to projects that meet the following criteria:

- Offers the greatest protection to life and property
- Maintains critical locations and functions during times of emergency
- Cost effective
- Economically feasible
- Supported by the community

Using the above rationale for establishing mitigation priorities, each project is assigned a priority ranking as follows:

High – Projects that will be the primary focus of implementation over the next five years.

Medium – Projects that may be implemented over the next five years.

Low – Projects that will not be implemented over the next five years unless conditions change (new program/funding source).

The table below lists all projects from the 2011 Hazard Mitigation Plan, along with the priority ranking:

Hazard	Project	Priority
Wildfire	Fuel Abatement & Defensible Space	High
Wildfire	Shake Shingle Roofs	High
Wildfire	Re-establish Fuel Breaks	High
Wildfire	Public Awareness Regarding Defensible Space	High
Wildfire	Forest Access Easement	Medium
Wildfire	Developer Access	Low
Wildfire	Reservoir Reinforcement	High
Wildfire	Therma-Gel Vehicle	Low
Wildfire	Station 292 Living Quarters	Medium
Wildfire	Purchase Land for New Fire Station	Low
Earthquake	Upgrade Back Garage	High
Earthquake	Purchase Back-up Generator for Station 292	High
Earthquake	Complete Debris Plan	High
Flood	Sawmill Drainage	Medium
Flood	Abandon Sawmill Drive	Low
Flood	Pineview Drainage	Medium
Flood	Teal & Drake Drainage	Medium
Flood	BBARWA Trunk Line	High
Flood	Villa Grove Easement Line	High

6.5 Implementation Strategy

High priority projects will be implemented first. Medium priority projects generally require the cooperation of an outside agency. Making contact with the outside agency and developing a timeline will be necessary to move these projects forward. Low priority projects are either cost-prohibitive at this time or are part of a strategy that extends beyond the five year review period for this plan. These projects will only be considered if grants or other outside funding are available.

Section 7 Plan Maintenance

7.1 Monitoring, Evaluating, and Updating the Plan

Upon approval, the information in the 2011 Hazard Mitigation Plan will be presented to all District employees, departments, and the management team. Without the awareness of all involved parties, the goals and objectives of this plan cannot be reached. Additionally the plan will be formally reviewed each year prior to the beginning of the budget process so that new projects can be part of the District's fiscal plan. At the same time, public input will be sought for implementation of current projects and potential future projects. During the five year period, new mitigation projects will be presented. These will be utilized in future plan updates. The plan will be formally updated in January of 2016.

7.2 Implementation through Existing Programs

The HMP goals and projects will be incorporated into various existing plans and programs. The plans that are listed in Section 5.2 will be enhanced with the information from this plan. For example, much of the information from the HMP will be included in the District's Emergency Operation Plan. The Hazard Mitigation Plan will also be considered and included in any future planning efforts.

7.3 Continued Public Involvement

A critical part of maintaining the Hazard Mitigation Plan is ongoing public awareness and input. Consequently, the District will provide opportunities for citizens to comment on the plan on a frequent basis. The public will continue to receive information about the Hazard Mitigation Planning efforts and projects through the District's website and through the local media. All proposed changes to the plan will be subject to citizen review prior to District action. Public input via twice-monthly board meetings is also available.