

# HAZARD MITIGATION ACTION PLAN

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# EXECUTIVE SUMMARY

## FIVE-YEAR ACTION PLAN MATRIX

This is the Beverly Hills Unified School District's first edition Hazard Mitigation Plan. Changes to the Robert T. Stafford Disaster Relief and Emergency Assistance Act, which provide the basis for federal assistance to state and local governments impacted by a disaster, have placed a new emphasis on local mitigation planning. Hazard Mitigation, also known as prevention before the occurrence of a disaster, is now considered to be the first step in preparing for emergencies, rather than the final step in recovery. The Disaster Mitigation Act 2000 requires state and local governments to develop hazard mitigation plans by November 2004. On March 14, 2006 the Board of Education approved the development of such a plan. The plan is now completed and on September 11, 2006 the Board of Education adopted the resolution approving the Hazard Mitigation Plan .

The Beverly Hills Unified School District Hazard Mitigation Plan includes resources and information to assist the District of Beverly Hills students, staff, District property and facilities, public and private sector organizations, and others interested in participating in planning for hazards. The mitigation plan provides a list of activities that may assist the Beverly Hills Unified School District in reducing risk and preventing loss from future hazard events. The strategies address multi-hazard issues. This plan meets the requirements of the Disaster Mitigation Act of 2000. By preparing this plan, the Beverly Hills Unified School District is eligible for federal mitigation funding after disasters and to apply for mitigation grants before disasters strike.

The BHUSD is proud to reinforce and be a part of Governor Arnold Schwarzenegger's emphasis on emergency preparedness. The proposed 2006-2007 California State budget has detailed a proposed Statewide Emergency Preparedness Initiative to further develop the state's ability to respond rapidly to a natural or man-made disaster.

### Federal Laws

Federal legislation has historically provided funding for disaster relief, recovery, and some hazard mitigation planning. The Disaster Mitigation Act of 2000 (DMA 2000) is the latest legislation to improve this planning process (Public Law 106-390). The new legislation reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur. As such, DMA 2000 establishes a pre-disaster hazard mitigation program and new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP).

Section 322 of DMA 2000 specifically addresses mitigation planning at the state and local levels. It identifies new requirements that allow HMGP funds to be used for planning activities, and increases the amount of HMGP funds available to states that have developed a comprehensive, enhanced mitigation plan prior to a disaster. States and communities must have an approved mitigation plan in place prior to receiving post-disaster HMGP funds. Local and tribal mitigation plans must demonstrate that their proposed mitigation measures are based on a sound planning process that accounts for the risk to and the capabilities of the individual communities.

FEMA prepared an Interim Final Rule, published in the Federal Register on February 26, 2002 (44 CFR Parts 201 and 206), which establishes planning and funding criteria for states and local communities.

The Plan has been prepared to meet FEMA and COESS requirements thus making the District eligible for funding and technical assistance from state and federal hazard mitigation programs.

### **State Laws**

California has many laws and programs relating to hazard mitigation, the most effective of which include:

- California Earthquake Hazards Reduction Act of 1986
- California Fire Alliance
- California Earthquake Authority's Seismic Retrofit Program
- NFIP, administered by the DWR
- State planning law and OPR's general plan guidance documents

The following are state laws and executive orders related to hazard mitigation:

- Executive Order W-18-19
- Executive Order W-9-91
- Health & Safety Code §19211
- Health & Safety Code §19181.
- Public Resources Code §2621, et seq. (the Alquist-Priolo Earthquake Fault Zoning Act)

### **HOW IS THE PLAN ORGANIZED**

Each section of the mitigation plan provides information and resources to assist people in understanding the District and the hazard related issues facing staff, students, citizens and the environment. Combined, the sections of the plan work together to create a document that guides the mission to reduce risk and prevent loss from future hazard events.

The mitigation plan is organized as follows:

### **EXECUTIVE SUMMARY: FIVE-YEAR ACTION PLAN**

The Five-Year Action Plan provides an overview of the mitigation plan mission, goals, and strategies.

### **PART I: MITIGATION ACTION PLAN**

#### **Section 1: Introduction**

The Introduction describes the background and purpose of developing the mitigation plan and the planning process.

#### **Section 2: District Profile**

This section presents the history, geography, demographics, and socioeconomics of Beverly Hills Unified School District. In this section, each school within the District is profiled in detail.

### **Section 3: Risk Assessment**

This section provides information on hazard identification, vulnerability and risk associated with hazards in Beverly Hills Unified School District.

### **Section 4: Multi-Hazard Goals and Strategies**

This section provides information on the plan goals and strategies that address the six hazards identified.

### **Section 5: Public Involvement and Plan Maintenance**

This section provides information on plan implementation, monitoring and evaluation and public involvement during the creation of the plan and details for future public involvement.

## **PART II: HAZARD SPECIFIC INFORMATION**

Hazard specific information on the six most likely hazards is addressed in the plan. Each of these sections provides information on the background and history of the hazard, hazard causes and characteristics, a risk assessment as well as the economic and social impacts of the hazard. Various District data and maps are used to provide background and context for the narrative.

These sections were composed with much information provided by the City of Beverly Hills. The City and the District collaborated on the entire plan however on Sections 6-10 they worked especially close. The BHUSD utilized a wealth of hazard information and analysis provided by the City of Beverly Hills which was not readily available at the District. The City of Beverly Hills has land surveys, seismic analysis, flood maps and various other resources that the District is not equipped to conduct or obtain. We thank the City very much for their efforts and assistance in creating the BHUSD Hazard Mitigation Plan.

Hazards addressed in the plan are as follows:

### **Section 6: Earthquake**

### **Section 7: Fire**

### **Section 8: Terrorism**

### **Section 9: Flooding**

### **Section 10: Earth Movement (Landslide)**

### **Section 11: Windstorm**

## **PART III: RESOURCES**

Resources include, but are not limited to, all information used to gather information to assemble the entire Hazard Mitigation Plan.

## **WHO PARTICIPATED IN DEVELOPING THE PLAN**

The development of the plan has been a collaborative staff and community effort. The planning process has been facilitated by the District's Business Services Department with participation from all District departments. The Steering Committee was comprised of the each school's assistant principal, the assistant superintendent and various department representatives from within the District. The public was invited to participate in the development and review of the plan as well. Additionally, the BHUSD collaborated with a consulting firm, VFL Planning Consultants, who are very knowledgeable regarding hazard

planning and emergency management. Their information and guidance was a vital force in creating the plan.

The Steering Committee was chosen to create the form and substance of the plan as well as to provide imperative feedback, guidance and approval. This Steering Committee drafted the Mission Statement, Plan Goals, identified the hazards list, and developed and approved the plan and strategies.

Additionally the BHUSD worked closely with the City of Beverly Hills, most notably with the Office of Emergency Management and several other departments which shared vital information and resources for completion of the plan.

### **WHAT IS THE PLAN MISSION**

The Beverly Hills Unified School District Hazard Mitigation Plan's mission is to establish and promote policies and programs to protect students, staff, facilities, property, and infrastructure from natural and manmade hazards. This will be achieved by developing and implementing this plan to guide the District towards, creating and maintaining a safer, more sustainable community.

### **WHAT ARE THE PLAN GOALS**

The plan goals describe the overall direction that Beverly Hills Unified School District departments, staff and students can take to minimize the impacts of hazards. The plan goals help to guide direction of future activities aimed at reducing risk and preventing loss from hazards. The goals are stepping-stones between the broad direction of the mission statement and the specific recommendations that are outlined in the strategies.

### **PLAN GOALS**

#### **To Protect Life, Property, Environment**

Implement activities that assist in protecting lives by making schools, infrastructure, critical facilities, and other property more resistant to hazards.

Reduce losses and repetitive damages for chronic hazard events while promoting insurance coverage for catastrophic hazards.

Encourage preventative measures for existing and new developments that are in areas vulnerable to hazards.

#### **Public Awareness**

Develop and implement education and outreach programs to increase public awareness of the risks associated with hazards.

Develop and implement education and outreach programs to increase public awareness of the mitigation measures associated with hazards.

Provide information on tools, partnership opportunities, and funding resources to assist in implementing mitigation activities.

## Partnerships and Implementation

Strengthen communication and coordinate participation with students, parents, public agencies, community-based organizations and the business community to promote a collaborative process in implementation.

Encourage leadership within public and private sector organizations to prioritize and implement District, city and county hazard mitigation activities.

## District Emergency Management

Establish policy to ensure mitigation projects for critical facilities, services, and infrastructure.

Update current school safety site plans, make recommendations for current District safety guidelines and codes and establish new plans and projects that support mitigation.

Strengthen emergency operations by increasing collaboration and coordination among district departments, public agencies and community-based organizations.

Coordinate and integrate hazard mitigation activities, where appropriate, with emergency operations plans and procedures.

Continue providing emergency services with training and equipment to address all identified hazards.

## HOW ARE THE STRATEGIES ORGANIZED

The strategies are a listing of activities in which the District can take or had taken in the recent past to reduce risk. Each strategy includes an estimate of the time line for implementation. The strategies are organized within a detailed matrix, which lists all of the multi-hazard and hazard-specific strategies included in the mitigation plan. The Steering Committee along with BHUSD staff members developed these strategies based on department goals, data collection, history, research and the public participation process. The following overview chart

HAZARD	<b>The hazard the strategy mitigates.</b>
PROJECT NAME	<b>Name of the Mitigation project strategy.</b>
STRATEGY	<b>Strategy Description</b>
ACTION ITEM	<b>What actions will be completed to complete the strategy.</b>
COORDINATING DEPARTMENT	<b>The department with regulatory responsibility to address hazards, or that is willing and able to organize resources, find appropriate funding, or oversee activity implementation, monitoring, and evaluation. The main department responsible is in bold, the supporting departments are not.</b>
TIMELINE/COMPLETION DATE	<b>Each project includes an estimate of the time line for implementation.</b>
TOTAL COST	<b>Estimate of cost of project.</b>
FUNDING SOURCE(S)	<b>Where the funding will be obtained.</b>
CONSTRAINTS	<b>Constraints may apply to some of the action projects. These</b>

<b>constraints maybe a lack of District staff, lack of funds, or vested property rights which might expose the District to legal action as a result of adverse impacts on private property</b>		
<b>PLAN GOALS ADDRESSED</b>	<b>The plan goals addressed by each project are included as away to monitor and evaluate how well the mitigation plan is achieving its goals once implementation begins.</b>	
	Public Awareness	Protect Life and Property
	Partnerships and Implementation	Emergency Management

Mitigation strategies are steps that the BHUSD plans to take in order to create a safer learning environment. They are steps that reinforce the plan’s mission and goals and will lead to successful mitigation efforts.

**BENEFIT/COST REVIEW**

Benefit-cost review (BCR) is an abbreviated quantitative method of comparing the projected benefits to projected costs of a project or policy. It is used to measure benefit/cost and cost effectiveness For each mitigation strategy listed in the plan, careful consideration was given to the reasonable costs of implementation, fiscal and social.

A Benefit-Cost review was conducted for each mitigation strategy using a quantifying strategy. A modified process called “STAPLEE” was used to methodically review the benefit as opposed to the cost of each strategy and action listed where that information was attainable. STAPLEE stands for Social, Technical, Administrative, Political, Legal, Economical, and Environmental. This benefit-cost review determines the overall feasibility of implementation of each strategy developed.

The strategies are prioritized based on this analysis. The ratings are based on a priority level of “Very High” to “Very Low”. The result of this review is documented in each mitigation strategy matrix. See Section 4 for more detail on STAPLEE. The following is a mitigation strategies overview chart.

**Chart 1. MITIGATION STRATEGIES OVERVIEW CHART**

<b>Mitigation Strategies Overview Chart</b> (lead department in bold)							
<b>Hazard</b>	<b>Mitigation Strategy</b>	<b>Responsible Department</b>	<b>Timeline</b>	<b>Plan Goals Addressed</b>			
				<b>To Protect Life, Property, Environment</b>	<b>Public Awareness</b>	<b>Partnerships and Implementation</b>	<b>Emergency Management</b>
Multi-Hazard	<i>Red Cross Agreements</i>	Business Services	2008	X	X	X	X
Multi-Hazard	<i>Beverly Hills Unified School District Hazard Mitigation Plan</i>	Business Services	Ongoing	X	X	X	X
Multi-Hazard	<i>Risk Assessment Project</i>	<b>Business Services,</b> Human Resources, Facilities	2009	X			X
Multi-Hazard	<i>Communications Hardening</i>	<b>Business Services,</b> Facilities	2009			X	X
Multi-Hazard	<i>BHUSD Emergency Preparedness Public Awareness Campaign</i>	Business Services	2011	X	X	X	X
Multi-Hazard	<i>The BHUSD District-Wide Emergency Preparedness Manual</i>	Business Services	2011	X	X	X	X
Multi-Hazard	<i>Volunteer Emergency Response Team</i>	Business Services	2011	X	X	X	X
Multi-Hazard	<i>Emergency Shelter Identification</i>	<b>Facilities,</b> Business Services	2009	X		X	X
Multi-Hazard	<i>Critical Infrastructure Assessment</i>	<b>Facilities,</b> Business Services	2011	X			X
Multi-Hazard	<i>Evacuation Routes Update</i>	<b>Business Services,</b> Facilities, Educational Technology	2007	X			X
Multi-Hazard	<i>Advanced DART Staff Training</i>	Business Services	Ongoing	X	X		X
Multi-Hazard	<i>GIS Upgrade</i>	Educational Technology	2010	X			X

Multi-Hazard	<i>AED Installations</i>	<b>Facilities, Business Services</b>	2007	X		X	X
Terrorism	<i>Closed Circuit Television Upgrades</i>	<b>Business Services, Facilities</b>	2011	X			X
Earthquake	<i>Modernization Assessments</i>	<b>Buiness Services, Facilities</b>	2007	X		X	X
Earthquake	<i>Horace Mann Liqifaction Assessment</i>	<b>Business Services, Facilities</b>	2007	X		X	X
Flood	<i>Roof Reparatations</i>	<b>Business Services, Facilities</b>	2007	X			X
Fire	<i>Fire Safety Plan</i>	Business Services	2008	X	X	X	X

## **HOW WILL THE PLAN BE IMPLEMENTED, MONITERED, EVALUATED**

The Plan Maintenance section of this document details the formal process that will ensure that the Beverly Hills Unified School District Hazard Mitigation Plan remains an active and relevant document. The plan maintenance process includes a schedule for monitoring and evaluating the Plan annually and producing a plan revision every five years. This section describes how the District will integrate public participation throughout the plan maintenance process. Finally, this section includes an explanation of how Beverly Hills Unified School District intends to incorporate the mitigation strategies outlined in this Plan into existing planning mechanisms such as the Safe School Plans and evacuation plans, retrofitting plans and future development plans.

## **PLAN ADOPTION**

The Board of Education (BOE) adopts the Beverly Hills Unified School District Hazard Mitigation Plan. Once the plan has been adopted, the District's Superintendent of Business Services will be responsible for submitting it to the State Hazard Mitigation Officer at the Governor's Office of Emergency Services. The Governor's Office of Emergency Services will then submit the plan to the Federal Emergency Management Agency (FEMA) for review. This review will address the federal criteria outlined in FEMA Interim Final Rule 44 CFR Part 201. Upon acceptance by FEMA, Beverly Hills Unified School District will gain eligibility for Hazard Mitigation Grant Program funds.

Plan implementation and evaluation will be a shared responsibility among all of the Hazard Mitigation Steering Committee members. According to federal requirements, the Plan will be evaluated on an annual basis to determine the effectiveness of programs, and to reflect program changes. Copies of the plan will be made available to the public through written and digital formats.

The approved Hazard Mitigation Plan will be significant in the future growth and development of the District. The Beverly Hills Unified School District Hazards Mitigation Plan was approved by the Board of Education on September 11, 2006. The BOE Resolution adopting the plan is set forth as Appendix F.

## **COORDINATING BODY**

The Beverly Hills Unified School District Hazard Mitigation Steering Committee was responsible for coordinating implementation of plan strategies and undertaking the formal review process.

## **CONVENER**

The BOE will adopt the Beverly Hills Unified School District Hazard Mitigation Plan, and the Hazard Mitigation Steering Committee will take responsibility for plan implementation. The Assistant Superintendent of Business Services will serve as a convener to facilitate the Hazard Mitigation Steering Committee meetings, and will assign tasks such as updating and presenting the plan to the members of District staff and community. Plan implementation and evaluation will be a shared responsibility among all of the Steering Committee Members.

## **IMPLEMENTATION THROUGH EXISTING PROGRAMS**

The Beverly Hills Unified School District addresses statewide safety goals and legislative requirements through its safety, building and evacuation plans and with its comprehensive emergency preparedness programs. The Hazard Mitigation Plan provides a series of recommendations that are closely related to the goals and objectives of these existing planning programs. The Beverly Hills Unified School District will have the opportunity to implement recommended mitigation strategies through existing programs and procedures.

A hazard mitigation Steering Committee meeting will be held every six months after the formal adoption of the mitigation plan. The meetings of the will provide an opportunity for committee members to report on the progress of mitigation planning elements and to provide suggestions for revisions. Please refer to the segment *BHUSD Emergency and Safety Preparedness Programs– Existing Mitigation Strategies* in Section 2 of this plan for further details on existing mitigation strategies the District practices.

## **FORMAL REVIEW PROCESS**

The Beverly Hills Unified School District Hazard Mitigation Plan will be evaluated on an annual basis to determine the effectiveness of programs, and to reflect changes in land development or programs that may affect mitigation priorities. The evaluation process includes a firm schedule and timeline, and identifies the departments and organizations participating in plan evaluation. The convener will be responsible for contacting the hazard mitigation Steering Committee members and organizing the annual meeting. Committee members will be responsible for monitoring and evaluating the progress of the mitigation strategies in the Plan.

## **CONTINUED PUBLIC INVOLVEMENT**

Public involvement is an integral part of the Beverly Hills Unified School District's mission. The connection the District has made with the community has led it to be regarded as a pivotal component and partner in the entire Beverly Hills network. Their role in the community is not only as educational institution but as a community facilitator.

The BHUSD is dedicated to involving the public directly in the continual review and updates of the Hazard Mitigation Plan. The BHUSD already has a strong, existing relationship with the community including parents, staff and residents. Copies of the plan will be catalogued and made available at BHUSD District Office and at the Public Library. The existence and location of these copies will be available on the City's website and participation will be recruited through bulletins sent home with students to parents. Once the Plan is complete, the District website will contain contact information where the public can direct their comments and concerns regarding the plan.

Additionally, the District is currently creating a district-wide emergency preparedness manual that the public will be asked to review and provide comments.

## **SECTION 1 INTRODUCTION**

The Beverly Hills Unified School District is within the City of Beverly Hills which is a 5.7 square mile municipality surrounded by the cities of Los Angeles and West Hollywood. It was incorporated in 1914. Approximately 33,784 people now live in the City of Beverly Hills and the city's daytime population has been estimated as low as 110,000 and as high as 250,000. As a General Law City, the City of Beverly Hills is governed by five City Council members elected for overlapping terms. The BHUSD is governed by the Board of Education.

The District employs 650 total employees. Departments and Offices include: Human Resources, Educational Services, Business Services, Educational Technology, Facilities and Special Needs. Each department within the District has safety drills and training on a yearly basis.

The following are the five campuses within the Beverly Hills Unified School District.

El Rodeo School  
Hawthorne School  
Horace Mann School  
Beverly Hills High School  
Beverly Vista School

Moreno High, located within the grounds of Beverly Hills High School, is a continuation high school. Since Moreno has a limited number of students and shares facilities with Beverly Hills High, it will not be covered in depth for all hazard information pertinent to it will be included along with Beverly Hills High School information.

The Beverly Hills Unified School District is located within an urban environment, with some areas of hills and canyons that house much vegetation. The City of Beverly Hills reports more than 30,000 park and street trees and budgets seven times the national average.

Although the City of Beverly Hills has a diverse population, its popular image is that of homes to the rich and famous. Today Beverly Hills is an important retail, financial, and professional center. Property value within the City's radius exceeds \$8.1 billion, and real estate is priced accordingly. The Business Triangle attracts many commercial businesses. The rent along Rodeo Drive can be as high as \$264 per square foot annually (\$22.00 per square foot per month). Prices for a single residence in Beverly Hills could average \$2.5 million and range from three bedrooms to 40+ room mansions.

With its celebrity residents, international boutiques, luxury hotels, and acclaimed restaurants, Beverly Hills has become the most popular destination for Southern California visitors. The following threat assessments identify and summarize the hazards that could impact the Beverly Hills Unified School District:

- An earthquake would impact the entire District's and the community within.

- The City of Beverly Hills has little industry and therefore is not affected by stationary hazardous materials users.
- The southeast portion of the District may be subject to flooding, due to flash flooding and urban flooding (storm drain failure/infrastructure breakdown), however the District has no facilities in the flood zones.
- The District is not vulnerable to storm surge inundation associated with hurricanes and tropical storms.
- The entire Los Angeles basin is considered as a risk area for a nuclear event or act of terrorism; therefore both sheltering and evacuation should be considered.
- The District has no facilities located within high risk urban wildfire areas.
- The District has no history of damage associated with a Windstorm or Landslide hazard.

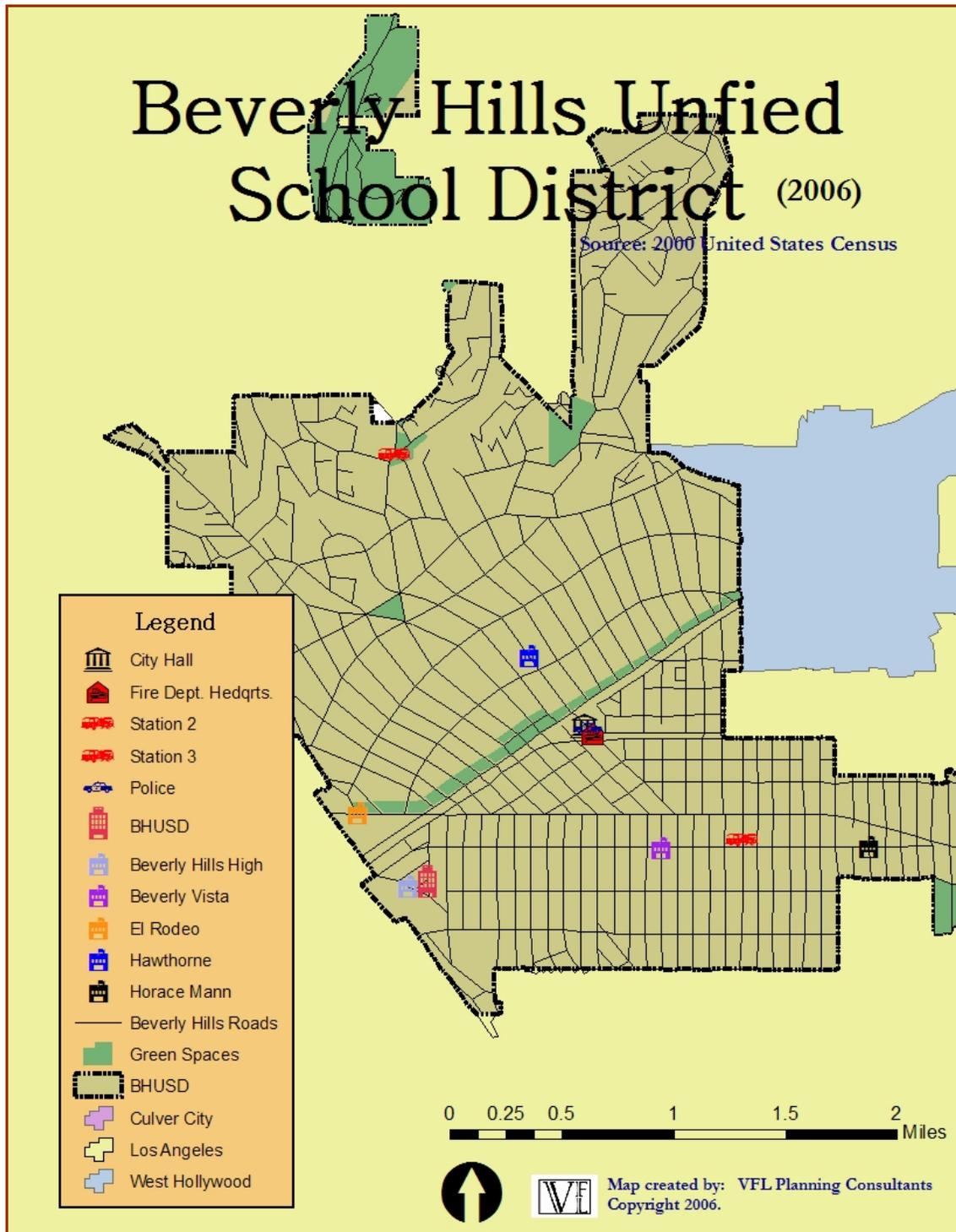
Emergencies and disasters can cause damage to the Beverly Hills Unified School District its students, staff, facilities and the environment. These disasters can cost tremendous amounts of money in terms of response and recovery dollars, property damage and can cause death or injuries.

Throughout its history, the community within the Beverly Hills Unified School District has dealt with the various hazards affecting the area. State, County and local history has illustrated that Southern California residents have dealt or will deal with earthquakes, earth movements including landslide and mudslide, flooding, fires (including wildland and structural), wind storms and terrorism.

While the District cannot prevent disasters from happening, their effects can be reduced or eliminated through a well organized public education and awareness effort, preparedness and mitigation. The District recognizes that most hazards cannot be fully mitigated; therefore the community must be prepared to provide efficient and effective response and recovery. Through our public awareness and outreach campaigns we aim to train and instruct District staff and students on the necessary skills and steps to take in case of an emergency. That is why each school has a thorough Safe School Plan which is a requirement under the California Educational Code under Senate Bill 187. These plans cover a range of emergency situations and the procedures staff is to follow in case of them. In 2006, the District updated Evacuation Routes and Maps within each school. Every classroom in all schools is equipped with a map, clearly visible, that illustrates the evacuation route for that classroom. Each teacher and staff member are provided instructions on what to do in case of evacuation. A large map of the evacuation routes is also posted in each school.

Map 1 illustrates the Beverly Hills Unified School District.

**Map 1. Beverly Hills Unified School District**



Additionally, the District is currently creating a district-wide emergency preparedness manual that the public will be asked to review and provide comments.

The District is located within a unique urban landscape. There are areas highly urbanized to the south and areas of concentrated vegetation in the north end of the District. The potential impacts of hazards associated with the terrain make the environment and population vulnerable to natural disaster situations.

Chart 1 reflects disasters occurring in Los Angeles County within the last fifteen years. Chart 2 shows disasters within the Beverly Hills Unified School District area that have occurred within last fifteen years.

**Chart 2 - Los Angeles County Disasters 1989 - 2004**

Hazard Type	Disaster Name	Disaster #	Year	Counties and Cities Declared	State Declaration	Federal Declaration	# of Deaths	# of Injuries	Cost of Damage
Economic	Mediterranean Fruit Fly	N/A	1989	Los Angeles	8/9/1989	Not declared			
Fire	Santa Barbara Fires	DR-872	1990	Los Angeles, Santa Barbara, Riverside, San Bernardino	6/28/90, 6/29/90	6/30/1990	3	89	\$300,000,000
Earthquake	Upland Earthquake	N/A	1990	Los Angeles, San Bernardino	3/9/90, 3/13/90	Not declared	0	38	\$12,034,150
Economic	Mexican Fruit Fly	N/A	1990	Los Angeles, San Diego	5/14/1990	Not declared			
Severe Storm	1992 Winter Storms	DR-935	1992	Los Angeles, Ventura, District of Los Angeles, Kern, Orange, San Bernardino	2/12/92, 2/19/92	2/25/1992	5		\$123,240,531
Civil Unrest	Los Angeles Civil Disorder	DR-942	1992	Los Angeles	4/29/1992	5/22/1992	53	2,383	\$800,000,000
Flood	1992 Late Winter Storms	DR-979	1992	Alpine, Los Angeles, Humboldt, Napa, Santa Barbara, Culver City, District of Los Angeles, Contra Costa, Mendocino, Sonoma, Fresno, Imperial, Madera, Monterey, San Bernardino, Sierra, Tehama, Trinity, Tulare, Modoc, Orange, Riverside, Lassen, Siskiyou, Plumas, San Diego	1/7/93 - 2/19/93	1/15/1993	20	10	\$600,000,000
Fire	Southern California Firestorms	DR-1005	1993	Los Angeles, Ventura, San Diego, Orange, Riverside, San Bernardino	10/27/93, 10/28/93	10/28/1993	4	162	\$1,000,000,000
Earthquake	Northridge Earthquake	DR-1008	1994	Los Angeles, Ventura, Orange	1/17/94, 1/24/94	1/17/1994	57	11,846	\$40,000,000,000
Severe Storm, Flood	Late Winter Storms	DR-1046	1995	All counties except Del Norte		1/10/1995	17		\$1,100,000,000

Hazard Type	Disaster Name	Disaster #	Year	Counties and Cities Declared	State Declaration	Federal Declaration	# of Deaths	# of Injuries	Cost of Damage
Severe Storm	Severe Winter Storms	DR-1044	1995	Los Angeles, Orange, Humboldt, Lake, Sonoma, Butte, Colusa, Contra Costa, Del Norte, Glenn, Kern, Lassen, Mendocino, Modoc, Monterey, Napa, Placer, Plumas, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, Tehama, Ventura, Yolo, Yuba, Alpine, Amador, Nevada, Riverside, Sacramento, San Bernardino, San Mateo, Shasta, Sutter, Trinity, San Diego, Alameda, Marin, Fresno, Kings, El Dorado, Madera, Solano, Siskiyou	1/6/95 - 3/14/95	1/13/1995	11		\$741,400,000
Fire	Southern California Firestorms	EM-3120	1996	Los Angeles, Orange, San Diego	10/1/1996			5	\$40,000,000
Flood	El Nino		1998	Alameda, Amador, Butte, Calaveras, Colusa, Contra Costa, Fresno, Glenn, Humboldt, Kern, Kings, Lake, Los Angeles, Marin, Mendocino, Merced, Monterey, Napa, Orange, Riverside, Sacramento, San Benito, San Bernardino, San Diego, San Francisco, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, Siskiyou, Solano, Sonoma, Stanislaus, Sutter, Tehama, Trinity, Tulare, Ventura, Yolo, Yuba			17		\$550,000,000
Earthquake	Sierra Madre Earthquake	N/A	2003	Los Angeles	7/5/1991	Not declared	1	30	\$33,500,000
Fire	Southern California Wildfires	DR-1498	2003	Ventura, Los Angeles, San Bernardino, Riverside, San Diego	10/24-26/03	10/27/2003			

There have been few disasters to cause substantial loss of life or property to the District. However the most financially devastating in recent history has been the 1994 Northridge Earthquake, FEMA disaster DR 1008. The District incurred a total of \$1,131,739 dollars in damage to it's facilities. The following chart illustrates damages incurred by disasters to occur within the District from 1989-2004.

**Chart 3. Beverly Hills Unified School District Disasters 1989 – 2004.**

<b>Hazard Type</b>	<b>Disaster Name</b>	<b>Disaster #</b>	<b>Year</b>	<b>Federal Declaration</b>	<b>Cost of Damage to the District</b>
Civil Unrest	Los Angeles Civil Disorder	DR-942	1992	5/22/1992	\$0
Flood	1992 Late Winter Storms	DR-979	1992	1/15/1993	\$0
Earthquake	Northridge Earthquake	DR-1008	1994	1/17/1994	\$1,131,739
Severe Storm	Severe Winter Storms	DR-1044	1995	1/13/1995	\$0

**WHY DEVELOP A MITIGATION PLAN?**

Changes to the Robert T. Stafford Disaster Relief and Emergency Assistance Act, which provides the basis for federal assistance to state and local governments impacted by a disaster, have placed a new emphasis on local mitigation planning. Hazard Mitigation, also known as prevention before the occurrence of a disaster, is now considered to be the first step in preparing for emergencies, rather than the final step in recovery. FEMA is now requiring state and local governments to develop hazard mitigation plans by November 2004.

The consequences of not having an approved Local Hazard Mitigation Plan are significant. Without one, the District would be ineligible for FEMA mitigation programs including the Hazard Mitigation Grant Program, Flood Mitigation Assistance Program, and potential loss of public assistance funding for repetitively damaged facilities following a disaster. However the most important aspect of having a well-prepared and thorough Hazard Mitigation Plan is to ensure the proper care and safety of the District’s lives and property.

Some of the required contents of a Local Hazard Mitigation Plan exist in current District programs and procedures. The District’s Disaster Assistance Response Training (DART) program, existing building codes, federal and state safety codes the District follows, school evacuation plans and each school’s Safe School Plan contain requirements of the Local Hazard Mitigation Plan. These existing programs and plans have been incorporated into this Hazard Mitigation Plan.

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, identifies and prioritizes mitigation actions, encourages the development of local mitigation and provide technical support for those efforts. This mitigation plan serves to meet those requirements.

This plan assists the District in reducing risk from hazards by identifying resources, information, and strategies for risk reduction, while helping to guide and coordinate mitigation activities throughout the District. Upon completion, the Hazard Mitigation Plan will include mitigation strategies that outline the District's blueprint for reducing the potential losses identified in the

risk assessment, based on existing authorities, policies, programs, and resources, and its ability to expand on and improve these existing tools. This plan will formalize all mitigation and associated data completed in the past and create a direction for mitigation in the future.

The resources and information within the Mitigation Plan:

- (1) Establish a basis for coordination and collaboration among District departments and each school population within the Beverly Hills Unified School District;
- (2) Identify and prioritize future mitigation projects; and
- (3) Assist in meeting the requirements of state and federal assistance programs.

### **WHOM DOES THE MITIGATION PLAN AFFECT?**

The Beverly Hills Unified School District Hazard Mitigation Plan affects not only the District's students and staff but parents and the entire City of Beverly Hills. This plan provides a framework for mitigation planning for hazards. The resources and background information in the plan is applicable District-wide, and the goals and recommendations can lay groundwork for mitigation plans and partnerships.

### **THE PLANNING PROCESS**

The creation of this plan was a multi-agency effort. The development of the plan included comprehensive and collaborative District and community effort, including the City of Beverly Hills. The District took the planning process very seriously and collaborated with many groups to create the plan including District staff, parent/guardians, and the Beverly Hills Fire Department. The plan creation was coordinated by the Office of Business Services along with help from the City of Beverly Hills Office of Emergency Management with participation from all District departments. Input was sought from District staff, the Steering Committee and the general District's public.

A Steering Committee was established, composed of individuals from various Departments and areas within the District. The Steering Committee was chosen to facilitate the progression of the plan, provide imperative feedback, guidance and approval. This Steering Committee wrote the Mission Statement, Plan Goals, decided and approved the hazards, and will approve the plan and strategies.

Information in the plan is based on research from a variety of sources including District data research and analysis, City of Beverly Hill data and analysis, and community input. District staff facilitated steering committee meetings, public workshops, and develop the final mitigation plan.

### **Steering Committee Input**

The Hazard Mitigation Steering Committee convened about every four weeks over the course of seven months to guide development of the Mitigation Plan. The Steering Committee serves several purposes in the BHUSD. In addition to their role as the Steering Committee for the purposes of this plan, they are also the BHUSD Disaster Planning, Safety, and Emergency Steering Committee. The committee played an integral role in developing the mission, goals, and strategies for the mitigation plan. The Steering Committee is comprised of the following representatives:

**Alex Cherniss** – Assistant Principal, Hawthorne elementary  
**Amy Lambert** – Director of Pupil Personnel Services and Special Education  
**Erik Warren**- Assistant Principal, Beverly Vista Elementary  
**Jim Fahey** – Director of Maintenance and Operations  
**Loren Pearlman** – Assistant Principal, El Rodeo Elementary  
**Marlene Calcines** – Assistant Principal, Horace Mann Elementary  
**Mick McClatchey** – Assistant Superintendent  
**Mike Williams** -Manager of Custodial Services  
**Toni Staser** – Assistant Principal Beverly Hills High School  
**Paul De Vargas** - Grounds Person El Rodeo and President CSEA  
**Melody Voyles** - Senior Payroll/Benefits Specialist  
**Claudia Grover** - Administrative Assistant II

This committee also serves as the District’s Safety and Disaster Planning Committee whom meet monthly. As shown in Appendix E, the Hazard Mitigation Steering Committee and various other stakeholders met regularly to develop the plan. This process involved much dialogue, discussion and input on the development of the plan. The Steering Committee also had a very specific role in ranking the severity of the hazards. There are also number of meetings and events that demonstrate the District’s drive for safety and mitigation. These events are part of the overall public input process. The Steering Committee identified hazards based on probability, magnitude, warning time and duration using a Hazard Rating survey. A sample of this survey is provided in Appendix D.

### **Public/Community Input**

Public participation is a key component of strategic planning processes. Community participation offers the parents and staff the opportunity for inclusion of their interests and concerns into the process. The Federal Emergency Management Agency requires public input during the development of local hazard mitigation plans. The public was invited to participate in the development of the plan using various communications methods. Information was provided on the District’s website, each school’s website, hard copies located at each school and in the District newsletter.

The Beverly Hills Unified School District Hazards Mitigation Plan integrates a cross section of local staff and parent input. To accomplish meaningful participation, rather than appointing, educating and grappling with scheduling concerns of a project-specific steering committee, it was deemed more efficient and more representatives to enlist the expertise of existing District commissions, groups and parent’s interest’s representative of all stakeholders in the community.

Additionally, the District community, including parents/guardians, were asked to participate in hazard identification. A simple, informative survey was distributed via hard copy and electronic form. A sample survey is located in Appendix C.

This has been a collaborative effort with input from all District departments, the City of Beverly Hills and the community. Furthermore the District has utilized healthy communication networks with Area A cities, e.g. the four Westside cities Beverly Hills, Culver City, Santa Monica and West Hollywood. The cities have worked closely to share information and aid in development

and creation of their respective plans. As part of the public process, the District also consulted the authors of the Los Angeles Unified School District Hazard Mitigation Plan.

For more detailed information on public input see Section 5, Public Involvement and Plan Maintenance.

### **HAZARD SPECIFIC RESEARCH**

Beverly Hills Unified School District staff collected data and compiled research on hazards. Research materials came from a variety of sources. The Beverly Hills Unified School District staff conducted research using data and speaking with experts, current mitigation activities, resources and programs, and potential strategies from research materials and stakeholder input.

The plan was assembled referencing various sources including, but not limited to:

Federal Emergency Management Agency  
State Office of Emergency Services  
Los Angeles County Office of Emergency Management  
Beverly Hills Unified School District  
Beverly Hills Fire Department  
Beverly Hills Police Department  
Los Angeles County Fire Department  
Los Angeles County Public Works  
Edison International  
Los Angeles Unified School District Hazard Mitigation Plan.  
Beverly Hills Chamber of Commerce  
Firewise Program  
United States Census  
City of Beverly Hills Records  
Los Angeles County Records  
City of Beverly Hills General Plan

### **STATE AND FEDERAL GUIDELINES AND REQUIREMENTS FOR MITIGATION PLANS**

The following are the Federal requirements for approval of a Hazard Mitigation Plan:

- Open public involvement, with public meetings that introduce the process and project requirements.
- Public must be afforded opportunities for involvement in identifying and assessing risk, drafting a plan, and public involvement in approval stages of the plan.
- Community cooperation, with opportunity for other local government agencies, the business community, educational institutions, and non-profits to participate in the process.
- Incorporation of local documents, including the local General Plan, the Zoning Ordinance, the Building Codes, and other pertinent documents.

The following components must be part of the planning process:

- Complete documentation of the planning process
- A detailed risk assessment on hazard exposures in the community
- A comprehensive mitigation strategy, which describes the goals & objectives, including proposed strategies, programs & actions to avoid long-term vulnerabilities.
- A plan maintenance process, which describes the method and schedule of monitoring, evaluating and updating the plan and integration of the All Hazard Mitigation Plan into other planning mechanisms.
- Formal adoption by the Board of Education.
- Plan Review by both State OES and FEMA

These requirements are spelled out in greater detail in the forthcoming plan sections and supporting documentation.

### **HOW IS THE PLAN USED**

Each section of the mitigation plan provides information and resources to assist the community in understanding the District and the hazard-related issues facing students, staff, facilities and the environment. Combined, the sections of the plan work together to create a document that guides the mission to reduce risk and prevent loss from future hazard events.

The structure of the plan enables people to use a section of interest to them. It also allows District government to review and update sections when new data becomes available. The ability to update individual sections of the mitigation plan places less of a financial burden on the City. Council members can allocate funding and staff resources to selected pieces in need of review, thereby avoiding a full update, which can be costly and time-consuming. New data can be easily incorporated, resulting in a Hazard Mitigation Plan that remains current and relevant to District of Beverly Hills.

The mitigation plan is organized as follows:

### **EXECUTIVE SUMMARY: FIVE-YEAR ACTION PLAN**

The Five-Year Action Plan provides an overview of the mitigation plan mission, goals, and strategies. The plan strategies are included in this section, and address multi-hazard issues, as well as hazard-specific activities that can be implemented to reduce risk and prevent loss from future hazard events.

### **PART I: MITIGATION ACTION PLAN**

#### **Section 1: Introduction**

The Introduction describes the background and purpose of developing the mitigation plan for Beverly Hills Unified School District and the planning process.

#### **Section 2: Community Profile**

This section presents the history, geography, demographics, and socioeconomics of the City of Beverly Hills as well as the Beverly Hills Unified School District. It

serves as a tool to provide an historical perspective of hazards within District boundaries.

### **Section 3: Risk Assessment**

This section provides information on hazard identification, vulnerability and risk associated with hazards in Beverly Hills Unified School District.

### **Section 4: Multi-Hazard Goals and Strategies**

This section provides information on the plan goals and strategies that address the six hazards addressed in the mitigation plan.

### **Section 5: Public Involvement and Plan Maintenance**

This section provides information on plan implementation, monitoring and evaluation and public involvement during the creation of the plan and details for future public involvement.

## **PART II: HAZARD SPECIFIC INFORMATION**

Hazard specific information on the six chronic hazards is addressed in this plan. Each of the hazard-specific sections includes information on the history, hazard causes and characteristics, hazard and risk assessment, area of susceptible to the hazard and existing mitigation activities and local, state, and national resources.

These sections were composed with much information provided by the City of Beverly Hills. The City and the District collaborated on the entire plan however on Sections 6-10 they worked especially close. The BHUSD utilized a wealth of hazard information and analysis provided by the City of Beverly Hills which was not readily available at the District. The City of Beverly Hills has land surveys, seismic analysis, flood maps and various other resources that the District is not equipped to conduct or obtain. We thank the City very much for their efforts and assistance in creating the BHUSD Hazard Mitigation Plan. The hazards addressed in the plan are as follows:

### **Section 6: Earthquake**

### **Section 7: Fire**

### **Section 8: Terrorism**

### **Section 9: Flooding**

### **Section 10: Earth Movement (Landslide)**

### **Section 11: Windstorm**

## **PART III: RESOURCES**

Resources include, but are not limited to, all information used to gather information to assemble the entire Hazard Mitigation Plan.

### **Appendix A: Resources**

This section provides a list of resources for District, city, regional, state, and federal agencies and organizations that may be referenced directly and indirectly within the BHUSD Hazard Mitigation Plan. The resources are also provided for public information.

**Appendix B: Crosswalk**

This section includes the Local Hazard Mitigation Plan Review Crosswalk for California local governments.

**Appendix C: Natural Hazard Risk Analysis Rating Form**

This section includes the survey by which community members rated the hazards.

**Appendix D: Steering Committee Hazard Rating Survey**

This survey was provided to the Steering Committee and Focus Group to rate the Beverly Hills School District hazards.

**Appendix E: Public Involvement & Planning Events**

This section provides a list of dates, descriptions and locations of all planning meetings pertaining to the planning process of the Hazards Mitigation Plan. The section also provides a list of dates, descriptions and locations of all public meetings and events that involved the community in the planning process of the Hazard Mitigation Plan.

**Appendix F: Plan Adoption**

This section contains a copy the Categorical Exemption and of the BOE Resolution adopting the Hazard Mitigation Plan.

## **SECTION 2**

### **DISTRICT PROFILE**

#### **INTRODUCTION**

The purpose of this plan is to develop a plan for responding to hazards that may occur within the District of Beverly Hills. Hazards will impact the District's staff, students, property, and environment. Potential earth movements, earthquakes, flooding, terrorism, windstorms and fires expose the District to financial and emotional costs of recovering under natural and manmade disasters.

The Beverly Hills Unified School District (BHUSD) is located within the City of Beverly Hills, Ca. This is located in Southern California. The BHUSD employs a total of 650 employees. The District is comprised of five school campuses and one district building. Within these five campuses and one continuation school (located within the Beverly Hills High School campus) there are a total of 5,037 students for the 2005-2006 school year. The following are the District's beliefs, objectives, policies and strategies.

#### **Beliefs**

The following are a list of beliefs, objectives, policies, and strategies which the District promotes and enforces.

A person's right to thoughts and ideas is inviolate.  
Self-respect is essential to individual and community well-being.  
Every person has immeasurable intrinsic value.  
Society requires standards of right and wrong.  
Every person is entitled to personal safety.  
Every person needs love.  
Every person has a right to the basic necessities of life.  
Every person deserves the opportunity to achieve his or her potential.  
Family is the primary influence on each person's development.  
Literacy is vital to individual empowerment.  
Human dignity is sacrosanct.  
Every person has the right to education.  
Diversity of all kinds enriches the individual and society.  
Family is basic to the preservation and creation of societal values.  
There can be no progress without change.  
Every person is accountable for his or her behavior and actions.  
Honesty is the basis for successful human relationships.

#### **Objectives**

All students will be prepared for higher education and/or employment within this rapidly changing global society.  
100% of our students will have the skills and character to deal effectively with problems.  
100% of our graduates will feel satisfied with their preparation for post-graduate pursuit.

## **Policies**

Nothing will take precedence over the elementary through secondary instructional program.

We will not tolerate prejudicial discrimination by anyone.

We will practice participative management throughout the organization.

## **BHUSD Strategies**

1. We will develop and implement a dynamic, interdisciplinary and standards based curriculum, including character education and life skills, to ensure that the success of each student.
2. We will maintain a comprehensive adult education as an enhancement of the K-12 program.
3. We will secure the support of our community in the realization of our mission and objectives.
4. We will promote and support staff effectiveness and accountability.
5. We will create a climate of mutual understanding and respect.
6. We will use the California Standards for the Teaching Profession to develop student-centered instructional practices that motivate individual student learning.
7. We will involve all segments of the school community in decision making.
8. We will secure the funding and resources necessary to fulfill our mission and objectives.
9. We will continue to increase the District's efficiency, accuracy and effectiveness of the District's instructional programs through the use of technology.
10. We will continuously plan for facilities that optimize the learning environment.

## **Board of Education**

The Board of Education (BOE) is the District's governing body that meets twice a month. The Board of Education is responsible for approving the plan. The following individuals comprise the current BOE.

Myra B. Lurie, President

John D. Millan, Vice President

Myra Demeter Ph.D. Member

Nooshin Meshkaty, Member

Alissa Roston, Member

Roxanna Pirnia, Student Board Member

The Board works very closely with the Superintendent of Schools Jeffrey Hubbard, Ed.D.

## **Beverly Hills Unified School District (BHUSD)**

255 South Laskey Drive  
Beverly Hills, CA 90212  
(310) 551-5100



### **Mission Statement**

The mission of the Beverly Hills Unified School District, the heart of our city's tradition of pride and excellence, is to ensure that our students are humane, thinking, productive citizens through an educational system characterized by state-of-the-art technology; a dynamic interdisciplinary curriculum; an exemplary instructional and support team; student-centered active learning; respect for diversity; strong parent and community involvement; and a nurturing environment where all share a common purpose and a joy for learning.

### **Departments**

The BHUSD is composed of nine major departments. Each department is responsible for composing district wide goals which are presented to the Board of Education. The following are the departments.

- Human Resources
- Educational Services
- Business Services
- Educational Technology
- Facilities
- Special Needs
- Pupil Personnel Services
- Maintenance, Operations & Grounds
- Purchasing

### **Facilities/Future Development**

The has a total of five (5) schools and one District Building. Adjacent to the District building is the Adult School. As with any urban area, the District will develop more facilities as deemed by population growth in the area. As new schools are built to meet demand, the District will follow local, state and federal construction guidelines and with the BHUSD Hazard Mitigation Plan will make note to avoid any development within hazard areas. Currently the District has only one school within a liquefaction zone.

### **Schools**

The BHUSD has five (5) schools, an Adult School (located at the District offices) and an alternative high school located within Beverly Hills High School. All of the schools within the BHUSD comply with all Federal and State Education guidelines and regulations. The statistical information provided in the following pages is contingent on each school's *School Accountability Report Card* (SARC) consistent with State Board of Education Guidelines for the 2003-2004 school year.

## Emergency Preparedness

The BHUSD has recently stepped up its emergency planning services and trainings. Currently the District conducts DART (Disaster Assistance Response Training) quarterly disaster drills, monthly fire drills, and an Annual District-wide Disaster Exercise. Additionally the BHUSD is taking steps to create a comprehensive district-wide emergency preparedness manual. Please refer to Section 2, *BHUSD Emergency and Safety Preparedness Programs– Existing Mitigation Strategies* for more on how the District prepares for hazards events.

### El Rodeo School

605 Whittier Drive  
Beverly Hills, CA 90210  
(310) 229-3670

### Mission Statement

El Rodeo School's mission is that all students experience an educational program that is balanced, relevant, motivating and academically challenging. Students are actively involved in a standards-based curriculum which promotes higher order, critical thinking skills. The academic curriculum is supported by a variety of instructional strategies, enrichment programs, and state of the art technology. Teachers, parents, and collaborate to meet the individual needs student population in a safe learning environment. We respect the diversity of our students and promote an appreciation of different cultures.



**Image 1. El Rodeo School** students

of our

### Enrollment

El Rodeo School is an elementary school with an enrollment for the 2003-2004 of 765.

### Demographics

The following chart illustrates the racial makeup of El Rodeo School.

**Chart 4.**

Racial/Ethnic Category	Number of Students	Percent of Students	Racial/Ethnic Category	Number of Students	Percent of Students
African-American	21	2.7	Hispanic or Latino	29	3.8
American Indian or Alaska Native	0	0.0	Pacific Islander	0	0.0
Asian	58	7.6	White (Not Hispanic)	624	81.6
Filipino	7	0.9	Multiple or No Response	26	3.4

Source: California Basic Educational Data System (CBEDS)

## School Facilities

As reported in El Rodeo's SARC, the following information is based on safety, cleanliness, and adequacy of school facilities, including any needed maintenance to ensure good repair. This includes any description of the condition and cleanliness of the school grounds, buildings, and restrooms.

El Rodeo is currently undergoing a major renovation of the school facilities. Two Beverly Hills city wide bond issues have been passed to provide funding for the needed renovations. All playgrounds are being renovated and updated to current safety standards. The playground renovations include a synthetic playing field, play equipment, and other needed upgrades. In addition, all auditoriums and restrooms throughout are scheduled to be upgraded, as well as other life and safety projects, as part of the new Measure K bond issue.



## Professional Development

As part of the staff professional development program at El Rodeo School, staff members participate in various trainings and conferences to strengthen teaching skills and concepts throughout the year.

The district offers three staff development days annually where teachers are offered a variety of professional growth opportunities in curriculum, teaching strategies and methodologies. Academic topics for staff development for the 2003-2004 school year included:

### Image 2.

El Rodeo was founded in 1927.

- Character Education Standards-Based Reporting
- Curriculum and Content Standards Alignment Mathematics Assessment and Benchmarks
- Assessment Review and Goals Visual Arts Standards-Based Lesson Design
- UCLA Mathematics Project Reading Assessment Program
- Grade Level/Department Articulation Meetings Technology
- MS/HS Articulation Meetings

Additionally teachers participated in safety trainings that would be essential during an emergency situation. The following trainings were conducted for the 2003-2004 school year.

- Physical Best/CPRT Training Service Learning
- HIV/AIDS Training Writing

Beverly Hills Unified School District participates in both Beginning Teachers Support and Assessment (BTSA), which is a mentoring program for new teachers, and Peer Assistance and

Review (PAR), a program that pairs exemplary teachers with others to assist in teaching strategies. Middle school teachers also meet twice monthly during late start days to collaborate as an entire group and by grade level or subject area. This collaboration assists the teachers in meeting the instructional needs of every middle school student

### **School Safety Plan**

Safety of students and staff is a primary concern of El Rodeo School. The school is in compliance with all laws, rules and regulations pertaining to hazardous materials and state earthquake standards. The disaster preparedness plan, developed in conjunction with local police and fire departments, includes steps for ensuring student and staff safety during a disaster, and disaster drills are held once a month throughout the year. El Rodeo School's Safety Plan has been implemented and is revised annually by the School Site Safety Committee. The School Safety Plan is on file in the Principal's office.

Additionally, El Rodeo provides detailed instructions for parents and guardians on how to respond in case an emergency situation presents itself during school hours.

There are official procedures outlined in El Rodeo's Site Safety Plan in case of an emergency during school hours. In addition, El Rodeo conducts periodic drills for fire, earthquake, and lockdown. In an emergency, students will be picked up at the reunion gate on the Wilshire and Primary playgrounds. Additionally, if the school needs to evacuate, El Rodeo has established pre-arranged agreements at offsite locations with the Beverly Hilton and the Los Angeles Country Club.

### **Hawthorne School**

624 North Rexford Drive  
Beverly Hills, CA 90210  
(310) 229-3675

### **Mission Statement**

The mission of the BHUSD, the heart of our city's pride and excellence, is to ensure that our students are humane, thinking, productive citizens through an educational system characterized by state-of-the-art technology; a dynamic interdisciplinary curriculum; an exemplary instructional and support team; student centered active learning; respect for diversity; strong parent and community involvement; and a nurturing environment where all share a common purpose and a joy of learning.



**Image 3. The Hawthorne School**

### **Description**

The Hawthorne School was established in the 1920's and is a California Distinguished School, serving students in grades kindergarten through grade eight. In addition to core curriculum, K-5 students receive enrichment in art, music, physical education and technology. The middle school (grades 6-8) is a "school within a school," as students receive instruction in a homeroom and in individual subject areas. Middle school students choose from a variety of elective classes to supplement core instruction.

### Enrollment

During the 2003-2004 school year 775 students were enrolled on a traditional schedule

### Demographics

The following chart illustrates the racial makeup of the Hawthorne School.

**Chart 5.**

Racial/Ethnic Category	Number of Students	Percent of Students	Racial/Ethnic Category	Number of Students	Percent of Students
African-American	19	2.5	Hispanic or Latino	35	4.5
American Indian or Alaska Native	0	0.0	Pacific Islander	2	0.3
Asian	64	8.3	White (Not Hispanic)	624	80.5
Filipino	10	1.3	Multiple or No Response	21	2.7

Source: California Basic Educational Data System (CBEDS)

### School Facilities

As reported in the Hawthorne School's SARC, the following information is based on safety, cleanliness, and adequacy of school facilities, including any needed maintenance to ensure good repair. This includes any description of the condition and cleanliness of the school grounds, buildings, and restrooms.

Hawthorne School provides a safe, clean environment for students, staff, and volunteers. A team of three full-time custodians ensures that all facilities are well maintained, and a scheduled maintenance program is administered by Beverly Hills Unified School District.

The Hawthorne School campus is undergoing a modernization which includes revisions to the auditorium, restrooms and focuses on other life and safety projects scheduled for 2007. A new playground and campus landscaping were made possible by the Joint Powers Agreement, which combines funds from both the district and the city of Beverly Hills.

### Professional Development

As part of the staff professional development program at the Hawthorne School, staff members participate in various trainings and conferences to strengthen teaching skills and concepts throughout the year.

The district offers three staff development days annually where teachers are offered a variety of professional growth opportunities in curriculum, teaching strategies and methodologies. Academic topics for staff development include:

- Character Education Standards-Based Reporting
- Curriculum and Content Standards Alignment Mathematics Assessment and Benchmarks
- Assessment Review and Goals Visual Arts Standards-Based Lesson Design
- UCLA Mathematics Project Reading Assessment Program
- Grade Level/Department Articulation Meetings Technology
- MS/HS Articulation Meetings

Additionally teachers participated in safety trainings that would be essential during an emergency situation. The following trainings were conducted for the 2003-2004 school year.

- Physical Best/CPRT Training Service Learning
- HIV/AIDS Training Writing

### **School Safety Plan**

Safety of students and staff is a primary concern of Hawthorne School. The Hawthorne School is in compliance with all laws, rules, and regulations pertaining to hazardous materials and state earthquake standards. The school safety plan includes steps for ensuring student and staff safety during a disaster, and complete disaster drills are held regularly throughout the year. All teachers and classified staff are scheduled for first aid training and CPR and training as well as AED and CPR training in spring 2007. Additionally, part of the 7<sup>th</sup> grade will receive DART training in October 2006.

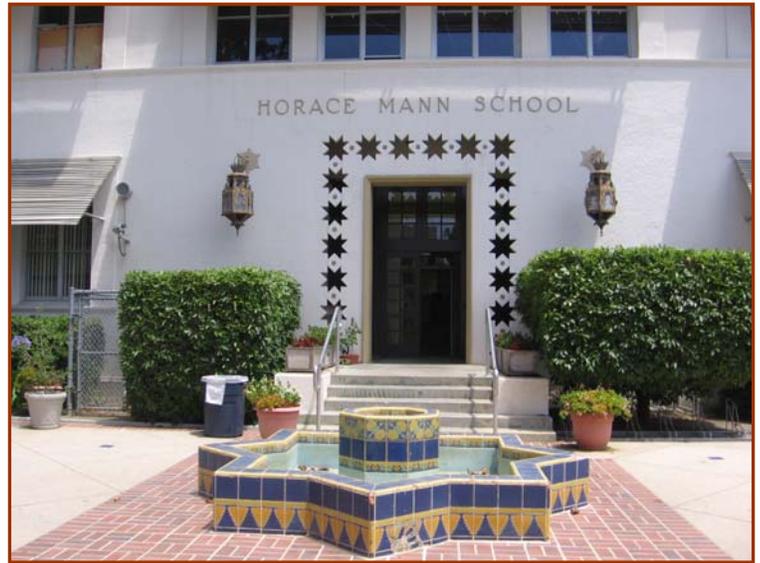
Hawthorne School's safety plan has been implemented and is revised annually. The last review date of the plan is scheduled for September 2006. The Hawthorne School also has a *School Site Safety Committee* which is comprised of the School Site Council members, parents, teachers, and community members. Local police, fire agencies and the City of Beverly Hills Office of Emergency Management are also consulted regarding disaster plans.

## Horace Mann School

8701 Charleville Blvd.  
Beverly Hills, CA 90211  
(310) 229-3680

### Mission Statement

The vision for Horace Mann School is in concert with the mission of the Beverly Hills Unified School District. We have created a school family that includes students, teachers, parents and community members to promote the welfare, skills, knowledge and understanding of all students. We want all students to achieve academic excellence through a challenging learning experience providing students with the necessary skills to become positive role models in our democratic society.



**Image 4. Horace Mann School**

### Description

Horace Mann School was opened in the fall of 1929 as one of four schools in the Beverly Hills Unified School District dedicated to serving the students of Beverly Hills for grades kindergarten through eight. It has since been named with the prestigious honor of California Distinguished School. In addition to the core curriculum, K-5 students receive enrichment in art, music, physical education, and technology. The middle school (grades 6-8) is a “school within a school,” and students receive instruction in individual subject areas and choose from a variety of elective classes to supplement core instruction.

The school was named in honor of Horace Mann, commonly known as the “father of public education.” Mann worked tirelessly to improve education for all students, calling education “the greatest equalizer of the conditions of men – the balance-wheel of the social machinery.” Today at Horace Mann School, students and the surrounding community are offered the best in standards based curriculum, family support, and technology, thus enabling our students to become leaders for the future. The Horace Mann School is dedicated to academic excellence and has a faculty that is extremely qualified, professionally skilled, and personally committed to meeting the learning needs of all students.

### Enrollment

During the 2003-2004 school year 713 students were enrolled on a traditional semester schedule.

### Demographics

The following chart illustrates the racial makeup of Horace Mann School.

**Chart 6.**

Racial/Ethnic Category	Number of Students	Percent of Students	Racial/Ethnic Category	Number of Students	Percent of Students
African-American	21	2.7	Hispanic or Latino	29	3.8
American Indian or Alaska Native	0	0.0	Pacific Islander	0	0.0
Asian	58	7.6	White (Not Hispanic)	624	81.6
Filipino	7	0.9	Multiple or No Response	26	3.4

Source: California Basic Educational Data System (CBEDS)

### School Facilities

Horace Mann provides a safe, clean environment for students, staff, and volunteers. A team of four full-time custodians ensure that all facilities are well maintained and a scheduled maintenance program is administered by the Beverly Hills Unified School District. Horace Mann School completed its renovation project during the summer of 2001. A playground and landscaping project was completed during the 2003-2004 school year, including the installation of an artificial turf field, completely new playground equipment, surfacing and striping, and a new vinyl-coated fence around the perimeter of the playground. Additional modernization projects are being planned for the 2006-2007 school year.

### Professional Development

As part of the staff professional development program at the Horace Mann School, staff members participate in various trainings and conferences to strengthen teaching skills and concepts throughout the year.

The district offers three staff development days annually where teachers are offered a variety of professional growth opportunities in curriculum, teaching strategies and methodologies. Academic topics for staff development include:

- Character Education Standards-Based Reporting
- Curriculum and Content Standards Alignment Mathematics Assessment and Benchmarks
- Assessment Review and Goals Visual Arts Standards-Based Lesson Design
- UCLA Mathematics Project Reading Assessment Program
- Grade Level/Department Articulation Meetings Technology
- MS/HS Articulation Meetings

Additionally teachers participated in safety trainings that would be essential during an emergency situation. The following trainings were conducted for the 2003-2004 school year.

- Physical Best/CPRT Training Service Learning
- HIV/AIDS Training Writing
- DART training for all classified and certified staff (2005-2006)

### **School Safety Plan**

Safety of students and staff is a primary concern of Horace Mann School. The school is in compliance with all laws, rules and regulations pertaining to hazardous materials and state earthquake standards. The disaster preparedness plan, developed in conjunction with local police and fire departments, includes steps for ensuring student and staff safety during a disaster, and complete drills are held once a month throughout the year and disaster drills quarterly. A district-wide disaster drill was held in June 2006. Horace Mann School's Safety Plan has been implemented and is revised annually by the School Site Safety Committee, comprised of School Site Council members, parents, teachers, community members, and students. It is approved annually by the School Site Council. Local police and fire agencies are also consulted regarding disaster plans.



**Image 5. Horace Mann Playground**

## **Beverly Hills High School**

241 Moreno Drive  
Beverly Hills, CA 90212  
(310) 229-3685

### **Description**

Beverly Hills High School is a comprehensive, college-oriented high school located in the City of Beverly Hills. It is one of the most decorated public high schools in the country, and has been honored as a 1999-2000 National Blue Ribbon School of Excellence, a California Distinguished School and a New American High School. Beverly Hills High School was again named a California Distinguished School in 2003. Beverly Hills High School was established in 1928. The Beverly Hills Unified School District is comprised of four K-8 schools, one high school and one alternative high school. The District enjoys tremendous support from the local community, including the City of Beverly Hills, the Chamber of Commerce, the local Rotary Club, and strong PTSA organization.



**Image 6. Beverly Hills High School**

### **Enrollment**

During the 2003-2004 school year, 2,135 students were enrolled at Beverly Hills High School on a traditional semester schedule.

### **Demographics**

The following chart illustrates the racial makeup of Beverly Hills High School.

**Chart 7**

Racial/Ethnic Category	Number of Students	Percent of Students	Racial/Ethnic Category	Number of Students	Percent of Students
African-American	114	5.3	Hispanic or Latino	77	3.6
American Indian or Alaska Native	0	0.0	Pacific Islander	1	0.0
Asian	334	15.6	White (Not Hispanic)	1,563	73.2
Filipino	26	1.2	Multiple or No Response	20	0.9

**Source: California Basic Educational Data System (CBEDS)**

### **School Facilities**

Beverly Hills High School provides a safe, clean environment for students, staff and volunteers. A team of eight fulltime custodians ensures that all facilities are well maintained, and a scheduled maintenance program is administered by Beverly Hills Unified School District. Beverly Hills High School recently completely remodeled its auditorium and installed lights on Nickoll Field. The residents of Beverly Hills have recently passed Measure K, a portion of which is funding a new 30 million dollar Science and Technology Center. This new Science building is located on the North Lot of the campus, and will tentatively have 12 state of the art science laboratory classrooms, 18 regular classrooms, an Education Development Center (flexible learning space), a lecture hall, and a courtyard. Completion is scheduled for Fall 2007.

### **Professional Development**

Staff members build teaching skills and concepts through participation in conferences and workshops throughout the year. The district offers three staff development days annually where teachers are offered a broad based variety of professional growth opportunities in curriculum, teaching strategies, and methodologies. Topics for staff development year include:

- Focus on Learning - Accreditation Self-Study
- Technology – use of Choices and CTAP; training in Micrograde, Turnitin.com, or Manilla webpage; Tech. support & training
- Department Curriculum and Standards training Course description training & Instructional strategies evaluation
- Articulation with Middle schools
- Fitness Test Training
- Tolerance Training
- Review of new textbooks to be adopted
- Writing recommendations

Additionally teachers participated in safety trainings that would be essential during an emergency situation. The following trainings were conducted for the 2003-2004 school year.

- CPR/AED Training

In the 2005-200 school year, the staff participated in two disaster drills and one district-wide disaster/earthquake exercise. DART training is scheduled for the Beverly Hills High School

entire staff in January of 2007. Additionally, DART training will be provided to the Associated Student Body (ASB) students in October 2006.

### **School Safety Plan**

The safety of students and staff is a primary concern at Beverly Hills High School. Beverly Hills High School has worked closely with local law and emergency officials to continue to review and refine its emergency practices and procedures. The school is in compliance with all laws, rules and regulations pertaining to hazardous materials and state earthquake standards. The disaster preparedness plan includes steps for ensuring student and staff safety during a disaster. Fire, earthquake and intruder/lockdown drills are held regularly. Beverly Hills High School's Safety Plan has been implemented and is revised annually. The next revision date is scheduled for September 2006. The School Site Safety Committee is made up of district staff, the School Resource and Security Officers, site administration and parents.

### **Beverly Vista School**

200 South Elm Drive  
Beverly Hills, CA 90212  
(310) 229-3669

### **Mission Statement**

The mission of Beverly Vista School is to ensure that our students are humane, thinking, productive citizens taught by a professional staff who nurture the affective, cognitive, and physical development of our children and instill continuously the joy of learning. We celebrate the diverse population whose cultural backgrounds enhance the educational experience of our student body. We rejoice in the partnership that exists among our parents, students, and staff which fosters a warm, caring environment.



**Image 7. Beverly Vista School**

### **Description**

Beverly Vista School was established in 1924 and serves 724 students in grades kindergarten through eighth grade. We are proud to have been named a California Distinguished School in 1993 and a National Blue Ribbon School in 2005. In 2004, Beverly Vista witnessed the completion of major portions of new construction and remodeling. The modern structure provides an extraordinary facility where students can pursue their quest for knowledge and become informed, responsible citizens.

On September 23, 2005, Beverly Vista School was named a National Blue Ribbon School.

## Modernization Projects

Currently the school is undergoing major modernizations thanks to Measure K funding sources.

Measure K reads as the following:

*To repair/upgrade and improve all Beverly Hills Unified School District schools, construct additional classrooms, science/computer classrooms, restrooms, and school facilities, qualify for state grants if possible, address building safety/health issues including upgrade electrical wiring/power, repair/upgrade deteriorating restrooms/plumbing/HVAC and make other improvements to school sites and buildings, shall the District issue \$90,000,000 of bonds at interest rates within the legal limit with annual audits and citizens' oversight.*

*Source: <http://www.smartvoter.org/2002/03/05/ca/la/meas/K/>*

This measure was passed by Beverly Hills citizens in 2002. The Beverly Vista Modernization Project has a budget of \$12.5 million and is scheduled to be completed in 14.5 months from its groundbreaking. The modernizations will include the partial demolition of designated portions of the existing Theatre Building, the structural strengthening of the remaining portions of the building, the Auditorium and the Stage and Historical Bell Tower. Additionally, a new 2-story masonry and steel frame addition will be constructed on the south and east of the Auditorium and Bell Tower. A single story wood frame addition will be constructed on the west side that will house a Kindergarten classroom and support spaces.

Below are images of current construction and the rendition of the final product from Architectural firm Dougherty + Dougherty Architects.

**Image 8. Beverly Vista School Modernization**  
Funded through Measure K Bond monies.





**Image 9. Current Construction @ Beverly Vista**

### **Enrollment**

During the 2003-2004 school year, 719 students were enrolled on a traditional semester schedule.

### **Demographics**

The following chart illustrates the racial makeup of Beverly Vista.

**Chart 8.**

Racial/Ethnic Category	Number of Students	Percent of Students	Racial/Ethnic Category	Number of Students	Percent of Students
African-American	32	4.5	Hispanic or Latino	21	2.9
American Indian or Alaska Native	0	0.0	Pacific Islander	0	0.0
Asian	100	13.9	White (Not Hispanic)	542	75.4
Filipino	5	0.7	Multiple or No Response	19	2.6

Source: California Basic Educational Data System (CBEDS)

### **School Facilities**

Beverly Vista School provides a safe, clean environment for students, staff and volunteers. A team of four fulltime custodians ensures that all facilities are well-maintained. A full time maintenance program is administered by the Beverly Hills Unified School District. Beverly Vista School completed the renovation and retrofitting of our school during the 2003-04 school year. A new structure was built which houses three science labs, two state of- the-art computer labs, a modern library and cafeteria and classrooms for our Middle School. A large atrium, occupying the first floor, acts as our temporary auditorium and serves as a gathering place for students. A new instructional building having three kindergarten rooms and an auditorium is under construction and scheduled to be completed in September 2007.

## **Professional Development**

As part of the staff professional development program at Beverly Vista , staff members participate in various trainings and conferences to strengthen teaching skills and concepts throughout the year.

The district offers three staff development days annually where teachers are offered a variety of professional growth opportunities in curriculum, teaching strategies and methodologies. Academic topics for staff development include:

- Character Education Standards-Based Reporting
- Curriculum and Content Standards Alignment Mathematics Assessment and Benchmarks
- Assessment Review and Goals Visual Arts Standards-Based Lesson Design
- UCLA Mathematics Project Reading Assessment Program
- Grade Level/Department Articulation Meetings Technology
- MS/HS Articulation Meetings

Additionally teachers participated in safety trainings that would be essential during an emergency situation. The following trainings were conducted for the 2003-2004 school year.

- Physical Best/CPRT Training Service Learning
- HIV/AIDS Training Writing

Additionally all certified and classified staff received DART training in the spring of 2006. Staff is scheduled to receive first aid training and selected staff will receive CPR/NED training in Spring 2007.

## **School Safety Plan**

Safety of students and staff is a primary concern of Beverly Vista School. The school is in compliance with all laws, rules, and regulations pertaining to hazardous materials and state earthquake standards. The school safety plan, developed in conjunction with local police and fire departments, includes steps for ensuring student and staff safety during a disaster, and complete fire drills are held once a month and disaster drills quarterly. Lockdown drills are conducted periodically with guidance from the School Resource Officer. Beverly Vista School's Safety Plan has been implemented and is revised annually by the School Safety Committee and approved by the School Site Council. The plan is currently under review.

## **Moreno High**

H214 Moreno Drive  
Beverly Hills, CA 90212  
(310) 551-5100

## **Mission Statement and Description**

Moreno High School is an alternative high school located on the Beverly Hills High School campus in beautiful Beverly Hills. The Beverly Hills High School campus was built in 1928, and Moreno High School was established in the fall of 1971. As an alternative high school, Moreno serves a broad cross section of learning styles, proficiency levels, and personal needs. Instruction is individualized and challenging, and students work at their own pace until they have achieved mastery.

**Enrollment**

During the 2003-2004 school year, 18 students were enrolled on a traditional semester schedule at Moreno High.

**Demographics**

The following chart illustrates the racial makeup of Moreno High.

**Chart 9.**

Racial/Ethnic Category	Number of Students	Percent of Students	Racial/Ethnic Category	Number of Students	Percent of Students
African-American	1	5.6	Hispanic or Latino	0	0.0
American Indian or Alaska Native	0	0.0	Pacific Islander	0	0.0
Asian	0	0.0	White (Not Hispanic)	17	94.4
Filipino	0	0.0	Multiple or No Response	0	0.0

Source: California Basic Educational Data System (CBEDS)

**School Facilities**

Moreno High School shares a campus with Beverly Hills High School. Moreno High School is comprised of one main classroom and four breakout rooms. The school provides a safe, clean environment for students, staff, and volunteers. It shares a team of eight full-time custodians with Beverly Hills High School, who ensure that all facilities are well maintained. A scheduled maintenance program is administered by the Beverly Hills Unified School District.

**Professional Development**

Since the Moreno High School shares a campus with Beverly Hills High School, many of the resources including teachers are shared. Please refer to Beverly Hills High School section for this information.

**School Safety Plan**

Safety of students and staff is a primary concern at Moreno High School. The school is in compliance with all laws, rules, and regulations pertaining to hazardous materials and state earthquake standards. The disaster preparedness plan includes steps for ensuring student and staff safety during a disaster. Fire and earthquake drills are held throughout the year and intruder/lockdown drills are held once per semester. The Moreno High School site is part of Beverly Hills High School’s Safety Plan, which has been implemented and is revised annually. The next revision date is scheduled for September 2006.

The School Site Safety Committee is made up of district and site staff. Since the Beverly Hills/Moreno High School facilities were built in 1928, Moreno High School recently underwent modernization.

### **BHUSD EMERGENCY AND SAFETY PREPAREDNESS PROGRAMS – EXISTING MITIGATION STRATEGIES**

The Beverly Hills Unified School District implements comprehensive emergency awareness and preparedness programs. These programs are existing mitigation strategies the District executes in order to prevent the loss of life and property in case of a hazard. The BHUSD makes many efforts to minimize the loss of life in case of an emergency and has various trainings, drills and emergency awareness information all in preparation of a natural or manmade hazard. The following are a selected list of programs and projects that are implemented in order to mitigate damage to life and property in the Beverly Hills Unified School District. See Attachment I, *Beverly Hills Unified School District Disaster Preparedness Schedule 2005-2006*, for an excerpt of the District's comprehensive emergency preparedness schedule it implemented during the current school year.

#### **Safety and Disaster Planning Committee**

The BHUSD Safety and Disaster Planning Committee meet monthly and is led by the Asst. Superintendent of Business Services. The purpose of this committee is to schedule and enforce regular disaster trainings and disaster preparedness procedures in compliance with state, county and local regulations. The committee is composed of Jim Fahey, Maintenance and Operations Director, Melody Voyles, Senior Payroll/Benefits Specialist, Mike Williams, Custodial Manager, Claudia Grover, Administrative Assistant II, Alex Cherniss, Principal, Hawthorne Elementary, Amy Lambert, Director of Pupil Personnel Services and Special Education Erik Warren, Principal, Beverly Vista Elementary, Joseph Leppert, Assistant Principal, El Rodeo Elementary, Marlene Calcines, Assistant Principal, Horace Mann Elementary, Paul Devargas, Grounds Person El Rodeo and President CSEA and Toni Staser, Assistant Principal Beverly Hills High School. The BHUSD Safety and Disaster Planning Committee also serve as the Steering Committee for the Hazard Mitigation Plan.

See Attachment II, *Sample Disaster Training Packet*, to see a sample packet that is distributed during disaster training.

#### **DART**

The Disaster Assistance Response Training (DART) is an 8-hour, hands on program based on the Community Emergency Response Team (CERT) that is taught by the Fire Department to members of the Beverly Hills community. As indicated in a memo presented to the BHUSD Board of Education on March 3<sup>rd</sup>, 2006 by the Business Services Department, "DART will be an annual event scheduled to ensure a strong knowledge base for pending disasters". DART is designed to provide school district personnel with the skills to protect themselves and students in the event of an emergency. Additionally this program is designed to train staff to care for students during the 'day to day' emergencies. As part of the District's goal to be as fully prepared for an emergency situation as possible, the District is currently purchasing equipment such as a generator and radio for their Emergency Operations Center and disaster supplies. On March 20, 2006 DART training was provided to the entire staff. For more information on this please Section 4, Multi-Hazard Goals and Strategies.

In 2004, the Beverly Hills Fire Department has trained 86 faculty and staff at the Beverly Hills Unified School District. In 2006, the Beverly Hills Fire Department trained an additional 301 faculty and staff. DART training is scheduled for Beverly Hills High School staff of 140 in January 2007 and for all new school and District staff (approximately 100) in March 2007. More information on DART trainings is provided in Appendix F, Public Involvement & Planning Events.

### **Emergency Drills/Evacuation Plans**

In 2006, the District updated Evacuation Routes and Maps within each school. Every classroom within the District is equipped with a 8 ½ x 11 evacuation map, clearly visible, that illustrates the evacuation route and emergency exits for that classroom. Each teacher and staff member is provided instructions on what to do in case of evacuation. Additionally, all school sites and the District office have a large map board depicting the evacuation routes and the site and building design for use in an emergency.

Additionally, 8 ½ x 11 copies of the building and site architectural drawings have been sent to Sgt Joe Chirillo of the Beverly Hills Police Department to be used in case of emergency response. A copy of the map was sent to Captain Greg Barton of the Beverly Hills Fire Department for use in emergency response.

The District enforces that each school conduct four (4) disaster drills per school year, plus twice-annual lockdown drills and monthly fire drills. These include fire, earthquake, lock-down and evacuation procedures. See Attachment III at the end of this Section 2 to see a preliminary schedule of the *Beverly Hills Unified School District Disaster Preparedness Training Calendar* for the 2006-2007 school year. This is subject to change as the year continues.

### **Safe School Plans**

Each school has a thorough Safe School Plan required under the California Education Code. These plans cover a range of emergency situations and the procedures staff is to follow in case of them. Each plan is available for public review at the corresponding school office and at the District office. The District is currently creating a district-wide emergency preparedness manual that the school staff will be asked to review and provide comments.

### **AED Installations**

The Beverly Hills Unified School District has installed 18 operational Automated External Defibrillators (AED) and are located throughout the District. Each of the four elementary schools in the District have two AED's, Beverly Hills High School has nine units and one is installed in the District office.

### **Emergency Information WebPage and other Media Outlets**

The BHUSD has an entire webpage dedicated to emergency preparedness titled "Emergency Information" on its website. This page provides parents with information regarding safety issues at schools and what a parent should do in case an emergency does occur while their child is in school. In addition, each school's website has information for parent/guardians in case of an emergency during school hours.

Additionally the website offers various resources where the public may find other safety and emergency preparedness information such as Cable Channel 6 (Beverly Hills Education Channel) and the City of Beverly Hills Cable Channel 10, the Los Angeles County Disaster Hotline and the Federal Emergency Management Agency.

### **Emergency Services Agreements - Various Agencies**

The Beverly Hills Unified School District has a Joint Powers Agreement with the City of Beverly Hills that states the City may use school facilities as necessary in case of an emergency. This agreement has been created in order to be more fully prepared in case of a hazard event. It is preventative measure. Each school has different agreements with external locations in case of evacuation. El Rodeo School has arranged offsite evacuation locations with the Beverly Hilton Hotel and the Los Angeles Country Club in case of evacuation.

Additionally, the BHUSD is currently working with the Red Cross of Los Angeles on a Statement of Agreement to provide the Red Cross access and permission to use school facilities in case of an emergency. In this agreement the BHUSD will assign specific buildings/structures within the five campuses to be used as Mass Care Shelters as needed by the Red Cross. The contract was approved and signed by the Board of Education on June 13, 2006.

These are current strategies the BHUSD has taken to mitigate the dangers and difficulties of a hazard event in order to reduce the loss of life and property. The BHUSD consider emergency preparedness to be a critical component of a successful educational environment and take their emergency preparedness projects, programs and plans very seriously. BHUSD will continue to take steps to alleviate the dangers that can result from a hazard event.

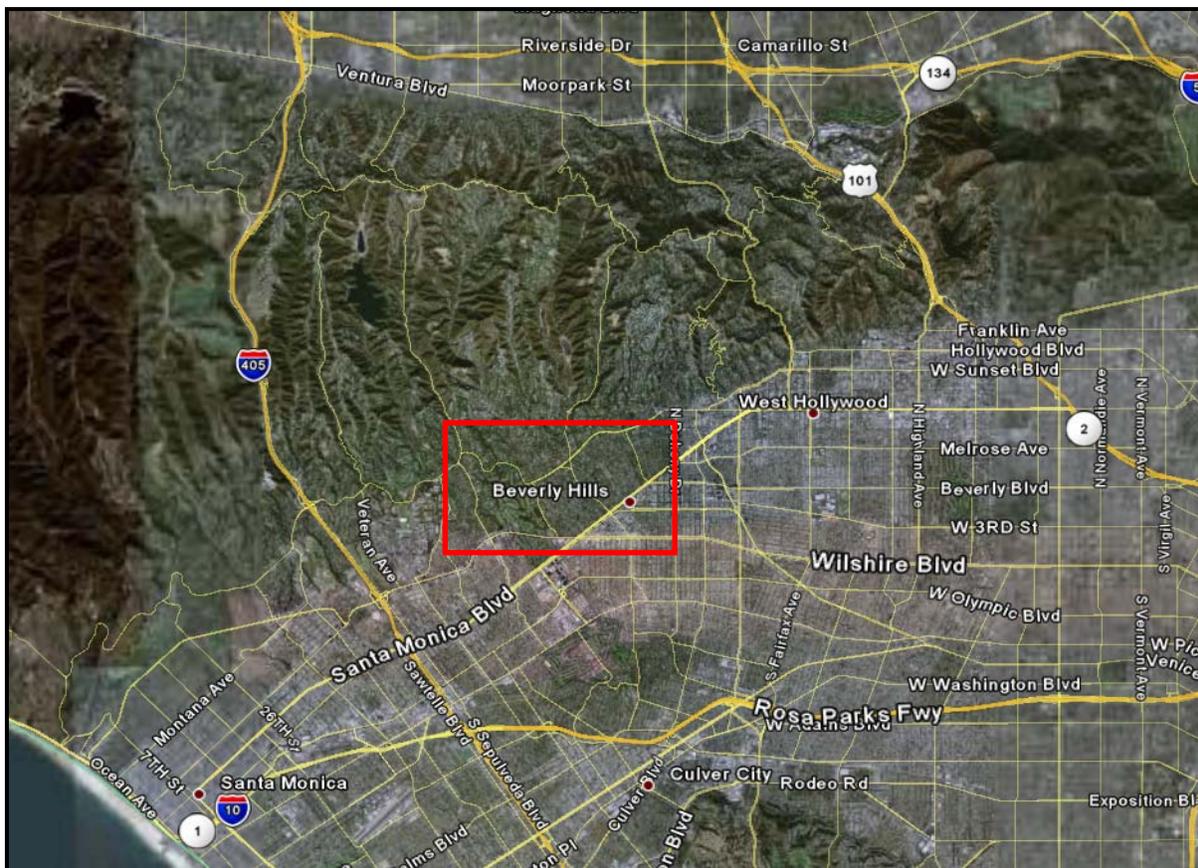
## BACKGROUND

The following background information will provide a general picture of the geographic and social background of the Beverly Hills community. This will include data and information of both the Beverly Hills city and school district.

The Beverly Hills Unified School District is located within the City of Beverly Hills. The City has grown tremendously in the last century and continues to do so. With population growth, comes the growth of business, housing and schools.

The growing population and activity within the District create an urgent need to develop strategies, coordinate resources, and increase public awareness to reduce risk and prevent loss from future hazard events. Identifying the risks posed by hazards and developing strategies to reduce potential impacts can assist in protecting the life and property of student, staff, parents, and community. Local residents, public agencies such as the City of Beverly Hills and businesses can work together with the District to create a hazard mitigation plan that addresses the potential impacts of hazardous events.

### Map 2. Geography and Environment of BHUSD



Source: Google Earth

The Beverly Hills Unified School District spans over 5.7 miles. It is located within the area known as the “Westside” of Los Angeles County that includes West Hollywood, Culver District

and Santa Monica. The area is fully urbanized and includes several business centers including Century City, Westwood Village and the Wilshire corridor.

The City of Beverly Hills has an intricate street system consisting of a grid of local streets (many serving as collectors), arterials, and other lesser thoroughfares. Regional access to the District is provided by San Diego (405) and the Santa Monica (10) Freeways. Major east/west arterials include Wilshire and Santa Monica and Olympic Boulevards. Major north/south streets include Beverly Drive, Doheny Drive, Robertson Boulevard and La Cienega Boulevard.

**LAND AND DEVELOPMENT**

The City’s General Plan addresses the use and development of private land, including residential and commercial areas. This plan is one of the City’s most important tools in addressing environmental challenges including transportation and air quality; growth management; conservation of natural resources; clean water and open spaces. Additionally the City makes note of the BHUSD in it’s plan. The City of Beverly Hills is currently working on an update of its General Plan.

**CLIMATE**

Beverly Hills enjoys a dry, sub-tropical, Mediterranean- like climate. Very little precipitation, low humidity, and an abundance of sunshine is enjoyed by residents, employees and visitors to the City. Virtually no precipitation is recorded between May and October, however an average of 15 inches of rain is measured annually. Monthly averages are shown in the following chart. (see Chart 10)

**Chart 10. Average Temperatures**

Month	High		Low	
	°	°	°	°
January	67°	19°	45°	7°
February	67°	19°	47°	8°
March	68°	20°	48°	19°
April	70°	21°	51°	11°
May	72°	22°	54°	12°
June	74°	23°	58°	14°
July	78°	26°	61°	16°
August	79°	26°	62°	17°
September	79°	26°	60°	16°
October	76°	24°	56°	13°
November	72°	22°	50°	10°
December	68°	20°	46°	7°

Source: Western Regional Climate Center

**MINERALS AND SOILS**

Local soils conditions are discussed in the Section 6 of this Report.

**CITY POPULATION AND DEMOGRAPHICS**

**Demographics**

Approximately 90% of the City of Beverly Hills is zoned for residential use. In 2000, approximately 62% of the total dwelling units were apartments and condominiums, and 37% were single family houses. District records indicate that approximately 82% of the multi-family units are apartments and 18% are condominiums.

**General Demographic Information**

The number of residents within the City of Beverly Hills has increased at a slow rate over the past thirty years, and growth predictions indicate that this trend will continue. Thus as the population grows, so will school population. A snapshot of demographics is provided below.

**Chart 11. General Demographic Information**

Subject	Number	Percent	Subject	Number	Percent
Total Population	33,784	100.00	Race		
Male	15,371	45.5	White		85.1%
Female	18,413	54.5	Asian		7.1%
Age			Two or more races		4.5%
0-19	7427	22.0%	African American		1.8%
20-44	11,362	33.6%	Other		1.5%
45-64	9,046	26.8%	Total		100%
65 years and over	5049	17.6%	Total Housing Units	15,856	
Median Age		41.3	Total occupied housing units	15,035	
Number of Households			Owner occupied housing units	6,518	
Family Households		8,263	Renter occupied housing units	8,517	
Non-Family Households		6,772	Homeowner vacancy rate	--	1.6%
Total Households		15,035	Rental vacancy rate	--	3.3%
Average Household Size	2.24 persons		Average Household size of owner-occupied units	2.73	
1990-2000 Change in Population		+5.7%	Average household size of Renter-occupied units	1.87	
1980-2000 Change in Population		+4.4%			
1970-2000 Change in Population		+1.1%			

Source: 2000 U.S. Census

**ATTACHMENT I. BEVERLY HILLS UNIFIED SCHOOL DISTRICT DISASTER PREPAREDNESS SCHEDULE 2005-2006 (Excerpt)**

<b>LEAD AGENCY</b>	<b>APRIL</b>	<b>MAY</b>	<b>JUNE</b>
<b>DISTRICT OFFICE</b>	<b>4/4 11:30 am – 1:30 pm</b> <b>Duck, Cover, Hold,</b> <b>Evacuate</b> <b>Take care of ourselves</b> <b>-Search &amp; Rescue</b> <b>-Triage/First Aide</b> <b>-Utility Shut-off</b>	<b>5/2 9:00 am – 10:30 am</b> <b>Command Post</b> <b>Training and</b> <b>Exercise</b>	<b>6/1 9:30 am – 11:30 am</b> <b>All District Disaster</b> <b>Exercise</b> <b>-Full Drill/Search &amp;</b> <b>Rescue</b>
<b>DISASTER SAFETY COMMITTEE</b>	<b>4/5 2:00 pm – 4:00 pm</b> <b>Assistant Principals</b> <b>Safety Planning Meeting</b>	<b>5/11 2:00 pm – 4:00 pm</b> <b>Assistant Principals</b> <b>Safety Planning</b> <b>Meeting</b>	<b>6/1 2:00 pm – 3:30 pm</b> <b>Assistant Principals or</b> <b>Disaster Debriefing All</b> <b>Admin/</b> <b>Management</b> <b>Leadership Mtg @</b> <b>3:30 pm</b>
<b>SCHOOL SITES</b>	<b>4/18 10:50 am El</b> <b>Rodeo</b> <b>4/19</b> <b>Hawthorne</b> <b>4/24</b> <b>Beverly Vista</b> <b>4/20 12:20 pm</b> <b>Beverly Hills High</b> <b>School</b> <b>-Drop Cover Hold</b> <b>-Evacuate</b> <b>-Assemble Teams</b> <b>-Assemble Equipment</b> <b>- Report to Stations</b>	<b>5/18 9:45 am El</b> <b>Rodeo</b> <b>5/22</b> <b>Beverly</b> <b>Vista</b> <b>5/22</b> <b>Hawthorne</b> <b>5/25 12:20 pm Beverly</b> <b>Hills High School</b> <b>-Drop Cover Hold</b> <b>-Evacuate</b> <b>-Assemble Teams</b> <b>-Limited Search &amp;</b> <b>Rescue 25%</b> <b>- Limited Parent</b> <b>Release</b> <b>- After Action De-</b> <b>Briefing</b>	<b>6/1 9:30 am – 11:30</b> <b>am</b> <b>Beverly Vista</b> <b>El Rodeo</b> <b>Hawthorne</b> <b>Horace Mann</b> <b>Beverly Hills High</b> <b>School</b> <b>-Full Drill/Search &amp;</b> <b>Rescue</b>

**ATTACHMENT II. SAMPLE DISASTER TRAINING PACKET**

**Disaster Planning Training – Emergency Operations Center**  
**Thursday June 1, 2006**  
**Agenda**

1. Duck, Cover and Hold – Evacuate Buildings – Assembly in the Board Room
2. Assemble in the Board Room – Review Disaster Response Stages – Designate Key Location (Primary and Secondary) – Disaster Box (keys and supplies) – Discuss External Operations Duties and EOC organization – Assign teams
  - Stage 2 EXTERNAL OPERATIONS - DUTIES
    - Assemble Communications Team (2-operators, 2-recorders, 2-runners)  
(Base station , Admin supplies, three radios and chargers)
    - Assemble Operations Center Team – Operate five stations (2 persons per station, 2 runners, 1- Center Supervisor) ( 5-School site map boards, school building design boards, 5- Situation Report Boards, Admin supplies, emergency supplies.
    - Assemble Security Team (3-5 staff with short range radios – when available)
    - Conduct Exercise – Communications Exercise with the five school sites – recording information – assignment of resources.
4. Review June 1, 2006 Exercise - - Questions

The California Office of Emergency Service (OES) and the geologists in the State predict that there will be a catastrophic earthquake (8.3 magnitude) in Southern California during our lifetime.

The Beverly Hills Unified School District Disaster Plan has been completely revised in accordance with State and Federal Law. The Plan represents the best of several state agencies (cities, counties) and school districts operational plans. The Plan is in full compliance with the Standard Emergency Management System (SEMS).

## **RESPONSIBILITY AND THE LAW**

School administrators have the responsibility to ensure the safety of their students and staff in an emergency. The Katz Act (Sections 35295-35297 of the California Education Code) requires that schools plan for earthquakes and other emergencies.

The Petris Bill (Section 8607 of the California Government Code) requires that state, local governments including school districts, be prepared to respond to emergencies using the Standardized Emergency Management System (SEMS). This necessitates that the principals of SEMS be incorporated in plans, that all school personnel are trained in how the system works, and that schools have drills and exercises in order to practice using the system.

## **EMERGENCY RESPONSE**

Each organization must use the Standard Emergency Management System or risk losing state assistance funds for emergency response-related personnel cost. Using SEMS includes planning, training, and exercising (California Code of Regulations #2400-24500)

SEMS requires that each school and district understands and uses the following:

- The Incident Command System, a method of organizing any emergency response effort into five basic function: command, planning/intelligence, operations, logistics, and finance/administration.
- An Emergency Operations Center (or Incident Command Post in the field), the staff of which is organized according to the same five functions as the Incident Command System.
- Coordination of the BHUSD Emergency Operations Center with the City of Beverly Hills Emergency Operations Center.
- Incorporation of SEMS into all school plans, training and exercises.

- Documentation of the use of SEMS in planning, exercising and during an actual emergency.

## **DISASTER SERVICE WORKERS**

**California Government Code Section 3100** declares that public employees are disaster service workers, subject to such disaster service activities as may be assigned them by their superiors or by law. The term public employees include public school employees in the following cases: 1) when a local emergency has been proclaimed, 2) when a state emergency has been proclaimed, or 3) when a federal disaster declaration has been made.

The law has two ramifications: 1) public school employees may be pressed into service as Disaster Service Workers by their superiors, and may be asked to do jobs other than their usual duties for periods of time exceeding their normal working hours; and 2) in those cases, their Workers Compensation Coverage becomes the responsibility of state government (Office of Emergency Services - - OES).

Schools are required by both federal and state regulation to be available for shelters following a disaster. The American Red Cross has access to schools in damaged area to set up their mass care facilities, and local governments have a right to use schools for the same purpose. This requirement mandates close cooperation between these agencies, the schools and the district and should be planned and arranged for in advance. BHUSD has coordinated with the Red Cross and the City of Beverly Hills.

### ***THE PLAN***

The Plan provides detailed guidance for specific jobs required during several different emergencies. Rarely will there be a requirement to activate every position as outlined in this plan. The information is available if you need it.

I ask that you review and implement the Plan at your sites. Establish practice drills and exercises using this Plan in order to ensure all staff and students are trained. We do well what we practice, practice, practice. Be prepared and be safe.

Sincerely,

Mick McClatchey, Assistant Superintendent, Business Services  
Superintendent

BEVERLY HILLS UNIFIED SCHOOL DISTRICT  
DISASTER PLANNING COMMITTEE

**RADIO COMMUNICATIONS TRAINING**

This paper will address how Beverly Hills Unified School District departments' and schools' staff should talk on a radio that:

- ❖ Networks with radios throughout the entire district –long range
- ❖ Networks with radios only on a school or department site –short range.

There is an established protocol that should be use every time one station communicates with another station or to the entire network. Generally, language should be abbreviated and to the point. Full sentences are not required, however it is essential to **ANSWER** the question – long drawn out explanations or background is discourage.

Proper use of two-way radios is essential to effective communication. Unlike telephones, all conversation should be short, clear, concise, and terminated immediately once the message has been sent. Each time you pick up a radio to send a message imagine being charged \$5.00 per word. Hopefully, this will cause you to first *think - before* pushing the **“PUSH TO TALK Button”** and to be brief. To do otherwise will delay communications – the consequences may be deadly.

Each time a station transmits on a radio to another station several other stations will be able to hear what is said – however, as long as the PUSH TO TALK Button is pressed, no other station can reply. **Know what you intend to say before you pick up the radio** – say it – listen to the reply – acknowledge and comment if necessary – then terminate.

**Common Radio Terminology and Phrases:**

- ❖ **Station** – person/organization with radio capability to transmit/receive on preset frequency.
- ❖ **Radio Net** – a preset frequency – any station tuned to that frequency may transmit or receive on it.
- ❖ **District Network** – all radio stations having radios with the same frequency as the district office and M&O
- ❖ **This is** – identifies the person or station speaking on the radio
- ❖ **Roger** – understand/acknowledges the last transmission
- ❖ **Over** - finished speaking, now you may speak
- ❖ **Go ahead** – similar to Over – send your traffic (message/information)
- ❖ **Out** – terminate the transmission – no further conversation is requested. Only the station that initiated the radio call may terminate the call.
- ❖ **Clear-** similar to Out – a station is indicating that they have nothing else to report
- ❖ **Nothing Further** - similar to Out – a station is indicating that they have nothing else to report

- ❖ **Anything further** – do you have additional information
- ❖ **Traffic** – message, information, report, etc.
- ❖ **WILCO** – will comply
- ❖ **Affirmative** – understood and agree
- ❖ **Negative** – understood and disagree
- ❖ **Call Sign** – person or organization unique identification
- ❖ **Commo Check** – a request for another station to state how clearly they receive your communication – it could be in the blind (any station) or a specific station
- ❖ **Radio Check** a request for another station to state how clearly they receive your communication – it could be in the blind (any station) or a specific station
- ❖ **How do you hear this station** – similar to commo check - a request for another station to state how clearly they receive your communication – it could be in the blind (any station) or a specific station
- ❖ **5 By 5** – response to a commo check – indicates I read you loud and clear
- ❖ **Wall to Wall** - response to a commo check – indicates -I read you loud and clear
- ❖ **Are you ready to copy** – are you prepared to write down the message I am sending
- ❖ **How Copy Over** – used to confirm that you have received and understand the complete message – normally used following a long message or a detailed message.
- ❖ **Any Station – Any Station - This is** (state your callsign) – used when a station is unable to contact a know station and wants to confirm that they are transmitting
- ❖ **Send your message/traffic - OVER** – we are ready to copy your information
- ❖ **Standby** – station requests a delay before another station sends its traffic/ message
- ❖ **I spell phonetically** – standard international name for alphabetic letters use to spell a word, i.e., Alpha, Bravo, Charlie, Delta, Echo, Foxtrot---
- ❖ **Channel** – preset frequency such as 1,2,3,4 etc.
- ❖ **Go to Channel \_3\_** - change frequency to the channel three
- ❖ **Sit Rep** – situation report – a standard format use to send a periodic report during a major disaster – only the items of the report with data are transmitted.
- ❖ **Hot Mike** – a person is unknowingly holding down the Push To Talk button – therefore blocking all communications on that frequency.

The **examples** below show how two stations establish initial contact with each other –transfer information and then terminate the conversation. Remember, only one person at a time can talk – the other can only listen, therefore, it is necessary to let the person listening know when you are finished speaking so that they can speak. You have to take turns. The station that initiates the radio call is the station that terminates the transmission.

### *Example 1*

**INITIAL CONTACT** (M&O -Beverly Base) (Mick -101)

Victor Base **this is 101 Over.**

101 **this is Victor Base Over.**

**SEND YOUR MESSAGE**

**This is 101** – request maintenance personnel report to Park View School to fix broken water line between classrooms 23 and 24 – **Over**

**This is Victor Base – Roger** – we will have Vince and Jay report to Park View immediately – Say name of Point of Contact at the site – **Over**.

**TERMINATE CONTACT**

**This is 101** – Point of Contact is Ed – Advise when maintenance personnel arrive on station – **This is 101 -Out**

*Example 2*

**INITIAL CONTACT**(district office –Delta Base)(Prep school)

Delta Base **this is** Prep school **Over**

Prep school **this is** Delta Base **Over**

**SEND YOUR MESSAGE**

**This is** Prep school - I have emergency traffic, are you ready to copy- **Over**

**This is** Delta Base – **Negative – Standby – Over**

**This is** Prep school– **WILCO** (wait until Delta Base calls)

Prep school **This is** Delta Base – **Send your traffic - Over**

**This is** Prep school – **Roger – Message follows** – 10 fifth grade male students severely injured, 13 female fifth grade students, three teachers and one aide slightly injured – all transported to St Mary’s. Names of students are -----, Names of staff are-----

Bus accident occurred at 3:05 while returning from a field trip. **How copy –Over**

**TERMINATE CONTACT**

**This is** Delta Base – **Good copy – Anything further – over**

**This is** Prep school – **Nothing further - OUT**

*Example 3*

**INITIAL CONTACT** (Mojave Vista) (District Office – Delta Base)

Delta Base **this is Mojave Vista Over**

Mojave Vista **this is Delta Base Over**

**SEND YOUR MESSAGE**

Delta Base **this is Mojave Vista** - we have an emergency situation on campus – Hostile Intruder – adult male approximately 20 yrs – Code Blue has been sounded. This is not a drill - **Over**

**This is Delta Base - Roger** - understand Code Blue in effect – 1<sup>st</sup> have the police been notified and 2<sup>nd</sup> are there any injuries or hostages at this time – **Over**

**This is Mojave Vista – Affirmative** - police notified and enroute – **ETA** is five minutes – no injuries and no hostages – subject is armed and walking around the east – intermediate playground – yelling something. **Over**

**TERMINATE CONTACT**

**This is Delta Base** - please advise when police arrive – we will notify the cabinet and board. Delta Base standing by **Over**

**This is Mojave Vista – Roger** we will keep you posted - **Out**

**When you talk on a radio in VESD you are expected to be professional – casual conversations, jokes or inappropriate comments are unauthorized. Inexperience in the use of a radio is understandable – overtime and with practice, proper radio procedure will become second nature to you. Sites and departments are encouraged to have experienced radio operators work with those less experienced – especially in an actual emergency.**

**END ATTACHMENT II**

**ATTACHMENT III. Beverly Hills Unified School District Disaster Preparedness Training Calendar 2006-2007**

**PRELIMINARY DISASTER AND EMERGENCY PREPAREDNESS TRAINING  
2006-2007 - REVISED**

**1. DART TRAINING**

- January 12, 2007
- BHHS – 100% classified and certificated staff
- Location -BHHS
  - ❖ Continental Breakfast and Lunch provided (No specialty food provided)
  - ❖ Training provided BHFD
  
- ✓ March 21, 2007
- ✓ Location - BHHS
- ✓ Staff and Faculty
  - i. K-8 schools – classified and certificated who missed training in March 20, 2006
  - ii. New staff - all new employees classified and certificated staff for 06-07.
  - iii. Continental Breakfast and Lunch provided (No specialty food provided)
  - iv. Training provided BHFD

**2. FIRST AID AND CPR (Certification Course)**

- ✓ March 21, 2007
- ✓ Location – Hawthorne School, EL Rodeo School, Horace Mann School, Beverly Vista School
- ✓ Staff and Faculty
  - i. K-8 schools’ – All classified and certificated staff who attended DART in March 20, 2006.
  - ii. Continental Breakfast and Lunch provided (No specialty food provided)
  - iii. Training provided BHFD, local city FD and American Red Cross

**3. MINI DART**

- ✓ October – TBD, 2006 (Multiple days)
- ✓ Location – Hawthorne School, Horace Mann School and BHHS
- ✓ Students
  - i. All ASB students at BHHS – training at BHHS Gym
  - ii. One 7<sup>th</sup> Grade equivalent class (30)students) per K-8 school
  - iii. El Rodeo and Hawthorne students train at Hawthorne
  - iv. Beverly Vista and Horace Mann students train at Horace Mann
  - v. Parents drop students at site of training location
  - vi. Bus transportation provided to return students to home school
  - vii. Training Time – 4 hours - lunch available at training location
  - viii. Training provided by BHFD

4. **CERT**

- ✓ TBD (Summer and School Year) 2006-2007
- ✓ Location BHFD
- ✓ Staff and Faculty
  - i. Max five staff/faculty per school and District Office Support Staff (30)
  - ii. Three eight hour work days
  - iii. Training provided BHFD

## SECTION 3 RISK ASSESSMENT

The goal of mitigation is to reduce the future impacts of a hazard. Hazards can cause property damage, disruption to the school district, and force the expenditure of large amounts of public and private funds to assist with recovery. However, mitigation should be based on risk assessment.

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 major components: hazard identification, vulnerability analysis and risk analysis.

### FEDERAL REQUIREMENTS FOR RISK ASSESSMENTS

Recent federal regulations for hazard mitigation plans outlined in 44 CFR Part 201 include a requirement for risk assessment. This risk assessment requirement is intended to provide information that will help communities to identify and prioritize mitigation activities that will reduce losses from the identified hazards. There are hazards profiled in the mitigation plan, including earthquakes, earth movements including landslide, flooding, fires (including wildland and structural), wind storms and terrorism. The Federal criteria for risk assessment and information on how the Beverly Hills Unified School District Hazard Mitigation Plan meets those criteria is outlined in the table below.

<b>Section 322 Plan Requirement</b>	<b>How is this addressed?</b>
Identifying Hazards	Each hazard section includes an inventory of the best available data sources that identify hazard areas. The District developed maps identifying the location of the hazard in the District which appear throughout the plan and are listed in the table of contents.
Profiling Hazard Events	Each hazard section includes documentation of the history, and causes and characteristics of the hazard in the District which appear in the “history” section under each of the hazards in Part II of the plan.
Assessing Vulnerability: Identifying Assets	The “hazard identification” and “risk assessment” sections under each hazard in Part II of the plan provides a summary of the vulnerability assessment of each hazard and where data is available, contains the types and numbers of existing buildings, infrastructure and critical facilities exposed to each hazard.
Assessing Vulnerability: Estimating Potential Losses:	The calculations of the impact of the hazard and if data is available, the economic and physical losses, are discussed under the “What is susceptible to...” section under each hazard in Part II of the plan. Vulnerability assessments have been completed for the hazards addressed in the plan,

	and quantitative estimates were made for each hazard where data was available.
Assessing Vulnerability: Analyzing Development Trends	The Beverly Hills Unified School District Community Profile Section of this plan provides a description of the development within the District, including a background on geography and environment, City population and demographics, and land use development within the District and future construction plans.

## WHAT IS RISK ASSESSMENT?

The District conducted a thorough risk assessment by soliciting District staff, the City of Beverly Hills and community input as demonstrated by the following actions. The BHUSD consulted with the City of Beverly Hills to assess which disasters and hazards were most probable to occur within the District and City boundaries. Therefore, the surveys were tailored to suit this information.

### Hazard Identification

The Steering Committee discussed all possible natural and man-made hazards that may affect the District. Several sources participated in assessing which hazards are most likely to occur within the Beverly Hills Unified School District and which ones would be most significant. Based on history, probability and with the help of surrounding communities the BHUSD Steering Committee decided to include earthquake, fire, flood, terrorism, windstorm and landslide in their Hazard Mitigation Plan. The public, including parents and District staff, were asked to participate in hazard identification and ranking. Please see Appendices C and D for samples of surveys these groups were asked to take in order to receive their input.

### The Steering Committee

The Steering Committee along with the BHUSD community were asked for their input in identifying hazards.

The Steering Committee identified hazards using a Hazard Rating survey. A total of 10 surveys were taken. A sample of this survey is provided in Appendix D. Weighing the history, the probability, and the magnitude of each hazard that would affect District staff, students and facilities, the Steering Committee chose to incorporate the following natural hazards into the Mitigation Plan and ranked accordingly<sup>1</sup>.

1. Earthquake
2. Terrorism
3. Flood
4. Windstorm

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<sup>1</sup> Methodology for the Steering Committee survey was conducted as follows: Each hazard has four categories with four points per category making 16 the highest points possible per hazard, per survey. The choices within individual categories are ranked according to points: first choice is one point, last choice is four points. Points for individual hazards were added amongst the eleven surveys providing a sum which was divided by 40, the number of surveys (10) multiplied by the number of categories (4) per hazard. Formula: total points/40.

- 5. Fire (including Wildland and Structural Fire)
- 6. Landslide/Debris Flow

**Chart 12. STEERING COMMITTEE HAZARD RATING SURVEY RESULTS**

<b>STEERING COMMITTEE</b>			
<b>HAZARD</b>	<b>TOTAL POINTS</b>	<b>CATEGORIES*SURVEYS</b>	<b>TOTAL</b>
Earthquake	151	40	3.7
Terrorism	135	40	3.3
Flood	112	40	2.8
Windstorm	91	40	2.2
Fire	85	40	2.12
Landslide	84	40	2.1

Based on these findings, the Steering Committee felt that Terrorism and Earthquake hazards the most likely and most significant hazards to occur and affect the District.

**Community**

In another informal survey community members were asked to rank the hazards from most likely to least likely to occur in the Beverly Hills Unified School District. This survey was distributed via hard copy and electronic form over a length of three months. A total of 11 surveys were returned to the District. Weighing the history, the probability, and the magnitude of each hazard that would affect District staff, students and facilities, the community chose to incorporate the following natural hazards into the Mitigation Plan and are ranked accordingly.

The following is the tabulation of the responses.

**Chart 13. COMMUNITY HAZARD RATING SURVEY RESULTS**

<b>COMMUNITY SURVEY</b>			
<b>HAZARD</b>	<b>TOTAL POINTS</b>	<b>CATEGORIES*SURVEYS</b>	<b>TOTAL</b>
Earthquake	194	88	2.2
Terrorism	145	88	1.6
Flood	86	88	0.9
Wildfires	77	88	0.8
Windstorm	55	88	0.6
Landslide	46	88	0.5

The community responses varied greatly towards the middle of the rankings. Although the Steering Committee felt a windstorm hazard to be more prominent ranking it number four, the community results differed ranking this hazard number five. However there was a consensus

among both parties in terms of the two most prominent and dangerous of hazards which the results illustrated as an earthquake hazard or an act of terrorism.

In sum, the community ranked the hazards in the following order.

1. Earthquake
2. Terrorism
3. Flood
4. Fire
5. Windstorm
6. Landslide/Debris Flow

A sample of the survey form is attached in Appendix C<sup>2</sup>.

### **OTHER DISASTERS**

There are a number of possible disasters that can happen at any given time, at any given place. However, based on historical analysis and community input the probable hazards were narrowed down to five natural and one manmade disaster that are most common or likely to occur within the Beverly Hills Unified School District. The following two natural disasters are not ruled out as possibilities, but are categorized as not very likely to occur.

#### ***Natural*** **Tsunami**

A tsunami has never occurred within the Beverly Hills Unified School District. Although the District enjoys a close proximity to the ocean, there is no record of a Tsunami or repercussions from a Tsunami. State modeling data shows the Beverly Hills Unified School District would sustain some to little water damage if a Tsunami hits the Southern California Coast, however it would have little to no affect on the city.

#### **Drought**

The region of Southern California is currently undergoing a six year drought however there are no accounts that indicate a serious threat to life or property due to a drought within the city.

#### ***Manmade***

The only manmade disaster that is included in the plan for the Beverly Hills Unified School District is terrorism. The District has been preparing diligently to prevent this type of catastrophe. The following are possibilities, as all disasters are, but the likelihood based on history and the affect they would have on life or property have been taken into consideration.

#### **Civil Unrest**

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<sup>2</sup> The BHUSD community, including staff, parents and guardians ranked the following hazards in order of significance and likelihood. The same methodology was used to calculate these surveys as the Steering Committee surveys. There were 24 points possible per hazard in this survey and 11 surveys. There were eight (8) categories within each hazard, The formula thus went: total points/88.

Though Los Angeles County experienced a Civil Unrest in 1992, the Beverly Hills Unified School District suffered no loss of life or property. There is only one history of repeated civil unrest within the Beverly Hills Unified School District which is addressed more thoroughly in the Terrorism section of this plan. However the District has never seen an act of civil unrest on its campuses.

### **Hazardous Material Accidents**

The Beverly Hills Unified School District could be affected by hazardous materials incidents. The spills/releases of material can result from both stationary and mobile sources. The level of exposure from stationary sources is considered to be very low, due to the types of business and industry conducted within the City of Beverly Hills. The exposure to the District from mobile sources is slightly higher, due to the types of thoroughfares within the City of Beverly Hills such as Santa Monica Blvd., which crosses through the center of the City. There is no record of a hazard material spill or incident in the District's or the City of Beverly Hills history.

Additionally, Beverly Hills High School has 18 oil and natural gas wells located on campus operated by Venoco Oil, Inc approximately since 1995. In response to community concerns, AQMD has conducted air monitoring since 2003 in and around the oil well and high school campus on six different days. Air samples collected to date have not shown any abnormal levels of toxic air contaminants. AQMD is the air pollution control agency for Orange County and major portions of Los Angeles, San Bernardino and Riverside counties.

In accordance with its commitment to strong parent and community involvement, BHUSD provides important information regarding air quality in regards to the oil activity at Beverly Hills High School. The BHUSD has contracted the Phylmar Group to conduct periodic Methane Monitoring Results and publishes this information for public analysis. Because of the low probability and the history the Steering Committee did not address this disaster.

### **Lockdown**

In the 92 year history of the District, there has only been two lockdown procedures (one instance at Beverly Hills High School and the other at Horace Mann). A lockdown can occur for a number of reasons ranging from a police pursuit in the area to an unidentified package on school grounds. The BHUSD performs lockdown drills, four times a year along with the campus police. Two of the drills are announced, two are unannounced. Because of the low probability and the history the Steering Committee did not address Lockdown as a disaster.

### **PROFILING HAZARDS**

This process describes the causes and characteristics of each hazard, how it has affected District in the past, and what part of the Beverly Hills Unified School District's population, infrastructure, and environment has historically been vulnerable to each specific hazard. A profile of each hazard discussed in this plan is provided in each hazard section. For a full description of the history of hazard and vulnerability, see the appropriate hazard section.

The Beverly Hills Unified School District is directly within the boundaries of the City of Beverly Hills. Therefore BHUSD decided it would be best to collaborate with the City on hazard profiling and using as much data and information the City has identified for it's Hazard

Mitigation Plan. The two jurisdictions share the same boundaries therefore the same type of hazards.

### **ASSESSING VULNERABILITY, ESTIMATING POTENTIAL LOSSES, AND INVENTORYING ASSETS**

Assessing vulnerability is a three step process. First, we must identify existing structures and critical facilities that are located within the hazard area.

District facilities such as schools are considered critical facilities because these buildings provide essential services to the District's population that are necessary to preserve the welfare and quality of life of students and staff and to fulfill important public safety, emergency response, and/or disaster recovery functions. The list of critical facilities have been identified and are listed as follows. The Beverly Hills Unified School District has mitigated or will be mitigating most of the issues identified in these critical facilities. Because of the student population at each school and the uncertainty of their location at the time a hazard may occur, the District considers all 37 buildings within the five school campuses as critical facilities. The total value of these buildings is \$216,477,102 dollars.

Once existing structures are identified, the plan includes an estimate of losses for the identified asset. Estimating potential loss involves assessing the damage, injuries, and financial costs likely to be sustained in a geographic area over a given period of time. This level of analysis involves using mathematical models. The two measurable components of risk analysis are magnitude of the harm that may result and the likelihood of the harm occurring. Describing vulnerability in terms of dollar losses provides the community and the state with a common framework in which to measure the effects of hazards on assets. For each hazard where data was available, quantitative estimates for potential losses are included in the hazard assessment. This information is found on the hazard maps.

### **CRITICAL FACILITES**

Critical and essential facilities are those facilities that are vital to the continued delivery of key services or that may significantly impact the District's population ability to deal and recover from the emergency. The list and maps on the following pages illustrate the critical facilities within the District of Beverly Hills. The following is a list of District owned critical facilities within the Beverly Hills Unified School District.

**BHUSD Critical Facilities.**

<b>Facility Name</b>	<b>Beverly Hills Unified School District Office</b>
<b>Size</b>	2 stories, 10,657 sq.ft.
<b>Facility Description: Use(s)</b>	District administrative services, business services, business operations, payroll, purchasing, human resources, adult education, education services
<b>Age</b>	Built in 1957, 49 years old
<b>Estimated Value</b>	\$2,295,508
<b>Location</b>	255 S. Laskey Drive, Beverly Hills, CA 90212
<b>Major earthquake retrofitting</b>	No

<b>Facility Name</b>	<b>El Rodeo School</b>
<b>Size</b>	2 Stories/4.17 acres/78,572 sq.ft.
<b>Facility Description: Use(s)</b>	Public School
<b>Age</b>	Built in 1927 – 79 Years
<b>Estimated Value</b>	Net Book Value - \$560,000
<b>Location</b>	605 Whittier Drive, Beverly Hills, CA 90212
<b>Major earthquake retrofitting</b>	Yes – FEMA 1008-DR DSR 74133 \$35,727.00 DSR 87919 \$81,233.00 DSR 91764 \$108,852.00

<b>Facility Name</b>	<b>Horace Mann</b>
<b>Size</b>	2 stories – 4.8 acres 66,018 sf
<b>Facility Description: Use(s)</b>	Public School
<b>Age</b>	79 Years
<b>Estimated Value</b>	(1927) (net book value) \$628,451.00
<b>Location</b>	8501 Charleville Blvd. Beverly Hills, CA 90211
<b>Major earthquake retrofitting</b>	Yes - FEMA 1008-DR DSR 12320 \$28,107.00 DSR 12322 \$1,189.00 DSR 74142 \$2,543.00 DSR 87940 \$5,448.00 DSR 87973 \$16,610.00 DSR 87917 \$21,423.00 DSR 15600 (2 <sup>nd</sup> appeal) \$341,341.00 Grand Total \$416,661.00

<b>Facility Name</b>	<b>Hawthorne School</b>
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<b>Size</b>	2 Stories/4.18 acres/78,318 sq.ft.
<b>Facility Description: Use(s)</b>	Public School
<b>Age</b>	74 Years
<b>Estimated Value</b>	(1932) (net book value) \$664,640.00
<b>Location</b>	624 N. Rexford Drive Beverly Hills, CA 90212
<b>Major earthquake retrofitting</b>	Yes - FEMA 1008-DR DSR 45184 \$9,112.00 DSR 15144 -\$4,200.00 (funded under 404 Haz Mit) DSR 60845 & 14905 \$33,857.00 DSR 14905 -\$11,520.00 (funded under 404 Haz Mit) DSR 60846 \$1,007.00 DSR 60848 \$4,273.00 DSR 60849 \$8,974.00 DSR 60850 \$3,157.00 DSR 60851 \$19,037.00 DSR 78661 \$1,770.00 DSR 87998 \$2,213.00 DSR 74146 \$1,386.00 DSR 74145 \$91,115.00 DSR 60853 \$37,910.00 DSR 87996 \$25,366.00 DSR 92008 (GAP Offer) \$277,201.00 Grand Total \$432,978.00

<b>Facility Name</b>	<b>Beverly Hills High School</b>
<b>Size</b>	3 stories – 25.11 acres 584,066 sf
<b>Facility Description: Use(s)</b>	Public School
<b>Age</b>	72 Years
<b>Estimated Value</b>	72 years old (1934) 5,463,092.00 (net book value)
<b>Location</b>	241 Moreno Drive Beverly Hills CA 90212
<b>Major earthquake retrofitting</b>	Yes - FEMA 1008-DR DSR 74137 \$3,507.00 DSR 88083 \$3994.00 DSR 88082 \$10,291.00 DSR 74138 \$2,018 DSR 74138 (supplement) \$1,738.00 DSR 74139 \$120,837.00 DSR 92009 (gap offer) \$138,694.00 DSR 88087 DSR 74140 \$3,095.00 DSR 74140 (supplement) \$1,508.00

	DSR 74141 \$1,750.00 DSR 74141 (supplement) \$19, 606.00 DSR 74144 \$27,467.00 DSR (supplement) \$25,152.00 DSR 91765 (supplement to DSR 74144) \$3,669.00 Grand total \$56,288.00
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<b>Facility Name</b>	<b>Beverly Vista School</b>
<b>Size</b>	2 Stories, 5.3 acres
<b>Facility Description: Use(s)</b>	Public School
<b>Age</b>	70 years
<b>Estimated Value</b>	TBD
<b>Location</b>	241 Moreno Drive Beverly Hills CA 90212
<b>Major earthquake retrofitting</b>	N/A

The following is a map of the BHUSD Critical Facilities.

Map 3. Critical Facilities



## **HOW BUILDING VALUES WILL BE AFFECTED**

The District's building stock's assessed valuation is significant. Administrative costs associated with closed schools could be considerable and would depend in part on damage and recovery time.

## **STRUCTURE VALUATION**

The District buildings are currently estimated at \$30,143,467.00 dollars.

## **STRUCTURES**

The Beverly Hills Unified School District has a number of buildings comprised of various materials and structure types.

- **Unreinforced Masonry structures.** In 1989, the City of Beverly Hills enacted a mandatory retrofit program. Each of the buildings identified under this program has been strengthened.
- **Wood Frame Buildings.** Most early wood frame structures are not connected to their foundations with anchor bolts which could allow buildings to slide off their foundations. Others are constructed on short wood studs between the first floor and the foundation using cripple stud walls. This type of construction can collapse and topple, dropping the building to the ground.

## **BUILDINGS AND VALUATION IN HAZARDS AREAS**

The Beverly Hills Unified School District contains very little property in hazard areas. The District considers all six buildings within the five school campuses as critical facilities. The total value of these buildings is estimated at \$30,143,467 dollars. A recent Statement of Insurable Values report conducted by the American Appraisal Associates created an assets inventory for the District valued at \$24,146,955 dollars.

The following estimated figures are based on the District's most recent information from various sources.

### **Very High Fire Hazard Severity Zone (VHFHSZ).**

Approximately 0 buildings are located within this zone.

Estimated valuation: \$0.00

### **Flood Zone**

Approximately 0 buildings are located within this zone.

Estimated valuation: \$0.00

### **Landslide Areas**

Approximately 0 buildings are located within this zone.

Estimated valuation: \$0.00

## **Liquefaction Areas**

Approximately 1 building is located within this zone.

Estimated valuation: (1927 net book value) \$628,451.00

Due to current real estate market fluctuations these numbers are subject to change.

\*\*Note: Given the uncertain nature of a terrorist attack on a specific building, infrastructure, etc. a specific valuation number cannot be provided. \*\*

## **CAPABILITY ASSESSMENT**

The following practices, ordinances and policies current steps practiced by the City of Beverly Hills and the Beverly Hills Unified School District to facilitate the mitigation process. The following ordinances, codes, programs, and services are used in a proactive manner to stand as preventative measures for the entire Beverly Hills community, including the BHUSD.

Evacuation Drills  
Earthquake Drills  
Fire Drills  
DART Trainings  
First Aid Training  
CPR/AED Training  
School Safety Site Plans  
District-wide Safety Plan (Completion: TBD)  
Modernization Efforts  
Storm Water Management Ordinances  
Stream Management Ordinances  
Zoning Management Ordinances  
Subdivision Management Ordinances  
Erosion Management Ordinances  
Floodplain Management Ordinances  
Elevation Certificates Maintained:  
National Flood Insurance Program Community  
Land Use Plan (Last Update: 5/17/1977)  
Community Zoning  
Established Building Codes  
Building Codes (Last Updated 12/19/2002)  
Type of Building Codes: California Building Code  
Local Electric Utilities: Southern California Edison  
Local Water Utilities: Beverly Hills Unified School District  
Local Sewage Treatment Utilities: City of Los Angeles  
Local Natural Gas Utilities: Southern California Edison  
Local Telephone Utilities: Pacific Bell  
Fire Insurance Rating: ISO Rating, Class 1  
Fire Insurance Rating Date: 7/01/2001

## **ASSESSING VULNERABILITY/ANALYZING DEVELOPMENT**

The last step in assessing the District's vulnerability to hazards is to analyze development in the District. This process provides the District and community a basis in making decisions on the type of mitigation approaches to consider and the locations in which mitigation should be approved. Development within the BHUSD depends highly on the population growth of the City of Beverly Hills and funding available to upgrade old buildings or construct new ones to accommodate demand. The District takes all precaution to follow all local, state and federal building and construction regulations.

This plan provides comprehensive description of the preventative measures the Beverly Hills Unified School District is taking and needs to take in order to mitigate loss of life and property in case of an emergency. Information includes the geography and environment, current District-wide programs, school safety site plans, and future development. Analyzing these components of the Beverly Hills Unified School District helped in identifying potential problem areas, and serves as a guide for incorporating the goals and ideas contained in this mitigation plan.

However prepared and ready the BHUSD is for a natural or man-made disaster, there are nonetheless numerous strategies the District can take to reduce risk. One can never be too prepared. These strategies are described in the action items detailed in each hazard section of this Plan. Mitigation strategies can further reduce disruption to critical services, reduce the risk to human life, and alleviate damage to public property.

### **Summary**

Hazard mitigation strategies can reduce the impacts concentrated around the District's major assets which are the public (student and staff) and critical facilities. Collaboration among various public and private agencies to create comprehensive and exhaustive mitigation plans can reduce the impacts of hazards. It is critical to involve as many groups as possible in composing a Hazard Mitigation Plan such as public agencies, private and the public in general. Public participation is key and will be sought during the creation of this plan and throughout annual renewals of the BHUSD Hazard Mitigation Plan.

## **SECTION 4**

### **MULTI-HAZARD MISSION STATEMENT, MISSION, GOALS AND STRATEGIES**

This section describes the framework that focuses the plan on developing successful mitigation strategies. The framework is made up of three parts: the mission, goals, and strategies. The Steering Committee developed and approved the mission, goals and strategies of the plan. Additionally, the public was invited to provide input on the mission and goals.

#### **PLAN MISSION AND GOALS**

The plan mission and goals are the backbone of the plan. They are reiterated and reinforced throughout the creation of the hazard mitigation plan.

##### **Plan Mission**

The Beverly Hills Unified School District Hazard Mitigation Plan's mission is to establish and promote policies and programs to protect students, staff, facilities, property, and infrastructure from natural and manmade hazards. This will be achieved by developing and implementing this plan to guide the District towards, creating and maintaining a safer, more sustainable community.

##### **Plan Goals**

The plan goals describe the overall direction that Beverly Hills Unified School District departments, staff and students can take to minimize the impacts of hazards. The plan goals help to guide direction of future activities aimed at reducing risk and preventing loss from hazards. The goals are stepping-stones between the broad direction of the mission statement and the specific recommendations that are outlined in the strategies.

#### **PLAN GOALS**

##### **To Protect Life, Property, Environment**

- Implement activities that assist in protecting lives by making schools, infrastructure, critical facilities, and other property more resistant to hazards.
- Reduce losses and repetitive damages for chronic hazard events while promoting insurance coverage for catastrophic hazards.
- Encourage preventative measures for existing and new developments that are in areas vulnerable to hazards.

##### **Public Awareness**

- Develop and implement education and outreach programs to increase public awareness of the risks associated with hazards.
- Develop and implement education and outreach programs to increase public awareness of the mitigation measures associated with hazards.

- Provide information on tools, partnership opportunities, and funding resources to assist in implementing mitigation activities.

### **Partnerships and Implementation**

- Strengthen communication and coordinate participation with students, parents, public agencies, community-based organizations and the business community to promote a collaborative process in implementation.
- Encourage leadership within public and private sector organizations to prioritize and implement District, city and county hazard mitigation activities.

### **District Emergency Management**

- Establish policy to ensure mitigation projects for critical facilities, services, and infrastructure.
- Update current safety plans, make recommendations for current District safety guidelines and codes and establish new plans and projects that support mitigation.
- Strengthen emergency operations by increasing collaboration and coordination among district departments, public agencies and community-based organizations.
- Coordinate and integrate hazard mitigation activities, where appropriate, with emergency operations plans and procedures.
- Continue providing emergency services with training and equipment to address all identified hazards.

## **HAZARD MITIGATION STRATEGIES**

The Hazard Mitigation Strategies are future and current steps the District plans to take or is currently taking to prevent the loss of life and property in case of a hazard event. The mitigation plan identifies strategies developed and submitted through data collection, research, and the public participation process. Mitigation strategies may be considered for funding through Federal and State grant programs, and when other funds are made available, through the District. To help ensure activity implementation, each action item includes information on the time line and coordinating organizations.

### **Identification and Prioritization of Mitigation Strategies**

Mitigation strategies were identified, evaluated, and prioritized. These actions form the core of the mitigation plan. BHUSD conducted a capabilities assessment, reviewing existing local plans, policies, and regulations for any other capabilities relevant to hazard mitigation planning. An analysis of their capability to carry out these implementation measures with an eye toward hazard and loss prevention was conducted. The capabilities assessment required an inventory of each jurisdiction's legal, administrative, fiscal and technical capacities to support hazard mitigation planning. After completion of the capabilities assessment, BHUSD evaluated and prioritized their proposed mitigations. Social, technical, administrative, political, legal, economic, and environmental opportunities as well as constraints of implementing a particular mitigation action were

considered. This step resulted in a list of acceptable and realistic actions that address the hazards identified. A full suite of goals, objectives and action items for the District is presented in this Plan. The Steering Committee then identified and prioritized strategies with the ‘very high’ to ‘very low’ rating system.

### **BHUSD Mitigation Strategies Identified Constraints**

Constraints may apply to some of the strategies. These constraints may be a lack of District staff, lack of funds, or vested property rights which might expose the District to legal action as a result of adverse impacts on private property.

The Steering Committee identified a list of issues that exist that can be considered constraints to mitigation planning implementation:

- Legal
- Economic Constraints
- Budgetary Constraints
- Land Ownership Constraints
- State and Federal Influences
- Enormity of Population and Area Served
- Sensitivity of Information Needed to Complete the Plan.

Chart 14 summarizes the Hazard Mitigation Strategies for the Beverly Hills Unified School District. The chart contains the coordinating departments, the timeline and the plan goals each hazard addressed. These items were submitted from various departments within the District and carefully planned, reviewed and approved by the Steering Committee. The strategies were developed based on department goals, data collection, research and public participation process.

Chart 14. MITIGATIONS STRATEGIES OVERVIEW CHART

Mitigation Strategies Overview Chart (lead department in bold)						
Hazard	Mitigation Strategy	Responsible Department	Timeline	Plan Goals Addressed		
				To Protect Life, Property, Environment	Public Awareness	Partnerships and Implementation
				Emergency Management		
Multi-Hazard	<i>Red Cross Agreements</i>	Business Services	2008	X	X	X
Multi-Hazard	<i>Beverly Hills Unified School District Hazard Mitigation Plan</i>	Business Services	Ongoing	X	X	X
Multi-Hazard	<i>Risk Assessment Project</i>	<b>Business Services,</b> Human Resources, Facilities	2009	X		X
Multi-Hazard	<i>Communications Hardening</i>	<b>Business Services,</b> Facilities	2009	X		X
Multi-Hazard	<i>BHUSD Emergency Preparedness Public Awareness Campaign</i>	Business Services	2011	X	X	X
Multi-Hazard	<i>The BHUSD District-Wide Emergency Preparedness Manual</i>	Business Services	2011	X	X	X
Multi-Hazard	<i>Volunteer Emergency Response Team</i>	Business Services	2011	X	X	X
Multi-Hazard	<i>Emergency Shelter Identification</i>	<b>Maintenance &amp; Operations,</b> Facilities, Business Services	2009	X		X
Multi-Hazard	<i>Critical Infrastructure Assessment</i>	<b>Facilities,</b> Business Services	2011	X		X

Multi-Hazard	<i>Evacuation Routes Update</i>	<b>Business Services, Facilities, Educational Technology</b>	2007	X			X
Multi-Hazard	<i>Advanced DART Staff Training</i>	<b>Business Services</b>	Ongoing	X	X		X
Multi-Hazard	<i>GIS Upgrade</i>	<b>Educational Technology</b>	2010	X			X
Multi-Hazard	<i>AED Installations</i>	<b>Pupil Personnel Services, Business Services</b>	2007	X	X		X
Terrorism	<i>Closed Circuit Television Upgrades</i>	<b>Business Services, Facilities</b>	2011	X			X
Earthquake	<i>Modernization Assessments</i>	<b>Business Services, Facilities</b>	2007	X		X	X
Earthquake	<i>Horace Mann Liqifaction Assessment</i>	<b>Business Services, Facilities, Maintenance &amp; Operations</b>	2007	X		X	X
Flood	<i>Roof Reparatons</i>	<b>Business Services, Facilities, Maintenance &amp; Operations</b>	2007	X			X
Fire	<i>Fire Safety Plan</i>	<b>Business Services, Facilities</b>	2008	X	X	X	X

**HOW ARE THE STRATEGIES ORGANIZED**

The strategies are a list of activities the District plans to execute in order to reduce risk. The strategies are organized within the following matrix, which lists all of the multi-hazard and hazard-specific strategies included in the mitigation plan. Data collection and research and the public participation process resulted in the development of these strategies. The matrix includes the following information for each strategies:

HAZARD	<b>The hazard the strategy mitigates.</b>		
PROJECT NAME	<b>Name of the Mitigation project strategy.</b>		
STRATEGY	<b>Strategy Description</b>		
ACTION ITEM	<b>What actions will be completed to complete the strategy.</b>		
COORDINATING DEPARTMENT	<b>The department with regulatory responsibility to address hazards, or that is willing and able to organize resources, find appropriate funding, or oversee activity implementation, monitoring, and evaluation. The main department responsible is in bold, the supporting departments are not.</b>		
TIMELINE/COMPLETION DATE	<b>Each project includes an estimate of the time line for implementation.</b>		
TOTAL COST	<b>Estimate of cost of project.</b>		
FUNDING SOURCE(S)	<b>Where the funding will be obtained.</b>		
CONSTRAINTS	<b>Constraints may apply to some of the action projects. These constraints maybe a lack of District staff, lack of funds, or vested property rights which might expose the District to legal action as a result of adverse impacts on private property</b>		
PLAN GOALS ADDRESSED	<b>The plan goals addressed by each project are included as away to monitor and evaluate how well the mitigation plan is achieving its goals once implementation begins.</b>		
	Public Awareness		Protect Life and Property
	Partnerships and Implementation		Emergency Management

**BENEFIT-COST REVIEW - STAPLEE**

Benefit-cost review (BCR) is an abbreviated quantitative method of comparing the projected benefits to projected costs of a project or policy. It is used to measure benefit/cost and cost effectiveness. DMA 2000 requires that every community submitting a plan prioritize its alternative mitigation actions with an emphasis on costs and benefits. A formal benefit/cost analysis is not mandatory, but an explanation of the analysis undertaken and why some actions were chosen above others is required. If detailed cost information is not available, a qualitative analysis will suffice.

For each mitigation strategy listed in the plan, careful consideration was given to the reasonable costs of implementation, fiscal and social. Each issue was considered carefully by the Steering Committee in order to determine the cost-effectiveness and prioritize each mitigation strategy. A modified process called “STAPLEE” was used to methodically review the benefit as opposed to the cost of each strategy and action listed where that information was attainable. The strategies are prioritized based on this analysis. The ratings are based on a priority level of High” to “Low” in terms of the benefits of the mitigation strategy superseding the costs. The STAPLEE process considers the following in order to prioritize strategies.

**Chart 15. STAPLEE**

<b>Social</b>	Community Acceptance	Effect on Segment of Population			
<b>Technical</b>	Technical Feasibility	Long-term Solution		Secondary Impacts	
<b>Administrative</b>	Staffing	Funding Allocated		Maintenance/Operations	
<b>Political</b>	Political Support	Local Champion		Public Support	
<b>Legal</b>	State Authority	Existing Local Authority		Potential Legal Challenge	
<b>Economic</b>	Benefit of Action	Cost of Action	Contributes to Economic Goals		Outside Funding Required
<b>Environmental</b>	Effects on Land/Water	Effect on Endangered Species	Effect on HAZMAT / Waste Sites	Consistent with Community Environmental Goals	Consistent with Federal Laws

The result of this review is documented in each mitigation strategy matrix.

## MITIGATION STRATEGIES BY HAZARD

The following are the detailed mitigation strategies for the Beverly Hills Unified School District. They are future and current strategy recommendations that the District feels will mitigate loss of life and property in a hazard event. Strategies marked multi-hazard are projects that would mitigate multiple hazards.

### Multi – Hazard

Hazard	Multi Hazard		
Project Name	<b>Red Cross Agreements</b>		
Strategy	Establish pre-arranged contracts with the Red Cross of LA to use BHUSD facilities in case of an emergency		
Action Items	<ol style="list-style-type: none"> <li>1. Create contract for BHUSD facilities to be used as mass-care shelters</li> <li>2. Coordinate with the Red Cross to create detailed service agreements</li> <li>3. Assist the Red Cross in creating contracts with the City of Beverly Hills and surrounding entities</li> </ol>		
Coordinating Department(s)	Business Services		
Timeline/Completion Date	1-2 years		
Total Cost	\$400		
Funding Source(s)	General Fund		
Constraints	Time		
Plan Goals Addressed			
X	Public Awareness	X	Protect Life and Property
X	Partnerships and Implementation	X	Emergency Management

Hazard	Multi Hazard		
Project Name	<b>Modernization Improvements</b>		
Strategy	Conduct comprehensive improvements to necessary District buildings		
Action Items	<ol style="list-style-type: none"> <li>1. Consult with a structural engineer, building inspector, etc and all necessary personnel who are qualified to provided an assessment of building structures</li> <li>2. Provide upgrades such as roofing, cracked-wall, structural support and foundation repairs, etc.</li> <li>3. Work and coordinate with the City of Beverly Hills to provide appropriate staff</li> </ol>		
Coordinating Department(s)	<b>Business Services, Facilities</b>		
Timeline/Completion Date	1-2 years		
Total Cost	\$396,625		
Funding Source(s)	In house and/or FEMA funds		
Constraints	Time, funding, coordination		
Plan Goals Addressed			

	Public Awareness	X	Protect Life and Property
X	Partnerships and Implementation	X	Emergency Management

Hazard	Multi-Hazard		
Project Name	<b>Beverly Hills Unified School District Hazard Mitigation Plan</b>		
Strategy	Coordinate with all BHUSD departments and the City of Beverly Hills to develop, revise, implement, and maintain as needed the Hazards Mitigation Plan.		
Action Items	<ol style="list-style-type: none"> <li>1. Create the plan with input from all departments and public</li> <li>2. Conduct an annual review of the plan</li> <li>3. Implement and monitor all mitigation strategies within the stated time period</li> <li>4. Plan mitigation goals will address at least one, if not all plan goals: Public Awareness, Partnership and Implementation, Protect Life and Property and Emergency Management</li> </ol>		
Coordinating Department(s)	Business Services		
Timeline/Completion Date	Once a year		
Total Cost	\$22,500		
Funding Source(s)	General Fund		
Constraints	Time		
Plan Goals Addressed			
X	Public Awareness	X	Protect Life and Property
X	Partnerships and Implementation	X	Emergency Management

Hazard	Multi Hazard		
Project Name	<b>Risk Assessment Project</b>		
Strategy	Conduct a comprehensive District risk assessment of life and property in direct earthquake, fire, landslide and flood zones.		
Action Items	<ol style="list-style-type: none"> <li>1. Identify hazard zones within the Beverly Hills Unified School District region</li> <li>2. Identify number of District buildings that lie within the hazard zones</li> <li>3. Identify a valuation of buildings and provide a methodology process for this calculation</li> <li>4. Seek funding through internal grant writers</li> </ol>		
Coordinating Department(s)	<b>Business Services, Human Resources, Facilities</b>		
Timeline/Completion Date	3 years		
Total Cost	\$50,000		
Funding Source(s)	FEMA HMGP funds		
Constraints	Funding		
Plan Goals Addressed			
	Public Awareness	X	Protect Life and Property
	Partnerships and Implementation	X	Emergency Management
Hazard	Multi Hazard		

Project Name	<b>Communications Hardening</b>		
Strategy	Update, revise, upgrade communications networks, facilities, equipment, etc. within the District to avoid communications problems during a hazard event		
Action Items	<ol style="list-style-type: none"> <li>1. Consult with the City of Beverly Hills and other appropriate agencies to practice best strategies</li> <li>2. Purchase generators</li> <li>3. Purchase wireless communication equipment (such as handheld radios) for Emergency Operations Center (EOC)</li> </ol>		
Coordinating Department(s)	<b>Business Services, Facilities</b>		
Timeline/Completion Date	2-3 years		
Total Cost	\$50,000		
Funding Source(s)	FEMA HMGP funds/General Fund		
Constraints	Funding		
Plan Goals Addressed			
	Public Awareness	X	Protect Life and Property
X	Partnerships and Implementation	X	Emergency Management

Hazard	Multi Hazard		
Project Name	<b>BHUSD Emergency Preparedness Public Awareness Campaign</b>		
Strategy	To create a comprehensive program that would educate staff, students and the BHUSD community about local hazards and what to do in case of hazard events.		
Action Items	<ol style="list-style-type: none"> <li>1. Provide the public with information regarding hazards</li> <li>2. Create informational packets for students to take home</li> <li>3. Obtain matched funding through partnerships with local business community</li> </ol>		
Coordinating Department(s)	Business Services		
Timeline/Completion Date	5 years		
Total Cost	\$10,000		
Funding Source(s)	FEMA grants/General Fund		
Constraints	Funding		
Plan Goals Addressed			
X	Public Awareness	X	Protect Life and Property
X	Partnerships and Implementation	X	Emergency Management

Hazard	Multi Hazard		
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Project Name	<b>The BHUSD District-Wide Emergency Preparedness Manual</b>		
Strategy	Create a disaster plan for the entire BHUSD to be available at each school.		
Action Items	<ol style="list-style-type: none"> <li>1. In compliance with the Hazard Mitigation Plan, create a plan using all available resources</li> <li>2. Detail roles, responsibilities and procedures for all schools</li> <li>3. Prepare maps and use the most current information available to ensure accuracy</li> <li>4. Consult with the City of Beverly Hills Emergency Management Department</li> </ol>		
Coordinating Department(s)	Business Services		
Timeline/Completion Date	5 years		
Total Cost	In house staff time/Architect Drawing/Maps - \$10,000		
Funding Source(s)	General Fund		
Constraints	Time		
Benefit/Cost Review			
Plan Goals Addressed			
X	Public Awareness	X	Protect Life and Property
X	Partnerships and Implementation	X	Emergency Management

Hazard	Multi Hazard		
Project Name	<b>Volunteer Emergency Response Team</b>		
Strategy	Create a Volunteer team of individuals from the District community that would assist during a hazard event		
Action Items	<ol style="list-style-type: none"> <li>1. Provide first aid and emergency response training through the Beverly Hills Fire Department for interested individuals</li> <li>2. Create public awareness campaign through community outreach, press releases and city held volunteer functions</li> <li>3. Develop a volunteer base to create opportunities for citizens to participate</li> <li>4. Provide recruitment and training for these groups</li> </ol>		
Coordinating Department(s)	Business Services		
Timeline/Completion Date	5 years		
Total Cost	None – staff time /PTA		
Funding Source(s)	FEMA		
Constraints	Funding		
Plan Goals Addressed			
X	Public Awareness	X	Protect Life and Property
X	Partnerships and Implementation	X	Emergency Management

Hazard	Multi Hazard		
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Project Name	<b>Emergency Shelter Identification</b>		
Strategy	Identify buildings, areas, locations, etc within the District that can be used as Emergency Shelters in case of a hazard event.		
Action Items	<ol style="list-style-type: none"> <li>1. Build relationships with local hotels</li> <li>2. Educate the hotels on hazards and procedures</li> <li>3. Identify emergency shelters and provide detailed instructions on how to set up when activated as an emergency shelter</li> <li>4. Conduct at minimum, yearly drills at the emergency shelters</li> </ol>		
Coordinating Department(s)	Maintenance & Operations, Business Services, Facilities		
Timeline/Completion Date	3 years		
Total Cost	None, in-house staff time		
Funding Source(s)	N/A		
Constraints	Time		
Plan Goals Addressed			
	Public Awareness	X	Protect Life and Property
	Partnerships and Implementation	X	Emergency Management

Hazard	Multi Hazard		
Project Name	<b>Critical Infrastructure Assessment</b>		
Strategy	Conduct an assessment of long term support for critical infrastructure		
Action Items	<ol style="list-style-type: none"> <li>1. Determine what infrastructure is most crucial to the District during an emergency event</li> <li>2. Conduct an assessment of how well prepared this infrastructure is in terms of long term support, i.e. what buildings have back up generators, emergency materials, etc. to last for a designated period of time</li> <li>3. Establish a designated period of time the for 'long term' support that critical infrastructure should be prepared for</li> </ol>		
Coordinating Department(s)	Facilities, Business Services		
Timeline/Completion Date	5 years		
Total Cost	None, in-house staff time		
Funding Source(s)	N/A		
Constraints	Time		
Plan Goals Addressed			
	Public Awareness	X	Protect Life and Property
	Partnerships and Implementation	X	Emergency Management

Hazard	Multi Hazard		
Project Name	<b>Evacuation Routes Update</b>		
Strategy	Update current evacuation routes and study the possibility of creating alternate evacuation routes in case of an emergency event		
Action Items	<ol style="list-style-type: none"> <li>1. Conduct an assessment of current school site emergency routes and ditrict-wide evacuation route</li> <li>2. Determine if these routes are sufficient</li> <li>3. Take necessary action to create alternative routes, means of school or District-wide evacuation if current route is not sufficient.</li> <li>4. Create maps and charts to be placed at each school in case of school site evacuation or district-wide evacuation</li> </ol>		
Coordinating Department	Business Services, Facilities, Educational Technology		
Timeline/Completion Date	1-2 years		
Total Cost	\$24,861		
Funding Source(s)	General Fund		
Constraints	Time		
Plan Goals Addressed			
	Public Awareness	X	Protect Life and Property
	Partnerships and Implementation	X	Emergency Management

Hazard	Multi Hazard		
Project Name	<b>Advanced DART Staff Training</b>		
Strategy	Provide advanced Disaster Assistance Response Training for District staff and volunteer members		
Action Items	<ol style="list-style-type: none"> <li>1. Provide CPR training for District staff</li> <li>2. Provide first-aid training for District staff</li> <li>3. Provide training for staff to be certified to operate AED's already present at some public buildings within the Beverly Hills Dsitric</li> </ol>		
Coordinating Department	Business Services		
Timeline/Completion Date	2-3 Years, ongoing		
Total Cost	\$10,000 for DART/\$10,000 for First aid, AED, and CPR		
Funding Source(s)	FEMA		
Constraints	Time, funding		
Plan Goals Addressed			
X	Public Awareness	X	Protect Life and Property
	Partnerships and Implementation	X	Emergency Management

Hazard	Multi Hazard		
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Project Name	<b>GIS Upgrade</b>		
Strategy	To upgrade the Geographic Information Systems in order to add a higher resolution backdrop to District hazard areas, geologic sensitive areas and document more detailed school site information such as critical infrastructure and evacuation routes.		
Action Items	<ol style="list-style-type: none"> <li>1. Upgrade GIS technologies to better map hazard areas, evacuation routes, school sites, etc</li> <li>2. Conduct GIS training for appropriate staff</li> <li>3. Seek funding through internal grant writers</li> </ol>		
Coordinating Department(s)	Educational Technology		
Timeline/Completion Date	2-3 years		
Total Cost	\$2,000		
Funding Source(s)	General Fund		
Constraints	Funding		
Plan Goals Addressed			
	Public Awareness	X	Protect Life and Property
	Partnerships and Implementation	X	Emergency Management

Hazard	Multi Hazard		
Project Name	<b>Automatic External Defibrillators (AED)</b>		
Strategy	Provide AED's for key District facilities to be used in case of a medical emergency.		
Action Items	<ol style="list-style-type: none"> <li>1. Determine how many units are necessary</li> <li>2. Determine most efficient location of units</li> <li>3. Purchase units and tracking software</li> <li>4. Staff training</li> </ol>		
Coordinating Department(s)	Business Services, <b>Pupil Personnel Services</b>		
Timeline/Completion Date	1 year / Ongoing (maintenance and training)		
Total Cost	\$25,695		
Funding Source(s)	General Fund and/or FEMA funds/ City of Beverly Hills		
Constraints	Funding		
Plan Goals Addressed			
	Public Awareness	X	Protect Life and Property
X	Partnerships and Implementation	X	Emergency Management

## TERRORISM

Hazard	Terrorism		
Project Name	<b>Closed Circuit Television Upgrades</b>		
Description	Upgrade current closed circuit safety monitoring equipment		
Action Item	<ol style="list-style-type: none"> <li>1. Consult with security integration firms</li> <li>2. Create an assessment of what is needed</li> <li>3. Furnish and install necessary equipment for the safety of all District staff, students and community</li> </ol>		
Coordinating Department(s)	<b>Business Services, Facilities</b>		
Timeline/Completion Date	5 years		
Total Cost	\$452,395		
Funding Source(s)	FEMA Grant Funds		
Constraints			
Plan Goals Addressed			
	Public Awareness	X	Protect Life and Property
	Partnerships and Implementation	X	Emergency Management

## EARTHQUAKE

Hazard	Earthquake		
Project Name	<b>Modernization Assessments</b>		
Strategy	Conduct a comprehensive physical review of all school buildings to determine which are in need of modernization updates.		
Action Items	<ol style="list-style-type: none"> <li>1. Conduct 'walk'through's" of all school sites</li> <li>2. Consult with a structural engineer, building inspector, architect, etc and all necessary personnel who are qualified to provide an assessment of building structures</li> </ol>		
Coordinating Department(s)	<b>Business Services, Facilities</b>		
Timeline/Completion Date	6 months – 1 year		
Total Cost	\$10,000,000		
Funding Source(s)	Measure K funds and/or FEMA funds		
Constraints	Time, funding, coordination		
Plan Goals Addressed			
	Public Awareness	X	Protect Life and Property
X	Partnerships and Implementation	X	Emergency Management

Hazard	Earthquake		
Project Name	<b>Horace Mann Liquefaction Assessment</b>		
Strategy	Conduct a comprehensive physical inspection of Horace Mann School		
Action Items	<ol style="list-style-type: none"> <li>1. Coordinate with the City of Beverly Hills Building and Safety Department to take the necessary steps to mitigate for a liquefaction event</li> <li>2. Consult with structural engineer, building inspector, etc and all necessary personnel who are qualified to provided an assessment of building structures within Horace Mann</li> </ol>		
Coordinating Department(s)	<b>Business Services</b> , Facilities, Maintenance & Operations		
Timeline/Completion Date	6 months -1 year		
Total Cost	Unknown at this time		
Funding Source(s)	In house and/or FEMA funds		
Constraints	Time, funding, coordination		
Plan Goals Addressed			
	Public Awareness	X	Protect Life and Property
X	Partnerships and Implementation	X	Emergency Management

## FLOOD

Hazard	Flood		
Project Name	<b>Roof Repairs – El Rodeo and Hawthorne Schools</b>		
Strategy	Repair roof due to rain damage		
Action Items	<ol style="list-style-type: none"> <li>1. Assess damage</li> <li>2. Contract roofers</li> <li>3. Repair roof</li> <li>4. Contract Environmental mitigation</li> </ol>		
Coordinating Department(s)	<b>Business Services</b> , Facilities, Maintenance & Operations		
Timeline/Completion Date	1 year		
Total Cost	\$49,835		
Funding Source(s)	General Fund, FEMA		
Constraints	Funding		
Plan Goals Addressed			
	Public Awareness	X	Protect Life and Property
	Partnerships and Implementation	X	Emergency Management

## FIRE

Hazard	Fire		
Project Name	<b>Fire Safety Plan</b>		
Strategy	Conduct a thorough assessment of all fire safety equipment within the District. four (4) times a year		
Action Items	<ol style="list-style-type: none"> <li>1. Create a Fire Safety Plan, in writing, to be used within the District to update, review and test all fire safety equipment with school sites.</li> <li>2. Plan should have a 'checklist' of what should be inspected</li> <li>3. Coordinate with the Beverly Hills Fire Department to ensure compliance with all County, State and Federal regulations.</li> </ol>		
Coordinating Department	<b>Business Services</b>		
Timeline/Completion Date	1-2 years		
Total Cost	None, In-house staff time plus additional Fire Department time		
Funding Source(s)	N/A		
Constraints	Coordination, time		
Plan Goals Addressed			
X	Public Awareness	X	Protect Life and Property
X	Partnerships and Implementation	X	Emergency Management

## **ANALYSIS OF MITIGATION STRATEGIES AND PROJECTS**

Mitigation activities reduce the cost of disasters by minimizing property damage, injuries, and the potential for loss of life, and by reducing emergency response costs, which would otherwise be incurred.

Evaluating hazard mitigation provides decision-makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects. Evaluating mitigation projects is a complex and difficult undertaking, which is influenced by many variables.

Second, while some of the direct and indirect costs of disaster damages are measurable, some of the costs are non-financial and difficult to quantify in dollars. Third, many of the impacts of such events produce “ripple-effects” throughout the community, greatly increasing the disaster’s social and economic consequences.

While not easily accomplished, there is value, from a public policy perspective, in assessing the positive and negative impacts from mitigation activities, and obtaining an instructive benefit/cost comparison. Otherwise, the decision to pursue or not pursue various mitigation options would not be based on an objective understanding of the net benefit or loss associated with these actions.

The benefit/cost analysis and cost-effectiveness analysis are important tools in evaluating whether or not to implement a mitigation activity but often a mitigation strategy is completed just because it meets the BHUSD goal to protect life, property and the environment within the District.

Benefit/cost analysis is a key mechanism used by the state Office of Emergency Services (OES), the Federal Emergency Management Agency (FEMA) , and other state and federal agencies in evaluating hazard mitigation projects, and is required by the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288, as amended.

Studying alternatives, calculating the costs and benefits, determining the project cost, estimating the benefits, considering costs and benefits to society and the environment are ways mitigation strategies are considered to be worthwhile.

These analyses will be conducted every time the plan is up for evaluation and new strategies are introduced to the plan.

## **PRIORITATION OF MITIGATION STRATEGIES**

All strategies and their priorities were studied using some or all of the methods discussed above. Priorities were decided based on these methods. All projects or strategies were deemed to be worthwhile before they were included in this plan. Chart 16, Prioritization and Benefit Analysis of Mitigation Strategies, provides an overview of all strategies, and ranks the following the effect on overall risk to life and property, ease of implementation, political and community support, and overall priority. This chart also shows the funding status. This chart was completed by the Steering Committee and Project Coordinators in

multiple meetings. The Department responsible for the hazard took the initiative in ranking and prioritizing the strategies. These rankings and prioritizing were then extensively discussed with the group and the final priority and analysis was agreed upon.

Chart 16.

<b>Prioritization and Benefit Analysis of Mitigation Strategies</b>						
<b>Hazard</b>	<b>Mitigation Strategy</b>	<b>Effect on Overall Risk to Life and Property</b>	<b>Ease of Implementation</b>	<b>Political and Community Support</b>	<b>Funding</b>	<b>Overall Priority</b>
Multi-Hazard	<i>Red Cross Agreements</i>	Low	Easy	High	Funded	High
Multi-Hazard	<i>Modernization improvements</i>	High	Difficult	Mixed	Funded	High
Multi-Hazard	<i>Beverly Hills Unified School District Hazard Mitigation Plan</i>	Low	Easy	High	Funded	High
Multi-Hazard	<i>Risk Assessment Project</i>	Low	Moderate	High	Unfunded	Medium
Multi-Hazard	<i>Communications Hardening</i>	High	Moderate	Mixed	Funded	High
Multi-Hazard	<i>BHUSD Emergency Preparedness Public Awareness Campaign</i>	High	Easy	High	Partially Funded	High
Multi-Hazard	<i>The BHUSD District-Wide Emergency Preparedness Manual</i>	Medium	Moderate	Mixed	Funded	Medium
Multi-Hazard	<i>Volunteer Emergency Response Team</i>	High	Difficult	Mixed	Partially Funded	Low
Multi-Hazard	<i>Emergency Shelter Identification</i>	Low	Difficult	Mixed	Funded	Low
Multi-Hazard	<i>Critical Infrastructure Assessment</i>	High	Moderate	Mixed	Funded	High
Multi-Hazard	<i>Evacuation Routes Update</i>	Very High	Easy	High	Funded	Very High
Multi-Hazard	<i>Advanced DART Staff Training</i>	High	Moderate	Mixed	Funded	High
Multi-Hazard	<i>GIS Upgrade</i>	Medium	Difficult	Low	Unfunded	Low
Multi-Hazard	<i>AED Installations</i>	Low	Easy	Low	Funded	Medium
Terrorism	<i>Closed Circuit Television Upgrades</i>	Medium	Difficult	Mixed	Unfunded	High
Earthquake	<i>Modernization Assessments</i>	Very High	Difficult	Mixed	Partially Funded	Medium
Earthquake	<i>Horace Mann Liqifaction Assessment</i>	Medium	Difficult	Mixed	Unfunded	Low
Flood	<i>Roof Reparatons</i>	High	Easy	Low	Funded	High
Fire	<i>Fire Safety Plan</i>	Medium	Moderate	High	Unfunded	Low

## **SECTION 5**

### **PUBLIC INVOLVEMENT AND PLAN MAINTENANCE**

This section of this plan details the formal process that will ensure that the Beverly Hills Unified School District Hazard Mitigation Plan remains an active and relevant document. This section includes a schedule for monitoring and evaluating the Plan annually and producing a plan revision every five years. Finally, this section includes an explanation of how Beverly Hills Unified School District intends to incorporate the mitigation strategies outlined in this Plan into existing planning mechanisms such as the District-wide Disaster Plan (completion date Summer 2006), each Safe School Plan, future building/campus development , current evacuation plans and disaster drill strategies.

Additionally, this section of the plan includes specific details on how the BHUSD involved the public, which includes District staff, faculty, parents and community, in the creation of this plan and how they will continue to do so. This section describes how the District will integrate public participation throughout the plan maintenance process.

### **PUBLIC PARTICIPATION**

#### **Public/Community Input**

Public participation is just one of the components of the planning process of the BHUSD Hazard Mitigation Plan. Public involvement is an integral part of the Beverly Hills Unified School District's mission. The connection the District has made with the community has led it to be regarded as a pivotal component and partner in the entire Beverly Hills network. Their role in the community is not only as educational institution but as a community facilitator. For the purposes of this plan, 'public' is defined by BHUSD parents/guardians, District staff and employees and the City of Beverly Hills as a government agency. The BHUSD has taken steps to ensure the public had opportunities to provide input on the creation of the plan. This public involvement has been an integral part of the planning process for the creation of the BHUSD Hazard Mitigation Plan.

#### **Public Invitation**

Public participation is a key component of strategic planning processes. Community participation offers the parents and staff the opportunity for inclusion of their interests and concerns into the process. The Federal Emergency Management Agency requires public input during the development of local hazard mitigation plans. The public was invited to participate in the development of the plan using various communications methods. Information was provided on the District's website, each school's website, surveys, and hard copies located at each school and in the District newsletter.

The Beverly Hills Unified School District Hazards Mitigation Plan integrates a cross section of local staff and parent input. To accomplish meaningful participation, rather than appointing, educating and grappling with scheduling concerns of a project-specific steering committee, it was deemed more efficient and more representative to enlist the expertise of existing District committees, groups and parent's interests representatives of all stakeholders in the community.

Along with the Steering Committee (who took a similar but more comprehensive survey found in Appendix D) the BHUSD District community, including parents/guardians, staff and employees were asked to participate in hazard identification. A simple, informative survey was distributed via hard copy and electronic form. A sample survey is located in Appendix C.

### The City of Beverly Hills

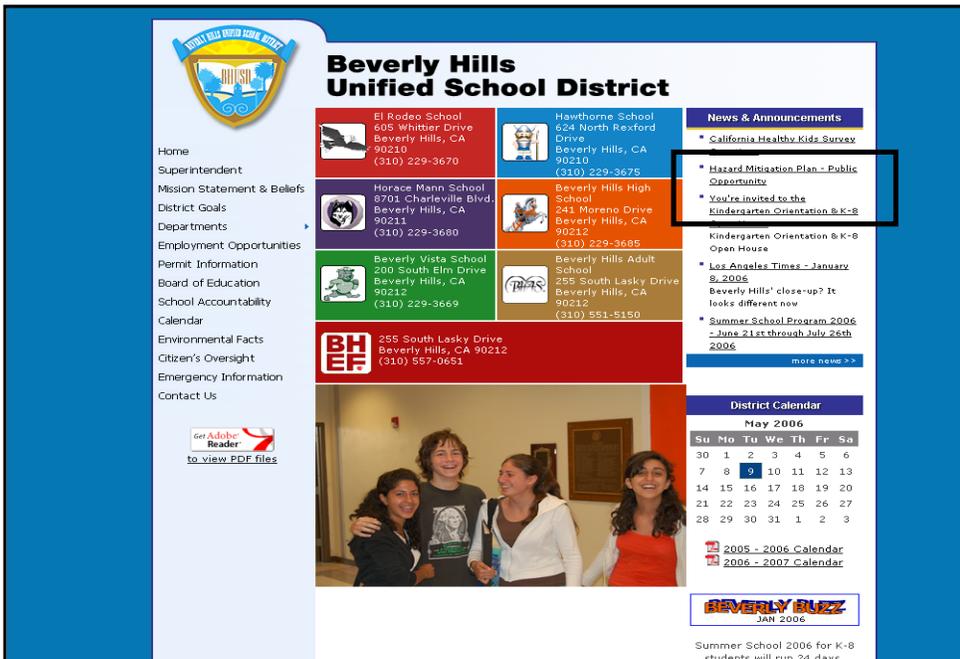
This has been a collaborative effort with input from all District departments, the City of Beverly Hills and the community. Furthermore the District has utilized healthy communication networks with Area A cities, e.g. the four Westside cities Beverly Hills, Culver City, Santa Monica and West Hollywood. The cities have worked closely to share information and aid in development and creation of their respective plans. As part of the public process, the District also consulted the authors of the Los Angeles Unified School District Hazard Mitigation Plan.

### Web-based Public Input Program

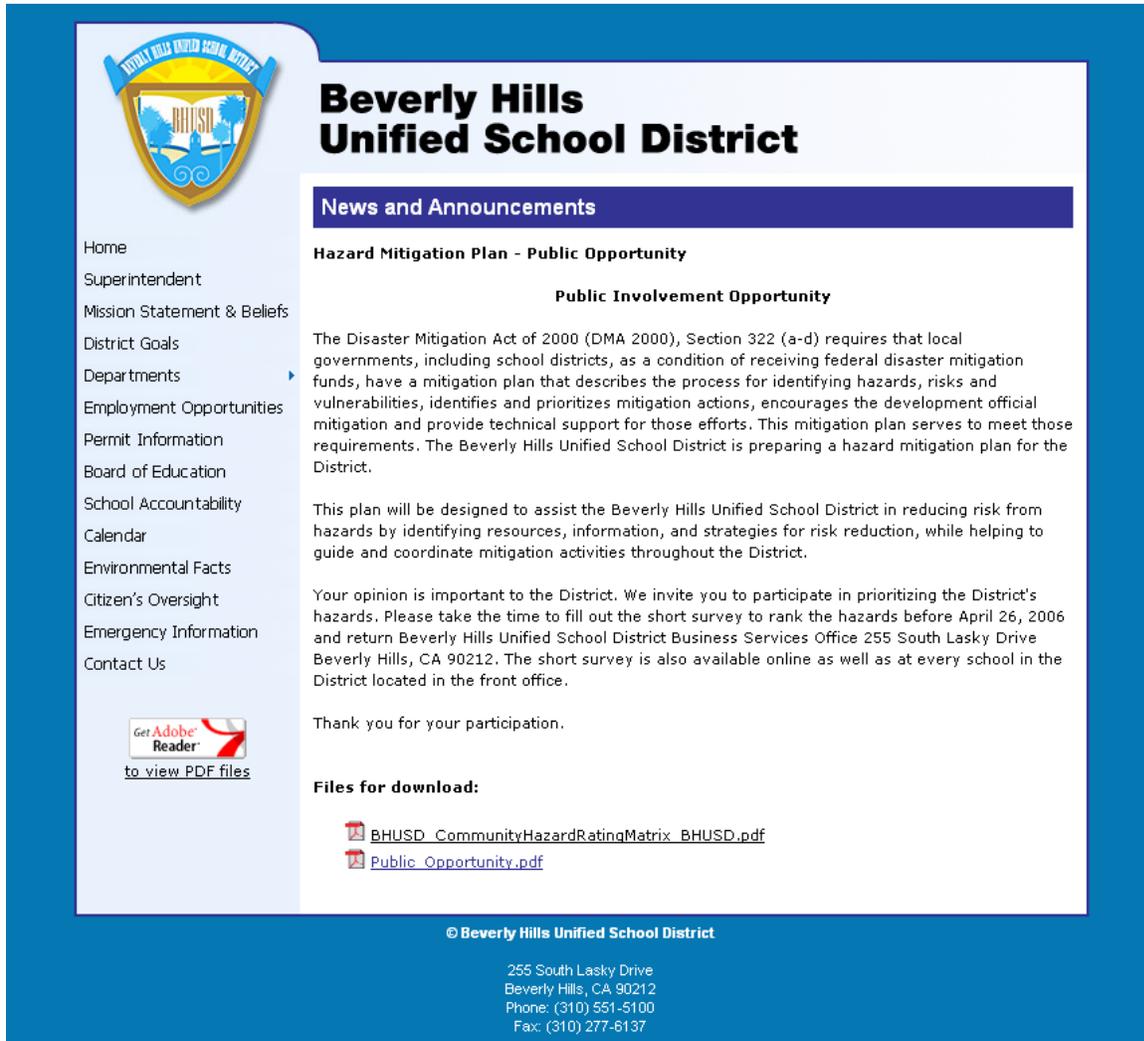
Because of growing technological advances and the District’s large number of persons who have access to the internet, the BHUSD decided to launch a comprehensive public input campaign via the web. BHUSD placed information regarding the Hazard Mitigation planning process on their website (<http://www.bhusd.k12.ca.us/>).

Additionally each school’s website also posted information regarding the Hazard Mitigation Plan and request for public input. See image 10 for the BHUSD link.

**Image 10 . BHUSD Website – Public Input Invitation Link.**



Source: <http://www.bhusd.org/>



Source: [http://www.bhusd.k12.ca.us/apps/news/show\\_news.jsp?REC\\_ID=16633&id=0&rn=8362](http://www.bhusd.k12.ca.us/apps/news/show_news.jsp?REC_ID=16633&id=0&rn=8362)

### Image 11. BHUSD Website – Public Opportunity

To the right of the screen (highlighted by the black box), there is a link that reads: Hazard Mitigation Plan – Public Opportunity. This link is available on each school’s website as well. This link was made available for a period of three months during the 2005-2006 school year.

After the public clicks on the link, one is directed to the following page, see Image 11.

This page provides the public with a background of what a Hazard Mitigation Plan a summary of the Disaster Mitigation Act of 2000. On this page, participants are provided instruction on where to obtain and return the survey and detailed instructions on how to fill out the survey are within the survey itself

At the bottom of the webpage there is a link to the survey. Please see Appendix C for a sample of the survey.

### **Resources/Outside Input**

The creation of this plan was a multi-agency effort. Beverly Hills Unified School District staff examined multiple existing mitigation plans from around the country, current FEMA hazard mitigation planning standards and the State of California Hazard Mitigation Plan Guidance. The BHUSD utilized a wealth of hazard information and analysis provided by the City of Beverly Hills which was not readily available at the District. The City of Beverly Hills has land surveys, seismic analysis, flood maps and various other resources that the District is not equipped to conduct or obtain. We thank the City very much for their efforts and assistance in creating the BHUSD Hazard Mitigation Plan.

The development of the plan included comprehensive and collaborative District and community effort, including the City of Beverly Hills. The District took the planning process very seriously and collaborated with many groups to create the plan including District staff, parent/guardians, and the Beverly Hills Fire Department. The plan creation was coordinated by the Office of Business Services along with help from the City of Beverly Hills Office of Emergency Management with participation from all District departments. Input was sought from District staff, the Steering Committee and the BHUSD community.

For detailed information on the meetings and events please refer to Appendix E, Public Involvement & Planning Events.

### **MONITORING AND IMPLEMENTING THE PLAN AND PLAN ADOPTION**

Beverly Hills Unified School District is dedicated to involving the public directly and indirectly in the review and updates of the Hazard Mitigation Plan. The Steering Committee members are responsible for the annual review and update of the plan. The public has been invited and welcomed to participate in the creation of the Hazard Mitigation Plan. The BHUSD has created many opportunities for involvement.

The Board of Education will be responsible for adopting the Beverly Hills Unified School District Hazard Mitigation Plan. This governing body has the authority to promote sound public policy regarding hazards. Once the plan has been adopted, the District's Assistant Superintendent of Business Services will be responsible for submitting it to the State Hazard Mitigation Officer at The Governor's Office of Emergency Services. The Governor's Office of Emergency Services will then submit the plan to the Federal Emergency Management Agency (FEMA) for review. This review will address the federal criteria outlined in FEMA Interim Final Rule 44 CFR Part 201. Upon acceptance by FEMA, Beverly Hills Unified School District will gain possible eligibility for Hazard Mitigation Grant Program funds.

The approved Hazard Mitigation Plan will be significant in the future growth and development of the BHUSD community. The Beverly Hills Unified School District Hazard Mitigation Plan was adopted by the Board of Education on September 11, 2006.

### **Coordinating Body**

The Beverly Hills Unified School District Hazard Mitigation Steering Committee will be responsible for coordinating implementation of the plan's strategies and undertaking the formal review process.

### **Continued Public Involvement**

The BHUSD is dedicated to involving the public directly in the continual review and updates of the Hazard Mitigation Plan. The BHUSD already has a strong, existing relationship with the community including parents, staff and residents. Copies of the plan will be catalogued and made available at BHUSD District Office and at the Public Library. The existence and location of these copies will be available on the City's website and participation will be recruited through bulletins sent home with students to parents, formal and informal announcements and through webpage posts. Once the Plan is complete, the District will provide contact information where the public can direct their comments and concerns regarding the plan.

Separate public and Steering Committee meetings will be held prior to the BOE's annual evaluation or when deemed necessary by the Hazard Mitigation Steering Committee to gather input and revisions on the plan. The meetings will provide the public a forum for which they can express its concerns, opinions, or ideas about the Plan. These revisions are crucial and necessary as time provides many organizational and structural changes. The plan will then adapt to these changes by implanting the most current programs, strategies and practices implemented at the BHUSD.

### **Convener**

The BOE will adopt the Beverly Hills Unified School District Hazard Mitigation Plan, and the Hazard Mitigation Steering Committee will take responsibility for plan implementation. The Assistant Superintendent of Business Services will serve as a convener to facilitate the Hazard Mitigation Steering Committee meetings, and will assign tasks such as updating and presenting the Plan to the members of the committee. Plan implementation and evaluation will be a shared responsibility among all of the Hazard Mitigation Steering Committee Members.

### **IMPLEMENTATION THROUGH EXISTING PROGRAMS**

The Beverly Hills Unified School District addresses statewide safety goals and legislative requirements through its safety, building and evacuation plans. In addition the BHUSD is constantly working with the City of Beverly Hills and their existing planning mechanisms such as General Plans, Capital Improvement Projects, and City Building and Safety Codes in order to cross check that all processes are being evaluated when it comes to mitigation. The Hazard Mitigation Plan provides a series of recommendations that are closely related to the goals and objectives of these existing planning programs. The Beverly Hills Unified School District will have the opportunity to implement recommended mitigation strategies through existing programs and procedures.

A Hazard Mitigation Steering Committee, as part of the District Disaster Planning and Safety Committee, meeting will be held every six months after the formal adoption of

the mitigation plan. The meetings of the will provide an opportunity for committee members to report on the progress of mitigation planning elements and to provide suggestions for revisions.

### **EVALUATING AND UPDATING THE PLAN AND THE FORMAL REVIEW PROCESS**

The Beverly Hills Unified School District Hazard Mitigation Plan will be evaluated on an annual basis to determine the effectiveness of programs, and to reflect changes in development or programs that may affect mitigation priorities. Steering Committee members will be responsible for monitoring and evaluating the progress of the mitigation strategies in the Plan. The Steering Committee will also be responsible for updating the plan.

The committee will review the goals and strategies to determine their relevance to changing situations within the District, as well as changes in State or Federal policy, and to ensure they are addressing current and expected conditions. The committee will also review the risk assessment portion of the Plan to determine if this information should be updated or modified, given any new available data. The departments responsible for the various strategies will report on the status of their projects, the success of various implementation processes, difficulties encountered, success of coordination efforts, and which strategies should be revised.

The Business Services Department will be designated to make appropriate changes to the plan before submitting it to the Steering Committee members, and presenting it to the Board of Education. Every five years the updated plan will be submitted to the State Hazard Mitigation Officer and the Federal Emergency Management Agency for review.

### **PREVIOUS MITIGATION PLANS, PROJECTS AND ACTIONS**

Please see specific hazards sections for previous and existing mitigation projects.

## SECTION 6 - EARTHQUAKES

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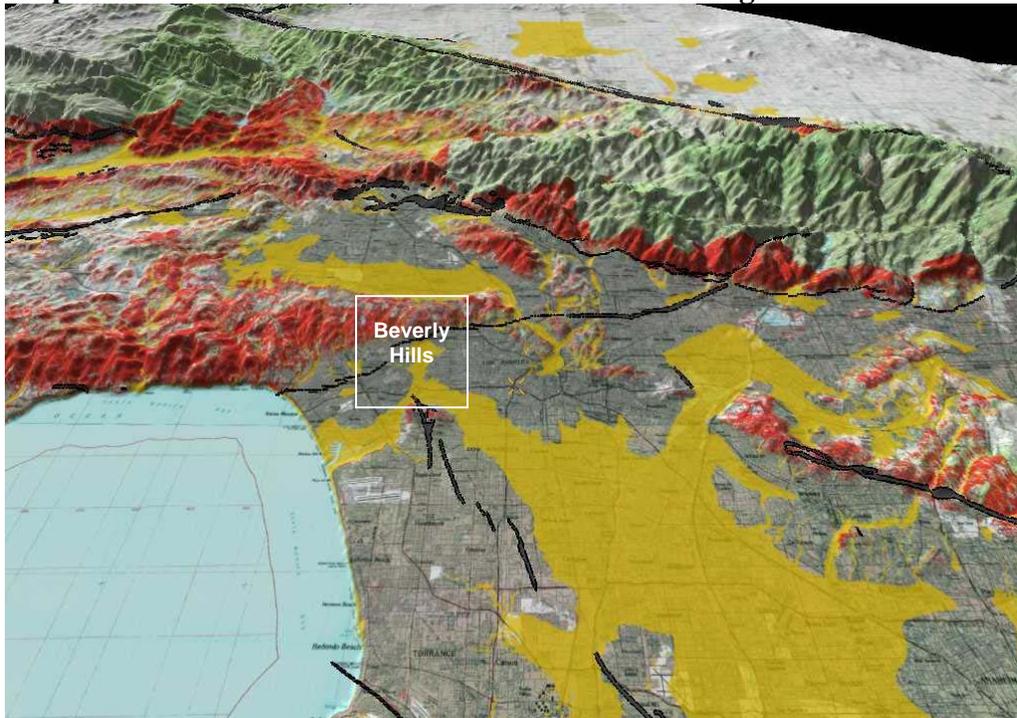
## **WHY EARTHQUAKES ARE A THREAT TO THE BEVERLY HILLS UNIFIED SCHOOL DISTRICT**

The Beverly Hills Unified School District is located in a region that is subject to high seismic activity. There are several active faults in or near the City of Beverly Hills and the District. A major earthquake occurring on any one of these faults could result in substantial number of deaths and injuries and extensive damage to both public and private property. The economic impact in direct and indirect costs will be billions of dollars.

Building standards have evolved over the years and seismic design provisions have been added to or improved upon following major earthquakes. Some buildings in BHUSD are older than that of many communities in Southern California. The District<sup>3</sup> has performed much retrofitting to their buildings. In total, the BHUSD is spending over \$90 million dollars over the next 3 years in building upgrades to prevent loss of life and property due to an earthquake hazard.

In conclusion, the combination of the District's older building stock built with earlier, less stringent earthquake provisions and the District's proximity to active seismic zones makes earthquakes a major threat to the Beverly Hills Unified School District.

### **Map 4: Seismic Hazards 3-D Animation of the Los Angeles Area.**



[http://www.consrv.ca.gov/cgs/geologic\\_hazards/earthquakes/3d\\_snaps.htm](http://www.consrv.ca.gov/cgs/geologic_hazards/earthquakes/3d_snaps.htm)

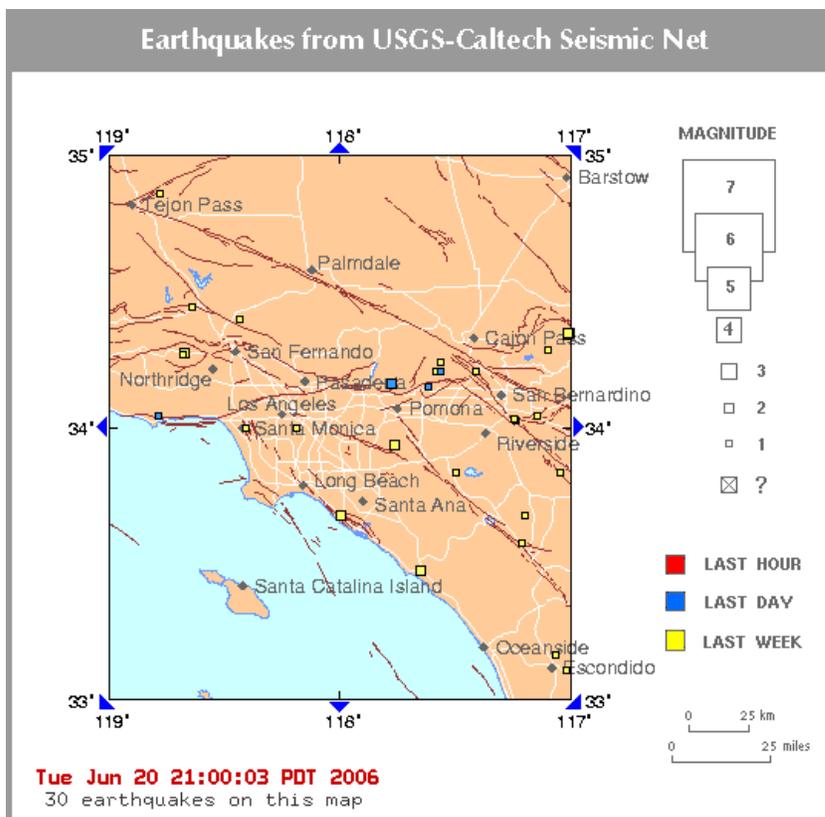
## **HISTORY OF EARTHQUAKE EVENTS IN BEVERLY HILLS**

<sup>3</sup> Whereas “the City” from here forth refers to the City of Beverly Hills.

The most recent seismic activity near Beverly Hills Unified School District was on June 20, 2006. A moderate size (M4.2) earthquake occurred in West Hollywood (see Map 5 below). This earthquake was widely felt throughout the Los Angeles Basin and in parts of San Fernando Valley and was well recorded by the Caltech-USGS TriNet. The focal depth of this earthquake was about 4 km, making the shaking most severe in the Hollywood basin.

The earthquake was located near the intersection of the Newport-Inglewood and Hollywood faults. The focal mechanism showed horizontal strike-slip motion on a north-northwest striking plane, suggesting that this event may have been associated with the north end of the Newport- Inglewood fault. This earthquake differed from of the deep thrust faulting earthquake sequences recorded in the last two decades in the Los Angeles area such as 1987 M5.9 Whittier Narrows and 1994 M6.7 Northridge. The occurrence of this earthquake suggested activation of a shallower strike-slip regime of faults in the Los Angeles basin, which has mostly remained dormant over the last decade

**Map 5. Southern California Recent Earthquake Activity – June 20, 2006**



Source: <http://www.data.scec.org/recenteqs/Maps/118-34.html>

The most recent significant earthquake event in southern California that affected Beverly Hills was the 1994 Northridge Earthquake. At 4:31 A.M. on Monday, January 17, a moderate but very damaging earthquake with a magnitude of 6.7 struck the San Fernando Valley. In the following days and weeks, thousands of aftershocks occurred, causing additional damage to affected structures.

Fifty-seven people were killed and more than 1,500 people seriously injured. For days afterward, thousands of homes and businesses were without electricity. Within the City of Beverly Hills; tens of thousands had no gas; and nearly 50,000 had little or no water. Approximately 15,000 structures were moderately to severely damaged, which left thousands of people temporarily homeless. 66,500 buildings were inspected. Nearly 4,000 were severely damaged and over 11,000 were moderately damaged. Several collapsed bridges and overpasses created commuter havoc on the freeway system. Extensive damage was caused by ground shaking, but earthquake triggered liquefaction and dozens of fires also caused additional severe damage. This extremely strong ground motion in large portions of Los Angeles County resulted in record economic losses.

The earthquake occurred early in the morning on a holiday. This circumstance considerably reduced the potential effects. Many collapsed buildings were unoccupied, and most businesses were not yet open. The direct and indirect economic losses were estimated at \$40 billion for the County of Los Angeles. Although the Beverly Hills Unified School District is approximately 35 miles away from the epicenter of the Northridge Earthquake, several buildings in the City were red tagged and numerous block walls and chimneys were damaged.

There have been few disasters to cause substantial loss of life or property to the District. However the most financially devastating in recent history has been the 1994 Northridge Earthquake, FEMA disaster DR 1008. The District incurred a total of \$1,131,739 dollars in damage to it's facilities. Should a similar magnitude earthquake occur in or near Beverly Hills and if it were to occur during a workday, when schools are in session, and the population of the City swells to 200,000, the number of casualties could be substantial -- up to 100's deaths and 1,000's injuries.

**Chart 17. Significant Southern California earthquakes since 1933**

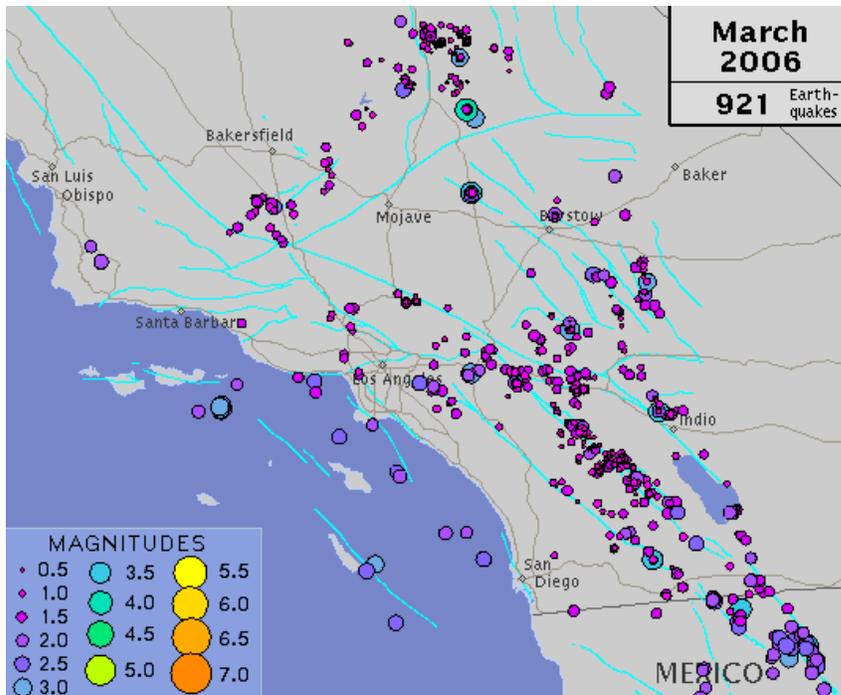
Date	Time (local)	Location	Magnitude
03.10.1933	5:54 pm	Long Beach	6.4
03.25.1937	8:49 am	San Jacinto	6.0
05.18.1940	8:37 pm	Imperial Valley	6.9
10.21.1942	9:30 am	Fish Creek Mountains	6.6
03.15.1946	5:49 am	Walker Pass	6.0
04.10.1947	7:58 am	Manix	6.5
12.04.1948	3:43 pm	Desert Hot Springs	6.0
07.21.1952	3:52 am	Kern County	7.5

Date	Time (local)	Location	Magnitude
11.21.1952	11:46 pm	San Simeon	6.2
03.19.1954	1:54 am	Arroyo Salada	6.4
04.09.1968	6:29 pm	Borrego Mountain	6.5
02.09.1971	6:01 am	San Fernando	6.6
10.15.1979	4:54 pm	Imperial Valley	6.4
07.08.1986	2:21 am	North Palm Springs	5.9
10.01.1987	7:42 am	Whittier Narrows	5.9
11.23.1987	5:54 pm	Elmore Ranch	6.2
11.24.1987	5:15 am	Superstition Hills	6.6
04.22.1992	9:50 pm	Joshua Tree	6.1
06.28.1992	4:57 am	Landers	7.3
06.28.1992	8:05 am	Big Bear	6.3
01.17.1994	4:30 am	Northridge	6.7
10.16.1999	2:46 am	Hector Mine	7.1
12.22.2003	11:15 am	San Simeon	6.5

Source: Southern California Earthquake Data Center

There are hundreds of earthquakes in Southern California of earthquakes every month. The seismic activity is extremely high compared to the rest of the State and United States. A few are damaging, but most are not even felt. The following map shows earthquakes in Southern California on a typical month (March 2006).

### Map 6. Earthquakes in Southern California (during the month of March 2006)



Source: <http://www.data.scec.org/monthly/index.php>

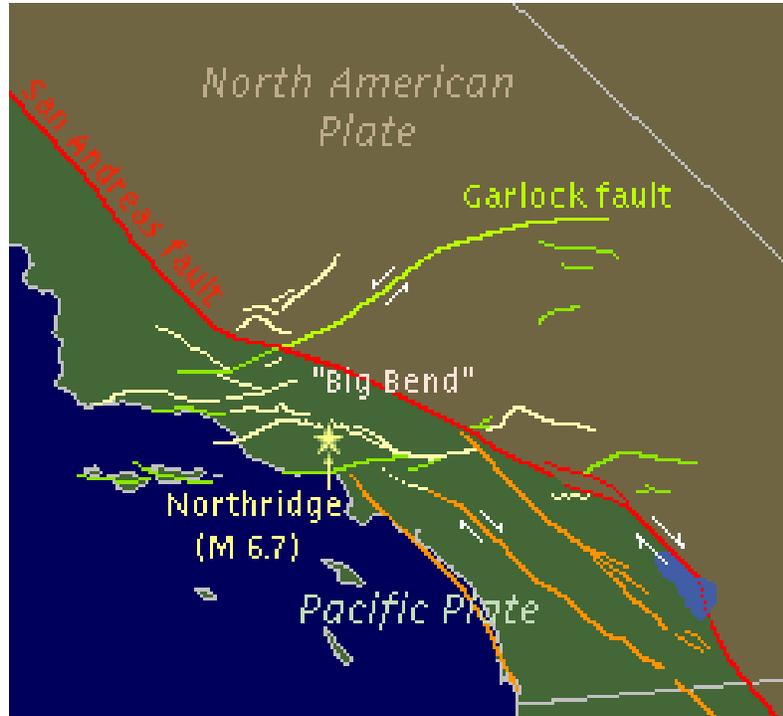
## CAUSES AND CHARACTERISTICS OF EARTHQUAKES IN SOUTHERN CALIFORNIA AND BEVERLY HILLS

The Beverly Hills Unified School District exposure to geologic and seismic hazards is directly related to the location of the District to active faults. Faults in Southern California can be attributed to the San Andreas fault system. This system is a major crustal discontinuity that separates the southeast-moving North American plate from the northwest- moving Pacific plate, and extends for more than 1100 kilometers along nearly the entire length of the state of California.

The "Big Bend" of the San Andreas Fault is responsible for much of the complexity of faulting in southern California. This bend is a convergent (restraining) bend, creating a localized collision of tectonic plates, and a tremendous amount of compressional stress. To release this stress, additional faults have formed over time. A typical response to large-scale compression is crustal shortening. This allows compression to continue by "squeezing" up the rocks in the compressional zone. This is accomplished by thrust faults -- low-angle reverse faults that drive sections of crust over one another to create a thicker pile of crust with a shorter (horizontal) length. The surface traces of such faults are shown in pale yellow on the map view below. The 1994 Northridge earthquake (magnitude 6.7) occurred on one of these numerous thrust faults.

**Map 7: "Big Bend" of the San Andreas Fault**

Not all the compressional force generated by the "Big Bend" of the San Andreas Fault goes into thrust faults. The collision boundary is not square with the plate motion, but at an angle, in such a way that some of the material "caught in the middle" has a chance to move laterally out of the way. This is exactly what happens. Large zones of left-lateral faulting, shown here in green, have formed in an effort to relieve some of the stress created by the fault bend. An example



of this left-lateral faulting is the Hollywood / Santa Monica fault zone and the Garlock fault which intersects with the San Andreas near the northern end of the "Big Bend" and continues eastward for several hundred kilometers.

In addition, several right-lateral strike-slip faults south of the Big Bend, and west of the southern San Andreas Fault zone, seem to be managing some of the overall slip between the two tectonic plates. These fault zones, shown here in orange, are quite lengthy and roughly parallel the plate boundary.

But San Andreas is only one of dozens of known earthquake faults that crisscross Southern California. Some of the better known faults include the Newport-Inglewood, Santa Monica, Hollywood, Puente Hills, Whittier, Chatsworth, Elsinore, Los Alamitos, and Palos Verdes faults. Beyond the known faults, there are a potentially large number of "blind" faults that underlie the surface of Southern California. One such blind fault was involved in the Whittier Narrows earthquake in October 1987.

One set of clues that you may have considered using to see through the apparent problems with the activity above is the topography of the Los Angeles basin -- the mountains, hills, and valleys present in the area. Low-angle faults (including some blind faults) can alter the surface, creating plateaus and hills by gradually uplifting a region. When such an uplifted area can be found prominently on one side of a fault, while the other side is low-lying and basically flat, there is a fair probability that the fault has a non-vertical dip, and so epicenters positioned off the fault trace are quite possible. Also, a belt of hills with no associated fault trace is an excellent signal that there may be a blind fault at work beneath those hills.

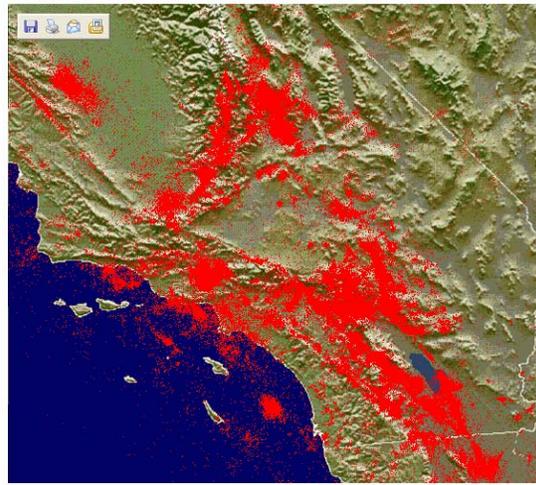
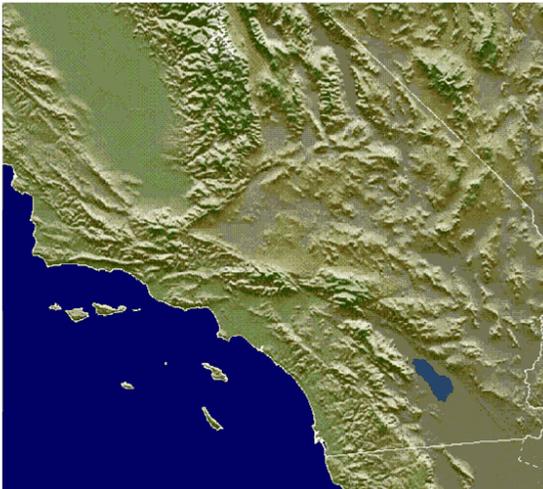
## TOPOGRAPHY

The Santa Monica Mountains, located in the northern portion of the District, are in the Transverse Ranges Physiographic province. The coastal plain of the Los Angeles Basin, located in the southern portion of the District, is part of the peninsular Ranges Physiographic Province. The majority of the District lies in a transitional area between the mountains and the coastal plain. This transitional area consists of broad coalescing alluvial fans that have developed over geologic time from debris that have been eroded from the Santa Monica mountains.

The presence of these three distinct physiographic features (the mountains, the alluvial fans, and the Los Angeles coastal plain) within the District provides considerable topographic relief. The lowest point within the District is 120 feet above sea level at Olympic Blvd and La Cienega Blvd and the highest point is 1400 feet above sea level along Carla Ridge Dr in Trousdale Estates area.

Areas north of Sunset Blvd are characterized by the typical rugged topography of the Santa Monica Mountains with steep sided ridges and narrow ravines or valleys. Between Sunset Boulevard and Santa Monica Boulevard, the surface of the alluvial fans slopes about 2 to 3 percent in a south southeast direction. South of Santa Monica Boulevard the terrain flattens as the alluvial fans merge into the coastal plain.

**Map 8: Topography of the Los Angeles Basin (The red dots represent earthquake occurrences from 1932 – 1996).**



Source: <http://www.data.scec.org/Module/module.html>

The Beverly Hills Unified School District is located along the boundary between the Transverse Ranges and Peninsular Ranges physiographic of southern California as shown in Map 4. The Transverse Ranges consist of a complex series of elongate, east-west trending mountains, such as the Santa Monica Mountains, and intervening valleys. In contrast, the Peninsular Ranges province consists of northwest-southwest trending mountains, such as the Santa Ana Mountains, and intervening valleys. Both the

Transverse Ranges and Peninsular Ranges physiographic provinces are seismically active and contain many active faults.

### **Local Soil Conditions**

The areas north of Sunset Boulevard in the Santa Monica Mountains are underlain primarily by Triassic metamorphic, Jurassic granitic, and upper Miocene sedimentary rocks. The alluvial fans that underlie most of the City south of Sunset Boulevard consist of Quaternary debris generated from erosion of the Santa Monica Mountains.

Certain soils greatly amplify the shaking in an earthquake. Passing from rock to soil, seismic waves slow down but get bigger. Hence a soft, loose soil may shake more intensely than hard rock at the same distance from the same earthquake.

Ground shaking, landslides, liquefaction, and amplification are the specific hazards associated with earthquakes. The severity of these hazards depends on several factors, including soil and slope conditions, proximity to the fault, earthquake magnitude, and the type of earthquake.

### **EARTHQUAKE FAULTS IN OR NEAR BEVERLY HILLS**

Numerous active earthquake faults present a potential danger to the Beverly Hills Unified School District. Of these, those that probably present the most danger are as follows:

#### **THE NEWPORT/INGLEWOOD FAULT**

This fault extends to just south of the District and is capable of producing a 6.9 magnitude earthquake. It has a slip rate at 1mm/yr. Because of its proximity to the District, it is thought to present a greater danger to the District in terms of injury (and/or death) and destruction than the San Andreas.

The Newport-Inglewood is a right-lateral fault system. The movement on this fault caused the 1933 Long Beach magnitude 6.3 earthquake, and the 1920 Inglewood earthquake (estimated magnitude 4.9).

The 1933 earthquake resulted in 120 deaths and over \$50 million in property damage. Most of the damaged buildings were of unreinforced masonry. Many school buildings were destroyed.

#### **THE SANTA MONICA FAULT**

This fault actually runs through the northern part of the District and with a slip rate of 1 mm/yr, it is capable of producing a 6.6 magnitude earthquake. Thus, like the Newport/Inglewood Fault, the Santa Monica Fault is also thought to present a great danger to the City. However, the District's critical facilities lie in the Southern portion of the District.

The Santa Monica Fault is a part of a major east-west trending, northward dipping, left lateral-reverse fault system that forms the southern boundary of the Transverse Ranges

physiographic province. This system of faults is located along the southern front of the Santa Monica mountains and extends from offshore in Santa Monica Bay to the San Gabriel mountains. Other faults that appear to be a part of this system are the Anacapa (Dume) fault, Malibu Coast fault, Raymond fault (located to the east of the District in Pasadena area).

### **THE HOLLYWOOD FAULT**

This fault is located near the base of the Santa Monica Mountains. The fault dips steeply to the north beneath the Santa Monica Mountains. Movement on the fault has juxtaposed the granitic, metamorphic, and sedimentary rocks of the Santa Monica Mountains up and over the sedimentary deposits south of the mountains. This fault actually runs through the northern part of the District and with a slip rate of 1 mm/yr, it is capable of producing a 6.4 magnitude earthquake. Thus, like the Newport/Inglewood Fault, the Hollywood Fault is also thought to present a great danger to the District. The Hollywood Fault is also a part of a major east-west trending, northward dipping, left lateral-reverse fault system that forms the southern boundary of the Transverse Ranges physiographic province. Other faults that appear to be a part of this system are the Anacapa (Dume) fault, Malibu Coast fault, Raymond fault (located to the east of the District in Pasadena area).

### **THE PUENTE HILLS FAULT**

This fault system runs under downtown Los Angeles could generate an earthquake of magnitude 7.0 or greater. The fault snakes underground for at least 25 miles, from Puente Hills in northern Orange County through downtown Los Angeles and west toward Beverly Hills.

### **THE SIERRA MADRE/SAN FERNANDO FAULT SYSTEM**

This fault system includes the Cucamonga, Sierra Madre, San Fernando and Santa Susana faults. Of this system of faults, the San Fernando Fault is most likely to present a danger to the Beverly Hills Unified School District. Located approximately fourteen (14) miles to the north of Beverly Hills Unified School District, this fault, caused great destruction and numerous deaths and injuries in 1971. With a slip rate of 3 mm/yr, this fault is capable of producing a 7.0 magnitude earthquake with a.

### **THE WHITTIER FAULT**

Located approximately twenty-three (23) miles to the southeast, this fault is capable of a 7.0 magnitude earthquake. During the Whittier Narrows earthquake of October 1987, which registered a magnitude of only 5.9, several buildings in Beverly Hills sustained damage, including one of the City's parking structures.

### **THE SAN ANDREAS FAULT**

Undoubtedly the most well known fault in California, the San Andreas Fault is located approximately nearly forty (40) miles to the east and with a slip rate of 24 mm/yr, it is capable of an 8.5 magnitude earthquake. Although capable of causing major damage throughout the Los Angeles Basin, it is now thought by many experts that because of its

distance from Metropolitan Los Angeles (including Beverly Hills), it probably presents less danger to the District than some of the other faults mentioned above.

### **RAYMOND FAULT**

Located near San Marino and South Pasadena, with a slip rate of 0.5 mm/yr, this fault is capable of producing a 6.5 magnitude earthquake. The exact nature of the slip along the Raymond fault has been a subject of debate for quite some time. The fault produces a very obvious south-facing scarp along much of its length, and this has made many favor reverse-slip as the predominant sense of fault motion. However, there are also places along this scarp where left-lateral stream offsets of several hundred meters can be seen.

The matter will not be conclusively resolved until the Raymond fault ruptures at the surface, but some new light was shed on the debate in late 1988, when the Pasadena Earthquake occurred.

Apparently located on the Raymond fault, the motion of this quake was predominantly left-lateral, with a reverse component only about 1/15th the size of the lateral component. Curiously enough, this corresponds very well with a scarp height of about 30 meters (reverse slip) versus a left-lateral stream offset of about 400 meters (lateral slip), which are found along the scarp of the Raymond fault south of Pasadena. If the Raymond fault is indeed primarily a left-lateral fault, it could be responsible for transferring slip southward from the Sierra Madre fault zone to other fault systems.

### **EARTHQUAKE RELATED HAZARDS IN BEVERLY HILLS**

Amount of damage to a building does not depend solely on how hard it is shaken. In general, smaller buildings such as houses are damaged more by higher frequencies, so usually a house must be relatively close to the hypocenter to be severely damaged. Larger structures such as high-rises are damaged more by lower frequencies and will be more noticeably affected by the largest earthquakes, even at considerable distances.

In addition to regional aspects of the earthquake hazard, there are location-specific hazards that can cause additional damage: surface rupture, ground shaking, amplification, settlement, liquefaction, and landslides. State laws require that every person buying a home or real property in California to be told if the property is in on one of these zones.

#### **Ground Shaking**

Ground shaking is the motion felt on the earth's surface caused by seismic waves generated by the earthquake. It is the primary cause of earthquake damage. The strength of ground shaking depends on the magnitude of the earthquake, the type of fault, and distance from the epicenter (where the earthquake originates). Buildings on poorly consolidated and thick soils will typically see more damage than buildings on consolidated soils and bedrock.

#### **Earthquake Induced Landslides**

Earthquake induced landslides are secondary earthquake hazards that occur from ground

shaking. They can destroy the roads, buildings, utilities, and other critical facilities necessary to respond and recover from an earthquake. The City has a high likelihood of encountering such risks, especially in areas with steep slopes. See earth movement (Landslide) section for more information.

### **Earthquake Induced Liquefaction**

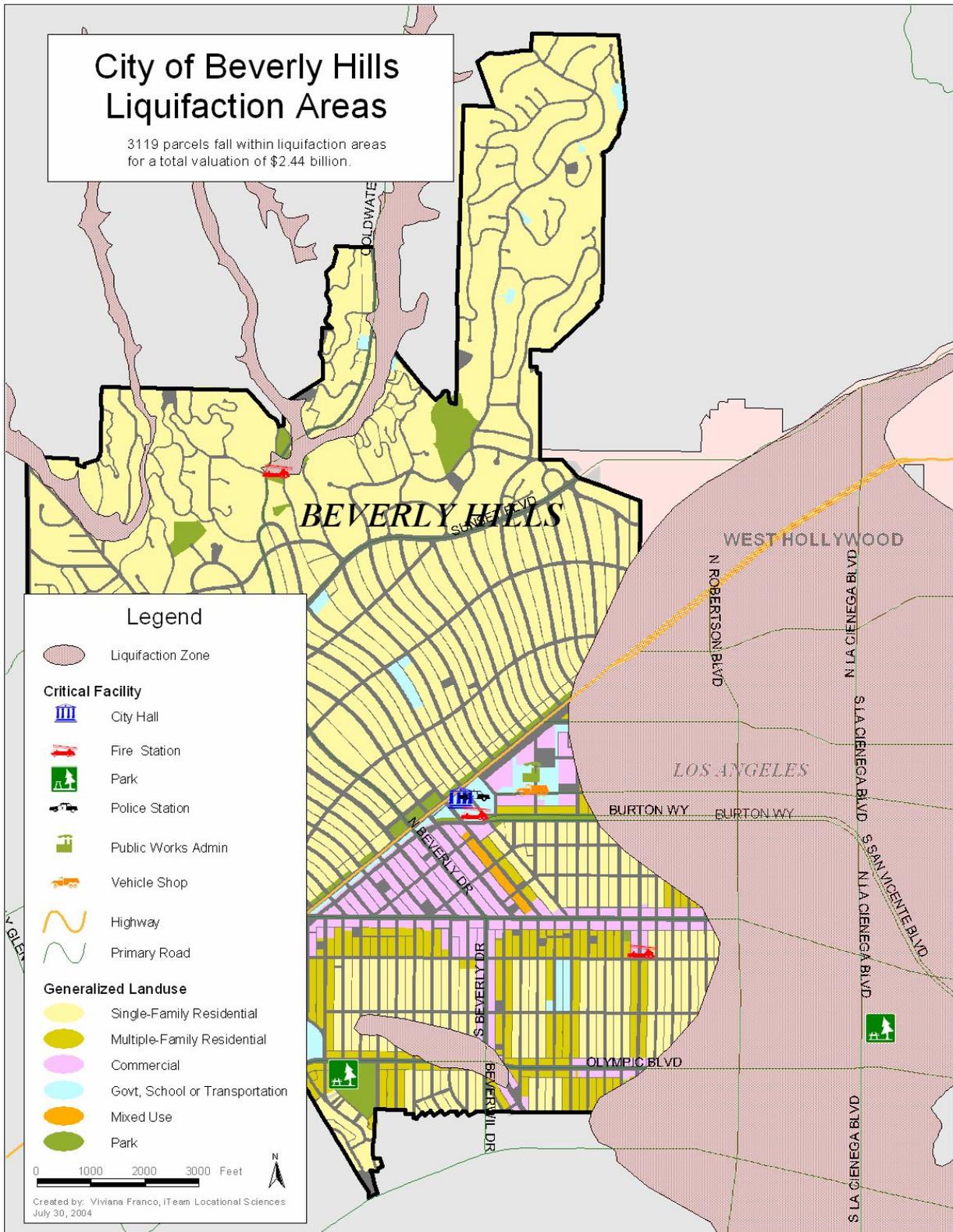
Liquefaction occurs when ground shaking causes wet granular soils to change from a solid state to a liquid state. This results in the loss of soil strength and the soil's ability to support weight. Buildings and their occupants are at risk when the ground can no longer support these buildings and structures.

Liquefaction- induced ground failure has historically been a major cause of earthquake damage in Southern California. During the 1971 San Fernando and 1994 Northridge earthquakes, significant damage to roads, utility pipelines, buildings, and other structures in the Los Angeles area was caused by liquefaction-induced ground displacement. Localities most susceptible to liquefaction-induced damage are underlain by loose, water saturated granular sediments at depths less than 40 feet subsurface. These geological and groundwater conditions exist in portions of the City of Beverly Hills and the District.

### **Liquefaction Zone**

There is some property within the City that have a high water table. Where this condition occurs, it is possible for the ground to liquefy during an earthquake, becoming like quicksand. If this occurs, buildings may settle or tilt. Such damage occurred in the Marina District in San Francisco in the 1989 Loma Prieta earthquake. The potential for liquefaction is considered for all new construction in the District. In the BHUSD, the District has one critical facility, Horace Mann School, located within the Liquefaction Zone – (See Map 9).

# Map 9. Liquefaction Zones



### **Amplification**

Soils and soft sedimentary rocks near the earth's surface can modify ground shaking caused by earthquakes. One of these modifications is amplification. Amplification increases the magnitude of the seismic waves generated by the earthquake. The amount of amplification is influenced by the thickness of geologic materials and their physical properties. Buildings and structures built on soft and unconsolidated soils can face greater risk<sup>4</sup>. Amplification can also occur in areas with deep sediment filled basins and on ridge tops.

### **Settlements**

Dissipation of seismically induced pore water pressure in saturated granular soils may lead to settlements after the shaking has stopped. The areas most susceptible to this potential hazard are the same areas that are in the liquefaction zone. Earthquake induced settlements can also occur in dry or moist granular materials simply as a result of shaking without pore water pressure buildup.

## **HAZARD IDENTIFICATION**

Southern California earthquakes have been identified by several sources including the Steering Committee, the community and the District to be the most likely disaster to occur within the Beverly Hills Unified School District.

## **RISK ANALYSIS**

Risk analysis involves estimating the damage and costs likely to be experienced in a geographic area over a period of time<sup>5</sup>. Factors included in assessing earthquake risk include population and property distribution in the hazard area, the frequency of earthquake events, landslide susceptibility, buildings, infrastructure, and disaster preparedness of the region. This type of analysis can generate estimates of the damages to the region due to an earthquake event in a specific location. FEMA's software program, HAZUS, uses mathematical formulas and information about building stock, local geology and the location and size of potential earthquakes, economic data, and other information to estimate losses from a potential earthquake<sup>6</sup>. The HAZUS software is available through the City of Beverly Hills Information Technology Department but has not been run in the last years.

For greater Southern California there are multiple worst case scenarios, depending on which fault might rupture, and which communities are in proximity to the fault. But damage will not necessarily be limited to immediately adjoining communities. Depending on the hypocenter of the earthquake, seismic waves may be transmitted

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4 Burby, R. (Ed.) Cooperating with Nature: Confronting Natural Hazards with Land Use Planning for Sustainable Communities (1998), Washington D.C., Joseph Henry Press.

5 Planning for Natural Hazards: The California Technical Resource Guide, Department of Land Conservation and Development (July 2000)

6 FEMA HAZUS <http://www.fema.gov/hazus/hazus2.htm> (May 2001).

through the ground to unsuspecting communities. In the Northridge 1994 earthquake, Santa Monica suffered extensive damage, even though there was a range of mountains between it and the origin of the earthquake.

Damages for a large earthquake almost anywhere in Southern California are likely to run into the billions of dollars. Although building codes are some of the most stringent in the world, ten's of thousands of older existing buildings were built under much less rigid codes. California has laws affecting unreinforced masonry buildings (URM's) and although many building owners have retrofitted their buildings, hundreds of pre-1933 buildings still have not been brought up to current standards. The City has 121 unreinforced masonry buildings. All have been retrofitted.

Non-structural bracing of equipment and contents is often the most cost-effective type of seismic mitigation. Inexpensive bracing and anchoring may be the most cost effective way to protect expensive equipment. Non-structural bracing of equipment and furnishings will also reduce the chance of injury for the occupants of a building.

### **PEAK GROUND ACCERLERATION IN BEVERLY HILLS**

The peak acceleration is the maximum acceleration experienced by the particle attached to the earth during the course of the earthquake motion. This movement can be described by its changing position, velocity as a function of time, or by its changing acceleration as a function of time.

Although predicting an earthquake is not possible, By using Federal Emergency Management Agencies methodology (FEMA 386-2), peak ground acceleration and average return period can be identified. These results were used to approximate the amount of damage.

The calculated maximum peak ground acceleration is 0.45g within the City of Beverly Hills for a 10 percent probability of being exceeded in 50 years (which corresponds to an average return period of about 475 years)

For PGA of 0.45g, earthquake loss estimation tables provide a simplified indication of the damages to different kinds of buildings (FEMA 386-2 ).

- 20 - 27% of wood frame single family homes would be lost for 120 - 200 days
- 19 – 22% of wood frame apartment building would be lost for 130 – 220 days
- 20 – 27% of steel frame office buildings would be lost.
- 27 – 35% of reinforced masonry buildings would be lost for 65-90 days

The calculated maximum peak ground acceleration is 0.2g within the City of Beverly Hills of a 50 percent probability of being exceeded in 50 years (which corresponds to an average return period of about 72 years).

For PGA or 0.2g, earthquake loss estimation tables provide a simplified indication of the

damages to different kinds of buildings (FEMA 386-2)

- Approximately 3% of wood frame single family homes would be lost for 9 – 15 days.
- Approximately 3% of wood frame apartment building would be lost for 10 – 16 days.
- 3 - 5% of steel frame office buildings would be lost.
- 6 - 8% of reinforced masonry buildings would be lost for 10 – 20 days.

Source: FEMA 386-2 – Understanding Your Risks identifying hazards and estimating losses.

### **WHAT IS SUSCEPTIBLE TO EARTHQUAKES?**

Collapse or damage to residential and commercial buildings, schools, and lifelines due to an earthquake will result in loss of life and injury. Results from the consultant's report states that 743 of the City's 85 buildings (84%) and 1480 of the City's 1565 multifamily buildings (95%) were constructed prior to the 1976 code provisions. The consultant goes on to say that the damage or collapse of the 1565 multifamily buildings will mean approximately 10,000 dwelling units may become uninhabitable. Post-disaster services for care and temporary housing will be significant.

### **Buildings**

The built environment is susceptible to damage from earthquakes. Buildings that collapse can trap and bury people. Lives are at risk and the cost to clean up the damages is great. Horace Mann School could sustain moderate to severe damage during an earthquake because of its location in a liquefaction zone. However, the Beverly Hills Unified School District has complemented many modernization projects within the schools and has future plans to continue to upgrade buildings with modern upgrades. See Section 4 of the plan for more details on current and future safety upgrades.

### **Infrastructure and Communication**

Beverly Hills Unified School District and the City community commute frequently by automobiles and public transportation such as buses and light rail. An earthquake can greatly damage bridges and roads, hampering efforts to pick up students from school and the normal movement of people and goods. Damaged infrastructure strongly affects the community because it disconnects the BHUSD community from schools and critical everyday services. The City of Beverly Hills has created strong partnerships with the Fire and Police department to organize and effectively carry out their Emergency Operations Plan in case of an emergency. This type of planning is essential for successful emergency procedures to work effectively in the entire Beverly Hills community.

### **Damage to Lifelines**

Lifelines are the connections between communities and outside services. They include water and gas lines, transportation systems, electricity and communication networks. Ground shaking and amplification can cause pipes to break open, power lines to fall, roads and railways to crack or move, and radio and telephone communication to cease.

Disruption to transportation makes it especially difficult to bring in supplies or services. Lifelines need to be usable after earthquake to allow for rescue, recovery, and rebuilding efforts and to relay important information to the public.

### **Disruption of Critical Services**

Critical facilities include the police station, the fire stations, City Hall, all school sites and other facilities that provide important services to the community. These facilities and their services need to be functional after an earthquake event.

### **Businesses**

Seismic activity can cause great loss to businesses, both large-scale corporations and small retail shops. When a company is forced to stop production for just a day, the economic loss can be tremendous, especially when its market is at a national or global level. Seismic activity can create economic loss that presents a burden to large and small shop owners who may have difficulty recovering from their losses.

Forty percent of businesses do not reopen after a disaster and another twenty-five percent fail within one year according to the Federal Emergency Management Agency (FEMA). Similar statistics from the United States Small Business Administration indicate that over ninety percent of businesses fail within two years after being struck by a disaster<sup>7</sup>.

## **EARTHQUAKE PREPAREDNESS**

Because the potential for earthquake occurrences and earthquake related property damage is relatively high in the Beverly Hills Unified School District, increasing emergency preparedness is a significant detail. The District has several emergency preparedness trainings throughout the year for staff and students. Please see to segment *BHUSD Emergency and Safety Preparedness Programs– Existing Mitigation Strategies* in Section 2 for more on how the District prepares for an earthquake hazard.

Strapping down heavy furniture, water heaters, and heavy objects within the schools and anchoring buildings to foundations are just a few steps the District has taken to prepare for an earthquake. All new construction meet state and federal earthquake standards.

Additionally, proper training is vital in emergency situations. The BHUSD currently has a comprehensive staff training program that they implement which includes DART, Disaster Assistance Response Training, is an 8-hour, hands on program based on the Community Emergency Response Team (CERT). Please see Appendix E for more details on these trainings.

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<sup>7</sup> [http://www.chamber101.com/programs\\_committee/natural\\_disasters/DisasterPreparedness/Forty.htm](http://www.chamber101.com/programs_committee/natural_disasters/DisasterPreparedness/Forty.htm)

## **Death and Injury**

Death and injury can occur both inside and outside of District buildings due to collapsed buildings, falling equipment, furniture, debris, and structural materials. Downed power lines and broken water and gas lines can also endanger human life,

## **Fire**

Downed power lines or broken gas mains can trigger fires. This is the biggest concern in the City's high fire hazard zone. Fortunately the District has no buildings in the high fire hazard zone.

## **Debris**

After damage to a variety of structures, much time is spent cleaning up brick, glass, wood, steel or concrete building elements, office and home contents, and other materials. The City has an agreement with the old debris management company. By 2005 the City expects to have a new plan with a new commercial contractor to ensure debris removal after a disaster.

## **EXISTING MITIGATION ACTIVITIES**

Existing mitigation activities include current mitigation programs and activities that are being implemented by county, regional, state, or federal agencies or organizations. The following practices are strategies the City of Beverly Hills practices in order to protect life and property within their city borders, which includes the Beverly Hills Unified School District.

Please refer to the segment *BHUSD Emergency and Safety Preparedness Programs—Existing Mitigation Strategies* in Section 2 of this plan for further details on existing mitigation strategies the District practices.

## **CODE DEVELOPMENT**

In California, each earthquake is followed by revisions and improvements in the Building Codes. The 1933 Long Beach resulted in the Field Act, affecting school construction. The 1971 Sylmar earthquake brought another set of increased structural standards. Similar re-evaluations occurred after the 1989 Loma Prieta and 1994 Northridge earthquakes. These code changes have resulted in stronger and more earthquake resistant structures.

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. This state law was a direct result of the 1971 San Fernando Earthquake, which was associated with extensive surface fault ruptures that damaged numerous homes, commercial buildings, and other structures. Surface rupture is the most easily avoided seismic hazard<sup>8</sup>.

The Seismic Hazards Mapping Act, passed in 1990, addresses non-surface fault rupture

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<sup>8</sup> <http://www.consrv.ca.gov/CGS/rghm/ap/>

earthquake hazards, including liquefaction and seismically induced landslides<sup>9</sup>. The State Department of Conservation operates the Seismic Mapping Program for California. Extensive information is available at their website:  
<http://gmw.consrv.ca.gov/shmp/index.htm>

### City of Beverly Hills Codes

The City of Beverly Hills Community Development Department Building and Safety enforces building codes pertaining to earthquake hazards.

The City of Beverly Hills Building Code sets the minimum design and construction standards for construction. In September 2002, the City of Beverly Hills adopted the most recent California Building Code. Additionally, the following is list of seismic related amendments in the City of Beverly Hills.

**Chart 18. Seismic Building Codes**

Section	Title
1612.3.1	Basic Load combinations
1612.3.2	Alternate Basic Load combinations
1629.4.2	Near-source factor – Steel
1630.1.1	Earthquake Loads; light-frame walls
1630.4.2	Redundancy factor
1630.7	Horizontal Torsional Moments
1630.8.2.1	Elements supporting discontinued system
1630.8.2.2	Detailing requirements for Steel
1630.10.2	Story Drift
1633.2.9	Diaphragms supporting concrete or masonry walls and diaphragm chords and drag members
1701.5	Special inspection for structural welding
1702	Structural Observation
1806.6.1	Additional requirements regarding steel plate washer for anchor bolts
Division IV and V of Chapter 22	Seismic Provisions for Structural Steel buildings

- In 1989, in accordance with Senate Bill 547, buildings were surveyed and identified buildings thought to be unreinforced masonry. With the number of such buildings and the extend and severity of the risk, the City developed a mitigation program – Resolution (No. 89-R-7896) mandatory retrofit program. 121 potentially hazardous buildings were identified and have been retrofitted.

<sup>9</sup> Ibid.

- In 1986, the City contacted with the geotechnical consulting firm of Woodward-Clyde to prepare a geotechnical report on the City’s seismic hazards in order to update the Seismic Element of the City’s General Plan. .

**CALIFORNIA EARTHQUAKE MITIGATION LEGISLATION**

. Dating back to the 19<sup>th</sup> century, Californians have been killed, injured, and lost property as a result of earthquakes. As the State’s population continues to grow, and urban areas become even more densely built up, the risk will continue to increase. For decades the Legislature has passed laws to strengthen the built environment and protect the citizens. The table 1 below provides a sampling of some of the 200 plus laws in the State’s codes.

**Chart 19. Partial List of California Building Codes**

<b>Partial List of the Over 200 California Laws on Earthquake Safety</b>	
Government Code Section 8870-8870.95	Creates Seismic Safety Commission.
Government Code Section 8876.1-8876.10	Established the California Center for Earthquake Engineering Research.
Public Resources Code Section 2800-2804.6	Authorized a prototype earthquake prediction system along the central San Andreas fault near the City of Parkfield.
Public Resources Code Section 2810-2815	Continued the Southern California Earthquake Preparedness Project and the Bay Area Regional Earthquake Preparedness Project.
Health and Safety Code Section 16100-16110	The Seismic Safety Commission and State Architect will develop a state policy on acceptable levels of earthquake risk for new and existing state-owned buildings.
Government Code Section 8871-8871.5	Established the California Earthquake Hazards Reduction Act of 1986.
Health and Safety Code Section 130000-130025	Defined earthquake performance standards for hospitals.
Public Resources Code Section 2805-2808	Established the California Earthquake Education Project.
Government Code Section 8899.10-8899.16	Established the Earthquake Research Evaluation Conference.
Public Resources Code Section 2621-2630 2621.	Established the Alquist-Priolo Earthquake Fault Zoning Act.
Government Code Section 8878.50-8878.52 8878.50.	Created the Earthquake Safety and Public Buildings Rehabilitation Bond Act of 1990.
Education Code Section 35295-35297 35295.	Established emergency procedure systems in kindergarten through grade 12 in all the public or private schools.
Health and Safety Code Section 19160-19169	Established standards for seismic retrofitting of unreinforced masonry buildings.
Health and Safety Code Section 1596.80-1596.879	Required all child day care facilities to include an Earthquake Preparedness Checklist as an attachment to their disaster plan.

### **EARTHQUAKE MITIGATION STRATEGIES**

The earthquake mitigation strategies provide direction on specific activities that the Beverly Hills Unified School District plans to undertake to reduce risk and prevent loss from an earthquake event. Each strategy is a recommendation for future action which can be used by the Steering Committee and local decision makers in pursuing strategies for implementation. Refer to Section 4 for more information on Earthquake Mitigation Strategies.

## **SECTION 7 - WILDFIRE**

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**WHY WILDFIRES ARE A THREAT TO THE BEVERLY HILLS UNIFIED SCHOOL DISTRICT**

For thousands of years, fires have been a natural part of the ecosystem in Southern California. However, wildfires present a substantial hazard to life and property in communities such as Beverly Hills which are built within or adjacent to hillsides and mountainous areas. The areas in Beverly Hills most susceptible to a large and destructive wildland/urban interface fire include the areas north of Sunset Blvd., extending north to the District limits. The BHUSD has no property in these areas. There is a huge potential for losses due to wildland/urban interface fires in Southern California and Beverly Hills in particular. The narrowness of the roads, the presence of medium to heavy native fuel beds, and the high density of very large structures built in this area all contribute to the potential for disaster. These factors are exacerbated several times per year when Santa Ana wind conditions make the threat of fire even greater than normal. According to the California Division of Forestry (CDF), there were over seven thousand reportable fires in California in 2003, with over one million acres burned<sup>10</sup>. According to CDF statistics, in the October, 2003 Firestorms, over 4,800 homes were destroyed and 22 lives were lost<sup>11</sup>.

**THE 2003 SOUTHERN CALIFORNIA FIRES**

The fall of 2003 marked the most destructive wildfire season in California history. In a ten day period, 12 separate fires raged across Southern California in Los Angeles, Riverside, San Bernardino, San Diego and Ventura counties. The massive “Cedar” fire in San Diego County alone consumed of 2,800 homes and burned over a quarter of a million acres.

**Chart 20. October 2003 Firestorm Statistics**

County	Fire Name	Date Began	Acres Burned	Homes Lost	Homes Damaged	Lives Lost
Riverside	Pass	10/21/03	2,397	3	7	0
Los Angeles	Padua	10/21/03	10,446	59	0	0
San Bernardino	Grand Prix	10/21/03	69,894	136	71	0
San Diego	Roblar 2	10/21/03	8,592	0	0	0
Ventura	Piru	10/23/03	63,991	8	0	0
Los Angeles	Verdale	10/24/03	8,650	1	0	0
Ventura	Simi	10/25/03	108,204	300	11	0
San Diego	Cedar	10/25/03	273,246	2,820	63	14
San Bernardino	Old	10/25/03	91,281	1,003	7	6

<sup>10</sup> <http://www.consrv.ca.gov/CGS/rghm/ap/>

<sup>11</sup> [http://www.fire.ca.gov/php/fire\\_er\\_content/downloads/2003LargeFires.pdf](http://www.fire.ca.gov/php/fire_er_content/downloads/2003LargeFires.pdf)

San Diego	Otay / Mine	10/26/03	46,000	6	11	0
Riverside	Mountain	10/26/03	10,000	61	0	0
San Diego	Paradise	10/26/03	56,700	415	15	2
Total Losses			749,401	4,812	185	22

Source: [http://www.fire.ca.gov/php/fire\\_er\\_content/downloads/2003LargeFires.pdf](http://www.fire.ca.gov/php/fire_er_content/downloads/2003LargeFires.pdf)

## HISTORY OF FIRES IN SOUTHERN CALIFORNIA

The last large wildland fire adjacent to the BHUSD occurred in Franklin Canyon over 50 years ago. However, from September 28 through October 7 of 2005 the Topanga Fire burned over 24,175 acres and destroyed 13 structures<sup>12</sup>.

Large fires have always been part of the Southern California landscape. “Written documents reveal that during the 19th century human settlement of southern California altered the fire regime of coastal California by increasing the fire frequency. This was an era of very limited fire suppression, and yet like today, large crown fires covering tens of thousands of acres were not uncommon. One of the largest fires in Los Angeles County (60,000 acres) occurred in 1878, and the largest fire in Orange County’s history, in 1889, was over half a million acres.”<sup>13</sup>

**Chart 21. Large Historic Fires in California 1961-2003**

	Fire Name	Date	County	Acres	Structures	Deaths
1	Tunnel	October 1991	Alameda	1,600	2,900	25
2	Cedar	October 2003	San Diego	273,246	2,820	14
3	Old	October 2003	San Bernardino	91,281	1,003	6
4	Jones	October 1999	Shasta	26,200	954	1
5	Paint	June 1990	Santa Barbara	4,900	641	1
6	Fountain	August 1992	Shasta	63,960	636	0
7	City of Berkeley	September 1923	Alameda	130	584	0
8	Bel Air	November 1961	Los Angeles	6,090	484	0
9	Laguna Fire	October 1993	Orange	14,437	441	0
10	Paradise	October 2003	San Diego	56,700	415	2

<sup>12</sup> California Department of Forestry and Fire 2005 Wildland Fire Summary. [http://www.fire.ca.gov/php/about\\_content/downloads/2005Summary.pdf](http://www.fire.ca.gov/php/about_content/downloads/2005Summary.pdf)

<sup>13</sup> Ibid.

11	Laguna	September 1970	San Diego	175,425	382	5
12	Panorama	November 1980	San Bernardino	23,600	325	4
13	Topanga	November 1993	Los Angeles	18,000	323	3
14	49er	September 1988	Nevada	33,700	312	0
15	Simi	October 2003	Ventura	108,204	300	0
16	Sycamore	July 1977	Santa Barbara	805	234	0
17	Canyon	September 1999	Shasta	2,580	230	0
18	Kannan	October 1978	Los Angeles	25,385	224	0
19	Kinneloa	October 1993	Los Angeles	5,485	196	1
19	Grand Prix	October 2003	San Bernardino	59,448	196	0

"Structures" is meant to include all loss - homes and outbuildings, etc.

Source: <http://www.fire.ca.gov/FireEmergencyResponse/HistoricalStatistics/PDF/20LSTRUCTURES.pdf>

During the 2005 fire season, more than 74,004 acres of public and private lands burned in the California, resulting in loss of property, damage to resources and disruption of community services<sup>14</sup>. Many of these fires burned in wildland/urban interface areas and exceeded the fire suppression capabilities of those areas. Chart 22 illustrates fire suppression costs for state, private and federal lands.

**Chart 22. National Fire Suppression Costs**

Year	Suppression Costs	Acres Burned	Structures Burned
2000	\$1.3 billion	8,422,237	861
2001	\$0.5 billion	3,570,911	731
2002	\$1.6 billion	6,937,584	815

Source: [http://research.yale.edu/gisf/assets/pdf/ppf/wildfire\\_report.pdf](http://research.yale.edu/gisf/assets/pdf/ppf/wildfire_report.pdf)

## CAUSES AND CHARACTERISTICS OF WILDFIRES IN SOUTHERN CALIFORNIA AND BEVERLY HILLS

According to the preceding chart, there are three categories of interface fire. The classic wildland/urban interface exists where well-defined urban and suburban development presses up against open expanses of wildland areas; the mixed wildland/urban interface is characterized by isolated homes, subdivisions and small communities situated predominantly in wildland settings; and the occluded wildland/urban interface exists where islands of wildland vegetation occur inside a largely urbanized area. Certain conditions must be present for significant interface fires to occur. The most common conditions include: hot, dry and windy weather; the inability of fire protection forces to

<sup>14</sup> Ibid.

contain or suppress the fire; the occurrence of multiple fires that overwhelm committed resources; and a large fuel load (dense vegetation). Once a fire has started, several conditions influence its behavior, including fuel topography, weather, drought and development.

Southern California has two distinct areas of risk for wildland fire. The foothills and lower mountain areas are most often covered with scrub brush or chaparral. The higher elevations of mountains also have heavily forested terrain. The lower elevations covered with chaparral create one type of exposure.

The higher elevations of Southern California's mountains are typically heavily forested. The magnitude of the 2003 fires is the result of three primary factors: (1) severe drought, accompanied by a series of storms that produce thousands of lightning strikes and windy conditions; (2) an infestation of bark beetles that has killed thousands of mature trees; and (3) the effects of wildfire suppression over the past century that has led to buildup of brush and small diameter trees in the forests.

### **WILDFIRE HAZARD IDENTIFICATION**

The City of Beverly Hills faces an ongoing threat from wildfires along its hillsides and mountainous areas where wildland and residential areas interface. Fires can be sparked by human activity and natural causes. The next section will further describe the areas in which the hazard can occur.

### **THE INTERFACE**

Beverly Hills is like many Southern California communities that are challenged by the increasing number of houses being built on the urban/wildland interface. The National Wildland Coordinating Group defines urban/wildland interface as "the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuel.

In 1992, Assembly Bill -337, known as the "Bates Bill", required all cities and counties in California to identify within their communities "The Very High Wildland Fire Hazard Severity Zones" or VHFHSZ.

In Beverly Hills, this VHFHSZ was identified as all of the area north of Sunset Boulevard and extending north to the City and District limits. However, the BHUSD has no property in these areas. This is a densely populated area with homes embedded in natural and landscaped vegetation. A total of 1640 parcels fall within this area for a total valuation of 2.99 billion dollars.

Once the City of Beverly Hills identified this VHFHSZ and submitted it to the California Department of Forestry and Fire Protection, the state required that an ordinance be passed covering the following elements in the identified zone:

- ◆ Minimum standards on roof coverings

- ◆ Minimum standards on clearances around occupied dwellings by removal of combustible vegetation
- ◆ Minimum standards on clearances of tree limbs around chimneys
- ◆ Regulations regarding the maintenance of trees and their litter on and around structures

When passing the ordinance, Beverly Hills chose to exceed the minimum requirements set forth by the state.

## **THE THREAT OF URBAN CONFLAGRATION**

Although communities without an urban/wildland interface are much less likely to experience a catastrophic fire, in Southern California there is a scenario where any community might be exposed to an urban conflagration similar to the fires that occurred following the 1906 San Francisco earthquake.

“Large fires following an earthquake in an urban region are relatively rare phenomena, but have occasionally been of catastrophic proportions. The two largest peace-time urban fires in history, 1906 San Francisco and 1923 Tokyo, were both caused by earthquakes.

The fact that fire following earthquake has been little researched or considered in the United States is particularly surprising when one realizes that the conflagration in San Francisco after the 1906 earthquake was the single largest urban fire, and the single largest earthquake loss, in U.S. history. The loss over three days of more than 28,000 buildings within an area of 12 km<sup>2</sup> was staggering: \$250 million in 1906 dollars, or about \$5 billion at today’s prices.

The 1989 Loma Prieta Earthquake, the 1991 Oakland hills fire, and Japan’s recent Hokkaido Nansei-oki Earthquake all demonstrate the current, real possibility of a large fire, such as a fire following an earthquake, developing into a conflagration. In the United States, all the elements that would hamper fire-fighting capabilities are present: density of wooden structures, limited personnel and equipment to address multiple fires, debris blocking the access of fire-fighting equipment, and a limited water supply.”<sup>15</sup>

This scenario highlights the need for fire mitigation activity in all sectors of the region, urban/wildland interface or not. Beverly Hills could conceivably experience such a fire in the areas outside of the VHFHSZ either as a result of an earthquake or some other phenomenon. Possible scenarios include a disruption in the water system that could allow a normally controllable structure fire to escape containment by fire forces and spread to adjoining buildings. Another scenario is a fire that starts in the flatlands and could be

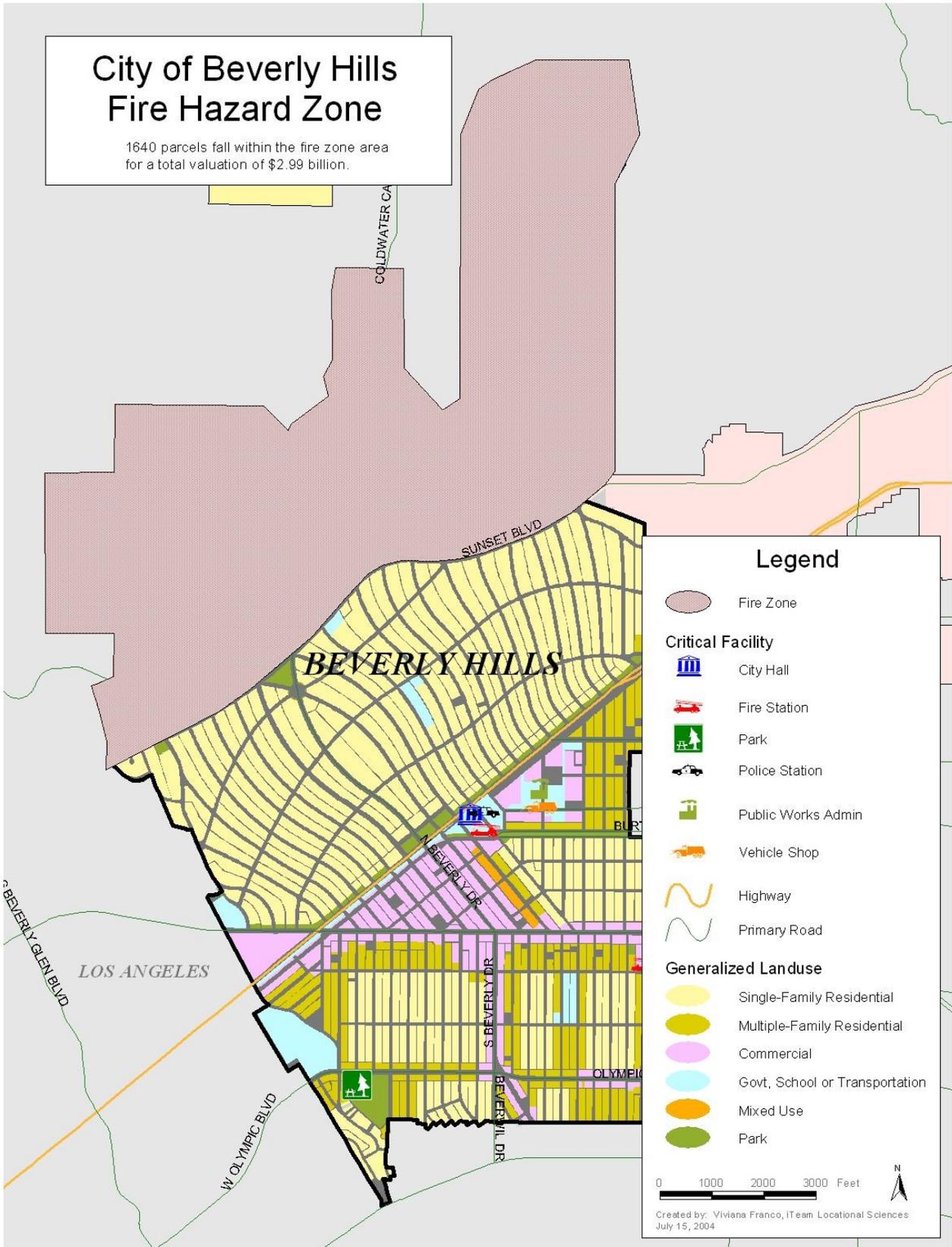
<sup>15</sup> Planning for Natural Hazards: The Oregon Technical Resource Guide, (July 2000) Department of Land Conservation and Development

wind driven from the roof of one building to the roofs of adjoining buildings. In the area outside the VHFHSZ, many wood shake or shingle roofs exist and there is a potential for fires being driven from roof to roof faster than firefighting efforts can keep up under strong Santa Ana wind conditions.

Other large dollar loss or large life loss fire potential exists within the City as well. Beverly Hills is home to 3 very large hotels having occupancies in excess of 500 persons per day, 32 High Rise buildings, and a densely populated retail and commercial district. Of particular concern are two High Rise buildings that are residential occupancies and did not fall under the 1998 retrofit sprinkler mandate imposed on buildings 55 feet or higher. These are the only two High Rise buildings in the City of Beverly Hills that are not set up with sprinkler systems and no plans exist to install the systems.

Identifying the hazard area as set forth above is the first step in assessing the City's vulnerability to wildland fires. Other key factors in assessing wildfire risk include ignition sources, building materials and design, community design, structural density, slope, vegetative fuel, fire occurrence and weather, as well as occurrences of drought. These factors can affect how quick a fire can spread.

**Map 10. Fire Hazards Zones**



## **Fuel**

Fuel is the material that feeds a fire and is a key factor in wildfire behavior. Fuel is classified by volume and by type. Volume is described in terms of “fuel loading,” or the amount of available vegetative fuel.

The type of fuel also influences wildfire. Like much of Southern California, chaparral is a primary fuel prevalent in Beverly Hills along with grasses, non-native vegetation and large trees such as Junipers, Palm, Eucalyptus and Pines. All of these fuel types are highly combustible. Added to this is the fact that a large percentage of the fuel beds in the Santa Monica Mountains contain dead and down vegetation. This “die back” condition as it is known is due largely to drought conditions that have been experienced in recent years. This condition makes these fuel beds far more receptive to ignition and spread of wildfires than if the vegetation were alive and healthy. This type of fuel model is of particular concern when the fires are wind driven as it can lead to short and long range spotting which can affect the entire city, not just the VHFHSZ.

An important element in understanding the danger of wildfire is the availability of diverse fuels in the landscape, such as natural vegetation, manmade structures and combustible materials. A house surrounded by brushy growth rather than cleared space allows for greater continuity of fuel and increases the fire’s ability to spread. After decades of fire suppression “dog-hair” thickets have accumulated, which enable high intensity fires to flare and spread rapidly.

## **TOPOGRAPHY**

Topography influences the movement of air, thereby directing a fire course. For example, if the percentage of uphill slope doubles, the rate of spread in wildfire will likely double. Gulches and canyons can funnel air and act as chimneys, which intensify fire behavior and cause the fire to spread faster. Unfortunately, hillsides with hazardous topographic characteristics are also desirable, residential areas in many communities. This underscores the need for wildfire hazard mitigation and increased education and outreach to homeowners living in interface areas. The areas above Sunset Boulevard, east of Benedict Canyon Dr, and extending to the eastern City limit contain all of the topographic features mentioned above. Another area of concern in Beverly Hills is that most of the developed area in the City is on south facing slopes. Southern facing slopes are exposed to more thermal heating by the sun and fires will start and spread more readily due to the pre-heated condition of the fuel and the lower fuel moisture content. Numerous canyons, saddles, and ridges in the VHFHSZ will also contribute to erratic fire behavior due to the funnel and subsequent acceleration effect it will have on wind traveling through the area.

## **WEATHER**

Weather patterns combined with certain geographic locations can create a favorable climate for wildfire activity. Areas where annual precipitation is less than 30 inches per

year are extremely fire susceptible<sup>16</sup>. High-risk areas in Southern California share a hot, dry season in late summer and early fall when high temperatures and low humidity favor fire activity. The “Santa Ana” winds, which are heated by compression as they flow down to Southern California from Utah create a particularly high risk, as they can rapidly spread what might otherwise be a small fire.

Beverly Hills experiences Santa Ana Wind conditions typically in the Fall months and this poses a threat in two ways. A fire starting in Beverly Hills will spread rapidly and has the potential of overwhelming initial attack forces and destroying structures within minutes of ignition. A fire starting adjacent to Beverly Hills in the City of Los Angeles could quickly burn into the City boundaries either by direct flame contact or by fire brands being carried by the winds and spotting onto structures or combustible vegetation. Wind bends the flames to pre-heat the fuel ahead and can carry fire brands up to ¼ mile or more ahead of the flame front. The majority of catastrophic fires that Southern California has experienced have occurred in the months of September, October, and November when Santa Ana Winds typically occur. Wind is considered to be the primary factor that influences fire spread.

## **DROUGHT**

Recent concerns about the effects of climate change, particularly drought, are contributing to concerns about wildfire vulnerability. The term drought is applied to a period in which an unusual scarcity of rain causes a serious hydrological imbalance. Unusually dry winters, or significantly less rainfall than normal, can lead to relatively drier conditions and leave reservoirs and water tables lower. Drought leads to problems with irrigation and may contribute to additional fires, or additional difficulties in fighting fires. Southern California is currently in its sixth year of drought conditions.

## **DEVELOPMENT**

Growth and development in scrubland and forested areas is increasing the number of human-made structures in Southern California interface areas. Wildfire has an effect on development, yet development can also influence wildfire. Owners often prefer homes that are private, have scenic views, are nestled in vegetation and use natural materials. A private setting may be far from public roads, or hidden behind a narrow, curving driveway. These conditions, however, make evacuation and fire fighting difficult. The scenic views found along mountain ridges can also mean areas of dangerous topography. Natural vegetation contributes to scenic beauty, but it may also provide a ready trail of fuel leading a fire directly to the combustible fuels of the home itself. Narrow and winding roads in these developed areas tend to make evacuation of civilians slow and difficult especially when fire resources are trying to gain access to the area utilizing the same roads. The development in Beverly Hills in the VHFHSZ is exemplified by the above description, however is complicated by the presence of very large homes, very often exceeding 10,000 square feet in livable area. Most of the new development in this

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<sup>16</sup> . Planning for Natural Hazards: The Oregon Technical Resource Guide, (July 2000), Department of Land Conservation and Development

zone involves the removal of smaller structures in order to build much larger structures in their place.

**WILDFIRE IDENTIFICATION**

Wildfire hazard areas are commonly identified in regions of the wildland/urban interface. Ranges of the wildfire hazard are further determined by the ease of fire ignition due to natural or human conditions and the difficulty of fire suppression. The wildfire hazard is also magnified by several factors related to fire suppression/control such as the surrounding fuel load, weather, topography and property characteristics. Generally, hazard identification rating systems are based on weighted factors of fuels, weather and topography.

Chart 23 illustrates a rating system to identify wildfire hazard risk (with a score of 3 equaling the most danger and a score of 1 equaling the least danger.)

**Chart 23. Sample Hazard Identification Rating System**

<b>Category</b>	<b>Indicator</b>	<b>Rating</b>
Roads and Signage	Steep; narrow; poorly signed	3
	One or two of the above	2
	Meets all requirements	1
Water Supply	None, except domestic	3
	Hydrant, tank, or pool over 500 feet away	2
	Hydrant, tank, or pool within 500 feet	1
Location of the Structure	Top of steep slope with brush/grass below	3
	Mid-slope with clearance	2
	Level with lawn, or watered groundcover	1
Exterior Construction	Combustible roofing, open eaves, Combustible siding	3
	One or two of the above	2
	Non-combustible roof, boxed eaves, non-combustible siding	1

In order to comply with the Bates Bill, in 1992 the City of Beverly Hills and the Beverly Hills Fire Department completed an evaluation of the following factors to determine the areas within City boundaries which would qualify as a Very High Wildland Fire Hazard Severity Zone.

- ◆ Fuel
- ◆ Topography
- ◆ Dwelling density
- ◆ Weather

- ◆ Infrastructure
- ◆ Fire codes and ordinances as they relate to brush issues

Each factor was given a value of 1-4 with a 4 being the highest danger rating. Any total score over 10 qualified the area as being one of VHFHSZ. Each of the three areas evaluated rated 10 or above with the highest area receiving a 12.

In order to determine the "base hazard factor" of specific wildfire hazard sites and interface regions, several factors must be taken into account. Categories used to assess the base hazard factor include:

- Topographic location, characteristics and fuels;
- Site/building construction and design;
- Site/region fuel profile (landscaping);
- Defensible space;
- Accessibility;
- Fire protection response; and
- Water availability.

The use of Geographic Information System (GIS) technology in recent years has been a great asset to fire hazard assessment, allowing further integration of fuels, weather and topography data for such ends as fire behavior prediction, watershed evaluation, mitigation strategies and hazard mapping.

## **RISK ANALYSIS**

Southern California residents are served by a variety of local fire departments as well as county, state and federal fire resources. Data that includes the location of interface areas in the county can be used to assess the population and total value of property at risk from wildfire and direct these fire agencies in fire prevention and response.

Key factors included in assessing wildfire risk include ignition sources, building materials and design, community design, structural density, slope, vegetative fuel, fire occurrence and weather, as well as occurrences of drought.

The National Wildland/Urban Fire Protection Program has developed the Wildland/Urban Fire Hazard Assessment Methodology tool for communities to assess their risk to wildfire. For more information on wildfire hazard assessment refer to <http://www.Firewise.org>.

## **WHAT IS SUSCEPTIBLE TO WILDFIRE**

The hills and mountainous areas of Southern California are considered to be interface areas. The development of homes and other structures is encroaching onto the wildlands and is expanding the wildland/urban interface. The interface neighborhoods are characterized by a diverse mixture of varying housing structures, development patterns, ornamental and natural vegetation and natural fuels.

In the event of a wildfire, vegetation, structures and other flammables can merge into unwieldy and unpredictable events. Factors important to the fighting of such fires include access, firebreaks, proximity of water sources, distance from a fire station and available firefighting personnel and equipment. Reviewing past wildland/urban interface fires shows that many structures are destroyed or damaged for one or more of the following reasons:

- Combustible roofing material;
- Wood construction;
- Structures with no defensible space;
- Fire department with poor access to structures;
- Subdivisions located in heavy natural fuel types;
- Structures located on steep slopes covered with flammable vegetation;
- Limited water supply; and
- Winds over 30 miles per hour.

A fire starting in the VHFHSZ has the potential to grow to devastating proportions which would destroy a great number of homes, infrastructure facilities, natural habitat, but more importantly, it has the potential for taking many lives. The “Tunnel” fire in the East Bay Hills (Oakland) in 1991 would be the best example of the type of fire potential that exists here in the city. That fire took 25 lives and destroyed over 3,500 dwelling units within a matter of a few hours. Beyond the impact of the loss of life, there will be significant and far reaching economic impacts on the community as it recovers and rebuilds in the aftermath of such a fire.

### **Road Access**

Road access is a major issue for all emergency service providers. As development encroaches into the rural areas of the county, the number of houses without adequate turn-around space is increasing. In many areas, there is not adequate space for emergency vehicle turnarounds in single-family residential neighborhoods, causing emergency workers to have difficulty doing their jobs because they cannot access houses. As fire trucks are large, firefighters are challenged by narrow roads and limited access. When there is inadequate turn around space, the fire fighters can only work to remove the occupants, but cannot safely remain to save the threatened structures.

### **Water Supply**

Water supply, both in terms of volume and pressure, is always a critical factor in fighting fires and particularly in keeping fires in the wildland/urban interface areas manageable by initial attack forces. Generally speaking the water supply to most areas of the Beverly Hills area is very good, however an area of concern is the area served by Zone 9. This area is known to have insufficient fire flow and plans are being developed to improve the flow capacity and reliability to this area. Fire fighters in remote and rural areas are faced by limited water supply and lack of hydrant taps. Rural areas are characteristically outfitted with small diameter pipe water systems, inadequate for providing sustained fire fighting flows.

## **EXISTING MITIGATION ACTIVITIES**

Existing mitigation activities include current mitigation programs and activities that are being implemented by county, regional, state, or federal agencies or organizations. The following practices are strategies the City of Beverly Hills practices in order to protect life and property within their city borders, which includes the Beverly Hills Unified School District.

Please refer to the segment *BHUSD Emergency and Safety Preparedness Programs—Existing Mitigation Strategies* in Section 2 of this plan for further details on existing mitigation strategies the District practices.

### **Monthly District Drills**

The Beverly Hills Unified School District performs monthly fire drills in order to be as prepared as possible for a fire emergency.

### **Weed Abatement Programs**

Beverly Hills Fire Department maintains an aggressive annual Brush Clearance Inspection program. Mailings to residents begin in early May and physical inspections begin in early July. Properties who have not complied with clearance requirements are ultimately referred to the City of Beverly Hills prosecutor's office. The City has also utilized mailings, WebPages, and local cable television programs as an integral part in educating the public of the need for brush clearance, non-combustible roofing, and pre-established evacuation routes.

### **Pre-Attack Plans**

For the high-hazard zone, the Beverly Hills Fire Department has developed a set of "Pre-Attack Plans" that enable the fire suppression resources to locate combustible roofs, evacuation routes, and safe refuge areas and Resident Assemblage Points. These plans are a great asset in helping firefighting forces make critical decisions during emergency situations. The plans are also made available to outside agencies who are called for Mutual Aid assistance and that may not be familiar with the area. These plans are reviewed annually by all personnel and updated every year.

### **Remote Automated Weather Station (RAWS)**

In 1998 Beverly Hills became part of the National Fire Weather Danger Rating System by installing a Remote Automated Weather Station (RAWS) just outside the City in Franklin Canyon. This RAWS is tied into other weather stations located throughout L.A. County that provide weather data that is analyzed by a computer which then gives a numerical value to the fire weather danger in Beverly Hills and for L.A. County communities. The RAWS also allows the Beverly Hills Fire Department to monitor its microclimate on demand when needed. Data from this RAWS assists fire officials in determining the need for augmenting or redeploying fire resources depending on current and anticipated weather conditions.

### **Red Flag Engine Program**

Since the addition of the RAWs, the Beverly Hills Fire Department has instituted a Red Flag Engine Program whereby the firefighting resources are augmented in the VHFHSZ on days where the fire weather danger is extremely high. The program calls for hiring additional personnel to staff an engine company which is then housed at Fire Station 2 for the duration of the extreme danger period. In addition to staffing the additional engine company, pre-designated streets which normally allow parking, are posted as no parking zones to allow for ingress of fire resources and egress of civilian traffic.

The Beverly Hills Fire Department provides ongoing community education with the following programs:

- Annual Occupancy Inspections for all public, commercial and R-1 & R-3 occupancies
- CERT (Citizen Emergency Response Team) training

The Beverly Hills Fire Department educates the public in terms of Fire and Life Safety by providing the following special programs upon request:

- Fire Safety Education Programs that consist of the following:
  - Local cable television education and informational programs are shown throughout the year, but most often during the months considered to be fire season. A video has been produced warning citizens of the danger of wildland fires and provides information as to how to prevent them and how to react should one start
  - Mailings such as the RSVP Program which educates the public on fire retardant roofs, seismic awareness, vegetation management, and overall preparedness.
  - Informational brochures have also been prepared and are distributed informing citizens about the need for evacuation plans and tips on home protection.
  - Disaster Assistance Programs that are taught to Beverly Hills employees
  - Fire Safety and Prevention in schools

### **Teleminder System**

To assist in the notification and early warning of the residents in the high-hazard zone, an automated computer dialing system called Teleminder is used. This system can make hundreds of calls to a geographical area within minutes and will broadcast a customized message to whomever, or whatever answers the phone.

### **LOCAL FIRE CODES**

The following codes have been adopted and are applied to the northern areas of the community which have been deemed the VHFHSZ.

#### **Section 103 is hereby amended by adding section 103.4.8 as follows:**

Section 103.4.8 Very High Fire Hazard Severity Zone.

A Very High Fire Hazard Severity Zone (VHFHSZ) is hereby established and declared to be those districts and areas included within the boundaries described and set forth in a map maintained by the Chief on file in the office of the Fire Marshal.

**Appendix II-A, Section 16.1, is hereby amended as follows:**

Appendix II-A, Section 16.1(1-5) Clearance of Brush or Vegetative Growth from Structures.

A. All native brush, weeds, grass and hazardous vegetation situated within one hundred (100') feet of ANY structure, regardless of whether said structure is located upon such land or upon adjacent land shall be maintained at a height of not more than three (3") inches above the ground.

B. All native brush, weeds, grass and hazardous vegetation within ten (10') feet of any combustible fence shall be maintained at a height of not more than three (3") inches above the ground.

C. All trees, shrubs, bushes, and other growing vegetation or portions thereof, adjacent to or overhanging any structure shall be kept free of dead limbs, branches, and other combustible matter.

D. All trees shall be trimmed up five (5') feet from the ground and maintained so that no portion is closer than ten (10') feet from the outlet of any chimney.

E. All roof structures shall be kept free of substantial accumulations of leaves, needles, twigs, and other combustible matter.

F. ALL CUT VEGETATION AND DEBRIS SHALL BE REMOVED AND LEGALLY DISPOSED OF. All vegetation, native or otherwise, shall be maintained so as not to constitute a fire hazard or public nuisance.

Exception: Specimen native shrubs can be retained throughout the 100 feet provided they are: spaced at a distance not less than eighteen (18') feet from other native shrubs, brush or structures; maintained free of dead wood and litter; and trimmed up at least two (2') feet from the ground or 1/3 of their height, whichever is less.

G. If the Fire Chief determines in any specific case that difficult terrain, danger of erosion, or other unusual circumstances make strict compliance with the clearance of vegetation provisions of this section undesirable or impractical, he may suspend the enforcement thereof and require reasonable alternative measures.

**Appendix II-A, Section 17, is hereby amended as follows:**

Appendix II-A, Section 17 - Clearance of Brush or Vegetative Growth from Roadways.

All native brush, weeds, grass and hazardous vegetation situated within ten (10') feet of the outer edge or edges of the usable road surface of any highway, street, alley or driveway serving more than one residence shall be maintained at a height of not more than three (3") inches above the ground.

**Section 1003.2.1 is hereby amended as follows:**

Section 1003.2.1 New buildings.

An automatic fire extinguishing system shall be required for all occupancies, except U-1 occupancies which are sheds of less than five hundred (500) square feet and agricultural buildings. Systems for R-3 occupancies shall comply with the "N.F.P.A. Standard No. 13D for Residential Sprinkler Systems for One and Two Family Dwellings", 1999 Edition, and systems for all other occupancies shall comply with the "N.F.P.A. Standard No. 13 for Installation of Sprinkler Systems", 1999 Edition.

**Section 1003.2.1.1 is hereby added as follows:**

Section 1003.2.1.1 Existing buildings.

(1) All existing buildings, except R-1 occupancy cooperatives, apartments, and condominiums, having a usable floor area of five (5) stories, or which exceed a height of fifty-five (55) feet, shall have an automatic fire extinguishing system in compliance with section 1003.2 installed and operational not later than September 1, 1991. "Height," for purposes of this Section, is defined in Section 10-3.100 of Title 10 of the Beverly Hills Municipal Code.

(2) Any existing building which is not required to have an automatic fire extinguishing system pursuant to subparagraph (1) of section 1003.2.1.1 shall install an automatic fire-extinguishing system in compliance with section 1003.2.1 if: (i) additions, alterations or repairs are made within any twelve (12) month period which exceed fifty percent (50%) of the value of such existing building, (ii) an addition is constructed which exceeds fifty percent (50%) of the square footage of the existing building, or (iii) an addition of more than five thousand (5,000) square feet is constructed.

**Section 1503.4 is hereby added to the California Building Code as follows:**

1503.4 Class A roof covering requirement.

Notwithstanding any other requirement of the Beverly Hills Municipal Code, no later than July 1, 2013, all roof coverings in the City of Beverly Hills shall be fire retardant Class A, as classified in Section 1504.

**FEDERAL PROGRAMS**

The role of the federal land managing agencies in the wildland /urban interface is reducing fuel hazards on the lands they administer; cooperating in prevention and education programs; providing technical and financial assistance; and developing agreements, partnerships and relationships with property owners, local protection agencies, states and other stakeholders in wildland/urban interface areas. These relationships focus on activities before a fire occurs, which render structures and communities safer and better able to survive a fire occurrence.

## **Federal Emergency Management Agency (FEMA) Programs**

FEMA is directly responsible for providing fire suppression assistance grants and, in certain cases, major disaster assistance and hazard mitigation grants in response to fires. The role of FEMA in the wildland /urban interface is to encourage comprehensive disaster preparedness plans and programs, increase the capability of state and local governments and provide for a greater understanding of FEMA programs at the federal, state and local levels<sup>17</sup>.

### **Fire Suppression Assistance Grants**

Fire Suppression Assistance Grants may be provided to a state with an approved hazard mitigation plan for the suppression of a forest or grassland fire that threatens to become a major disaster on public or private lands. These grants are provided to protect life and improved property and encourage the development and implementation of viable multi-hazard mitigation measures and provide training to clarify FEMA's programs. The grant may include funds for equipment, supplies and personnel. A Fire Suppression Assistance Grant is the form of assistance most often provided by FEMA to a state for a fire. The grants are cost-shared with states. FEMA's US Fire Administration (USFA) provides public education materials addressing wildland/urban interface issues and the USFA's National Fire Academy provides training programs.

### **Hazard Mitigation Grant Program**

Following a major disaster declaration, the FEMA Hazard Mitigation Grant Program provides funding for long-term hazard mitigation projects and activities to reduce the possibility of damages from all future fire hazards and to reduce the costs to the nation for responding to and recovering from the disaster.

### **National Wildland/Urban Interface Fire Protection Program**

Federal agencies can use the National Wildland/Urban Interface Fire Protection Program to focus on wildland/urban interface fire protection issues and actions. The Western Governors' Association (WGA) can act as a catalyst to involve state agencies, as well as local and private stakeholders, with the objective of developing an implementation plan to achieve a uniform, integrated national approach to hazard and risk assessment and fire prevention and protection in the wildland/urban interface. The program helps states develop viable and comprehensive wildland fire mitigation plans and performance-based partnerships.

### **U.S. Forest Service**

The U. S. Forest Service (USFS) is involved in a fuel-loading program implemented to assess fuels and reduce hazardous buildup on forest lands. The USFS is a cooperating agency and, while it has little to no jurisdiction in the lower valleys, it has an interest in preventing fires in the interface, as fires often burn up the hills and into the higher elevation US forest lands.

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<sup>17</sup> <http://www.eqe.com/publications/revf93/firefoll.htm>

## **OTHER MITIGATION PROGRAMS AND ACTIVITIES**

Some areas of the country are facing wildland/urban issues collaboratively. These are model programs that include local solutions. Summit County, Colorado, has developed a hazard and risk assessment process that mitigates hazards through zoning requirements. In California, the Los Angeles County Fire Department has retrofitted more than 100 fire engines with fire retardant foam capability and Orange County is evaluating a pilot insurance grading and rating schedule specific to the wildland/urban interface. All are examples successful programs that demonstrate the value of pre-suppression and prevention efforts when combined with property owner support to mitigate hazards within the wildland/urban interface.

### **Prescribed Burning**

The health and condition of a forest will determine the magnitude of wildfire. If fuels - slash, dry or dead vegetation, fallen limbs and branches - are allowed to accumulate over long periods of time without being methodically cleared, fire can move more quickly and destroy everything in its path. The results are more catastrophic than if the fuels are periodically eliminated. Prescribed burning is the most efficient method to get rid of these fuels. In California during 2003, various fire agencies conducted over 200 prescribed fires and burned over 33,000 acres to reduce the wildland fire hazard.

## **POSSIBLE WILDFIRE MITIGATION ACTIVITIES**

Recently, the area in the VHFHSZ underwent an assessment by the Firewise Communities USA program. From this assessment, a series of recommendations will be considered by a council formed by community members. This committee will also be responsible for enacting the recommendations and shepherding them through the various processes that are required.

### **Firewise**

Firewise is a program developed within the National Wildland/ Urban Interface Fire Protection Program and it is the primary federal program addressing interface fire. It is administered through the National Wildfire Coordinating Group whose extensive list of participants includes a wide range of federal agencies. The program is intended to empower planners and decision makers at the local level. Through conferences and information dissemination, Firewise increases support for interface wildfire mitigation by educating professionals and the general public about hazard evaluation and policy implementation techniques. Firewise offers online wildfire protection information and checklists, as well as listings of other publications, videos and conferences. The interactive home page allows users to ask fire protection experts questions and to register for new information as it becomes available.

The Firewise Communities/USA program is designed to provide an effective management approach for preserving wildland living aesthetics. The program can be tailored for adoption by any community and/or neighborhood association that is committed to ensuring its citizens maximum protection from wildland fire. The program

begins with a community assessment that is intended to be used as a resource to create a wildland protection plan. The plan developed from the information in this assessment should be implemented in a collaborative manner and will be updated and modified as needed. This assessment was conducted in early May of 2004 and the plan was delivered to the department in June. The plan is currently under review and consideration for adoption. Some of the highlighted mitigation strategies that have been identified are as follows:

- ◆ Replacement of flammable wood roofs - Currently and ordinance requires that all non Class A roof coverings be replaced by the year 2013. An accelerated plan for replacement of these roofs will make the community safer, sooner.
- ◆ Residents must be vigilant in removing accumulations of dead foliage and needles from roofs and around structures.
- ◆ Eucalyptus is a popular landscaping choice in the assessment area and while these trees themselves are not a significant fire problem, the material they shed is a significant hazard. The dead material that these trees shed can contribute to home ignition potential and needs to be cleared on a consistent basis.
- ◆ Other trees such as mimosa, sycamore, walnuts and palms also need annual grooming. Of particular concern is palm tree beards which are easily ignited by flying fire brands. These trees, whether on public or private property need to be groomed on an annual basis.

Another strategy not mentioned in the report, but that could prove significant in the fire department's ability to save structures is to increase the brush clearance requirements. The current ordinance calls for clearance of 100 feet around structures in the VHFHSZ. Many communities have increased this distance to 200 feet. This distance is considered to be the "defensible space" that allow fire departments to safely deploy resources with a reasonable expectation that the structure can be saved. In those communities that have experienced fires where 200 feet is the rule, the fire department has been far more successful in saving the structures threatened even by the worst wind driven fires. Fuel modification/removal programs should also be considered in those areas that due to build up of dead and live fuels combined with topographical features pose the greatest threat to individual structures or the neighborhood. These programs may include prescription burns, use of a "brush crushing" machine or simple removal by tractors or hand crews.

The wildfire mitigation action items provide direction on specific activities that organizations and residents in Southern California can undertake to reduce risk and prevent loss from wildfire events. Each action item is followed by ideas for implementation, which can be used by the steering committee and local decision makers in pursuing strategies for implementation. Enhance emergency services to increase the efficiency of wildfire response and recovery activities.

## **WILDFIRE MITIGATION STRATEGIES**

As stated in the Federal Wildland Fire Policy, “The problem is not one of finding new solutions to an old problem but of implementing known solutions. Deferred decision making is as much a problem as the fires themselves. If history is to serve us in the resolution of the wildland/urban interface problem, we must take action on these issues now. To do anything less is to guarantee another review process in the aftermath of future catastrophic fires.”<sup>18</sup>

### **FIRE MITIGATION STRATEGIES**

The fire mitigation strategies provide direction on specific activities that the Beverly Hills Unified School District plans to undertake to reduce risk and prevent loss from a fire event. Each strategy is a recommendation for future action which can be used by the Steering Committee and local decision makers in pursuing strategies for implementation. Refer to Section 4 for more information on Fire Mitigation Strategies.

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<sup>18</sup> <http://www.fs.fed.us/land/wdfire7c.htm>

## **SECTION 8 - TERRORISM**

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## **WHY IS TERRORISM A THREAT TO THE BEVERLY HILLS UNIFIED SCHOOL DISTRICT**

Terrorism has touched the U.S. at several locations over the years. After the September 11, 2001 World Trade Center airplane bombing, citizens no longer viewed terrorism as just a foreign problem. In recent years, terrorism has taken on new form with the introduction of chemical, biological, and radiological weapons.

Terrorism is a continuing threat throughout the world and within the United States. A variety of political, social, religious, cultural, and economic factors underlie terrorist activities. Terrorists target civilian targets to spread their message or communicate dissatisfaction with the status quo. The media interest generated by terrorist attacks makes this a high visibility threat.

The Beverly Hills Unified School District is known around the world for its wealth, hosting visiting international dignitaries and celebrities, and to being the home to many famous people. This makes the District a target for terrorist activity.

Recent trends toward large scale incidents generating significant casualties make preparedness and the mechanisms for effective response essential. In addition to large scale attacks, a full range of assault styles must be considered. Contemporary terrorist activity runs the gamut from simple letter bombings, assassinations with small arms, bio-chemical attacks, car, and suicide and building bombings to full-out attacks.

Bombings and arson remain significant sources of terrorist activity. Related threats include bomb threats, which disrupt the normal operations. Venues likely to suffer the impact of terrorism include government facilities, entertainment and cultural facilities: the business triangle, District office, school campuses, Rodeo Drive and the popular hotels are possible targets\*. Conventional political motivations for terrorism continue, however, issues involving weapons proliferation, organized crime and narcotics trafficking are seen as having increasing influence. The potential for nuclear, biological, or chemical (NBC) is a concern. Recent events make NBC emergencies a plausible scenario necessitating the detailed contingency planning and preparation of emergency responders to protect the civilian populace in Beverly Hills and in Los Angeles County.

## **HISTORY OF TERRORIST EVENTS IN BEVERLY HILLS**

Beverly Hills is an internationally known community with strong political and economic ties, hence making the BHUSD a target as well. Beverly Hills is frequently the focus of political events, dignitary visits, demonstrations and marches. It is routine for Heads of State to visit and conduct business within the City. These factors make Beverly Hills an attractive potential target. Acts of terrorism are not new to Beverly Hills. One need only recollect the turbulent times during the 1960's, 70's and 80's, which were noted for anti-war and anti-government incidents, which included marches, riots and bombings within the City and District limits. One such bombing occurred in June of 1978 at the Doheny Plaza Theater, directed against Palestinians. Another bombing occurred in June of 1980 at the House of Iran, which was an Iranian cultural center.

In the Beverly Hills Unified School District, the Police Department shall be the lead agency for City response/crisis management. The City's Office of Emergency Management is responsible for consequence management.

## **TERRORISM HAZARD IDENTIFICATION**

### **Defining Terrorism**

The United States Code defines terrorism as premeditated, politically motivated violence perpetrated against noncombatant targets by sub-national groups or clandestine agents usually intended to influence an audience. The United States Department of Justice defines terrorism as a violent act dangerous to human life, in violation of the criminal laws of the U.S. or any segment to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives. The FBI defines terrorism as the unlawful use of force or violence against persons or property to intimidate or coerce government, the civilian population, or any segment thereof, in furtherance of political or social objectives. Terrorists are categorized based on their actions, not beliefs. Even if we have sympathy for their cause, they are still criminals.

All three of these definitions share important components: (1) criminal action; (2) the action must include violence against civilians; and (3) the action is carried out in order to further political or social objectives; and (4) the action is intended to coerce a government or civilian population.

Law enforcement has been able to categorize various terrorism groups. They are as follows:

#### **→ Right Wing Terrorist Groups**

Often engage in survivalist/ paramilitary training to ensure the survival of the U.S. as a white, Christian nation. Many extremists work through political involvement; however, some are members of the "militia" or "patriot" movement, and cannot work within existing structures of government. It is not illegal activity to belong to a militia. Many members of militias express that an impending armed conflict with the federal government necessitates paramilitary training and the stockpiling of weapons. The growth of the militia movement can be attributed to an effective communication system through the use of the Internet, videotape, gun shows, etc. Another phenomenon related to militias is "Common Law Courts."

#### **→ Left-wing Terrorist Groups**

Typically, left-wing groups profess a revolutionary socialist doctrine and view themselves as protectors of the American people against capitalism and imperialism. They believe that bombings alone will not result in change, but are tools to gain publicity for their cause.

#### **→ Special Interest Terrorist Groups**

Special interest terrorist groups differ from traditional right- and left-wing groups in that they pursue specific objectives. These terrorist groups attempt, through their violent

criminal actions, to force members of society to change their attitudes about issues considered important to them. Some special interest groups include animal rights activists, right to life groups, environmental preservation groups and abortion rights groups.

#### → **International Terrorist Groups**

International terrorism against the U.S. is foreign based and/or directed by countries or groups outside the U.S. State sponsors view terrorism as a tool of foreign policy. State sponsors continue to engage in anti-Western terrorist activities by funding, organizing, networking, and providing other support to many extremists.

#### → **Formalized Terrorist Groups**

Some terrorist groups are more formalized and are autonomous organizations with their own infrastructure, personnel, financial arrangements, and training facilities. Examples of such groups include: (1) Hezbollah; (2) Irish Republican Army and (3) Sikh.

#### → **Loosely Affiliated International Radical Extremists**

The last type of terrorist groups are loosely affiliated international radical extremists. Such groups are neither surrogates of, nor strongly influenced by any one nation. They can tap into a variety of official and private resource bases.

### **Weapons of Mass Destruction (WMD)**

Terrorists could attack in different ways. Until very recently, no one seriously thought that weapons of mass destruction would ever be used against U.S. targets. Most law enforcement officers know very little about WMD. Law enforcement agencies with more immediate problems have had little time to prepare for a potential WMD attack. It is essential that law enforcement officers, who are likely to be first responders, become familiar with WMD. Additional training can occur once officers are aware of these WMD and how they can be used.

WMD can be categorized into five categories using the acronym B-NICE: Biological, nuclear, incendiary, chemical and explosive. The typical routes for exposure to the body include inhalation, ingestion, absorption and/or injection. Each category is further described below.

#### **Biological**

The four most common types of biological agents are bacteria, viruses, rickettsia, and toxins. These agents occur in nature, however they can be, and have been, produced by man for use as weapons.

#### **Nuclear**

Nuclear terrorism can occur in two different ways: either detonation or threat of detonation of a nuclear bomb; or dispersion of radiological material using a conventional explosive or other dispersal device.

**Incendiary**

An incendiary device is any mechanical, electrical, or chemical device used to intentionally initiate combustion and start a fire.

**Chemical**

Chemical agents can be classified into five categories: nerve agents, blister agents, blood agents, choking agents, and irritating agents. These agents are man-made.

**Explosive**

Explosive devices are the most common WMD (70% of all terrorist attacks). The Oklahoma City Federal Building bombing and the attack on the World Trade Center in New York are classic examples.

**RISK ANALYSIS**

The probability that an individual/location will be targeted by a terrorist is a function of several factors: attractiveness of target, potential for success and potential for avoiding identification and capture. Some terrorists are willing to die for their cause and will select targets regardless of the probability of identification or capture. It is difficult to determine what individual or location will be targeted, however, law enforcement experts agree that a key element is “symbolism.” The higher the profile of the target, the better in the terrorist mind. Examples include:

- a. Federal, state, and local government buildings
- b. Mass-transit facilities
- c. Public buildings and assembly areas
- d. Controversial businesses
- e. Communication and utility facilities
- f. Water supply locations
- g. Research laboratories
- h. Places where large groups of people congregate

It is not possible to estimate the probability of a terrorist attack. However, based on law enforcement’s role in combating terrorism as indicated in the chart below, the District has identified critical sites and will assess the vulnerability of these sites to terrorist attack. As previously indicated, sites that are most likely to suffer the impact of terrorism include government facilities, such as District Hall, and entertainment and cultural facilities such as the business triangle, Rodeo Drive and the more popular hotels.

### **Law Enforcement Role in Combating Terrorism**

- A. On-going attention to known potential targets within the service area
- B. Identification of new potential targets within the service area
- C. Identification of suspicious persons, places, or things which may be related to potential terrorist activity
- D. Recognition of potential surveillance and intelligence-gathering activities
- E. Recognition of potential terrorist involvement in routine crimes (ID theft, shoplifting, credit card fraud, forgeries, etc.)
- F. Organizing and informing community resources regarding anti- terrorism
- G. Ability to respond safely and effectively to a terrorist incident or a terrorist use of a WMD.
- H. Identify the Terrorist Group
- I. Remove Financial Support
- J. Monitor Weapons/Materials: No Weapons, No Attack Anywhere
- K. Threat/Vulnerability Assessment
- L. Counter Surveillance
- M. Target Hardening
- N. Awareness of Suspicious Behavior as Terrorists Egress From Target
- O. Additional Indicators
  - Equipment
  - Training/Rehearsal Indicators
  - General Indicators/Characteristics

### **WHAT IS SUSPECTIBLE TO TERRORISM**

Damage caused by a terror attack depends on the method of attack. As the intensity of the attack increases, the potential for death and injuries, property damage or destruction and general chaos also increases.

### **EXISTING MITIGATION ACTIVITIES**

Existing mitigation activities include current mitigation programs and activities that are being implemented by county, regional, state, or federal agencies or organizations. The following practices are strategies the City of Beverly Hills practices in order to protect life and property within their city borders, which includes the Beverly Hills Unified School District.

Please refer to the segment *BHUSD Emergency and Safety Preparedness Programs—Existing Mitigation Strategies* in Section 2 of this plan for further details on existing mitigation strategies the District practices.

Currently the Beverly Hills Police Department is implementing projects to help prevent a terrorist situation or be highly prepared if one were to occur.

### **Lockdown Drills**

The District practices lockdown drills twice a year. Additionally, there are two unannounced lockdown drills. The District works closely with the Beverly Hills Police Department to ensure effective communication and procedures during an emergency event.

Additionally, 8 ½ x 11 copies of the building and site architectural drawings have been sent to Sgt Joe Chirillo of the Beverly Hills Police Department to be used in case of emergency response. A copy of the map was sent to Captain Greg Barton of the Beverly Hills Fire Department for use in emergency response.

### **Intelligence**

In July 2004 the Police Department created an intelligence unit as to have a full time intelligence detail team.

### **Community Education**

Currently the Police Department along with the Office of Emergency Management is involved in conducting terrorism awareness programs for the community. This project has been going on since 2002. The goal of the project is to better inform the public on terrorist issues. The Police Department does this through community outreach such as coordinating Neighborhood Watch meetings and community programs.

### **Emergency Services Bureau**

Created in March of 2004 the Police Department has created a Bureau with the Police Department to deal specifically with emergency services.

### **Explosive Sniffing Canine**

Acquired in 2003, the Beverly Hills Unified School District purchased a canine specifically trained to sniff out explosive materials. The Police Department is responsible for training and maintenance of the canine and its skills. The canine serves as a great asset to the community by possibly preventing the loss of life and property in the case of a bomb threat emergency.

### **Closed Circuit Television Cameras**

Currently the District has very few surveillance cameras. There are 41 at Beverly Hills High School and nine (9) at Beverly Vista. The District has plans to upgrade the system. Please refer to Section 4 for details on this mitigation strategy.

## **TERRORISM MITIGATION STRATEGIES**

The terrorism mitigation strategies provide direction on specific activities that the Beverly Hills Unified School District plans to undertake to reduce risk and prevent loss from an terrorist event. Each strategy is a recommendation for future action which can be used by the Steering Committee and local decision makers in pursuing strategies for

implementation. Refer to Section 4 for more information on Terrorism Mitigation Strategies.

## **SECTION 9 - FLOOD**

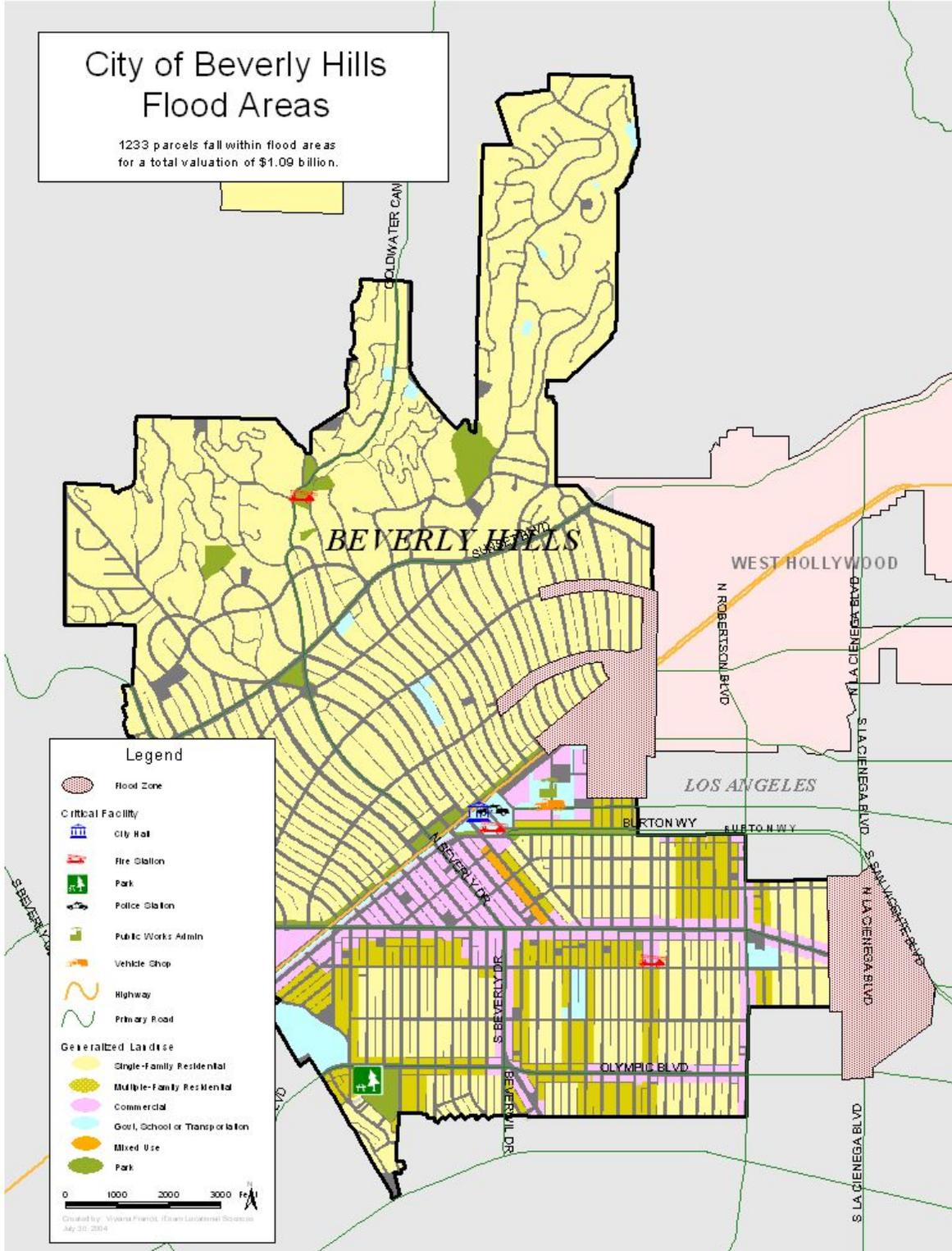
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## **WHY ARE FLOODS A THREAT TO THE BEVERLY HILLS UNIFIED SCHOOL DISTRICT**

Flooding poses a threat to life and safety, and can cause severe damage to public and private property. Flooding events have occurred predominantly in the southeastern and Northeastern sectors of the City, contiguous with the cities of Los Angeles and West Hollywood, respectively. The northeastern sector is bounded by Doheny Drive from Elevado Avenue to Third Street to the east, Santa Monica Boulevard and Civic Center Drive to the west. The southeastern sector is bounded by San Vicente Boulevard to the east, Burton Way/Clifton Way to the north, and La Cienega Boulevard to Olympic Boulevard to the south. This sector experienced a significant event in February 1978, causing the explosion of a natural gas service, loss of business and numerous flooding of multi-family residential and commercial properties with subterranean parking. Similar, but less severe flooding events occurred in 1980, 1992 and 1993.

Map 11 identifies the flood zones in the Beverly Hills area. The District has no real property in any flood zone.

**Map 11. Flood Areas**



The Beverly Hills Unified School District was most recently affected by flooding in February 2003, causing flooding of subterranean garages, loss of personal property, including vehicles, and temporary loss of electric and gas service to the buildings in the 300 North Oakhurst Drive/Doheny Drive areas. Fortunately, none of flooding events in the City have had any significant long-term effects.

### **HISTORY OF FLOODING IN THE BEVERLY HILLS UNIFIED SCHOOL DISTRICT AND THE LOS ANGELES AREA**

The Beverly Hills Unified School District, which is located within the Los Angeles Basin, has historically experienced flooding from major winter storm events. The City and District are at the southern edge of the Santa Monica Mountain range and approximately 12 miles east of the Pacific Ocean. Significant rainfalls typically drain quickly from the elevated areas northerly of and both in and outside the District are channeled through the regional Los Angeles County Flood Control System that traverses through the city.

Long-term precipitation (1950 – 2002) in this area is based on data collected and recorded by the Los Angeles County Department of Public Works (LACDPW) and the City's rain gauge station at City Hall. Annual precipitation ranges from a minimum of zero (recorded in 1989) to a maximum of 59.13 inches (1998 El Nino). Very little precipitation is recorded between the months of May and October although an average of 17.3 inches of rain is measured annually. Rain fall increases northward toward the Santa Monica Mountains to the north and northwest, and decreases toward the center of the Coastal Plain.

Historical annual precipitation and cumulative departure from mean annual precipitation for Beverly Hills demonstrate the severity and extent of dry and wet periods, the information below indicates five cyclical variations in the precipitation pattern between 1930 and 2003.

1. 1930 to 1976: a dry period
2. 1978 to 1983: an overall wet period
3. 1984 to 1990: a relatively dry period
4. 1991 to 1998: a relatively wet period
5. 1999 to present: beginning of a dry period

The Beverly Hills Unified School District is part of the coastal plain of Los Angeles County. The majority of the surface area in Beverly Hills is completely urbanized restricting percolation of rain water into the ground. Mountain runoff flows from the base of the Santa Monica Mountains in a south, and southeasterly direction.

While the Beverly Hills Unified School District is approximately ten miles west, of Los Angeles, it is not so far away as to not be affected by the heavy rains that brought flooding to Los Angeles. In addition, the towering mountains that give the Los Angeles region its spectacular views also bring a great deal of rain out of the storm clouds that

pass through. Because the mountains are so steep, the rainwater moves rapidly down the slopes and across the coastal plains on its way to the ocean.

“The Santa Monica, Santa Susana and Verdugo mountains, which surround three sides of the valley seldom reach heights above three thousand feet. The western San Gabriel Mountains, in contrast, have elevations of more than seven thousand feet. These higher ridges often trap eastern-moving winter storms. Although downtown Los Angeles averages just fifteen inches of rain a year, some mountain peaks in the San Gabriel’s receive more than forty inches of precipitation annually”<sup>18</sup>.

Naturally, this rainfall moves rapidly down stream, often with severe consequences for anything in its path. In extreme cases, flood-generated debris flows will roar down a canyon at speeds near 40 miles per hour with a wall of mud, debris and water tens of feet high.

In Southern California, stories of floods, debris flows, persons buried alive under tons of mud and rock and persons swept away to their death in a river or flood channel flowing at thirty- five miles an hour are without end. No catalog of chaos could contain all the losses suffered by man and his possessions from the region’s rivers and streams.

### **What Factors Create Flood Risk?**

Flooding occurs when climate, geology, and hydrology combine to create conditions where water flows outside of its usual course.

As described earlier, due to the close proximity to the Santa Monica Mountain range and the variations of topography ranging from an elevation of 250 feet to 1600 feet, flood waters have the potential to contribute to flooding hazards. Furthermore, due to continued growth, economic development and an increase of impermeable areas, the regions storm water collection and conveyance system were fast becoming incapable of safely disposing urban runoff. Thus, contributing to flooding conditions in the region and in particular, the flood zone areas earlier described in this section.

As a result of the need for flood control, the Los Angeles County Flood Control District was established in 1915. Currently, the Los Angeles County Flood Control District’s Drainage Area flood control system is one of the world’s largest and most extensive flood protection infrastructures. More recently, the system has undergone extensive upgrades and includes the recently completed construction of the Holly Hills Unit 7 Drainage System, a regional storm water conveyance system specifically constructed to replace the undersized drainage system that served both flood zone sectors of this District and contiguous areas of Los Angeles.

The Los Angeles County Department of Public Works will be performing an analysis of the Hollyhills Unit 7 drainage system, which potentially will redefine the flood zone, inundation area, susceptibility, and potential risk of flooding in this area

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<sup>18</sup> Gumprecht, Blake, 1999, Johns Hopkins University Press, Baltimore, MD.

Another relatively regular source for heavy rainfall, particularly in the mountains and adjoining cities is from summer tropical storms. These tropical storms usually coincide with El Nino years.

El Nino is a disruption of the ocean-atmosphere system in the tropical Pacific having important consequences for weather in California. Among these consequences are increased rainfall across the southern tier of the US and Peru, which has caused destructive flooding and drought in the West Pacific. During El Nino, the trade winds begin to relax in the central and western Pacific leading to a depression of the thermocline in the eastern Pacific and an elevation of the thermocline in the west. The result was a rise in sea surface temperature and a drastic decline in primary productivity, the latter of which adversely affected higher tropic levels of the food chain, including commercial fisheries as well. The weakening of the easterly trade winds during El Nino and the increase of rain fall follows the warm water eastwards, with associated flooding in the west. The eastward displacement of the atmospheric heat source overlaying the warmest water results in large changes in the global atmospheric circulation, which in turn forces changes in weather far removed from the tropical Pacific. December 1997 was near the peak of a strong El Nino year. There was also El Nino in 1991 – 1992, 1993-1994 and 1994-1995.

Flooding is often triggered by periods of short, heavy and intense rain fall. The majority of the surface area in Beverly Hills is completely urbanized, restricting percolation of rain water into the ground. Mountain runoff flows from the base of the Santa Monica Mountains in a southerly direction.

### **Winter Rainfall**

Over the last 125 years, the average annual rainfall in Los Angeles is 14.9 inches. But the term “average” means very little as the annual rainfall during this time period has ranged from only 4.35 inches in 2001-2002 to 38.2 inches in 1883-1884. In fact, in only fifteen of the past 125 years, has the annual rainfall been within plus or minus 10% of the 14.9 inch average. And in only 38 years has the annual rainfall been within plus or minus 20% of the 14.9 inch average. This makes the Los Angeles basin a land of extremes in terms of annual precipitation.

### **Long-term annual precipitation**

Two striking features of Los Angeles rainfall are its seasonal nature and its reflection of topographic effects.

Over the entire Los Angeles Basin, excluding mountain locations, the average annual precipitation ranges less than 12 inches at the immediate coast to more than 20 inches at the foothills. The normal seasonal rainfall measured at downtown Los Angeles is 15.14 inches.

On average, 92 percent of the seasonal precipitation falls between November 1<sup>st</sup> and April 30<sup>th</sup>. This percentage is roughly the same for all stations, regardless of elevation or distance from the ocean.

Seasonal rainfall variability was strongly demonstrated once again in Los Angeles during the 1998 calendar year. LAX received 352 % of normal rainfall within the first six months of 1998, but only 63% of normal in the second half of the year. The end of a very wet El Nino episode and the transition to a dry La Nina circulation was responsible for the change.

On a longer term, the 100- year change in rainfall rates within California in general and Los Angeles County in particular is practically nil: however, there was an apparent increase in the number of heavy precipitation in the last two decades of the twentieth century. From 1943 to 1992 (a period of almost fifty years) extreme rain falls occurred in southern California on only five occasions. This time span covered an era of incredible growth with the Los Angeles Basin and the concurrent flood control construction projects has tamed the flood-prone communities of Los Angeles. Heavy rainfall events were noted in the basin during the years 1992, '93, '95, '97, and '98 – helping to make the decade of the nineties the wettest since the 1930's and early "40s.

### **Geography and Geology**

The greater Los Angeles Basin is the product of rainstorms and erosion for millennia. "Most of the mountains that ring the valleys and coastal plain are deeply fractured faults and, as they (the mountains) grew taller, their brittle slopes were continually eroded. Rivers and streams carried boulders, rocks, gravel, sand, and silt down these slopes to the valleys and coastal plain. In places, these sediments are as much as twenty thousand feet thick"<sup>19</sup>. Much of the coastal plain rests on the ancient rock debris and sediment washed down from the mountains. This sediment can act as a sponge, absorbing vast quantities of rain in those years when heavy rains follow a dry period. But like a sponge that is near saturation, the same soil fills up rapidly when a heavy rain follows a period of relatively wet weather. So even in some years of heavy rain, flooding is minimal because the ground is relatively dry. The same amount of rain following a wet period of time can cause extensive flooding.

The Beverly Hills Unified School District geologic features consists of mainly unconsolidated and semi-consolidated alluvial materials underlain and bounded on the north and east by consolidated sediments and crystalline rocks. The deposits consists of a shallow layer of Quaternary fill that has been washed down from the Santa Monica Mountains. The materials are generally poorly sorted sands and gravels, intermingled with silts and clays.

The greater Los Angeles basin including this District is for all intents and purposes built out. This leaves precious little open land to absorb rainfall. This lack of open ground forces water to remain on the surface and rapidly accumulate. If it were not for the

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<sup>19</sup> Ibid

massive flood control system with its concrete lined river and stream beds, flooding would be a much more common occurrence. And the tendency is towards even less and less open land. In- fill building is becoming a much more common practice in many areas. Developers tear down an older home which typically covers up to 40% of the lot size and replacing it with three or four town homes or apartments which may cover 90-95% of the lot.

Another potential source of flooding is “asphalt creep.” The street space between the curbs of a street is a part of the flood control system. Water leaves property and accumulates in the streets, where it is directed towards the underground portion of the flood control system. The carrying capacity of the street is determined by the width of the street and the height of the curbs along the street. Often, when streets are being resurfaced, a one to two inch layer of asphalt is laid down over the existing asphalt. This added layer of asphalt subtracts from the rated capacity of the street to carry water. Thus the original engineered capacity of the entire storm drain system is marginally reduced over time. Subsequent re-paving of the street will further reduce the engineered capacity even more.

### **HAZARD IDENTIFICATION**

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 or rapid accumulation or runoff of surface waters from any source, or mudflow.

The standard for flooding is the so called “100 year flood” a benchmark used by the Federal Emergency Management Agency (FEMA) to establish a standard flood control throughout the country. Thus, the 100- year flood is also referred to as the regulatory or baseline for all flooding events.

Flood maps and Flood Insurance Studies (FIS) are often used to identify flood-prone areas. The National Flood Insurance Program (NFIP) was established by Congress in 1968 in response to the rising costs of taxpayer funded disaster relief for flood victims and the increasing amount of damage caused by floods. The Mitigation Division, a component of the Federal Emergency Management Agency manages the NFIP. The NFIP is self-supporting for the average historical loss year, which means that operating expenses and flood insurance claims are not paid for by the taxpayer, but through premiums collected for flood insurance policies. The Program has borrowing authority from the U.S. Treasury for times when losses are heavy, however these loans are back with interest.

The Program provides low-cost flood insurance to the nation’s flood-prone communities. The NFIP also reduces flood losses through regulations that focus on building codes and sound floodplain management. The NFIP and related building code regulations went into effect on March 1, 1978. NFIP regulations (44 Code of Federal Regulations (CFR) Chapter 1, Section 60, 3) require that all new construction in floodplains must be elevated at or above base flood level.

### **Flood Insurance Rate Maps (FIRM) and Flood Insurance Studies (FIS)**

Floodplain maps are the basis for implementing floodplain regulations and for delineating flood insurance purchase requirements. A Flood Insurance Rate Map (FIRM) is the official map produced by FEMA which delineates communities where NFIP regulations apply. FIRMs are also used by insurance agents and mortgage lenders to determine if flood insurance is required and what insurance rates should apply.

Water surface elevations are combined with topographic data to develop FIRMs. FIRMs illustrate areas that would be inundated during a 100-year flood, floodway areas, and elevations marking the 100-year-flood level. In some cases they also include base flood elevations (BFEs) and areas located within the 500-year floodplain. Flood Insurance Studies and FIRMs produced for the NFIP provide assessments of the probability of flooding at a given location. FEMA conducted many Flood Insurance Studies in the late 1970s and early 1980s. These studies and maps represent flood risk at the point in time when FEMA completed the studies. However, it is important to note that not all 100-year or 500-year floodplains have been mapped by FEMA. FEMA flood maps are not entirely accurate. These studies and maps represent flood risk at the point in time when FEMA completed the studies, and does not incorporate planning for floodplain changes in the future due to new development. Although FEMA is considering changing that policy, it is optional for local communities. Man-made and natural changes to the environment have changed the dynamics of storm water run-off since then.

FEMA mapped the 100 -year and 500-year floodplains through the Flood Insurance Study (FIS) in conjunction with the United States Army Corps of Engineers (USACE) in August of 1987. There were previous studies done, including a Housing and Urban Development (HUD) study, which mapped the floodplain in March of 1978, The county has updated portions of the USACE and FEMA maps through smaller drainage studies in the county since that time.

### **Flood Areas in the City**

FEMA has classified the District under Zone “C”, which does not require mandatory flood mitigation enforcement. Properties are therefore not required to carry flood insurance.

Aside from FEMA’s designation, the Beverly Hills Unified School District has a local ordinance that restricts construction below the flood level in two areas. These areas are designated as “Flood Hazard Area” by the District and are prone to water intrusion.

The Beverly Hills Unified School District is susceptible to flash or fast rise flooding because a high percentage of the surface area is composed of impervious streets, roofs, and parking lots. Flooding would tend to occur in the winter months. They can occur within several seconds to several hours, with little or no warning.

Urban flooding primarily affects the Beverly Hills Unified School District. Flooding of areas may occur when the amount of water generated from rainfall and runoff exceeds a

storm water system's capability to remove it. These issues are addressed in the Storm Drain Master Plan. In addition, low-lying areas have the potential to flood.

The District has municipal codes that provides for the protection of residential and non-residential structures in Flood Hazard areas. Title 9, Chapter 7, Protection of Subterranean Construction from Water Intrusion provides provisions for floor levels and openings for residential and non-residential structures and protection of new and existing mechanical and electrical systems. This municipal code is supported by Ordinance 96-0-2269, adopted on November 15, 1996, which provides a program to assist building owners in certain areas of the City, to identify and voluntarily mitigate potential hazardous conditions that may result in water intrusion from a 100 year storm. In addition, in Chapter 6, Article 3 is guidance for disaster repair and recovery

### **Storm Drain Master Plan**

In November, 1999, the City performed a study titled "The City of Beverly Hills Storm Drain System Master Plan" that was prepared by Psomas Engineering, Inc. The purpose of the master plan was to provide a comprehensive drainage study to insure that changes in population density, land use and impervious surfaces have not caused deficiencies to develop. Furthermore, the hydrologic and hydraulic analysis was to identify and inventory existing storm drain facilities (streets, piping and structures) and those areas where deficiencies occurred, rank their severity, and provide opinions for system upgrades and recommend a Capital Improvement Program (CIP) to initiate corrections.

Although a model of the City's drainage system was performed and identified deficiencies throughout the drainage system, most of the deficiencies were found to be attributed to two important factors. 1) Prior to 1980, when many of these drain were constructed, the Los Angeles County Flood Control District designed systems based on the use of 21% residential impervious factors. The Los Angeles County Department of Public Works has significantly increased this factor to 45%, essentially doubling the runoff flow; and 2) The Los Angeles County Modified Rational Method of Analysis is generally recognized as a conservative model that assumes worst case scenarios and predicts relatively high flows which may only marginally appear during actual events. Basically, the Modified Rational Method estimates runoff from approximate 40 acre areas, then integrates and routes the flows through the drainage system. It was prepared for 10-, 25-, and 100 year return interval storms.

This drain deficiency analysis was then used as a basis for formulation of a Capital Improvement Program, prioritized based on the results of the Cost-to-Benefit Index, which assesses the relative benefit against the cost of replacing the deficient elements.

### **Dam and Reservoir Failure Flooding**

In addition to flood hazard areas of the District that are prone to water intrusion, the City also has its own water system with its own reservoir. As with every District that has its own water system, there is the risk of a potential full or partial reservoir or dam failure. Loss of life and damage to structures, roads, and utilities may result from a reservoir or dam failure. Economic losses can also result from a lowered tax base and lack of utility profits. Several factors influence the severity of such an event: the amount of water

impounded, and the density, type, and value of development and infrastructure located downstream.

There have been a total of 45 reservoir failures in California, since the 19<sup>th</sup> century. Chart 24 below shows significant reservoir failures in Southern California are summarized below.

**Chart 24.**

Dam	Location	Year	Cause
Sheffield	Santa Barbara	1925	Earthquake slide
Puddingstone	Pomona	1926	Overtopping during construction
Lake Hemet	Palm Springs	1927	Overtopping
Saint Francis	San Francisquito Canyon	1928	Sudden failure at full capacity through foundation, 426 deaths
Cogswell	Monrovia	1934	Breaching of concrete cover
Baldwin Hills	Los Angeles	1963	Leak through embankment turned into washout, 3 deaths

Source: [http://cee.engr.ucdavis.edu/faculty/lund/reservoirs/Reservoir\\_History\\_Page/Failures.htm](http://cee.engr.ucdavis.edu/faculty/lund/reservoirs/Reservoir_History_Page/Failures.htm)

The two most significant reservoir failures in Los Angeles County are the St. Francis Reservoir in 1928, which killed over 500 people and caused damage estimates topped \$20 million and the Baldwin Hills Reservoir in 1963. Five people were killed. Sixty-five hillside houses were ripped apart, and 210 homes and apartments were damaged.

In the Beverly Hills Unified School District, the Greystone Reservoir is considered by the State Department of Water Resources as a reservoir and dam. The drinking water reservoir is a concrete structure partially below ground with a capacity of 19 million gallons.

The Greystone Reservoir is located in the lower Trousdale Estates area, north of Sunset Boulevard. The reservoir was built in 1971 and is a concrete structure with a capacity of 19 million gallons of drinking water. If the reservoir were to fail, the escaping water would flow in a southerly direction. The inundation area would include Doheny Road and Foothill Road to the west, Doheny Drive to the east, Sunset Boulevard and Santa Monica Boulevard, the termination point, to the south.

The District also has a total of nine above and partially below-ground storage reservoirs. Some of these reservoirs are located in the proximity of residential structures, which could be adversely impacted by the discharge of escaping water, in the event of structural failure.

Because reservoir failure can have severe consequences, FEMA requires that all reservoir owners develop Emergency Action Plans (EAP) for warning, evacuation, and post- flood actions. Although there may be coordination with county officials in the development of the EAP, the responsibility for developing potential flood inundation maps and facilitation of emergency response is the responsibility of the reservoir owner. For more detailed information regarding reservoir failure flooding, and potential flood inundation zones, refer to the Beverly Hills Unified School District' Disaster Plan.

In addition to the City's reservoir, the Upper and Lower Franklin Canyon Reservoir is located north of and adjacent to the Coldwater Canyon Park Recreational Center on North Beverly Drive. The Upper and Lower Franklin Canyon Reservoir is owned and operated by the District of Los Angeles. It was constructed in 1916 by William Mulholland. The Lower reservoir was the primary storage facility. The Upper reservoir was built for stability of the lower one.

During the early 1940's, the Works Project Administration (WPA) constructed the earthen flood control dam. After the 1971 Sylmar earthquake, it was discovered that the two reservoirs could not safely contain the amount of water needed for the City of Los Angeles so they were placed out-of-service and a third reservoir constructed just north of the Lower reservoir. Presently, the Lower reservoir is used to detain flood waters and is a nature preserve.

In the event of a failure of the flood control dam, the escaping water would flow into the Higgins-Coldwater Channel. This below-ground concrete channel is located on the easterly side of Coldwater Canyon Drive, north of the City's fire station and the Coldwater Canyon Reservoir. The Higgin-Coldwater Canyon system was constructed in 1962 by the Corps of Engineers.

See the Dam and Reservoir Emergency Notification List, written by the City of Los Angeles Department of Water and Power for more information on the emergency procedures for this dam.

### **Debris Flows**

Another type of flood-related hazard are debris flows. This is often referred to as mudslides, mudflows, lahars, or debris avalanches, are common types of fast- moving landslides. Debris flows are discussed in Section 10 Earth Movements of this plan.

### **Floodplain**

There are no specific floodplain areas in the Beverly Hills Unified School District.

### **Floodway/Flood Channels**

There are no floodways or above ground flood channels in the Beverly Hills Unified School District. There are flood channels below ground that carry water from the storm drains. These channels are: Benedict Canyon Channel, Rexford Channel, West Hollywood Storm Drain and the Holly Hills Drain.

## **RISK ANALYSIS**

Beverly Hills' risk analysis should include two components: (1) the life and value of property that may incur losses from a flood event (defined through the vulnerability assessment); and (2) the number and type of flood events expected to occur over time. Within the broad components of a risk analysis, it is possible to predict the severity of damage from a range of events. Flow velocity models can assist in predicting the amount of damage expected from different magnitudes of flood events. The data used to develop these models is based on hydrological analysis of landscape features. Changes in the landscape, often associated with human development, can alter the flow velocity and the severity of damage that can be expected from a flood event. Using GIS technology and flow velocity models, it is possible to map the damage that can be expected from flood events over time. It is also possible to pinpoint the effects of certain flood events on individual properties.

At the time of publication of this plan, data was insufficient to conduct a risk analysis for flood events in the Beverly Hills Unified School District. However, the current mapping projects will result in better data that will assist in understanding risk.

## **WHAT IS SUSCEPTIBLE TO DAMAGE DURING A FLOOD EVENT**

The largest impact on communities from flood events is the loss of life and property; In addition, other losses include vehicles in subterranean garages, loss of electrical and gas services, municipal services (i.e. water, wastewater, solid waste collection and disposal) and transportation.

### **Property Loss Resulting from Flooding Events**

The type of property damage caused by flood events depends on the depth and velocity of the flood waters. Faster moving flood waters can wash buildings off their foundations and sweep cars downstream. Pipelines and other infrastructure can be damaged when high waters combine with flood debris. Extensive damage can be caused by flooding and landslide damage related to soil saturation from flood events. Most flood damage is caused by water saturating materials susceptible to loss (i.e., wood, insulation, wallboard, fabric, furnishings, floor coverings, appliances and vehicles parked in subterranean garages). As depicted on Map 11, the District has no real property or critical facilities in the flood zone.

### **Business/Industry**

Flood events impact businesses by damaging property and by interrupting business. Flood events can cut off customer access to a business as well as close a business for repairs. A quick response to the needs of businesses affected by flood events can help a community maintain economic vitality in the face of flood damage. There has been no significant long term effect to the business and industry sector.

### **Public Infrastructure**

Publicly owned facilities are a key component of daily life for all citizens of the City. Damage to public water and sewer systems, transportation networks, emergency

facilities, and offices can hinder the ability of the government to deliver services. Previous mitigation measures have fixed many of the flooding problems to ground floor offices at City Hall and Parks and Recreational Centers.

The City's water distribution and the wastewater conveyance systems are maintained by District employees. During natural hazard events, or any type of emergency or disaster, dependable road connections are critical for providing emergency services. Roads systems in the Beverly Hills Unified School District are also maintained by District employees.

### **Storm Water Systems**

There is a drainage master plan, and Beverly Hills Unified School District Public Works staff is aware of local drainage threats and deficiencies. The problems are often present where storm water runoff enters culverts or goes underground into storm sewers. Inadequate maintenance can also contribute to the flood hazard in urban areas. The Beverly Hills Unified School District operates a wastewater collection system, which conveys the wastewater to a regional Wastewater Treatment Plant (Hyperion) that is owned and operated by the City of Los Angeles. The Beverly Hills Unified School District wastewater is treated by this facility. The Beverly Hills Unified School District also provides domestic drinking water to the residents as part of District services.

Water Quality problems include bacteria, toxins, and pollution. The Beverly Hills Unified School District

imports approximately 85 percent of its drinking water from the Metropolitan Water District of Southern California, The remaining 15 percent is produced locally from four municipal water wells and treated at a 3MGD water treatment plant that is owned and operated by Earth Tech, Inc. a subsidiary of Tyco International.

### **WHAT IS THE EFFECT OF DEVELOPMENT ON FLOODS**

The Beverly Hills Unified School District is highly urbanized and as a result of increased paving, can lead to an increase in volume and velocity of runoff after a rainfall event, exacerbating the potential flood hazards. Careful attention should be given to development in the flood areas to ensure that structures are prepared to withstand base flood events. Care should be taken in the development and implementation of storm water management systems to ensure that these runoff waters are dealt with effectively.

Fortunately, the District has no property or critical facilities in the Flood zones.

### **EXISTING MITIGATION ACTIVITIES**

Existing mitigation activities include current mitigation programs and activities that are being implemented by county, regional, state, or federal agencies or organizations. The following practices are strategies the City of Beverly Hills practices in order to protect life and property within their city borders, which includes the Beverly Hills Unified School District.

Please refer to the segment *BHUSD Emergency and Safety Preparedness Programs—Existing Mitigation Strategies* in Section 2 of this plan for further details on existing mitigation strategies the District practices.

Flood mitigation activities listed here include current mitigation programs and activities that are being implemented by the City of Beverly Hills.

- Routine inspection and cleaning of all storm water catch basins and culverts on a monthly maintenance schedule.
- Periodic inspection and cleaning of catch basins owned and operated by the Los Angeles Flood Control District in key locations within the District prior to storm events.
- Regularly schedule street cleaning to remove organic and non-organic debris from roadways to mitigate or reduce debris entering catch basins.

Furthermore, the Beverly Hills Unified School District uses building codes, zoning codes, and various planning strategies to address development in areas of known hazards, and applying the appropriate safeguards.

### **Flood Management Projects**

As described previously, the Los Angeles County, Department of Public Works Flood Control District has completed a massive storm water relief upgrade of the Holly Hills Unit 7 Drainage System in 2004. This project was designed specifically to negate the flooding conditions in the southeast sector of the cities of Beverly Hills and Los Angeles. The Los Angeles County, Department of Public Works Flood Control District was the lead agency for this project.

As a result of this capitol project, the Los Angeles County Flood Control District will be upgrading the floodplain maps to reflect this change in the near future.

### **Water Districts**

The Beverly Hills Unified School District continues to aggressively replace old cast iron pipes with more ductile iron pipes, which will be more resilient in disaster situations. During a disaster, water districts in the region work together to provide water for the Beverly Hills Unified School District citizens. For example, the Beverly Hills Unified School District has drinking water supply inter-ties with the City of Los Angeles, for emergency situations.

### **Wastewater Management**

As describe previously, the Beverly Hills Unified School District owns and operates a wastewater and storm water collection system. The wastewater and storm water collection system is maintained by District employees at regularly scheduled intervals. These intervals are increased during the fall and winter months, to mitigate the amount of

leaves and other organic debris from entering into the storm water conveyance system and catch basins.

The City's wastewater is conveyed and treated at the City of Los Angeles' Hyperion Treatment Plant, which is a regional sewage treatment facility. The City's storm water collection system conveys urban and storm water runoff to a regional system owned and operated by the Los Angeles County, Department of Public Works Flood Control District. The receiving water body is the Ballona Creek, which terminates in Marina Del Rey and the Santa Monica Bay.

### **Stormwater Systems**

There are a variety of surface water management providers in the county that manage water quality and storm water runoff from new development. The City of Beverly Hills is a Co-Permittee of the Los Angeles County, Waste Discharge Requirements for Municipal Urban and Stormwater Discharges and the Municipal National Pollution Discharge Elimination System (NPDES) Permit for Point and Non-Point source discharges. The District has in place a comprehensive program that includes enforcement of the requirements which are a part of the regional NPDES permit. The Program elements consist of: New Development Planning; New Construction and Grading Inspections; Best Management Practices; Industrial and Commercial Inspections; and Public Information and Outreach. Local authority to enforce the NPDES Permit was originally established in 1990 by the adoption of a Municipal Ordinance, followed by amendments resulting from Permit changes such as the Standard Urban Stormwater Mitigation Plan (SUSMP) as recently as calendar year 2000.

### **Community Issues Summary**

The City of Beverly Hills works to mitigate problems regarding flood issues when they arise. Some areas in the City are more susceptible to flooding issues, and have incurred repetitive losses. With the completion of the Los Angeles County Flood Control District's Holly Hills Unit 7 Storm Drain Project, the City of Beverly Hills and contiguous areas of the City of Los Angeles will no longer be susceptible to flooding conditions, flood related damages and loss of property.

### **District Flood Damage Assessment / Mitigation**

During rainy seasons, which occur seldom in Southern California, the District takes steps to avoid and/or repair damage incurred by rain water. Recently, the District spent \$49,835 to repair roof damage at the Hawthorne School and El Rodeo School. In addition, the District has taken preemptive steps to waterproof portions of the buildings at Beverly Hills High School investing over \$116,000 from 2001-2005.

### **FLOOD MITIGATION STRATEGIES**

The flood mitigation strategies provide direction on specific activities that the Beverly Hills Unified School District plans to undertake to reduce risk and prevent loss from a flood event. Each strategy is a recommendation for future action which can be used by the Steering Committee and local decision makers in pursuing strategies for implementation. Refer to Section 4 for more information on Flood Mitigation Strategies.

## **SECTION 10 - EARTH MOVEMENT (LANDSLIDES)**

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## **WHY ARE LANDSLIDES A THREAT TO THE BEVERLY HILLS UNIFIED SCHOOL DISTRICT**

Landslides are a serious geologic hazard in almost every state in America. Nationally, landslides cause 25 to 50 deaths each year<sup>20</sup>. The best estimate of direct and indirect costs of landslide damage in the United States range between \$1 and \$2 billion annually (30). As a seismically active region, California has had significant number of locations impacted by landslides. Some landslides result in private property damage, other landslides impact transportation corridors, fuel and energy conduits, and communication facilities. They can also pose a serious threat to human life.

“A landslide is defined as, the movement of a mass of rock, debris, or earth flow down a slope. Landslides are a type of “mass wasting” which denotes any down slope movement of soil and rock under the direct influence of gravity. The term “landslide” encompasses events such as rock falls, topples, slides, spreads, and flows. Landslides can be initiated by rainfall, earthquakes, volcanic activity, changes in groundwater, disturbance and change of a slope by man-made construction activities, or any combination of these factors. Landslides can also occur underwater, causing tidal waves and damage to coastal areas. These landslides are called submarine landslides.”<sup>21</sup>.

The size of a landslide usually depends on the geology and the initial cause of the landslide. Landslides vary greatly in their volume of rock and soil, the length, width, and depth of the area affected, frequency of occurrence, and speed of movement. Some characteristics that determine the type of landslide are slope of the hillside, moisture content, and the nature of the underlying materials. Landslides are given different names, depending on the type of failure and their composition and characteristics.

Landslides can be broken down into two categories: (1) slow moving; and (2) rapidly moving (generally known as debris flows). Slow moving landslides can cause significant property damage, but are less likely to result in serious human injuries. Rapidly moving landslides or debris flows present the greatest risk to human life, and people living in or traveling through areas prone to rapidly moving landslides are at increased risk of serious injury.

Landslides tend to move in contact with the underlying surface. These movements include rotational slides where sliding material moves along a curved surface, and translational slides where movement occurs along a flat surface. These slides are generally slow moving and can be deep. Slumps are small rotational slides that are generally shallow. Slow-moving landslides can occur on relatively gentle slopes and can cause significant property damage, but are far less likely to result in serious injuries than

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<sup>20</sup> Mileti, Dennis, *Disasters by Design: A Reassessment of Natural Hazards in the United States* (1999) Joseph Henry Press, Washington D.C.

<sup>21</sup> Brabb, E.E., and B.L Harrod. (Eds) *Landslides: Extent and Economic Significance*. Proceedings of the 28th International Geological Congress Symposium on Landslides. (1989) Washington D.C., Rotterdam: Balkema.

rapidly moving landslides<sup>22</sup>.

A debris or mud flow is a river of rock, earth and other materials, including vegetation that is saturated with water. This high percentage of water gives the debris flow a very rapid rate of movement down a slope. Debris flows often with speeds greater than 20 mile per hour, and can often move much faster<sup>23</sup>. This high rate of speed makes debris flows extremely dangerous to people and property in its path.

“Failure of a slope occurs when the force that is pulling the slope downward (gravity) exceeds the strength of the earth materials that compose the slope. They can move slowly, (millimeters per year) or can move quickly and disastrously, as is the case with debris-flows. Debris-flows can travel down a hillside of speeds up to 200 miles per hour (more commonly, 30 – 50 miles per hour), depending on the slope angle, water content, and type of earth and debris in the flow. These flows are initiated by heavy, usually sustained, periods of rainfall, but sometimes can happen as a result of short bursts of concentrated rainfall in susceptible areas. Burned areas charred by wildfires are particularly susceptible to debris flows, given certain soil characteristics and slope conditions.”<sup>24</sup>.

Beverly Hills Unified School District is located between the Santa Monica Mountains and the coastal plain of the Los Angeles Basin. Majority of the District lies in a transitional area between the mountain and the coastal plain. The present of these distinct physiographic features provides considerable topographic relief. The lowest point within the District is approximately 120 feet above sea level located at Olympic and La Cienega Boulevards. The highest point in the District is approximately 1400 feet above sea level along Carla Ridge Drive in the Trousdale Estates area of the Santa Monica Mountain.

Topography of the Beverly Hills Unified School District is greatly influenced by the Santa Monica Mountains and the Los Angeles Coastal Basin. Hillside areas north of Sunset Boulevard are characterized as rugged topography with steep sided ridges and narrow ravines and these areas have the highest potential of landslide. Areas south of Sunset Boulevard are flat with a mild slope approximately 2 to 3 percent in the south-southwest direction and these areas have little or no danger of landslide.

## **HISTORY OF LANDSLIDES**

Landslides are a common hazard in California. Weathering and the decomposition of geologic materials produces conditions conducive to landslides and human activity further exacerbates many landslide problems. Many landslides are difficult to mitigate, particularly in areas of large historic movement with weak underlying geologic materials. As communities continue to modify the terrain and influence natural processes, it is important to be aware of the physical properties of the underlying soils as they, along

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<sup>22</sup> Landslide Hazards, U.S. Geological Survey Fact Sheet 0071-00, Version 1.0, U.S. Department of the Interior - U.S. Geological Survey, <http://pubs.usgs.gov/fs/fs-0071-00/>

<sup>23</sup> Interagency Hazard Mitigation Team, State Hazard Mitigation Plan (2000) Oregon Emergency Management

<sup>24</sup> Ibid.

with climate, create landslide hazards. Even with proper planning, landslides will continue to threaten the safety of people, property, and infrastructure, but without proper planning, landslide hazards will be even more common and more destructive.

The increasing scarcity of build-able land, particularly in urban areas, increases the tendency to build on geologically marginal land. Additionally, hillside housing developments in Southern California are prized for the view lots that they provide.

Rock falls occur when blocks of material come loose on steep slopes. Weathering, erosion, or excavations, such as those along highways, can cause falls where the road has been cut through bedrock. They are fast moving with the materials free falling or bouncing down the slope. In falls, material is detached from a steep slope or cliff. The volume of material involved is generally small, but large boulders or blocks of rock can cause significant damage.

Earth flows are plastic or liquid movements in which land mass (e.g. soil and rock) breaks up and flows during movement. Earthquakes often trigger flows<sup>25</sup>. Debris flows normally occur when a landslide moves down slope as a semi-fluid mass scouring, or partially scouring soils from the slope along its path. Flows are typically rapidly moving and also tend to increase in volume as they scour out the channel<sup>26</sup>. Flows often occur during heavy rainfall, can occur on gentle slopes, and can move rapidly for large distances.

Several slope failures have been reported in the northern hillside areas of the City. The major cause of the slope failures were reported to be heavy rainfalls and soil erosion. Also, the hillside residential development has placed additional loads on the subsurface bedrock which contributed to the slope failure. These failure planes are few feet deep and it extended through the soils overlaying bedrock. The reported slope failures occurred in the Santa Monica slate area that are characterized as having landslide potential due to the existence of bedding planes dipping out of the slope. No major lost of property or personal injury reported.

No significant or major debris flow resulted from landslide in the northern hillside area has been recorded in the City. Small debris flows in the District in the past have been localized and cleaned up by the City's Public Works crew. In the event of a major landslide in the hillside area, debris flow will destroy roadway pavement and fill the storm drain catch basins. Any significant surface movement along the streets that access Coldwater Canon Drive and Benedict Canon Drive will isolate residents in those areas.

## **HAZARD IDENTIFICATION**

Identifying hazardous locations is an essential step towards implementing more informed mitigation activities. A geotechnical study was performed in 1987 by City's Geotechnical

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<sup>25</sup> Barrows, Alan and Smith, Ted, DMG Note 13,  
[http://www.consrv.ca.gov/cgs/information/publications/cgs\\_notes/note\\_33/](http://www.consrv.ca.gov/cgs/information/publications/cgs_notes/note_33/)

<sup>26</sup> Robert Olson Associates, Metro Regional Hazard Mitigation and Planning Guide (June 1999) Metro

Engineering Consultant Woodward Clyde Consultants. Based on the ground shaking levels, soil characteristic, soil condition and the historical records of slope failures in the City, a Slope Instability Potential Map was developed. The hillside areas north of Sunset Boulevard and Trousdale Estate is classified respectively as high and moderate zone for potential landslide. Development in the hillside areas must comply with the Beverly Hills Building Codes requirements for slope stability. The remaining of the District is classified as low zone for potential landslide as shown in the potential instability map.

In addition to identifying the locations of where landslides may occur, other factors affect the likelihood of landslide incidents.

### **Landslide Conditions**

Landslides are often triggered by periods of heavy rainfall. Earthquakes, subterranean water flow and excavations may also trigger landslides. Certain geologic formations are more susceptible to landslides than others. Human activities, including locating development near steep slopes, can increase susceptibility to landslide events. Landslides on steep slopes are more dangerous because movements can be rapid.

Although landslides are a natural geologic process, the incidence of landslides and their impacts on people can be exacerbated by human activities. Grading for road construction and development can increase slope steepness. Grading and construction can decrease the stability of a hill slope by adding weight to the top of the slope, removing support at the base of the slope, and increasing water content. Other human activities effecting landslides include: excavation, drainage and groundwater alterations, and changes in vegetation<sup>27</sup>.

Wildland fires in hills covered with chaparral are often a precursor to debris flows in burned out canyons. The extreme heat of a wildfire can create a soil condition in which the earth becomes impervious to water by creating a waxy-like layer just below the ground surface. Since the water cannot be absorbed into the soil, it rapidly accumulates on slopes, often gathering loose particles of soil in to a sheet of mud and debris. Debris flows can often originate miles away from unsuspecting persons, and approach them at a high rate of speed with little warning.

### **Natural Conditions**

Natural processes can cause landslides or re-activate historical landslide sites. Seismic tremors can trigger landslides on slopes historically known to have landslide movement. Earthquakes can also cause additional failure (lateral spreading) that can occur on gentle slopes above steep streams and riverbanks.

### **Particularly Hazardous Landslide Areas**

Locations at risk from landslides or debris flows include areas with one or more of the following conditions:

1. On or close to steep hills;
2. Steep road-cuts or excavations;

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<sup>27</sup> Ibid.

3. Existing landslides or places of known historic landslides (such sites often have tilted power lines, trees tilted in various directions, cracks in the ground, and irregular-surfaced ground);
4. Steep areas where surface runoff is channeled, such as below culverts, V-shaped valleys, canyon bottoms, and steep stream channels; and
5. Fan-shaped areas of sediment and boulder accumulation at the outlets of canyons.
6. Canyon areas below hillside and mountains that have recently (within 1-6 years) been subjected to a wildland fire.

### **Excavation and Grading**

Slope excavation is common in the development of home sites or roads on sloping terrain. Grading these slopes can result in some slopes that are steeper than the pre-existing natural slopes. Since slope steepness is a major factor in landslides, these steeper slopes can be at an increased risk for landslides. The added weight of fill placed on slopes can also result in an increased landslide hazard. Small landslides can be fairly common along roads, in either the road cut or the road fill. Landslides occurring below new construction sites are indicators of the potential impacts stemming from excavation.

Beverly Hills Building Department requires a geotechnical report for grading activities for the hillside developments. Grading plan is designed and certified by a licensed geotechnical engineer in accordance with the requirements of the Beverly Hills Building Codes. The site grading and excavation will be inspected by the Building Inspector during construction. Proper planning and geotechnical engineering will greatly reduce the potential for landslide and slope failure.

### **Drainage and Groundwater Alterations**

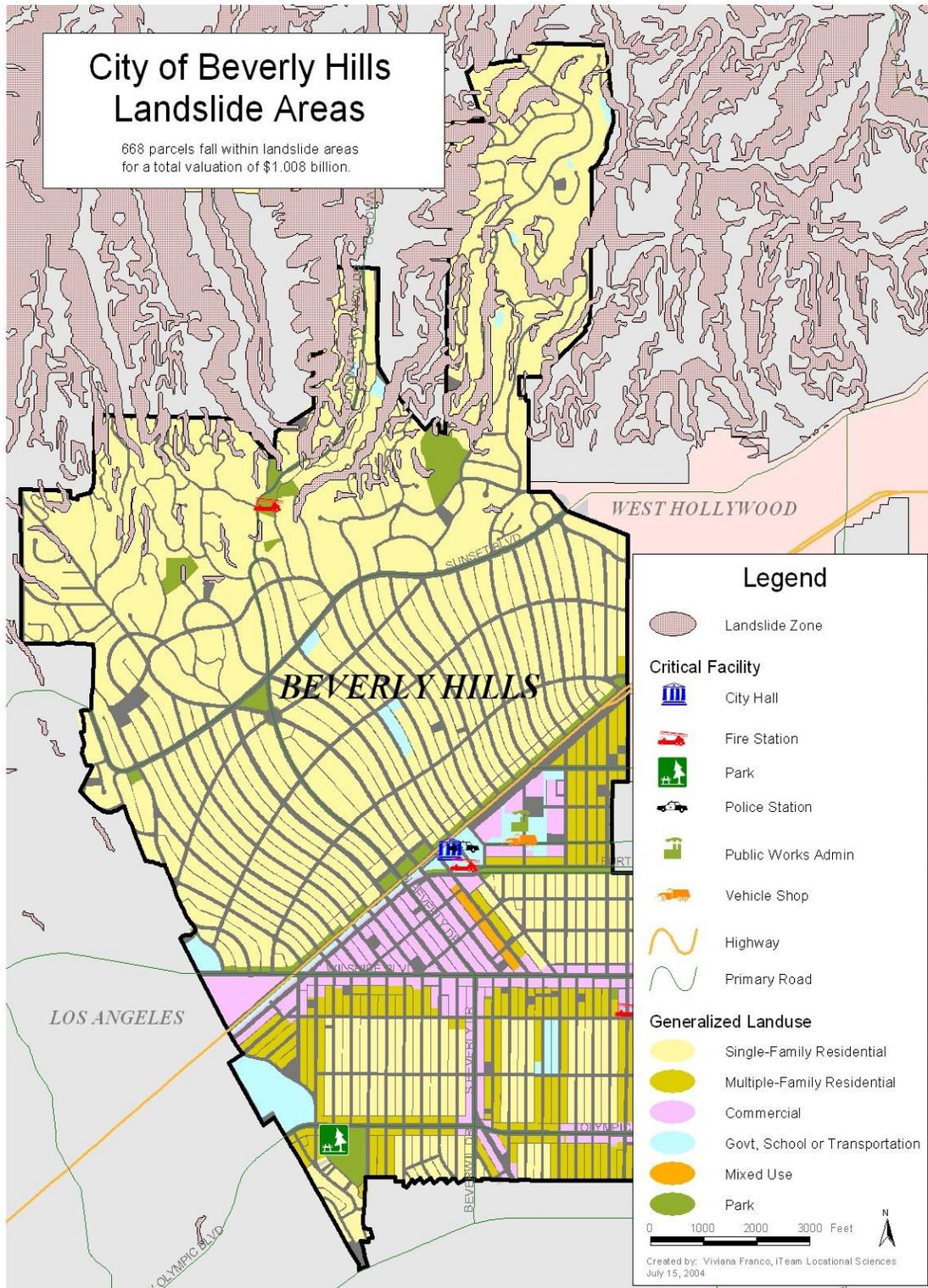
Water flowing through or above ground is often the trigger for landslides. Any activity that increases the amount of water flowing into landslide-prone slopes can increase landslide hazards. Broken or leaking water or sewer lines can be especially problematic, as can water retention facilities that direct water onto slopes. However, even lawn irrigation in landslide prone locations can result in damaging landslides. Ineffective storm water management and excess runoff can also cause erosion and increase the risk of landslide hazards. Drainage can be affected naturally by the geology and topography of an area; development that results in an increase in impervious surface impairs the ability of the land to absorb water and may redirect water to other areas. Channels, streams, ponding, and erosion on slopes all indicate potential slope problems.

Road and driveway drains, gutters, downspouts, and other constructed drainage facilities can concentrate and accelerate flow. Ground saturation and concentrated velocity flow are major causes of slope problems and may trigger landslides<sup>28</sup>.

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<sup>28</sup> Planning For Natural Hazards: The Oregon Technical Resource Guide, Department of Land Conservation and Development (2000), Ch 5.

**Map 12. Landslide Areas**



The Beverly Hills Building Codes require drainage devices to dispose storm runoff from the hillside development. Ultimately the storm runoff is discharged into the City's storm drain system. City's storm drain catch basins are maintained by the Public Works Department and they were cleaned to prevent any flooding or ponding.

### **Changes in Vegetation**

Removing vegetation from very steep slopes can increase landslide hazards. Areas that experience wildfire and land clearing for development may have long periods of increased landslide hazard. Also, certain types of ground cover have a much greater need for constant watering to remain green. Changing away from native ground cover plants may increase the risk of landslide.

### **RISK ANALYSIS**

Vulnerability assessment for landslides will assist in predicting how different types of property and population groups will be affected by a hazard<sup>29</sup>. Data that includes specific landslide-prone and debris flow locations in the District can be used to assess the population and total value of property at risk from future landslide occurrences.

The Beverly Hills Unified School District Building Department uses the ratio of horizontal to vertical slope as an indicator of hill slope stability, using the ratio of 2 horizontal to 1 vertical as the threshold to identify potentially unstable hillside slopes. The Slope Instability Potential Map shows the hillside areas north of Sunset Boulevard exceed the threshold limit.

An estimated 20 % of the land in Beverly Hills exceeds this slope threshold and has potentially unstable soil. There are 666 parcels in Beverly Hills are located in the potential landslide area. The total value of these properties is estimated approximately \$1.008 billions.

While a quantitative vulnerability assessment (an assessment that describes number of lives or amount of property exposed to the hazard) has not yet been conducted for Beverly Hills Unified School District landslide events, there are many qualitative factors that point to potential vulnerability. Landslides can impact major transportation arteries, blocking residents from essential services and businesses.

Past landslide events have caused major property damage or significantly impacted District residents, and continuing to map District landslide and debris flow areas will help in preventing future loss.

Factors included in assessing landslide risk include population and property distribution in the hazard area, the frequency of landslide or debris flow occurrences, slope steepness, soil characteristics, and precipitation intensity. This type of analysis could generate estimates of the damages to the District due to a specific landslide or debris flow event.

### **WHAT IS SUSCEPTIBLE TO LANDSLIDES**

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<sup>29</sup> Homeowners Guide for Landslide Control, Hillside Flooding, Debris Flows, Soil Erosion, (March 1997)

Landslides can affect utility services, transportation systems, and critical lifelines. Communities may suffer immediate damages and loss of service. Disruption of infrastructure, roads, and critical facilities may also have a long-term effect on the economy. Utilities, including potable water, wastewater, telecommunications, natural gas, and electric power are all essential to service community needs. Loss of electricity has the most widespread impact on other utilities and on the whole community. Natural gas pipes may also be at risk of breakage from landslide movements as small as an inch or two.

### **Roads**

The Beverly Hills Unified School District Public Works Department, Street Maintenance Division is responsible to slides that inhibit the flow of traffic or are damaging the roadway. The Public Works Department does its best to communicate with residents impacted by landslides, but can usually only repair the roadway itself, as well as the areas adjacent to the slide where the City has the right of way.

It is not cost effective to mitigate all slides because of limited funds and the fact that some historical slides are likely to become active again even with mitigation measures. The landslide can be alleviated by grading slides, and by installing new drainage systems on the slopes to divert water from the landslides. This type of response activity is often the most cost-effective in the short-term, but is only temporary. Unfortunately, many property owners are unaware of slides and the dangers associated with them.

### **Lifelines and critical facilities**

Lifelines and critical facilities should remain accessible, if possible, during a natural hazard event. The impact of closed transportation arteries may be increased if the closed road or bridge is critical for hospitals and other emergency facilities. Therefore, inspection and repair of critical transportation facilities and routes is essential and should receive high priority. Losses of power and phone service are also potential consequences of landslide events. Due to heavy rains, soil erosion in hillside areas can be accelerated, resulting in loss of soil support beneath high voltage transmission towers in hillsides and remote areas. Flood events can also cause landslides, which can have serious impacts on gas lines that are located in vulnerable soils.

The District has no critical facilities in landslide areas and has no plans for future development in identified hazard zones.

### **IMPACTS OF DEVELOPMENT**

Although landslides are a natural occurrence, residential development can substantially affect the potential for landslide failures in Beverly Hills Unified School District. Proper planning and geotechnical engineering can be exercised to reduce the threat of safety of people, property, and infrastructure.

### **EXISTING MITIGATION ACTIVITIES**

Existing mitigation activities include current mitigation programs and activities that are being implemented by county, regional, state, or federal agencies or organizations. The following practices are strategies the City of Beverly Hills practices in order to protect life and property within their city borders, which includes the Beverly Hills Unified School District.

Please refer to the segment *BHUSD Emergency and Safety Preparedness Programs—Existing Mitigation Strategies* in Section 2 of this plan for further details on existing mitigation strategies the District practices.

### **Landslide Building/Zoning Codes**

The Beverly Hills Unified School District Municipal Code (BHMC) Title 9 which adopted the Amendment of California Building Code (CBC) Chapters 18, 33 and 36 addresses development on hillside slopes. These sections outline standards for hillside slope hazard areas on slopes with a ratio of 2 horizontal to 1 vertical or less. Generally, the ordinance requires geotechnical engineering and geologic studies for developments proposed on slopes of 2 horizontal to 1 vertical or less. More detailed surface and subsurface investigations shall be warranted if indicated by geotechnical engineering and geologic studies to sufficiently describe existing conditions. This may include soils, vegetation, geologic formations, and drainage patterns. Site evaluations may also occur where stability might be lessened by proposed grading/filling or land clearing.

The CBC requires geotechnical investigation of the potential soil liquefaction and soil strength loss during earthquakes for development in the liquefaction zones. The geotechnical report shall address potential consequences of any liquefaction and soil strength loss and discuss mitigating measures.

### **LANDSLIDE MITIGATION STRATEGIES**

The windstorm mitigation strategies provide direction on specific activities that the Beverly Hills Unified School District plans to undertake to reduce risk and prevent loss from an landslide event. Each strategy is a recommendation for future action which can be used by the Steering Committee and local decision makers in pursuing strategies for implementation. Refer to Section 4 for more information on Landslide Mitigation Strategies.

## **SECTION 11 - WINDSTORMS**

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**WHY ARE WINDSTORMS A THREAT TO THE BEVERLY HILLS UNIFIED SCHOOL DISTRICT**

Severe wind storms pose a significant risk to life and property in the region by creating conditions that disrupt essential systems such as public utilities, telecommunications, and transportation routes. High winds have the potential to cause damage to local homes and businesses. High winds, over prolonged periods of time, can increase the risk of urban wildfire as moisture content decreases in brush on hillsides and at urban interface areas. High winds can displace or interrupt building structural elements, trees, electrical lines and other utility services.

**CAUSES AND CHARACTERISTICS OF WINDSTORMS IN BEVERLY HILLS**

High winds are generally related to thunderstorm activity, strong frontal systems or pressure gradient differences created at an interface of high and low pressure weather fronts. Most significant wind related events in the Southern California area are generally related to an anomaly termed “Santa Ana Winds”. A technical description of the Santa Ana Wind condition can be accessed on a National Weather Service internet web site (<http://nimbo.wrh.noaa.gov/Sandiego/snawind.html>).

While Santa Ana wind conditions are indeed a concern for the general Southern California area (see chart 25), there seems to be a lack of correlation between the effects of these events in the Southern California area and significant effects of the same event in the City of Beverly Hills. Furthermore, the diverse topography within the City seems to favor isolated wind events whereas the hillside areas may be windy while, at the same time, the southern area of the District may remain calm.

**Chart 25. Santa Ana Wind News Stories**

**The following Santa Ana wind events were featured in news resources during 2003:**

<p>January 6, 2003 OC Register</p>	<p>“One of the strongest Santa Ana windstorms in a decade toppled 26 power poles in Orange early today, blew over a mobile derrick in Placentia, crushing two vehicles, and delayed Metrolink rail service.” This windstorm also knocked out power to thousands of people in northeastern Orange County.</p>
<p>January 8, 2003 CBSNEWS.com</p>	<p>“Santa Ana’s roared into Southern California late Sunday, blowing over trees, trucks and power poles. Thousands of people lost power.”</p>
<p>March 16, 2003 dailybulletin.com</p>	<p>Fire Officials Brace for Santa Ana Winds - - “The forest is now so dry and so many trees have died that fires, during relatively calm conditions, are running as fast and as far as they might during Santa Ana Winds. Now the Santa Ana season is here. Combine the literally tinder dry conditions with humidity in the single digits and 60-80 mph winds, and fire officials shudder.”</p>

Comparing National Climatic Data Center (NCDC) records for thunderstorm/high wind events affecting Los Angeles County against available computerized tree maintenance records for the City of Beverly Hills street trees (1999 to present), the affects of high wind events that have occurred across Los Angeles County seem to have little historic effect on Beverly Hills street trees (see chart 15). More specifically, the cross reference of NCDC records of fifteen (15) high wind events occurring between 1999 and 2003 against tree maintenance records for whole tree loss to wind during the same period show the

loss of one (1) tree during a 29 November 1999 event and the loss of two (2) trees during a 6 January 2003 event. Therefore, it appears that wind related tree damage in the City does not appear to follow Los Angeles County weather event trends. Wind related tree damage is more likely to occur during events that are isolated specifically to the Beverly Hills area.

**Chart 26. NCDC Records for Beverly Hills**

<b>Event Date</b>	<b>NWS Event Log</b>	<b>NWS Reported Wind speed (MPH)</b>	<b>Beverly Hills Event Related Impact</b>
11-Feb-1999	NCDC: Event Details	74.88	None
3-Apr-1999	NCDC: Event Details	64.51	None
9-Apr-1999	NCDC: Event Details	46.08	None
21-Nov-1999	NCDC: Event Details	53.00	Windthrow of Ficus tree
2-Dec-1999	NCDC: Event Details	77.14	None
23-Feb-2000	NCDC: Event Details	57.60	None
5-Mar-2000	NCDC: Event Details	69.12	None
18-Apr-2000	NCDC: Event Details	100.22	None
28-Aug-2000	NCDC: Event Details	59.91	None
13-Feb-2001	NCDC: Event Details	51.84	None
20-Apr-2001	NCDC: Event Details	57.60	None
14-Dec-2001	NCDC: Event Details	52.00	None
13-Mar-2002	NCDC: Event Details	40.00	None
25-Nov-2002	NCDC: Event Details	80.64	None
6-Jan-2003	NCDC: Event Details	74.88	Windthrow of two (2) Pine trees

**WINDSTORM HAZARD IDENTIFICATION**

A windstorm event in the BHUSD can come in the form of short term, topographically influenced, high wind gusts to extended duration Santa Ana wind conditions. Significant wind events in the Beverly Hills could pose a significant concern to trees and structural elements of buildings, especially as wind thrown trees and detached structural elements block or disrupt roadways and school activity.

**Chart 27. Beaufort Scale**

Beaufort Force	Speed (mph)	Wind Description - State of Sea - Effects on Land
0	Less 1	Calm - Mirror-like - Smoke rises vertically
1	1-3	Light - Air Ripples look like scales; No crests of foam - Smoke drift shows direction of wind, but wind vanes do not
2	4-7	Light Breeze - Small but pronounced wavelets; Crests do not break - Wind vanes move; Leaves rustle; You can feel wind on the face
3	8-12	Gentle Breeze - Large Wavelets; Crests break; Glassy foam; A few whitecaps - Leaves and small twigs move constantly; Small, light flags are extended
4	13-18	Moderate Breeze - Longer waves; Whitecaps - Wind lifts dust and loose paper; Small branches move
5	19-24	Fresh Breeze - Moderate, long waves; Many whitecaps; Some spray - Small trees with leaves begin to move
6	25-31	Strong Breeze - Some large waves; Crests of white foam; Spray - Large branches move; Telegraph wires whistle; Hard to hold umbrellas
7	32-38	Near Gale - White foam from breaking waves blows in streaks with the wind - Whole trees move; Resistance felt walking into wind
8	39-46	Gale - Waves high and moderately long; Crests break into spin drift, blowing foam in well marked streaks - Twigs and small branches break off trees; Difficult to walk
9	47-54	Strong Gale - High waves with wave crests that tumble; Dense streaks of foam in wind; Poor visibility from spray - Slight structural damage
10	55-63	Storm - Very high waves with long, curling crests; Sea surface appears white from blowing foam; Heavy tumbling of sea; Poor visibility - Trees broken or uprooted; Considerable structural damage
11	64-73	Violent Storm - Waves high enough to hide small and medium sized ships; Sea covered with patches of white foam; Edges of wave crests blown into froth; Poor visibility - Seldom experienced inland; Considerable structural damage
12	>74	Hurricane - Sea white with spray. Foam and spray render visibility almost non-existent - Widespread damage. Very rarely experienced on land.

Source: <http://www.compuweather.com/decoder-charts.html>

In terms of City resources, trees come to mind as potential hazards during high wind events. The leafy canopy and structural elements of a tree crown present a drag type barrier to winds. Trees are naturally engineered to minimize wind drag through the re-orientation of leaves and through the independent motion of limbs and branches to minimize the transfer of uniform sway motion forces to the trunk during wind events. The Beaufort Wind Scale (BWS-see Chart 27) specifically notes problems with trees as wind speeds increase. The BWS references the likelihood of whole tree motion as wind

speeds exceed thirty two (32) miles per hour (MPH), twig breakage at thirty nine (39) MPH and whole tree windthrow as wind speeds exceed fifty five (55) MPH. The susceptibility of trees to windthrow can be influenced by the general structural condition of the trees, the location of the trees in reference to wind patterns and the level and frequency of pruning maintenance given the trees.

In the case of building structures, the likelihood of structural element detachment may be influenced by local construction code requirements, the location of buildings in reference to wind patterns and in the level of maintenance upkeep provided buildings by owners. Given the location of Beverly Hills in relation to historic Santa Ana wind flows, coupled with the topography of some areas of the City that favor the development of isolated high wind conditions; the effects of windstorms will be a continuing management concern in the City.

Using the analysis provided in the “Windstorm Characteristics in Beverly Hills” section, it can be assumed that windstorms will affect the Los Angeles area with some frequency, possibly annually. While the historic impact of these events on the District seems low, these events always stand to pose a threat to life, property, utility delivery systems, infrastructure elements and transportation. In the case that a wind event results in a major utility disruption, it may prove necessary to utilize private, City and District resources to aid in the care and sheltering of displaced residents. The District is currently working with the Red Cross to set up such agreements.

In the case of a severe event, the economic impact of providing these services on a long term basis could prove taxing. Additionally, the cost to restore disrupted or damaged District infrastructure or utility elements could be significant.

### **RISK ANALYSIS**

Historically, windblown debris liability claims in relation to trees are considered “acts of God” from a risk management perspective, unless a known condition existed that lent to an accident. In addition to the rare frequency of this type of problem as seen in the previous analysis, The Beverly Hills Unified School District has made no claim payments to address this type of problem.

The level of expenditures for all emergency type tree services (i.e. limb failures, clearance of private property tree failures into roadways, etc.) has decreased over the past few years from two (2) percent of the total funding availability to a current level of less than one (1) percent within the City of Beverly Hills. As the previous analysis showed, few of the responses are directly related to wind events. In regards to wind related damage to District structures; the District has no record of claim payments related to structural damage during windstorms during the last decade.

The BHUSD has not had any significant damage as a result of windstorm activity. In summary, historical data suggests that the vulnerability and risk levels for windstorm related damage and liability in the Beverly Hills Unified School District is low.

### **WHAT IS SUSCEPTIBLE TO WINDSTORMS**

### **Life and Property**

Based on the known wind patterns in the Los Angeles area, windstorms can be expected. As wind speeds increase, the likelihood that trees will be uprooted, building structural elements torn away and utility delivery elements damaged. Detached tree limbs and building elements present a significant hazard to life. As large trees are uprooted, the likelihood that loss of life or significant damage to structures and vehicles will occur increases dramatically.

### **Utilities and infrastructure**

Many times, when power poles and lines fall to the ground, it is because a tree has fallen across the lines. Live power lines on the ground can pose a deadly electrical shock hazard to pedestrians or people trapped in vehicles. Displaced tree limbs or flying structural debris can cause power line arching and subsequent utility delivery disruptions. Windstorms can cause structural damage to buildings and other critical infrastructure, especially as trees are wind thrown. With this damage comes the potential for disruption of communications and technological systems, especially as disruption timeframes become lengthy.

### **Transportation**

Windblown debris, tree limbs and wind thrown trees can damage traffic control apparatus, block roadways, damage vehicles and limit the accessibility of emergency vehicles. Power lines that have been knocked down by falling trees create the potential for fire and electrocution hazards.

### **Increased Fire Threat**

Prolonged winds during the warmer months of the year can decrease foliar moisture levels and increase the ignition potential in drying underbrush. When urban/wildland interface fires occur, Santa Ana wind conditions can drive the flames and increase the spread speed and severity of the fire. This is a concern near homes, especially where brush clearance has been lax.

### **EXISTING MITIGATION ACTIVITIES**

Existing mitigation activities include current mitigation programs and activities that are being implemented by county, regional, state, or federal agencies or organizations. The following practices are strategies the City of Beverly Hills practices in order to protect life and property within their city borders, which includes the Beverly Hills Unified School District.

Please refer to the segment *BHUSD Emergency and Safety Preparedness Programs—Existing Mitigation Strategies* in Section 2 of this plan for further details on existing mitigation strategies the District practices.

### **Tree Management**

In terms of limiting the potential impact of high wind events on trees, routine trimming to promote air flow through tree crowns and elimination of structurally questionable trees are prudent focuses.

As a Tree City USA program participant, the City of Beverly Hills is recognized for a well rounded urban forestry program. This program includes the scheduled maintenance pruning of trees, the identification and master planned removal and replacement of declining segments of the urban forest and public education programs. The following are current programs that address limiting decline and potential dangers in the Beverly Hills urban forest.

### **Street Tree Master Plan (STMP) Phase One (1)**

The removal and replacement of approximately three thousand (3000) American Elm (*Ulmus Americana*) and Arizona Ash (*Fraxinus velutina*) trees, affecting thirty (30) streets in the City was outlined in the STMP Phase One (1) of 1996. In addition to overall decline problems, many of these trees displayed structural abnormalities that could become failure potentials during high wind events. The removal and replacement of approximately two hundred (200) trees each year under this program serves to eliminate structurally deficient trees from the population, thus reducing the overall failure potential of trees in the overall tree population. The program will be approximately fifty (50) percent complete at the end of fiscal year 2003-2004. In addition to the phased removal and replacement program activities, remaining American Elm and Arizona Ash trees are inspected each year during a safety and clearance pruning cycle.

### **Street Tree Master Plan Phase Two (2)**

An ongoing program, Phase Two (2) of the STMP addresses problems with Indian Laurel Fig (*Ficus microphylla* "Nitida") trees in the City. Ficus trees, for the most part, are fast growing trees with an aggressive root system. As roots from Ficus trees cause conflict with sidewalks and curbs, it becomes necessary to cut roots. When severe root cutting is necessary, tree stability can become an issue. Prior to the development of Phase Two (2) of the STMP, the City attempted to maintain some equilibrium between the crowns of trees that had suffered root cutting and the root system keeping these trees in place through an aggressive and short phased trim cycle. This approach sapped resources from other portions of the urban forest, as approximately thirty (30) percent of the available annual pruning budget was spent pruning Ficus trees that represent approximately six (6) percent of the total City tree resource.

At present, STMP Phase Two (2) projects have decreased the Ficus tree population in the Business Triangle of the City, along Lasky Drive, Durant Drive and Olympic Boulevard. Future STMP Phase Two projects will include the review of Ficus trees on Robertson and La Cienega Boulevards, as well as a portion of Santa Monica Boulevard to the west of Wilshire Boulevard. With the continuation of this program, potentially unstable Ficus trees will be eliminated from the population. Replacement trees will offer the benefits of being more site and size appropriate in addition to being more structurally stable.

### **Ongoing Assessment and Protection of the City Tree Resource**

The computerized inventory of the City of Beverly Hills urban forest resource includes a simple data set for individual tree attributes and locations. The ongoing assessment of this inventory identifies increasing attrition rates in segments of the tree population not addressed by a STMP phase. Any notable increase in tree attrition is investigated and analyzed. Individual trees that are potentially dangerous are identified during tree maintenance activities and through reports originating from both City staff and residents.

### **Community Partnership**

The City of Beverly Hills encourages partnership in the care of the City tree resource by providing public education materials to residents and their gardeners in the proper care of City trees, especially when attrition rate trends are noted in a particular segment of the urban forest. This material is mailed with tree trimming notifications and is available for viewing and download on the City's web site.

### **Care of City Parkway Trees**

The City takes an aggressive approach towards the protection of parkway trees that may be impacted by construction activities. Construction personnel and property owners are provided with guidelines for the protection of City trees during construction projects. In the event that guidelines are not followed, the City takes whatever action is necessary to see to the protection of trees. When a tree is given proper attention and care, the likelihood that the tree will become diseased or structurally unstable decreases. This material is provided during the project planning process, distributed by inspectors in the field and is available for viewing and download on the City web site.

### **Protecting Parkway Trees during Construction**

Program successes and challenges:

The level of expenditures for all emergency type tree services (i.e. limb failures, clearance of private property tree failures into roadways, etc.) has decreased over the past few years from two (2) percent of the total funding availability to a current level of less than one (1) percent. As the previous analysis showed, few of the responses are directly related to wind events.

The continued improvement in community partnership related to the care of City parkway trees is expected to have a significant impact in limiting avoidable decline and attrition in the street tree population. As private property tree maintenance improves, especially in the hillside areas of the City, the occurrence of wind and rain related tree failures into public roadways is expected to decline.

### **Interagency Efforts**

As stated, one of the most common problems associated with windstorms is power outage. High winds commonly occur during winter storms, and can cause trees to bend, sag, or fail (tree limbs or entire trees), coming into contact with nearby distribution power lines. Fallen trees can cause short-circuiting and conductor overloading. Wind-induced damage to the power system causes power outages to customers, incurs cost to make repairs, and in some cases can lead to ignitions that start wild land fires.

One of the strongest and most widespread existing mitigation strategies pertains to tree clearance. Currently, California State Law requires utility companies to maintain specific clearances (depending on the type of voltage running through the line) between electric power lines and all vegetation.

Enforcement of the following California Public Resource Code Sections provides guidance on tree pruning regulations:

4293: Power Line Clearance Required

4292: Power Line Hazard Reduction

4291: Reduction of Fire Hazards around Buildings

4171: Public Nuisances

The following pertain to tree pruning regulations and are taken from the California Code of Regulations:

Title 14: Minimum Clearance Provisions

Sections 1250-1258

General Industry Safety Orders

Title 8: Group 3: Articles 12, 13, 36, 37, 38

California Penal Code Section 385

Finally, the following California Public Utilities Commission section has additional guidance.

### **California Public Utilities Commission**

General Order 95: Rule 35

Homeowner Liability:

Failure to allow a utility company to comply with the law can result in liability to the homeowner for damages or injuries resulting from a vegetation hazard. Many insurance companies do not cover these types of damages if the policy owner has refused to allow the hazard to be eliminated.

The power companies, in compliance with the above regulations, collect data about tree failures and their impact on power lines. This mitigation strategy assists the power company in preventing future tree failure. From the collection of this data, the power company can advise residents as to the most appropriate vegetative planting and pruning procedures.

### **WINDSTORM MITIGATION STRATEGIES**

The windstorm mitigation strategies provide direction on specific activities that the Beverly Hills Unified School District plans to undertake to reduce risk and prevent loss from an windstorm event. Each strategy is a recommendation for future action which can be used by the Steering Committee and local decision makers in pursuing strategies for implementation. Refer to Section 4 for more information on Windstorm Mitigation Strategies.