



FIRST RESPONDERS/FACILITIES CONTACT LIST

C-O-N-F-I-D-E-N-T-I-A-L

NOT FOR PUBLIC VIEW

(FOR EOC GENERAL STAFF & MANAGEMENT TEAM ONLY)

EOC RESPONSE STAFF

LOCAL EMERGENCY RESPONSE AGENCIES

ESSENTIAL FACILITIES

CRITICAL FACILITIES



Town of Apple Valley
Emergency Operations Plan

Appendix 6
Contact List

NAME	AGENCY/TITLE	EOC POSITION	HOME PHONE	NEXTEL PHONE
Acevedo, Orlando	TAV/	Liaison Section Coordinator		
Antobam, Kofi	TAV/Assistant Director of Finance	Finance/Accounting Manager		
Bell, Frank	AVPD/Lieutenant	Operations Section Coordinator		
Bossard, Denise	TAV/Executive Secretary	Liaison Officer		
Cady, Mike	TAV/Public Works	Public Works/Building & Safety Branch Coordinator		
Carroll, Patrick	TAV/Building Official	Damage/Safety Assessment Unit		
Cornett, Barbara	TAV/Animal Control Supervisor	Animal Care Unit		
Cron, Dennis	TAV/Public Services Manager	Liaison Section Coordinator		
Guarrera, Joseph	AVFPD/TAV Emergency Services Officer	EOC Coordinator		
Hill, Trish	AVPD/Community Liaison Officer	PIO		
Hultquist, Sid	AVFPD/Fire Chief	EOC Director (alternate)/ Fire Services Coordinator		
Martin, Kathie	TAV/Public Relations Officer	PIO		
Parsons, Mike	AVFPD/Division Chief	Operations Section Coordinator		
Puckett, Marc	TAV/Director of Finance	Finance/Administration Section Coordinator		
Reynolds, Mark	AVFPD/Finance Officer	Finance/Administration Section Coordinator		
Robinson, Frank	TAV/Town Manager	EOC Director		
Tomlin, Lana	AVPD/Police Chief	EOC Director (alternate)/Law Enforcement Svcs Coordinator		
Ward, Susan	TAV/Administrative Services Manager	Planning/Intelligence Section Coordinator		
Webb, Sierra	TAV/Events Coordinator	PIO		
Whiteside, Gina	TAV/Projects Manager	Planning/Intelligence Section Coordinator		

CONFIDENTIAL INFORMATION



LOCAL EMERGENCY RESPONSE AGENCIES

AGENCY	ADDRESS	PHONE
American Medical Response	14828 7 th Street, Victorville	(760) 245-7051
American Red Cross-High Desert Chapter	16248 Desert Knolls Drive, Victorville	(760) 245-6511
Apple Valley Fire Protection District	22400 Headquarters Drive, Apple Valley	(760) 247-7618
Apple Valley Police Department	14931 Dale Evans Parkway, Apple Valley	(760) 247-7400
Bureau of Land Management	18809 Central Road, Apple Valley	(760) 240-8541
California Army National Guard	17988 Highway 18, Apple Valley	(760) 242-2509
California Highway Patrol	14210 Amargosa Road, Victorville	(760) 241-1186
Cal-Trans	13693 Mariposa Road, Victorville	(760) 241-2321
Federal Bureau of Investigations	14011 Park Avenue, Victorville	(760) 951-7119
Reach-Upland Fire Air Ambulance	1257 N. Airport Drive, Upland	(909) 931-4180
Mercy Air Ambulance	1670 Miro Way, Rialto	(888) 499-9495
Salvation Army Corps	14585 La Paz Drive, Victorville	(760) 245-2545
San Bernardino County Fire Department	157 W. 5 th Street, San Bernardino	(909) 387-5974
San Bernardino County Sheriff's Department	14455 Civic Drive, Victorville	(760) 243-8720



ESSENTIAL FACILITIES

Essential facilities are defined as structures, areas, or systems that significantly or directly affect the public health and safety of the community, i.e., police and fire stations, hospitals, utilities (water, sewer, electrical, gas, communications), and Shelter/Schools. For records of industrial facilities in the Town of Apple Valley that handle hazardous materials, refer to the Apple Valley Fire Protection District, Fire & Life Safety Section.

Sector #	Essential Facility	Location	*Daytime Phone #	Facility Type
1	Apple Valley Fire Station #331/EOC	22400 Headquarters Drive	247-7618	Fire
1	Apple Valley Fire Station #332	18857 Highway 18	242-3252	Fire
1	Apple Valley Fire Station #333	20604 Highway 18	247-7141	Fire
1	St. Mary Medical Center	18300 Highway 18	242-2311	Hospital
1	Apple Valley Police Department	14931 Dale Evans Pkwy	240-7400	Police
1	Church of the Valley	14933 Wakita	247-7817	Shelter
1	Mojave Mesa Elementary School	15552 Wichita Road	242-5883	Shelter/School
1	Rancho Verde Elementary School	14334 Pioneer Road	247-2663	Shelter/School
1	Academy of Academic Excellence	18350 Highway 18	946-5414	Shelter/School
1	Sycamore Rocks Elementary School	23450 South Road	240-3332	Shelter/School
1	Phoenix Academy	20700 Thunderbird Road	242-7011	Shelter/School
1	Southwest Gas Corporation Victorville Tap	Southeast corner of Central Road and Quarry Road	241-9321	Utility/Gas
1	Verizon Desert Knolls Remote	15740 Outer Highway 18	800-772-5153	Utility/Telephone
1	Verizon North Apple Valley Remote	West side of Central Road @ El Centro Road	800-772-5153	Utility/Telephone
1	Apple Valley Ranchos Water Company Bell Mountain Tank	200 yards west of Dale Evans Parkway & 1.7 miles north of Corwin Rd	247-6411	Utility/Water
1	Apple Valley Ranchos Water Company Corwin Booster	Corwin Road, north side, 1 lot east of Choco Road	247-6411	Utility/Water
1	Apple Valley Ranchos Water Company Desert Knolls Reservoir	Kasson Court @ Kasson Road (north of Kaibab Road)	247-6411	Utility/Water
1	Apple Valley Ranchos Water Company Stoddard Booster	Lafayette Street, east of Rialto Avenue	247-6411	Utility/Water
1	Apple Valley Ranchos Water Company Stoddard Tank	Navajo Road, north of Stoddard Wells Road	247-6411	Utility/Water
1	Apple Valley Ranchos Water Company Well #10R	16514 South Road	247-6411	Utility/Water
1	Apple Valley Ranchos Water Company Well #12	To the rear of 13288 Choco Road	247-6411	Utility/Water
1	Apple Valley Ranchos Water Company Well #15	To the rear of 14081 Quinnault Road	247-6411	Utility/Water
1	Apple Valley Ranchos Water	To the rear of 21483	247-6411	Utility/Water



Town of Apple Valley
Emergency Operations Plan

Appendix 6
Contact List

	Company Well #24	Waalew Road		
1	Apple Valley Ranchos Water Company Well #7	16916 Dante Road (300 yards west of Stoddard Wells Road)	247-6411	Utility/Water

Sector #	Essential Facility	Location	*Daytime Phone #	Facility Type
1	Apple Valley Ranchos Water Company Youngstown Booster	23860 Cahuilla Road	247-6411	Utility/Water
1	Apple Valley Ranchos Water Company Youngstown Reservoir	South Road, north side, east of Moccasin Road	247-6411	Utility/Water
1	Southern California Water Company Central Plant Well	.25 miles north of Waalew Road, west side	247-3391	Utility/Water
1	Southern California Water Company Papago Well	17230 Central Road	247-3391	Utility/Water
1	Southern California Water Company Yucca Terrace Tanks	Half-way up side of hill on rock outcropping north of Yucca Terrace and Valley Crest Terrace	247-3391	Utility/Water
2	Apple Valley Fire Station #334	12143 Kiowa Road	247-0164	Fire
2	Apple Valley Fire Station #336	19235 Yucca Loma Road		Fire
2	Apple Valley Community Center	13467 Navajo Road	247-6411	Shelter
2	Apple Valley District Offices	12555 Navajo Road	247-7267	Shelter/School
2	Desert Knolls Elementary School	18213 Symeron Road	242-3441	Shelter/School
2	Vanguard Prep	13073 Mesquite Road	961-1066	Shelter/School
2	New Hope Community Church	12345 Navajo Road	247-2127	Shelter
2	Rio Vista Elementary School	13590 Havasu Road	240-0280	Shelter/School
2	Willow Park Continuation High School	21950 Nisqually Road	240-4252	Shelter/School
2	Yucca Loma Elementary School	21351 Yucca Loma Road	247-2623	Shelter/School
2	Southern California Edison Lions Park Substation	Southwest of Lions Park on Highway 18	800-611-1911 (24-hr)	Utility/Electrical
2	Verizon Apple Valley Central Office	13643 Navajo Road	800-772-5153	Utility/Telephone
2	Verizon West Apple Valley Remote	12295 Yorkshire Road	800-772-5153	Utility/Telephone
2	Apple Valley Ranchos Water Company Hilltop Reservoir	To the rear of 20600 Highway 18	247-6411	Utility/Water
2	Apple Valley Ranchos Water Company Well #16	Northwest corner of Sitting Bull Road & Tawya Road	247-6411	Utility/Water
2	Apple Valley Ranchos Water Company Well #17	To the rear of 14909 Nokomis Road	247-6411	Utility/Water
2	Apple Valley Ranchos Water Company Well #18	14510 Riverside Drive	247-6411	Utility/Water
2	Apple Valley Ranchos Water Company Well #19	21308 Sitting Bull Road	247-6411	Utility/Water
2	Apple Valley Ranchos Water Company Well #20	To the rear of 14670 Mandan Road	247-6411	Utility/Water
2	Apple Valley Ranchos Water Company Well #21	21292 Powhattan Road	247-6411	Utility/Water



Town of Apple Valley
Emergency Operations Plan

Appendix 6
Contact List

2	Apple Valley Ranchos Water Company Well #22	21090 Ottawa Road	247-6411	Utility/Water
2	Apple Valley Ranchos Water Company Well #23	15302 Apple Valley Road	247-6411	Utility/Water
2	Apple Valley Ranchos Water Company Well #25	18555 Tuscola Road	247-6411	Utility/Water
2	Apple Valley Ranchos Water Company Well #26	18588 Seneca Road	247-6411	Utility/Water
Sector #	Essential Facility	Location	*Daytime Phone #	Facility Type
2	Apple Valley Ranchos Water Company Well #28	Riverside Drive (2 lots north of Symeron Road)	247-6411	Utility/Water
2	Apple Valley Ranchos Water Company Well #32	Apple Valley Country Club Golf Course	247-6411	Utility/Water
2	Apple Valley Ranchos Water Company Well #4	To the rear of 21760 Ottawa Road	247-6411	Utility/Water
2	Southern California Water Company Anoka Well	Anoka Road, south side, 350-feet east of Pauhaska Road	247-3391	Utility/Water
2	Southern California Water Company Bear Valley Well	To the rear of 21834 Bear Valley Road	247-3391	Utility/Water
2	Southern California Water Company Mesquite Well	.2 miles north of Pah-Ute Road, 300-feet west of Mesquite Road (down gravel track)	247-3391	Utility/Water
2	Southern California Water Company Mohawk Well & Tank	Southeast corner of Mohawk Road and Nandina Road	247-3391	Utility/Water
3	Apple Valley Fire Station #335	21860 Tussing Ranch Road	247-9666	Fire
3	Apple Valley High School	11837 Navajo Road	247-7206	Shelter/School
3	Lone Wolf Colony	23200 Bear Valley Road	247-7878	Shelter
3	Mariana Elementary School	10601 Manhasset Road	247-7258	Shelter/School
3	Sandia Elementary School	21331 Sandia Road	240-5125	Shelter/School
3	Southern California Edison South Substation	Southeast corner of Deep Creek Road and Grande Vista Road	800-611-1911 (24-hr)	Utility/Electrical
3	Southwest Gas Corporation Roundup Way Tap	South side of Roundup Way, .15 miles east of Kiowa Road	241-9321	Utility/Gas
3	Verizon Del Oro Remote	21665 Del Oro Street	800-772-5153	Utility/Telephone
3	Verizon South Apple Valley Remote	9755 Navajo Road	800-772-5153	Utility/Telephone
3	Apple Valley Foothill County Water District Well & Tank	22545 Del Oro Road	247-1101	Utility/Water
3	Apple Valley Heights County Water District Wells	Pioneer Road, .2 miles south of Tussing Ranch Road, west side	247-7330	Utility/Water
3	Apple Valley Ranchos Water Company Hilltop Well #30 & Tank	Westmont Drive, north of Valley Center Drive, and east of Apple Valley Road	247-6411	Utility/Water



3	Apple Valley Ranchos Water Company Well #11R	11775 Jamacha Road	247-6411	Utility/Water
3	Apple Valley Ranchos Water Company Well #31	Apple Valley Road, west side .2 miles south of Bear Valley Road	247-6411	Utility/Water
3	Apple Valley Ranchos Water Company Well #9	11029 Saratoga Road	247-6411	Utility/Water
1, 2, 3	Sewer Stations ... refer to Town of Apple Valley Public Works	Various Locations	240-7000 Ext. 7520	Utility/Sewer

**For after-hours contact information, see the Emergency Services Officer.*

CRITICAL FACILITIES

Critical facilities are defined as structures, areas, or systems that, when damaged, could significantly impact the community. Although direct health and safety issues may not be a consideration, structural damage will have significant consequences to the community or affect a large portion of its population, i.e., traffic lights, railroad crossings, bridges, schools, nursing homes.

Sector #	Critical Facility	Location or Responsible Agency	*Daytime Phone #	Facility Type
1	Valley Crest Residential Care	18524 Corwin Road	242-3188	Assisted Living
1	A&L Manor	20330 Rimrock Road East	946-0288	Nursing Home
1	Rimrock Residential Care Home	20115 Rimrock Road East	242-7340	Nursing Home
1	Granite Hills High School	22900 Esaws Avenue	961-2290	School
1	Lewis Center for Educational Research/Thunderbird Campus	20702 Thunderbird Road	242-3514	School
1	St. Timothy's Episcopal School	15757 St. Timothy Road	242-4256	School
1	Bridge: Dale Evans Parkway & Interstate 15 (<i>out of Town limits but may disrupt transportation routes</i>)	Controlled by Cal-Trans	241-2321	Transportation/Bridge
1	Bridge: Highway 18 @ Mojave River (<i>out of Town limits but may disrupt transportation routes</i>)	Controlled by Cal-Trans	241-2321	Transportation/Bridge
1	Rail Spur: Dale Evans Parkway between Corwin Road & Johnson Road	Controlled by CEMEX	381-7639 (Safety Mgr)	Transportation/Rail
1	Traffic Light: Central Road & Esaws Road	Controlled by Town of Apple Valley	240-7000	Transportation/Traffic Light
1	Traffic Light: Highway 18 & Apple Valley Road	Controlled by Cal-Trans	241-2321	Transportation/Traffic Light
1	Traffic Light: Highway 18 & Bass Hill Road	Controlled by Cal-Trans	241-2321	Transportation/Traffic Light
1	Traffic Light: Highway 18 &	Controlled by Cal-Trans	241-2321	Transportation/Traffic



Town of Apple Valley
Emergency Operations Plan

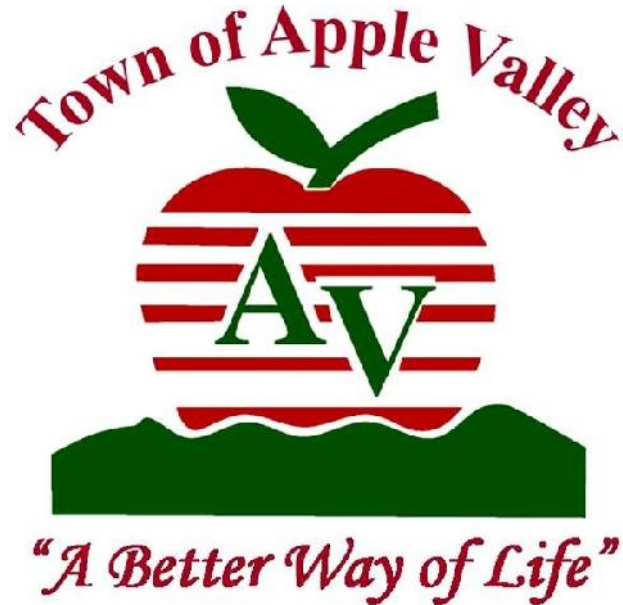
Appendix 6
Contact List

	Central Road			Light
1	Traffic Light: Highway 18 & Corwin Road	Controlled by Cal-Trans	241-2321	Transportation/Traffic Light
1	Traffic Light: Highway 18 & Dale Evans Parkway	Controlled by Cal-Trans	241-2321	Transportation/Traffic Light
1	Traffic Light: Highway 18 & Flathead Road	Controlled by Cal-Trans	241-2321	Transportation/Traffic Light
1	Traffic Light: Highway 18 & Kasota Road	Controlled by Cal-Trans	241-2321	Transportation/Traffic Light
1	Traffic Light: Highway 18 & Kiowa Road	Controlled by Cal-Trans	241-2321	Transportation/Traffic Light
1	Traffic Light: Highway 18 & Navajo Road	Controlled by Cal-Trans	241-2321	Transportation/Traffic Light
1	Traffic Light: Highway 18 & Quinnault Road	Controlled by Cal-Trans	241-2321	Transportation/Traffic Light

Sector #	Critical Facility	Location or Responsible Agency	*Daytime Phone #	Facility Type
1	Traffic Light: Highway 18 & Rancherias Road	Controlled by Cal-Trans	241-2321	Transportation/Traffic Light
1	Traffic Light: Highway 18 & Tao Road	Controlled by Cal-Trans	241-2321	Transportation/Traffic Light
2	AAA Agape Senior Care Placement Inc.	14650 Pamlico Road	242-5683	Nursing Home
2	Sitting Bull Academy	19445 Sitting Bull Rd	961-8479	Schooll
2	Apple Valley Head Start	13589 Navajo Road	247-6955	School
2	Lewis Center for Educational Research/Mojave River Campus	17500 Mana Road	946-5414	School
2	Bridge: Bear Valley Road @ Mojave River	Controlled by Town of Apple Valley	240-7000	Transportation/Bridge
2	Traffic Light: Apple Valley Road & Sitting Bull Road	Controlled by Town of Apple Valley	240-7000	Transportation/Traffic Light
2	Traffic Light: Apple Valley Road & Yucca Loma Road	Controlled by Town of Apple Valley	240-7000	Transportation/Traffic Light
2	Traffic Light: Bear Valley Road & Apple Valley Road	Controlled by Town of Apple Valley	240-7000	Transportation/Traffic Light
2	Traffic Light: Bear Valley Road & Kiowa Road	Controlled by Town of Apple Valley	240-7000	Transportation/Traffic Light
2	Traffic Light: Bear Valley Road & Navajo Road	Controlled by Town of Apple Valley	240-7000	Transportation/Traffic Light
2	Traffic Light: Navajo Road & Sitting Bull Road	Controlled by Town of Apple Valley	240-7000	Transportation/Traffic Light
2	Traffic Light: Bear Valley Road & Jess Ranch Parkway	Controlled by Town of Apple Valley	240-7000	Transportation/Traffic Light
2	Traffic Light: Bear Valley Road & Reata Road	Controlled by Town of Apple Valley	240-7000	Transportation/Traffic Light
3	Merrill Gardens at Apple Valley	11825 Apple Valley Road	961-1212	Assisted Living



3	Abundant Care Ranch	10408 Mockingbird	247-3537	Nursing Home
3	Apple Valley Christian Center	11959 Apple Valley Road	240-5051	Nursing Home
3	Valley Christian School	19923 Bear Valley Road	247-2933	School
3	Bridge: Railroad bridge over Deep Creek Road, just north of Rock Springs Road	Controlled by Mitsubishi Cement Plant	248-7373	Transportation/Bridge
3	Rail Spur: Central Road between Tussing Ranch Road & Ocotillo Road	Controlled by Mitsubishi Cement Plant	248-7373	Transportation/Rail
3	Rail Spur: Kiowa Road between Tussing Ranch Road & Ocotillo Road	Controlled by Mitsubishi Cement Plant	248-7373	Transportation/Rail
2	Rock Springs Retirement	20594 Bear Valley	247-1766	Indep Living
1	County School			
2	Apple Valley Senior Citizen Club	13188 Central Rd		Shelter



Hazard Mitigation Plan

2013

Town of Apple Valley, CA

Primary Point of Contact
Joseph A. Guarrera
Emergency Services Officer
Town of Apple Valley
22400 Headquarters Drive
Apple Valley, CA 92307
760-247-7618 (Office)
jguarrera@applevalleyfd.com





RESOLUTION NO. _____

A RESOLUTION OF THE TOWN COUNCIL OF THE TOWN OF APPLE VALLEY, CALIFORNIA, ADOPTING THE 2011 LOCAL HAZARD MITIGATION PLAN UPDATE, AUTHORIZING FUTURE NON-SUBSTANTIVE AMENDMENTS TO THE PLAN, AND RESCINDING RESOLUTION NO. 2005-12

WHEREAS, the preservation of life and property is an inherent responsibility of local, State and Federal government; and

WHEREAS, the Town of Apple Valley joined with agencies in San Bernardino County to develop, adopt and maintain a multi-jurisdictional Hazard Mitigation Plan; and

WHEREAS, the Town is charged and entrusted with the protection of persons and property prior to and during emergencies, and/or disaster conditions; and

WHEREAS, the goal of a Hazard Mitigation Plan is to minimize, reduce or eliminate loss of life and/or property; and

WHEREAS, this Hazard Mitigation Plan represents a comprehensive description of the Town's commitment to reducing, preventing or eliminating potential impacts of disasters caused by natural and human-caused hazards; and

WHEREAS, the Town of Apple Valley previously adopted its Hazard Mitigation Plan with the adoption of Resolution No. 2005-12; and

WHEREAS, the Town Council desires to rescind Resolution No. 2005-12 and adopt the updated Hazard Mitigation Plan in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS, the Town has undertaken a comprehensive planning effort in developing the Local Hazard Mitigation Plan by organizing resources, assessing risks, and developing and implementing a mitigation plan and monitoring process; and

WHEREAS, the Hazard Mitigation Plan is a Federal requirement under the Disaster Mitigation Act of 2000 for the Town to receive Federal funds for disaster recovery and mitigation; and

WHEREAS, the Hazard Mitigation Plan established a coordinated effort to support mitigation activities and identifies measures to combat natural and man-made hazards within our Town; and



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

WHEREAS, the Town of Apple Valley agrees to adopt this Hazard Mitigation Plan and urges all officials, employees, public and private organizations, and citizens, individually and collectively, to do their share in furthering the goals and objectives of hazard mitigation within the Town of Apple Valley.

NOW, THEREFORE, THE TOWN COUNCIL OF THE TOWN OF APPLE VALLEY DOES HEREBY RESOLVE, DETERMINE AND ORDER AS FOLLOWS:

Section 1. Resolution No. 2005-12 is hereby rescinded.

Section 2. The Town Council approves the Local Hazard Mitigation Plan of the Town of Apple Valley.

Section 3. The Town Council authorizes the Director of Emergency Services to make necessary administrative and operational changes to the plan that are in keeping with the intent of the plan as approved.

Section 4. The Town Council authorizes the Director of Emergency Services, or his duly appointed representative, to perform all duties required to carry out the Local Hazard Mitigation Plan.

Section 5. That the Town Clerk shall certify to the passage and adoption of this resolution and enter it into the book of original resolutions.

PASSED, APPROVED, AND ADOPTED this _____ day of _____ 2011.

DRAFT

Curt Emick, MAYOR

ATTEST:

LA VONDA PEARSON
TOWNCLERK



Table of Contents

Executive Summary	6
Section 1 Introduction	7
1.1 Purpose of the Plan.....	7
1.2 Authority	8
1.3 Community Profile.....	8
1.3.1 Physical Setting	8
1.3.2 History.....	10
1.3.3 Demographics.....	11
1.3.4 Existing Land Use.....	14
1.3.5 Development Trends	22
Section 2 Plan Adoption	24
2.1 Adoption by Local Governing Body.....	24
2.2 Promulgation Authority.....	24
2.3 Primary Point of Contact	25
Section 3 Planning Process	25
3.1 Preparing for the Plan	25
3.1.1 Planning Team	27
3.2 Coordination with Other Jurisdictions, Agencies, and Organizations	27
3.3 Public Involvement/Outreach	29
3.4 Assess the Hazard	33
3.5 Set Goals	34
3.6 Review and Propose Mitigation Measures.....	35
3.7 Draft the Hazard Mitigation Plan	37



3.8	Adopt the Plan.....	37
Section 4 Risk Assessment.....		37
4.1	Hazard Identification	38
4.1.1	Hazard Screening Criteria	39
4.1.2	Hazard Assessment Matrix.....	39
4.1.3	Hazard Prioritization	45
4.2	Hazard Profile	46
4.2.1	Earthquake	46
4.2.2	Flood.....	60
4.2.3	Fire.....	68
4.3	Inventory Assets.....	72
4.3.1	Population.....	72
4.3.2	Buildings	72
4.3.3	Critical Facility List.....	73
4.4	Vulnerability Assessment.....	87
4.4.1	Methodology	87
4.4.2	Earthquake	88
4.4.3	Fire.....	91
Section 5 Community Capability Assessment.....		95
5.1	Agencies and People	98
5.2	Existing Plans.....	101
5.3	Regulations, Codes, Policies, and Ordinances.....	101
5.4	Mitigation Programs	103
5.4	Fiscal Resources.....	107



Section 6 Mitigation Strategies 110

6.1 Overview110

6.2 Mitigation 5-Year Progress Report..... 110

6.3 Mitigation Goals, Objectives, and Projects111

 6.3.1 Emergency Preparedness.....112

 6.3.2 Earthquake113

 6.3.3 Flood..... 121

 6.3.4 Fire.....127

6.4 Mitigation Priorities.....128

6.5 Implementation Strategies.....129

Section 7 Plan Maintenance 131

7.1 Monitoring, Evaluating and Updating the Plan.....131

7.2 Implementation through Existing Programs133

7.3 Continued Public Involvement134

Executive Summary

The Disaster Mitigation Act of 2000 (DMA) was passed by Congress to emphasize the need for mitigation planning to reduce vulnerability to natural and human-caused hazards. DMA 2000 amended the Robert



T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act; 42 United States Code 5121 et seq.) by repealing the act's previous Mitigation Planning section (409) and replacing it with a new Mitigation Planning section (322).

To implement the DMA 2000 planning requirements, the Federal Emergency Management Agency (FEMA) established mitigation planning requirements for states, tribes, and local communities, including the requirement to develop a Hazard Mitigation Plan to address known hazards that impact the Town of Apple Valley. The Town of Apple Valley's Hazard Mitigation Plan includes resources and information to assist Town residents, public and private sector organizations, and others interested in participating in planning for natural hazards. This Hazard Mitigation Plan provides a list of activities that may assist Apple Valley in reducing risk and preventing loss from future hazard events. The action items address multi-hazard issues, as well as activities for earthquakes, flooding, and wildfires. While we cannot predict or protect ourselves against every possible hazard that may strike the community, we can anticipate many impacts and take steps to reduce the harm they will cause. This Hazard Mitigation Plan starts an ongoing process to evaluate the risks different types of hazards pose to the Town, and to engage the Town and the community in dialogue to identify which steps are most important to pursue to reduce these risks. The Plan contains a background on the purpose and methodology used to develop the mitigation plan, a profile of Apple Valley, and sections on hazards that occur within the City.

The Town and community members have worked to address certain aspects of the risk – such as strengthening infrastructures, developing strategies, and establishing emergency preparedness plans. This Plan will formalize this process and assure that these activities continue to be explored and improved over time. Over many years, this constant focus on disasters will make the Town, its residents, and businesses much safer.

This Plan meets the requirements of the federal DMA 2000, which calls for all communities to prepare mitigation plans. By preparing this plan, the Town of Apple Valley is eligible to receive federal mitigation funding after disasters and to apply for mitigation grants before disasters strike.

This Plan promotes sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural hazards. This can be achieved by increasing public awareness, documenting the resources for risk reduction and loss-prevention, and identifying activities to guide the Town toward building a safer, more sustainable community.

SECTION 1 – INTRODUCTION

1.1 Purpose of the Plan

Emergencies and disasters cause death or leave people injured or displaced, cause significant damage to our communities, businesses, public infrastructure and our environment, and cost tremendous amounts in terms of response and recovery dollars and economic loss.



Hazard mitigation reduces or eliminates losses of life and property. After disasters, repairs and reconstruction are often completed in such a way as to simply restore to pre-disaster conditions. Such efforts expedite a return to normalcy; however, the replication of pre-disaster conditions results in a cycle of damage, reconstruction, and repeated damage. Hazard mitigation ensures that such cycles are broken and that post-disaster repairs and reconstruction result in a reduction in hazard vulnerability.

While we cannot prevent disasters from happening, their effects can be reduced or eliminated through a well-organized public education and awareness effort, preparedness and mitigation. For those hazards which cannot be fully mitigated, the community must be prepared to provide efficient and effective response and recovery.

The purpose of this Hazard Mitigation Plan is to assess the significant natural and manmade hazards that may affect the Town of Apple Valley and its inhabitants, evaluate and incorporate ongoing mitigation activities and related programs in the community, determine additional mitigation measures that should be undertaken, and to outline a strategy for implementation of mitigation projects. In addition, this plan has been developed to identify actions, policies and tools for implementation over the long-term resulting in reduction of future losses community wide. The established mitigation projects provided were identified and reviewed by members of the planning committee. The Town of Apple Valley has established an effective, inclusive, comprehensive, and long-term plan against natural and manmade hazards.

Citizens and professionals active in disaster planning, response, and mitigation provided important input in the development of the plan and recommended goals and objectives, mitigation measures, and priorities for actions.

This plan fulfills the requirements of the following programs:

1. Pre-Disaster Mitigation (PDM)
2. National Flood Insurance Programs (NFIP) Community Rating System (CRS)
3. Hazard Mitigation Grant Program (HMGP)

Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5165, enacted under section 104 of the Disaster Mitigation Act of 2000, P.L. 106-390, provides new and revitalized approaches to mitigation planning. Section 322, in concert with other sections of the Act, provides a significant opportunity to reduce the

Nation's disaster losses through mitigation planning and emphasizing the need for State, local and tribal entities to closely coordinate mitigation planning and implementation efforts.

A major requirement of the law is the development of local hazard mitigation plans. These plans must be developed and approved by the Federal Emergency Management Agency (FEMA) before November 1,



2004, in order for the local jurisdictions to be eligible for Hazard Mitigation Grant Program (HMGP) project funding from a Presidentially-declared disaster that occurs after this date. Local mitigation plans must be reviewed, updated and re-approved by FEMA every five years to remain eligible. This Mitigation Plan has been updated to meet the requirements of the Act and the regulations established by FEMA. The FEMA regulations were published in the Federal Register on February 26, 2002, as an interim final rule at 44 CFR Parts 201 and 206. FEMA may revise the Interim Final Rule and publish a Final Rule; however, until such time, the Interim Final Rule will serve as the rule for mitigation planning implementation.

1.2 Authority

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

1.3 Community Profile

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

1.3.1. Physical Setting

The Town of Apple Valley is located in the Mojave Desert of the County of San Bernardino, at an elevation of 3,000 feet. Known as the "High Desert", Apple Valley consists of 78 square miles in its incorporated boundaries and a sphere of influence encompassing 200 square miles. The Town borders Interstate 15 to the north, Joshua Road to the east, the foothills of the San Bernardino Mountains to the south, and the Mojave River to the west.

Apple Valley is primarily desert-rural and consists of a typical mountain-and-basin topography with sparse vegetation. The natural geographic vulnerabilities are: Mojave River, San Bernardino Mountains, Dry Lake Bed, and the Desert Knolls area (generally an area with a slope greater than 15%).

Apple Valley experiences an average of 350 days of sunshine per year with summer temperatures ranging from 40 degrees Fahrenheit (F) to 100 degrees F., and winter temperatures dipping down to 10 degrees F. to a high of 70 degrees F. Prevailing winds range from 5-20 knots/hour from the south/southwest to the northeast.

The Mojave River rises in the San Bernardino Mountains at the Lake Silverwood and Mojave River Forks Reservoirs. The River runs in a northerly direction the entire length of the Town's western boundary. Due to the porous soil and rapid evaporation, the River is primarily dry in the area adjacent to Apple Valley. A flow of water is present during major rains and upon release of water from Lake Silverwood (contained by the Cedar Springs Dam and Mojave Dam).

The Town of Apple Valley also consists of a dry lake bed area that consists of sparse population. This area and the area along the Mojave River is part of the 100 Year Flood Area (Flood Zone A).

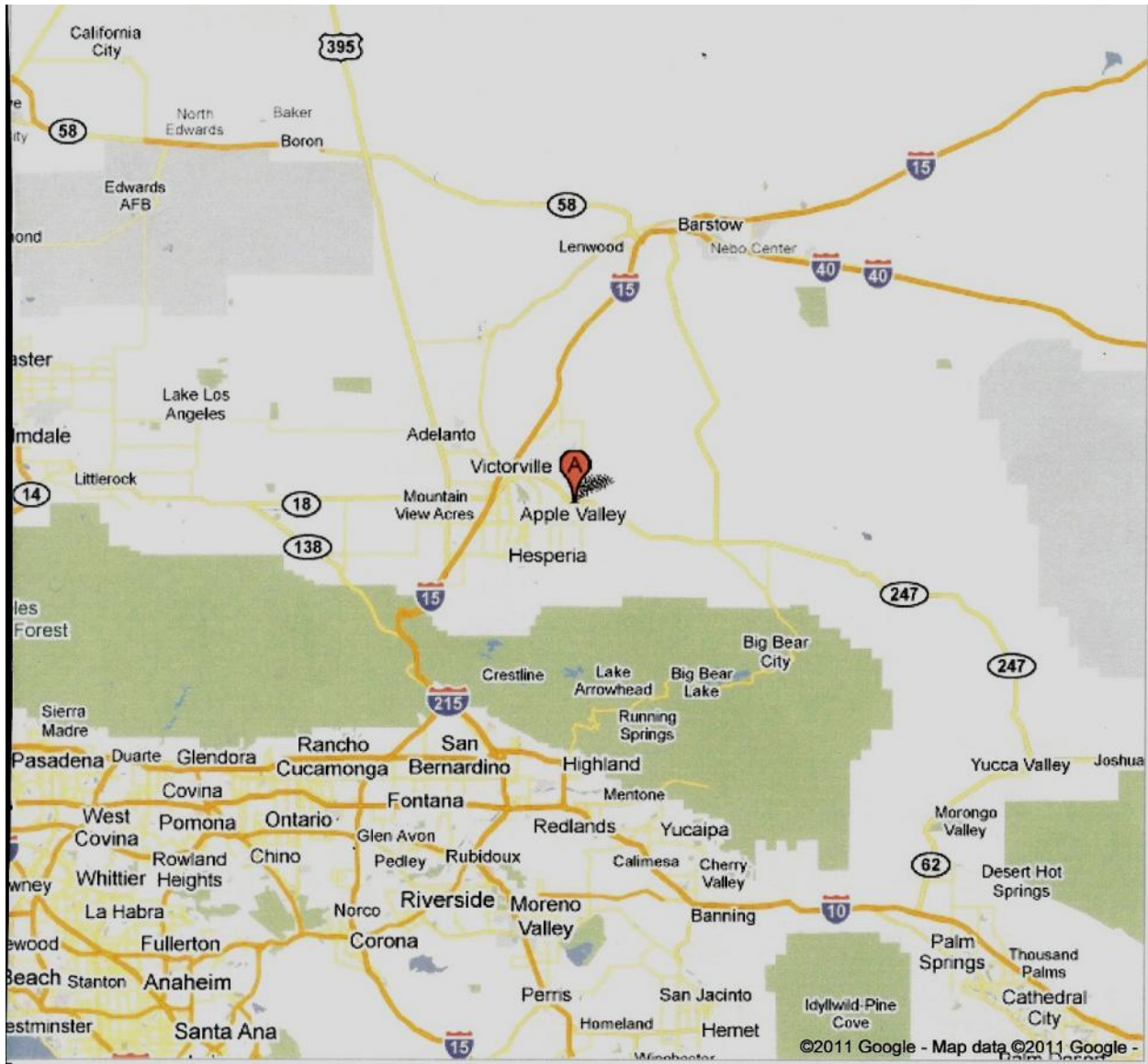


FIGURE 1 REGIONAL SETTING (CREDIT: 2011 GOOGLE MAP DATA)

1.3.2. History

The Town of Apple Valley was incorporated in 1988; however, its history goes back much further. Local historians have found signs of Serrano Indian camps along the Mojave River in Apple Valley. They were already there when Father Francisco Garces arrived in 1776, as he established the Spanish missions throughout California. In the late 1800s, the Paiute Indians also migrated to this area. The Mojave River Trail hosted trappers, gold prospectors, pack mules and Mormon wagon trains—over 13,000 people passed through there between 1849 and 1859. It was in 1860 that the first cabin was built in Apple Valley by Silas Cox, and the first road was cut the following year.



There are many stories as to how Apple Valley acquired its name. According to the late Mary Hampton, local historian, the name arose from the abundance of apple orchards that existed there in the 1920s. Some say the name "Apple Valley" originated from The Appleton Land Company that was based in this area in the early 1900s. Ursula Poates, one of the first settlers in the area, is credited with saying, "There were some apples being raised along the river in those early days, but not by the ton, so I just cut it down and called it Apple Valley!" By 1920, apples were being grown by the ton at award-winning orchards. Unfortunately, with the Great Depression and the cost of pumping water for irrigation, the orchards died off in the 1930s.

With a pleasant climate and lots of land, many types of ranches were built in the area. They touted the dry desert air as a cure for ailments of all sorts, including tuberculosis and asthma. Other ranches provided a haven for shell-shock victims of World War I, while still others developed into guest ranches. People would come to Apple Valley to enjoy the western lifestyle where they could ride horses, attend rodeos and just get away from the big city.

The modern founders of Apple Valley were Newton T. Bass and B.J. "Bud" Westlund, who were partners in the oil and gas industry in Long Beach, CA. Westlund and Bass formed the Apple Valley Ranchos Land Co. in 1946 and marketed the area as a destination resort and quality residential community - "The Golden Land of Apple Valley". They built the Apple Valley Inn and Hilltop House, and invited famous celebrities of Hollywood to come visit. Within ten years there were banks, churches and a school, along with a golf course, hospital and 180 businesses.

1.3.3. Demographics:

San Bernardino County Designated as a Coastal County within the State of California

The number of Americans residing in a coastal county passed the 150 million mark in 2005, making the coastal population larger than the entire U.S. population in 1950. Today, more than half of the U.S. population lives in a coastal area (as defined by the National Oceanic and Atmospheric Administration - NOAA), even though the 673 coastal counties constitute only about one fourth of the country's landmass.



FIGURE 2 – U.S. CENSUS BUREAU

As indicated by the map prepared by the U. S. Census Bureau, San Bernardino County is designated as a Coastal County within the State of California. Particular data exists demonstrating the effects of various types of risks within the county. It is important to use this information as a source point for evaluating the various risks that prevail not only in San Bernardino County, but the City of Yucaipa.

The growth in population of coastal areas illustrates the importance of emergency planning and preparedness for areas that are more susceptible to inclement weather conditions. The U.S. Census Bureau's official population estimates, along with annually updated socioeconomic data from the new American Community Survey, provide a detailed look at the nation's growing coastal population. Emergency planners and community leaders can better assess the needs of coastal populations using census data.



In 2005, the Town of Apple Valley had a population of 63,868 and that population has grown to 74,266 in 2009, with a median age of 33.41 and an average household size of 2.94.

Demographic Overview	
Current population (2009):	74,266
Current regional population (2007) :	333,061
Avg. Household Size (2009) :	2.94
Median Age (2009):	33.41
Home Ownership (2009):	70.43%
Total Households (2009):	25,088
Sources: Claritas Pop Facts Demographic Snapshot Report 04/09, Victorvalleyca.com Regional Profile 1/8/09	
* Regional population estimate is based on a total of Victorville, Hesperia, Apple Valley, and Adelanto populations; unincorporated areas are not included in this estimate.	

Historic and Projected Population Estimates				
1995	2000	2005	2009	2014
50,586	54,239	63,868	74,266	85,843
Annual Growth Rate: Waiting for update				
Source: Claritas Pop Facts Demographic Snapshot Report 4/6/09; Town of Apple Valley Building and Safety Department; California Dept. of Finance, Table E-1 City/County Population Estimates with Annual Percentage of Change.				

Age Distribution of Population		
Age Group	Total (2009)	% Distribution
0-17 years	20,915	28.16%
18-24 years	7,808	10.52%



25-34 years	10,001	13.47%
35-54 years	17,555	23.63%
55-74 years	13,147	17.70%
75 years and older	4,840	6.52%
TOTAL	74,266	100%
Claritas "Pop-Facts: Demographic Snapshot Report – 2009 Est. Population by Age," 4/6/09		

Educational Attainment of Population over 25 Years of Age		
Years of School Completed	Total (2009)	% Distribution
Less than High School	7,973	17.5%
High School	12,659	27.80%
Some College	13,794	30.29%
Associate's Degree	3,624	7.96%
Bachelor's Degree	4,520	9.92%
Graduate Degree or higher	2,973	6.52%
Claritas "Pop-Facts: Demographic Snapshot Report/Est. Population by Age 25+ by Educational Attainment," 4/6/09		

Income Level		
Per Capita (2009)	Median Household (2009)	Average Household (2009)
\$22,848	\$51,927	\$66,959
Claritas "Pop-Facts: Demographic Snapshot Report /Est. Population by Age 25+ Educational Attainment,"4/6/09		

Household Income Distribution



Annual Income	Total (2009)	% Distribution
Under \$35,000	8,480	33.79%
\$35,000- \$49,999	3,695	14.73%
\$50,000-\$74,999	4,793	19.10%
\$75,000- \$99,999	3,246	12.94%
Over \$100,000	4,874	19.42%
Claritas "Pop-Facts: Demographic Snapshot Report /Est. Households by Household income " 4/6/09		

Figure 3 Demographics Town of Apple Valley 2009

1.3.4 Existing Land Use

The land use types in Apple Valley are all related to a single, over-arching concept: that Apple Valley's quality of life is tied to its rural character, and that this character is to be preserved and protected for the long term health of the community. In Apple Valley "rural" means space -- unscarred mountains and vistas of desert valleys, neighborhoods of large lots where keeping horses is allowed, an extensive multi-use trail system, and landscaping consistent with the desert environment. The land use designations established in the Town's General Plan are provided below. The single family land use designations are consistent with those defined in Measure N (see further discussion below). Three land use designations are new to the General Plan: Estate Residential ., Mobile Home Park and Mixed Use.

Very Low Density Residential (R-VLD; 1 dwelling unit per 5 or more gross acres): This land use designation allows detached single family homes on lots of at least five gross acres. Multi-use trails should be integrated into all new projects in this designation, as appropriate. Also permitted are agricultural and ranching activities, animal keeping (both personal use and commercial) and

home occupations. May be appropriate for bed and breakfast and similar uses, and animalkeeping or agricultural-related commercial enterprises, such as feed stores, commercial stables and similar uses with approval of a conditional use permit.

Low Density Residential (R-LD; 1 dwelling unit per 2.5 to 5 gross acres): This land use designation allows detached single family homes on lots of two and a half to five gross acres. This designation provides for the rural and suburban environment. Multi-use trails should be integrated into all new projects in this designation, as appropriate. Also permitted are agricultural and ranching activities, animal keeping (both personal use and commercial) and home



occupations. May be appropriate for bed and breakfast and similar uses, with approval of a conditional use permit.

Estate Residential (R-E; 1 dwelling unit per 1 to 2.5 gross acres): This land use designation allows detached single family homes on lots of one to two and a half gross acres. Access on local roads in new subdivisions within this designation should be paved. Multi-use trails should be integrated into all new projects in this designation, as appropriate. Animal keeping for personal use, ranching activities and home occupations are appropriate land uses in this designation. May be appropriate for bed and breakfast and similar uses, with approval of a conditional use permit.

Estate Residential . (R-E; 1 dwelling unit per 0.75 to 1.0 net acre): This land use designation is specifically designed for animal keeping. Multi-use trails should be integrated into all new projects in this designation, as appropriate. Animal keeping for personal use, ranching activities and home occupations are appropriate land uses in this designation. Centralized stables, corrals, show rings and similar facilities, available to all residents of a development project are

encouraged. May be appropriate for bed and breakfast and similar uses, with approval of a conditional use permit.

Single Family Residential (R-SF; 1 dwelling unit per 0.4 to 0.9 net acre): Lots in this designation must be a minimum of 18,000 square feet net, and may range to 39,200 square feet. This designation is intended to be composed of planned subdivisions with all utilities and public services. Animal keeping is permitted on lots zoned Equestrian Residential in the Development Code. Multi-use trails should be integrated into all new projects in this designation, as appropriate.

Medium Density Residential (R-M; 4 to 20 dwelling units per net acre): This designation is intended to promote a wide range of higher density residential units, including: single family attached; and multi-family units, including condominiums, townhomes and apartments. Projects restricted to senior citizens (age 55 and older) and providing various levels of care are also appropriate in this designation. Single family detached units are only permitted on lots of 18,000

square feet or greater in the Mountain Vista Estates area, as defined in Program 2.G.1. On all other lands designated Medium Density Residential within Town limits, single family detached units are prohibited. This land use designation should be a buffer between less intense residential designations and commercial or industrial designations, or major roadways. Future projects should be located in close proximity to commercial services, public transit and schools.

Mobile Home Park (MHP; 5-15 units per acre): This designation is applied to mobile home parks that existed upon adoption of the General Plan. New mobile home parks would be required to file



a General Plan Amendment and Change of Zone to assign this designation to the project. This designation applies to mobile home parks and mobile home subdivisions. Home occupations and recreational facilities and amenities associated with the mobile home use are also appropriate in this designation.

Mixed Use (M-U): The land use designation has been created to allow for the development of projects that include residential and retail and office commercial development in an integrated, master planned project. Residential development should occur over commercial development, or within a commercial complex (i.e. residential building abutting a commercial building). Residential development must occur at a density of 4 to 30 units per acre. Mixed Use projects are encouraged in The Village, on major roadways, and in close proximity to employment centers, such as the North Apple Valley Industrial Specific Plan area. Projects that propose residential parcels adjacent to commercial parcels, and do not truly integrate the land uses, will not qualify for this designation. The minimum size for a Mixed Use project is 1 acre.

Office Professional (O-P): This designation allows professional offices, and is intended to act as a buffer between General Commercial and residential land uses. This designation encourages high quality professional services with only ancillary retail commercial components. There is no minimum size for project sites in this designation, but assemblage of smaller parcels is encouraged.

General Commercial (C-G): This designation allows a broad range of retail uses, as well as office and service land uses. Typical uses will serve the needs of the Town's residents and businesses, in a shopping center setting. General retail stores, including all types of consumer goods, furniture and appliance sales, auto repair and sales are permitted in this designation. Restaurants, both sit-down and fast food, gasoline service stations and general office (secondary to retail uses) are also permitted in this designation. There is no minimum size for project sites in this designation, but assemblage of smaller parcels is encouraged.

Service Commercial (C-S): This designation is assigned to lands in The Village, and is intended as a transition designation allowing commercial and industrial land uses on a smaller scale. Its location in an established area of Town necessitates flexibility in development standards, due to existing development and infrastructure constraints. Land uses in this designation include vehicle sales and service; lumber, home repair and building supply, general retail, warehousing and manufacturing uses completely contained within an enclosed structure. There is no minimum size for project sites in this designation, but assemblage of smaller parcels is encouraged.

Regional Commercial (C-R): This land use category allows retail uses that serve not only the residents and businesses of Apple Valley, but also of the surrounding region. Permitted uses in



this designation include auto malls, regional malls, business parks, factory stores and outlets, entertainment commercial, hotels and motels, restaurants, institutional and public uses. The minimum size for a Regional Commercial project site is 10 acres.

Planned Industrial (I-P): This land use designation allows high quality, non-polluting industrial land uses, either as free-standing uses or as part of master planned industrial parks. Uses permitted include warehousing, light manufacturing, research and development and administrative facilities. The minimum size for a Planned Industrial project site is 5 acres.

Public Facility (PF): This land use designation is assigned to public and quasi-public land uses, including Town Hall and other Town facilities, fire stations, schools, facilities of the County, State and federal government, water and sewer district, and utility substations and facilities. There is no minimum size in this land use designation.

Open Space (OS): This land use designation is applied to natural and active open space areas, including the knolls, Bell and Fairview mountains, the Mojave River, lands owned by Town, County, State and federal agencies for the purposes of recreation or conservation, and golf courses, parks or other recreational facilities.

Mineral Resources (MR): This land use designation is applied to lands in active mining operations. One such operation exists in the Town at the present time, located near Interstate 15. This land use designation allows mining operations permitted by the State for lands with significant deposits of concrete aggregate (please see the Mineral Resources Element).

Specific Plan: This designation is applied to lands on which a specific plan has been approved by the Town Council. The Specific Plan must conform to State law, and include maps and text that establish the land use designations; standards and guidelines for development; infrastructure requirements; and phasing for the specific plan area.

Town of Apple Valley

General Plan Land Use Map

Exhibit II-2

Adopted August 11, 2009 Town Council Resolution No. 2009-31
Amended September 14, 2020 Town Council Resolution No. 2010-43

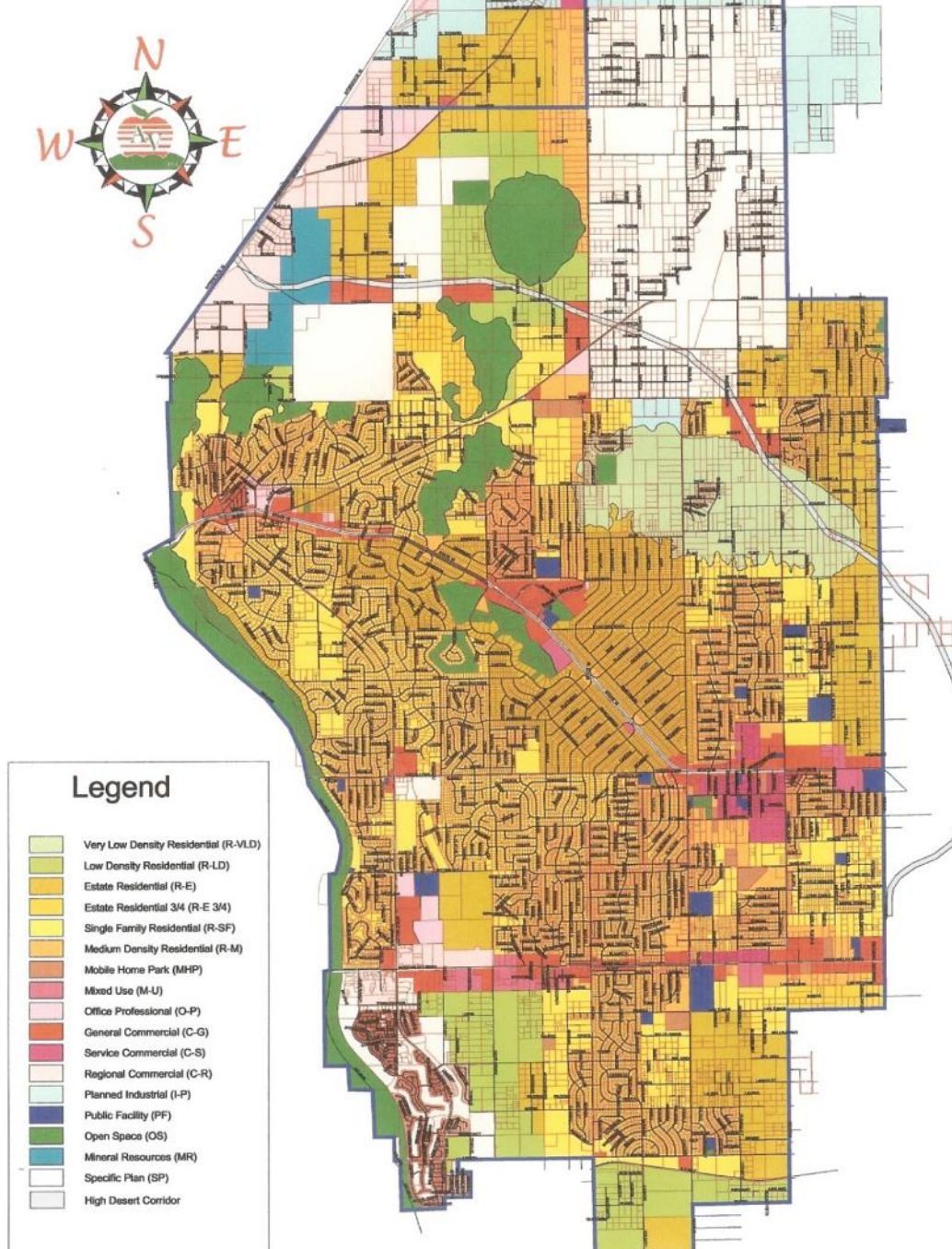


Figure 4 2009 Land Use Map, Exhibit II-2 – Source: Town of Apple Valley General Plan



Build Out Statistics

The Town consists of a total of 50,532 acres, of which 46,948.3 acres were within the Town limits prior to the addition of the two annexation areas. 3,583.2 acres were added as part of Annexations 2008-001 and 2008-002. The acreage, by land use designation, is shown in Tables II-1 and II-2, below.



Table II-1
Statistical Summary of Land Uses
(2008 Town Limits)

Land Use Designation	Town of Apple Valley		
	Developed Acres	Vacant Acres	Total Acres
Residential Land Uses			
Very Low Density Residential (1 du/5 or more gross ac)	212.0	1,749.5	1,961.5
Low Density Residential (1 du/2.5 - 5 gross ac)	450.7	3,071.7	3,522.4
Estate Residential (1du/1 – 2.5 gross ac)	3,308.2	3,308.0	6,616.3
Estate Residential ¾ (1 du/0.75 – 1 ac)	26.1	449.6	475.7
Single family Residential (1 du/0.4-0.9 ac)	8,811.2	3,770.7	12,581.9
Medium Density Residential (4- 20 du/ac)	826.2	1,057.0	1,883.1
Mobile Home Park (5-15 du/ac)	178.5	1.5	180.0
Mixed Use	90.8	229.7	320.5
Specific Plan	1,359.0	5,653.7	7,012.7
Total Residential Uses	15,262.7	19,291.5	34,554.2
Commercial Land Uses			
Mixed Use ¹	90.8	229.7	320.5
General Commercial	480.3	1,066.5	1,546.8
Regional Commercial	99.6	1,203.3	1,303.0
Service Commercial	152.4	179.2	331.6
Office Professional	64.7	546.7	611.3
Specific Plan/Commercial ¹	1,359.0	5,653.7	7,012.7
Total Commercial Uses¹	797.0	2,995.7	3,792.7
Industrial Land Uses			
Planned Industrial	21.4	623.9	645.3
Specific Plan/Industrial ¹	1,359.0	5,653.7	7,012.7
Total Industrial Uses¹	21.4	623.9	645.3
Other Land Uses			
Public Facility	330.2	132.0	462.2
Open Space	291.2	2,796.4	3,087.5
Mineral Resources	129.4	323.2	452.5
Street Rights-of-Way	2,771.1	1,182.8	3,953.9
Total Other Land Uses	3,521.8	4,434.4	7,956.2
Grand Total	19,602.8	27,345.5	46,948.3

¹Specific Plan and Mixed Use acreage included under Residential, above.

Source: Aerial Information Systems, July 2008



Table II-2
Statistical Summary of Land Uses
Annexation No. 2008-001 and No. 2008-002

General Plan Land Use Designation	ANNEXATION NO. 2008-001 and 2008-002		
	Developed Acres	Vacant Acres	Total Acres
Residential Land Uses			
Estate Residential (1du/1 – 2.5 gross ac)	55.7	722.3	778.0
Medium Density Residential (4- 20 du/ac)	41.5	177.3	218.7
Mixed Use (4-30 du/ac)	0.0	94.8	94.9
Total Residential Uses	97.2	994.4	1,091.6
Commercial Land Uses			
Mixed Use ¹	0.0	94.9	94.9
General Commercial	12.3	50.5	62.8
Regional Commercial	7.2	435.7	442.9
Office Professional	0.0	183.1	183.1
Total Commercial Uses	19.5	669.3	688.8
Industrial Land Uses			
Planned Industrial	64.3	1,538.5	1,602.8
Other Land Uses			
Public Facility	0.0	5.1	5.1
Street Rights-of-Way	43.8	151.1	194.9
Grand Total All Land Uses	224.8	3,358.4	3,583.2

¹Mixed Use Acreage included under Residential, above.

Source: Aerial Information Systems, July 24, 2008.

The build out potential of these lands is shown categorically in Table II-3, Residential Land Use Designation Build Out Summary; Table II-4, Commercial and Industrial Land Use Designation Build Out Summary; and Table II-5, Other Land Use Designation Build Out Summary.



Table II-3
Residential Land Use Designation Build Out Summary

Designation	Town Limits						Annexation Areas					
	AC Dev.	AC Vacant	AC Total	Exist. Units	Future Units	Total Units	AC Dev.	AC Vacant	AC Total	Exist. Units	Future Units	Total Units
Very Low Density Residential (1 du/5 or more gross ac)	212.0	1,749.5	1,961.5		350	350	-	-	-	-	-	-
Low Density Residential (1 du/2.5 - 5 gross ac)	450.7	3,071.7	3,522.4		1,229	1,229	-	-	-	-	-	-
Estates Residential (1du/1 - 2.5 gross ac)	3,308.2	3,308.0	6,616.3	20,107	3,308	23,415	55.7	722.3	778.0	-	722	722
Estates Residential 1/4 (1 du/0.75 - 1 ac)	26.1	449.6	475.7		399	399	-	-	-	-	-	-
Single family Residential (1 du/0.4 - 0.9 ac)	8,811.2	3,770.7	12,581.9		5,656	5,656	-	-	-	-	-	-
Medium Density Residential (4- 20 du/ac)	826.2	1,057.0	1,883.1	3,775	15,854	19,629	41.4	177.3	218.7	-	2,659	2,659
Mobile Home Park (5- 15 du/ac)	178.5	1.5	180.0	1,043	23	1,066	-	-	-	-	-	-
Mixed Use	90.8	229.7	320.5		2,088	2,088	0.00	94.8	94.8	-	854	854
Specific Plan	1,068.6	5,959.0	7,027.6		2,829	2,829	-	-	-	-	-	-
Residential Total	15,262.7	19,291.5	34,554.2	24,925	31,716	56,641	97.2	994.4	1,091.6	-	4,236	4,236

Table II-4
Commercial and Industrial Land Use Designation Build Out Summary

Designation	Town Limits				Annexation Areas			
	Acres Dev.	Acres Vacant	Acres Total	Total Potential SF	Acres Dev.	Acres Vacant	Acres Total	Total Potential SF
Mixed Use ¹	90.8	229.7	320.5	1,541,035	0.0	94.9	94.9	636,612
General Commercial	480.3	1,066.5	1,546.8	14,823,253	12.3	50.5	62.8	601,824
Regional Commercial	99.8	1,203.3	1,303.0	12,488,483	7.2	435.7	442.9	4,244,489
Service Commercial	152.4	179.2	331.6	3,177,663	0.0	183.1	183.1	1,754,639
Office Professional	64.7	546.7	611.3	5,838,606	0.0	94.9	94.9	636,612
Specific Plan ¹	1,359.0	5,633.7	7,012.7	6,663,010	-	-	-	-
Commercial Sub Total	887.7	3,225.4	4,113.2	44,598,054	19.5	669.3	688.8	7,874,156
Planned Industrial	21.4	623.9	645.3	6,183,941	64.3	1,538.5	1,602.8	15,359,953
Specific Plan ¹	1,359.0	5,633.7	7,012.7	36,938,443	-	-	-	-
Industrial Sub Total	21.4	623.9	645.3	43,122,386	64.3	1,538.5	1,602.8	15,359,953
Grand Total Commercial & Industrial	909.1	3,849.4	4,758.5	87,672,440	83.9	2,302.7	2,386.5	23,234,109

¹ Mixed Use and Specific Plan acreage included under Residential in Table II-3.

Table II-5
Other Land Use Designation Build Out Summary

Designation	Town Limits			Annexation Areas		
	Acres Dev.	Acres Vacant	Acres Total	Acres Dev.	Acres Vacant	Acres Total
Public Facility	330.2	132.0	462.2	0.00	5.1	5.1
Open Space	291.2	2,796.4	3,087.5	-	-	-
Mineral Resources	129.4	323.2	452.5	-	-	-
Street Rights-of-Way	2,771.1	1,182.8	3,953.9	43.8	151.1	194.9
Grand Total Other Uses	3,521.8	4,434.4	7,956.2	43.8	156.2	200.0



Build Out Potential and Population

As indicated in the Tables above, the Land Use Map creates a potential for up to 60,877 housing units. Based on 2008 average household size, these units could support a build out population of 185,858 people.

The Land Use Map further establishes 4,791.3 acres of commercial land, which has a potential to generate 51,685,423 square feet of commercial space. There is also a potential for 58,629,920 square feet of industrial space, mostly to be located in the North Apple Valley Industrial Specific Plan area. This Land Use Element also provides 3,068.5 acres of Open Space, and 481.2 acres of Public Facilities, which include schools, parks, fire stations and government buildings.

1.3.5 Development Trends

The Town of Apple Valley has been diligently working on a bridge project (Yucca Loma bridge) for several years. The purpose of the Project is to establish an alternate route between the Town of Apple Valley, County of San Bernardino, and the City of Victorville, in California. This Project would provide a new arterial connection through these three jurisdictions which would provide better access to the existing local residential neighborhoods, to the local freeway system, and to the Mojave Narrows Regional Park. The Project is designed to reduce traffic volume and congestion on the existing routes connecting the City of Victorville and the Town of Apple Valley (Bear Valley Road to the south and State Route 18 to the north), as well as increase residential, commercial, and industrial development in both jurisdictions.

Construction of the proposed Project would be an implementation of the General Plans from the Town of Apple Valley, the City of Victorville, and the County of San Bernardino. The Project is approximately 3.3 miles long with logical termini at the existing signalized intersections of Yucca Loma Road and Apple Valley Road on the East and Green Tree Boulevard and Hesperia Road on the West. The Project would build a new four-lane transportation corridor, including a bridge over the Mojave River and BNSF railroad, extension of Green Tree Boulevard, and expansion of existing sections of Yucca Loma Road and Yates Road.

The proposed Project connects Apple Valley Road to Hesperia Road. Given the large scope of the proposed Project and its location in three jurisdictions, the proposed Project will be built under multiple construction contracts over multiple construction seasons. It is anticipated construction will begin in the year 2010 and that the first area of focus or phase will be the Yucca Loma Bridge over the Mojave River, sound walls along Yucca Loma Road and Yates Road and other improvements from Apple Valley to Ridgecrest Road that will allow opening the bridge while maintaining the existing two lane configuration. Constructing this phase first will allow the associated segments of the proposed Project to be utilized by the public while the other phases are implemented and constructed. This first component will take approximately two to three years to construct.



The proposed Project is consistent with applicable state, regional, and local planning documents and is anticipated as a part of an overall development strategy necessary to capture growth that has already occurred as well as anticipated growth projected by the San Bernardino Associated Governments. The proposed Project would comply with Federal (23 USC 109(h), NEPA, American Disability Act of 1990, Council on Environmental Quality Regulations Section 1508.14, Title VI of the Civil Rights Act of 1964, and Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970) and State (CEQA) Laws, Regulations, and Guidance.

The proposed Project will not have a direct impact on changing existing land use designations, and thus, will not have any substantial environmental consequences to Land Use in the Project area. The Project is consistent with state, regional, and local plans and does not cause adverse impacts with respect to any of these plans. The proposed Project is consistent with the Town of Apple Valley's General Plan, 1991, and the General Plan adopted updates 1998 and 2009. The plan recognizes that as the Town grows the expectation and need for increased service levels, including adequate streets, will grow. The proposed Project is consistent with existing and future land uses. The circulation element of the Town's General Plan addresses both the local transportation system within the Town, and those segments of the local transportation system that interface with, and serve as extensions of, the regional roadway system. This system works to connect the Town of Apple Valley with the broader Victor Valley region and other communities in Southern California. The circulation element notes that a major transportation program being worked on by the Town is the construction of an extension of Yucca Loma Road which will result in a four lane bridge and an additional crossing over the Mojave River into Victorville (Mojave River Bridge).

The Project area includes all areas of construction, new or existing right-of-way, temporary staging areas and temporary construction easements. In the town of Apple Valley approximately 39.4 acres of urban land and 6.7 acres of rural land will be affected by the Project. Future plans for land within the Project area are limited by existing development and natural features (including the Mojave River and Mojave Narrows Regional Park). Nearly all of the land in the Project area that is located in the Town of Apple Valley is currently developed.

The 2005 Hazard Mitigation Plan mentioned that the Town's Vision 2010 projected additional development activity in North Apple Valley and anticipated that significant industrial development will occur in the north one-third of the Town. However, this development has moved along much slower than anticipated due to the downturn of the economy. When this industrial development commences the construction process for each development will be regulated by local building codes. Building codes include regulations pertaining to flooding (grading and elevation), earthquake standards (seismic standards), and fire codes (regulated by Apple Valley Fire Protection District).

Pre-planning for fire and law enforcement agency response was completed prior to occupancy for both the major developments that are currently in that area (Law & Justice Center and the 1.34 million square foot Wal-Mart Distribution Center). The pre-planning methodology includes routine drills at each site. In addition, all future buildings in the Town of Apple Valley will adhere to future building codes.

SECTION 2 – PLAN ADOPTION

2.1 Adoption by local governing body

A (draft) Resolution of the Town Council of the Town of Apple Valley, California, adopting the Local Hazard Mitigation Plan as required by the Disaster Mitigation Act of 2000 is included in this Plan (located



before the Table of Contents). Upon receipt of an “approvable pending adoption” status from FEMA, the Town will formally adopt the Resolution and forward adopting documentation to FEMA.

The Resolution will include support for the (State of California) Enhanced State Multi-Hazard Plan, October 2007 and, once adopted by the State of California, the 2011 Enhanced State Multi-Hazard Plan Update. The Town of Apple Valley Annex is part of the San Bernardino Operational Area Multi-**Jurisdictional Hazard Mitigation Plan.**

2.2 Promulgation Authority

Curt Emick, Mayor

Description of involvement: Mayor Nassif represents the elected body governing the Town of Apple Valley and will sign as the official final approving authority.

Contact Information:

Town of Apple Valley
14955 Dale Evans Parkway,
Apple Valley, CA 92307
760-240-7000
cemick@applevalley.org

Frank Robinson, Town Manager

Description of Involvement: Frank Robinson represents the staff of the Town of Apple Valley and authorized the development and approval process.

Contact Information:

Town of Apple Valley
14955 Dale Evans Parkway,
Apple Valley, CA 92307
760-240-7000
frobinson@applevalley.org

The Apple Valley Town Council will review the Hazard Mitigation Plan prior to its approval.

2.3 Primary Point of Contact

Joseph A. Guarrera, Emergency Services Officer

Town of Apple Valley/Apple Valley Fire Protection District
22400 Headquarters Drive, Apple Valley, CA 92307
760-247-7618
jguarrera@applevalleyfd.com

SECTION 3 - PLANNING PROCESS



The planning process for the Town's Hazard Mitigation Plan included the creation of a Planning Team representing various agencies and organizations whose input was vital to the plan. The Planning Team reviewed, analyzed, revised, and updated each Section within this Plan as required. Pursuant to Section 4(F) of the Crosswalk, the process used to review and analyze each Section is included within that Section.

Public presentation and input was also delivered at various public meetings in the local community.

3.1 Preparing for the Plan

To update its 2011 Local Hazard Mitigation Plan, the Town of Apple Valley joined with the San Bernardino County Fire Department Office of Emergency Services (OES) which is the coordinating agency for the update of the *San Bernardino County Operational Area Multi-Jurisdictional Multi-Hazard Mitigation Plan*. As required by the Department of Homeland Security's Federal Emergency Management Agency (DHS-FEMA), all Hazard Mitigation Plans (HMP) must be updated, adopted and approved every five (5) years. The purpose of the update is to validate and incorporate new information into the plan and identify progress that has been made since the last approval of the plan. In addition, an approved HMP is required to receive federal assistance under the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation (PDM) programs.

The current *San Bernardino County Operational Area Multi-Jurisdictional Multi-Hazard Mitigation Plan* process consists of information from 55 local HMPs, which are included as an annex to the County's Operational Area plan. The 55 participants include all 24 incorporated cities and towns, 30 special districts, and the unincorporated county.

San Bernardino County Fire OES hired a contractor (ICF International) to support the County, Cities and Towns, and Special Districts to update the 55 local HMPs and the *San Bernardino County Operational Area Multi-Jurisdictional Multi-Hazard Mitigation Plan*. The ICF Team, which includes subcontractors MMI Engineering and Natural Hazards, offers experienced, field-tested Hazard Mitigation and planning professionals who have developed similar comprehensive HMPs. This support includes providing technical expertise, resource material and tools, not only to expedite the HMP update process, but also to ensure that the updates are in compliance with federal requirements of the program. The tools, resource material, and other project related information are being maintained on a project portal (<https://tmsprojects.icfi.com/sbhmpupdate/default.aspx>) to ensure the same information is available to all participants.

Additionally, it was concluded that the Plan will include information and data supplied by supporting local agencies as listed in Section 3.2 "Coordination with Other Jurisdictions, Agencies, and Organizations", and 3.3 "Public Involvement", of this Plan, along with public surveys, public comments received during community-wide events and from other sources developed through discussions during Planning Team meetings.



The Town initiated its Plan Update by meeting the requirements of Title 44, Code of Federal Regulations, Part 201 (44 CFR 201.6) through the initial implementation of the 2005 Local Hazard Mitigation Plan.

- Why the update is necessary and how the update will build on the existing approved mitigation plan
- The process and data deficiencies/limitations that will be addressed
- The participatory planning process used to develop the plan to include how each section was reviewed and analyzed and how/why the decision was made to modify (or not) specific areas in the plan.
- The opportunities provided for public participation, modified as necessary, based on previous experience
- The contribution from other stakeholders
- The new/additional research conducted and data included in the plan;
- The modified risk assessment based on latest best available data;
- The prioritized mitigation action plan;
- The progress made in local mitigation efforts;
- The plan maintenance process to include: an evaluation of what was supposed to happen vs. what happened; a discussion of how the community was involved in the plan maintenance process; and a discussion of how the mitigation plan was incorporated into other planning mechanisms, and what worked/did not work.

The Town of Apple Valley completed a General Plan revision in 2009. Emphasis was placed on the importance of incorporating the Local Hazard Mitigation Plan as an extension of that revision, which will be done after the Plan is formally approved and adopted.

3.1.1 Planning Team

This Hazard Mitigation Planning team included members of various agencies, and organizations who were familiar with mitigation planning and have some type of emergency management responsibilities within their organizations. In addition, several private citizens who are Disaster Service Worker (DSW) volunteers were also chosen to give input on the Plan.

Name:	Organization:
Shelley Alfieri	Jess Ranch Community Disaster Response Program, Senior Center, DSW citizen
Art Bishop	Fire Chief, Apple Valley Fire Protection District
Chris Briggs	Desert Communities United Way, COAD
Mike Cook	Apple Valley Ranchos Water Company
Dennis Cron	Assistant Town Manager, Town of Apple Valley
Dawn Harrison	CERT Commander, DSW citizen



Pat Hayes	Sun City Safety Committee, DSW citizen
Brad Miller	Town of Apple Valley Engineer
Lance Miller	Public Works Manager, Town of Apple Valley
David Pinnecker	Risk Manager, Apple Valley Unified School District
Claude Stewart	Building Official, Town of Apple Valley
Robert Suchomel	Director of Facilities, St. Mary Medical Center
Laura Whitehead	Emergency Services Officer, Town of Apple Valley and the Apple Valley Fire Protection District
Ralph Wright	Parks and Recreation Manager, Town of Apple Valley

Planning team meetings:

Date	Item	Location
12/14/2010	Planning Team Meeting Hazard Mitigation Plan Update	Fire Station 336
11/16/2010	Planning Team Meeting Hazard Mitigation Plan Update	Fire Station 336
10/12/2010	Planning Team Meeting Hazard Mitigation Plan Update	Fire Station 336
9/21/2010	Planning Team Meeting Hazard Mitigation Plan Update	Fire Station 336
8/17/2010	Planning Team Meeting Hazard Mitigation Plan Update	Fire Station 336
7/13/2010	Planning Team Meeting Kickoff Hazard Mitigation Plan Update	Fire Station 336



3.2 Coordination with other Jurisdictions, Agencies, and Organizations

The Town of Apple Valley Planning Team consulted members from adjacent jurisdictions as well as the County of San Bernardino, who is implementing the multi-jurisdictional approach. (See Section 3.1)

- Apple Valley Chamber of Commerce
- Apple Valley Unified School District
- California Department of Transportation (Cal Trans)
- California Emergency Management Agency (Cal EMA)
- California Highway Patrol
- Community Members
- Federal Emergency Management Agency (FEMA)
- Local Hospital (St. Mary Medical Center)
- Local Churches
- Local Mobile home Park Owners, Managers and Residents
- Local Non-Profit Agencies (American Red Cross, United Way)
- Local Utility Companies
- National Weather Service (NWS)
- Public and Private Business Sectors
- San Bernardino County (OES, Dept. of Public Health, Animal Control)

In addition, the Town of Apple Valley participated in the San Bernardino County Fire Department Office of Emergency Services (OES) Stakeholder meetings. San Bernardino County Fire OES hired a contractor (ICF International) to support the County, Cities and Towns, and Special Districts to update the 55 local Hazard Mitigation Plans and the San Bernardino County Operational Area Multi-Jurisdictional Multi-Hazard Mitigation Plan. The ICF Team, which included subcontractors MMI Engineering and Natural Hazards, offered experienced, field-tested Hazard Mitigation and planning professionals who have developed similar comprehensive Hazard Mitigation Plans. This support included providing technical expertise and resource material and tools to help ensure that the updates are in compliance with federal requirements of the program.

Stakeholder Meetings

Date	Item	Location
1/27/2011	Stakeholder Meeting Hazard Mitigation Planning	Virtual Meeting



Date	Item	Location
1/20/2011	Stakeholder Meeting Hazard Mitigation Planning	Virtual Meeting
1/11/2011	Stakeholder Meeting Hazard Mitigation Planning	Virtual Meeting
12/15/2010	Stakeholder Meeting Hazard Mitigation Planning	Virtual Meeting
10/28/2010	Stakeholder Meeting Hazard Mitigation Planning	Virtual Meeting
10/7/2010	Stakeholder Meeting Hazard Mitigation Planning	Virtual Meeting
9/23/2010	Stakeholder Meeting Hazard Mitigation Planning	Virtual Meeting
9/9/2010	Stakeholder Meeting Hazard Mitigation Planning	Virtual Meeting
8/26/10	Stakeholder Meeting Hazard Mitigation Planning	SB County OES
8/19/2010	Stakeholder Meeting Hazard Mitigation Planning	Virtual Meeting
8/12/2010	Stakeholder Meeting Hazard Mitigation Planning	Virtual Meeting
7/29/2010	Stakeholder Meeting Hazard Mitigation Planning	Virtual Meeting
7/15/2010	Stakeholder Meeting	Ontario Police Dept.



Date	Item	Location
	Hazard Mitigation Planning (Time Line, Next Steps)	
7/7/2010	Stakeholder Meeting Hazard Mitigation Planning – Portal Rollout 2	SB County OES
7/1/2010	Stakeholder Meeting Hazard Mitigation Planning – Portal Rollout	SB County OES
6/10/2010	Stakeholder Meeting Hazard Mitigation Planning – Project Kick Off Meeting	SB County OES

3.3 Public Involvement/Outreach

The Town of Apple Valley undertook a number of methods to inform the public of this effort to solicit their input on the Hazard Mitigation Plan and efforts of the town involving mitigation and emergency preparedness. On an ongoing basis the Town of Apple Valley and the Apple Valley Fire Protection District participate in public events and meetings to inform the public of emergency preparedness and mitigation and solicit comments and input from the citizens regarding their concerns and questions regarding mitigation planning efforts.

The 2010 Emergency Preparedness Fair sponsored by the Town of Apple Valley, Apple Valley Fire Protection District, Apple Valley Police, and St. Mary Medical Center was held on April 24, 2010, from 10:00 am - 1:00 pm. Exhibitors provided information pertaining to mitigation strategies and disaster preparedness. Exhibitors included the Town of Apple Valley, Apple Valley Fire Protection District, Apple Valley Police, St. Mary Medical Center, American Red Cross, Edison, Gas Company, Church of Jesus Christ of Latter day Saints, CERT (Community Emergency Response Team), FADD (Friends of Animals During Disasters, ECS (Emergency Communications Services), PAL Humane Society, Ultrastop, Simpler Life, and other vendors catering to community preparedness and mitigation information.

The event included informational sessions on CERT, (people in disasters) FADD/PAL (Animals in Disasters, ECS (Communications in Disasters) St. Mary Medical Center Responding the emergencies and HAZMAT decontamination procedures): SB County Animal Control (Disaster Preparedness for Pets), SB County Health Department (Responding to Epidemics and Natural Disasters), and Redlands Community Hospital (Responding to Emergencies). The event drew a crowd of approximately 1500 attendees. The event was advertised through local businesses, schools and public sectors.



Other public outreach efforts include providing literature and handouts pertaining to mitigation strategies and emergency and disaster preparedness during town-sponsored events, including: CERT, FADD, and ECS training classes and general meetings; July 4th Freedom Festival; September Fall Festival and Pet Fair; October Equine Event; and other Emergency Preparedness Fairs, Health Fairs, and Safety Fairs held through the town and the Apple Valley Fire Protection District.

The following is a list of public meetings and events that have taken place during the drafting stage:

Date	Item	Location
11/4/10	Operational Area Coordinating Council County presented a report regarding the Hazard Mitigation Program. The meeting was attended by representatives of the 24 cities in the County of San Bernardino.	City of San Bernardino Public Library
10/30/2010	FADD Basic Training	Apple Valley
10/16/2010	Equine Festival	Apple Valley
10/12/2010	Town of Apple Valley Disaster Council/Citizen Corps Council	Apple Valley
10/9/2010	FADD General Meeting	Apple Valley
10/9/2010	Health and Safety Fair	Apple Valley
10/2/2010	CERT Basic Training	Apple Valley
9/25/2010	Fall Festival	Apple Valley
9/24/2010	Hospital Preparedness Committee meeting	Apple Valley
9/11/2010	Pet Fair	Apple Valley
9/4/2010	ECS general meeting	Apple Valley
8/27/2010	Rotary Club general meeting	Apple Valley
8/25/2010	Soroptimist Club general meeting	Apple Valley



Date	Item	Location
8/18/2010	Apple Valley Chamber of Commerce meeting	Apple Valley
8/20/2010	Kiwanis Club general meeting	Apple Valley
8/17/2010	Apple Valley Fire Board meeting	Apple Valley
8/7/2010	CERT general meeting	Apple Valley
8/5/2010	Operational Area Coordinating Council County presented a report regarding the Hazard Mitigation Program. The meeting was attended by representatives of the 24 cities in the County of San Bernardino.	Rancho Cucamonga
7/17/2010	Safety/ Emergency Preparedness Fair	Apple Valley
7/13/2010	Town of Apple Valley Disaster Council/Citizen Corps Council	Apple Valley
7/4/2010	Freedom Festival	Apple Valley
5/6/2010	Operational Area Coordinating Council County presented a report regarding the Hazard Mitigation Program. The meeting was attended by representatives of the 24 cities in the County of San Bernardino.	Chino
4/13/2010	Town of Apple Valley Disaster Council/Citizen Corps Council	Apple Valley
1/12/2010	Town of Apple Valley Disaster Council/Citizen Corps Council	Apple Valley
11/5/2009	Operational Area Coordinating Council County presented a report regarding the Hazard Mitigation Program. The meeting was attended by representatives of the 24 cities in the County of San Bernardino.	SB County OES
8/6/2009	Operational Area Coordinating Council CalEMA presented a report regarding the Hazard Mitigation Program. The meeting was attended by representatives of the 24 cities in the County. David Montague, Senior VP of ABS Consulting and Hope Deligson, Assoc., MMI Engineering, Inc. presented an overview of FEMA's San Bernardino County Essential Facility Risk Assessment	Ontario Police Dept.



Date	Item	Location
	project using HAZUS.	
5/7/2009	Operational Area Coordinating Council County presented a report regarding the Hazard Mitigation Program. The meeting was attended by representatives of the 24 cities in the County of San Bernardino.	Apple Valley
2/5/2009	Operational Area Coordinating Council County presented a report regarding the Hazard Mitigation Program. The meeting was attended by representatives of the 24 cities in the County of San Bernardino.	Chino
11/13/2008	Great Southern CA Shakeout/Golden Guardian Exercise - Police, Fire, Town staff and community-wide participation in the Great Southern CA Shakeout. Police, Fire, Town participation with the Golden Guardian Exercise.	
9/1/2008	Emergency Operations Plan Presented the EOP to the public to solicit comment and feedback.	
8/8/2008	Operational Area Coordinating Council County presented a report regarding the Hazard Mitigation Program. The meeting was attended by representatives of the 24 cities in the County of San Bernardino.	Big Bear
5/1/2008	Operational Area Coordinating Council County presented a report regarding the Hazard Mitigation Program. The meeting was attended by representatives of the 24 cities in the County of San Bernardino.	Victorville
2/7/2008	Operational Area Coordinating Council County presented a report regarding the Hazard Mitigation Program. The meeting was attended by representatives of the 24 cities in the County of San Bernardino.	Upland
8/9/2007	Operational Area Coordinating Council County presented a report regarding the Hazard Mitigation Program. The meeting was attended by representatives of	Fontana



Date	Item	Location
	the 24 cities in the County of San Bernardino.	
5/7/2007	Operational Area Coordinating Council County presented a report regarding the Hazard Mitigation Program. The meeting was attended by representatives of the 24 cities in the County of San Bernardino.	
2/1/2007	Operational Area Coordinating Council - County presented a report regarding the Hazard Mitigation Program. The meeting was attended by representatives of the 24 cities in the County of San Bernardino.	Upland
12/6/2006 11/22/2006 11/9/2006 9/6/2006	Pandemic Planning A series of meetings were held to educate the public on the hazard and the actions the public can take to mitigate and/or reduce the impact of pandemic influenza.	Redlands Rialto Yucaipa Redlands
8/3/2006	Operational Area Coordinating Council County presented a report regarding the Hazard Mitigation Program. The meeting was attended by representatives of the 24 cities in the County of San Bernardino.	Loma Linda

3.4 Assess the Hazard

Data collection and document review are important first steps in the identification and screening of hazards. The Planning Team identified new or emerging hazards, obtained updated hazard maps, hazard probability research studies and reports, reviewed data from new or updated local plans (i.e. safety element of the General Plan, threat assessments, disaster planning scenarios, community wildfire protection plans, etc.) and obtained information about emergencies or disasters that have occurred since the 2005 Hazard Mitigation Plan to provide insights into which parts of the risk assessment warrants updates.

The first step in this process was to identify which natural hazards are present in the community, augmenting the 2005 Hazard Mitigation Plan as necessary.



The intent of screening of hazards is to help prioritize which hazard creates the greatest concern in the community. Because the original 2005 process used to rank hazards (Critical Priority Risk Index (CPRI) software) was not utilized, the Planning Team screened hazards creating the greatest concern in the community.

The Planning Team utilized a non-numerical ranking system for the update process. This process consisted of generating a non numerical ranking (High, Medium, or Low) rating for the 1) probability and 2) impact from each screened hazard. The hazards were then placed in the appropriate/corresponding box/cell. The table below is an example of how the hazards were ranked. In this example the “Red” boxes represent the higher priority hazards; and the “Orange” and “Yellow” boxes represent additional levels of priority.

The definition of “High”, “Medium”, and “Low” probability and impacts are as follows:

Probability

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

Impact

- High-** Catastrophic/Critical
- Medium-** Limited
- Low-** Negligible

		Impact		
		High	Medium	Low
Probability	High			
	Medium			
	Low			

3.5 Set Goals

Project and community hazard mitigation goals and objectives for the Town of Apple Valley were set by the Planning Team to guide the development of the Plan using FEMA National Mitigation Strategies and Goals to substantially increase public awareness of natural hazard risks so that the public demands safer communities in which to live and work; and to significantly reduce the risk of loss of life, injuries, economic costs, and destruction of natural and cultural resources that result from natural hazards.



These were then commented on by the community stakeholders to refine the goals, resulting in a consensus agreement.

3.6 Review and Propose Mitigation Measures

A wide variety of mitigation measures that can be identified to help reduce the impact of the hazards or the severity of damage from hazards was examined. The projects were identified to help ensure the implementation of the Planning Team's goals and objectives. The following categories were used in the review of possible mitigation measures:

1. Public Information and Education- Outreach projects and technical assistance.
2. Preventive Activities- Zoning, building codes, storm water ordinances
3. Structural Projects- Detention basins, reservoirs, road and bridge improvements
4. Property Protection- Acquisition, retrofitting
5. Emergency Services- Warning, sandbagging, road signs/closures, evacuation
6. Natural Resource Protection: Wetlands, protection, best management practices.

Once the projects were identified, the Planning Team utilized the STAPLEE methodology to assess and prioritize the projects.

STAPLEE stands for the following:

- **Social:** Social criteria are based on the idea that community consensus is a necessary precondition for successful implementation of mitigation measures (i.e., measures should be supported and accepted by the entire community). This also means that measures should not affect adversely a particular segment of the population or a particular neighborhood, or adversely impact local cultural values or resources.
- **Technical:** Technical criteria address the technical feasibility of the proposed measures, in terms of effectiveness, secondary impacts, and the technical capabilities of the community to implement and sustain these measures.
- **Administrative:** Administrative criteria address the administrative capabilities required to implement each mitigation measure. For example, does the City have the necessary organization, staff, and funding sources to implement and sustain the mitigation process?
- **Political:** Political criteria consider the need for political support for mitigation measures. This means that all stakeholders in the political process, especially political organizations and institutions both inside and outside of the community, should support the measure.
- **Legal:** Legal criteria are used to determine the appropriate legal authority necessary to implement each mitigation measure and whether such an authority can be delegated. The mitigation measure is



examined from the standpoint of current statutes, codes, ordinances, and other regulations, as well as the possible legal ramifications of the measure’s implementation.

- **Economic:** Economic criteria address the cost-effectiveness of the proposed measure and its economic impact on the community. It is only reasonable to expect that the benefits of implementation will exceed the costs incurred. Economic considerations also consider the economic impact on the community’s future development.
- **Environmental:** Environmental criteria have become an important consideration in examining mitigation options. Although most mitigation measures are usually beneficial for the environment, some measures may have adverse effects, which must be considered and addressed.

Based on STAPLEE, the Planning Team addressed the following questions to determine mitigation options:

Does the Action:

- | | |
|---|--|
| 1. Solve the problem? | 4. Address multiple hazards? |
| 2. Address Vulnerability Assessment? | 5. Address more than one (1) Goal/Objective? |
| 3. Reduce the exposure or vulnerability to the highest priority hazard? | 6. Benefits equal or exceed costs? |

Can the Action:

- | | |
|--|---|
| 1. Be implemented with existing funds? | 3. Be completed within the 5-year life cycle of the LHMP? |
| 2. Be implemented by existing state or federal grant programs? | 4. Be implemented with currently available technologies? |

Will the Action:

- | | |
|--|---|
| 1. Be accepted by the community? | 5. Result in legal action such as a lawsuit? |
| 2. Be supported by community leaders? | 6. Positively or negatively impact the environment? |
| 3. Adversely impact segments of the population or neighborhoods? | 7. Comply with all local, state and federal environmental laws and regulations? |
| 4. Require a change in local ordinances or zoning laws? | |

Is there:

- | | |
|--|---|
| 1. Sufficient staffing to undertake the project? | 2. Existing authority to undertake the project? |
|--|---|

3.7 Draft the Hazard Mitigation Plan

The Hazard Mitigation Plan was drafted by the Planning Team members following the 2005 Hazard Mitigation Plan, the guidance document and Hazard Mitigation Plan outline provided by the consultant, and input from all stakeholders and Town departments. The Planning Team provided opportunity for



public comment and input. FEMA Guidance documents for Hazard Mitigation were also used extensively as additional reference materials.

The results of the mitigation activities review are summarized in the Hazard Mitigation Plan update. The draft plan will be circulated for additional comment and review.

3.8 Adopt the Plan

After the public review, the draft plan will be submitted to Cal EMA/FEMA for review and approval. FEMA will provide the Town with an “Approval Pending Adoption” letter if the Hazard Mitigation Plan update meets all federal requirements. Upon receipt of this letter, the final plan will be submitted to the Apple Valley Town Council for consideration and adoption. Once adopted, the final Resolution will be submitted to FEMA for incorporation into the Hazard Mitigation Plan.

The Town of Apple Valley’s adoption of the Hazard Mitigation Plan is only the beginning of this effort. Town offices, other agencies, and private partners will implement the Hazard Mitigation Plan activities. The Planning Team will monitor implementation progress, evaluate the effectiveness of the actions, and periodically recommend action items. Progress of the implementation of the Plan and the recommended action/mitigation strategies will be assessed annually. The Plan will be submitted and updated to FEMA every five years, which is required by FEMA in order to remain eligible for post-disaster mitigation funding

SECTION 4 – RISK ASSESSMENT

The goal of mitigation is to reduce the future impacts of a hazard including property damage, disruption to local and regional economies, and the amount of public and private funds spent to assist with recovery; however, mitigation should be based on risk assessment. This section discusses the risk assessment approach for the Town of Apple Valley’s Hazard Mitigation Plan. FEMA defines the risk assessment process as a

multi-step effort in “Understanding Your Risks: Identifying Hazards and Estimating Losses (FEMA 2001)”. The steps include:

1. Identify and Screen your Hazards
2. Profile Hazard Events
3. Inventory Assets
4. Estimate Losses





The risk assessment approach for Apple Valley is composed of these four steps, and each step is organized in a separate subsection of Chapter 4. Section 4.1 (step 1) includes hazard identification and screening. During this process, all reasonably possible hazards affecting the Town are considered and ranked by the Town of Apple Valley Planning Team and stakeholders. Section 4.2 (step 2) provides a profile for each of the significant hazards identified during the screening process. In general, the hazard profiles are addressed on a regional level.

Figure 5 – 4-Step Risk Assessment-Source:FEMA

Wherever possible the profile includes a discussion of local characteristics and possible impacts on the community. Section 4.3 (step 3) discusses the process of creating an inventory of the Town's assets. This step includes the comprehensive information gathering and prioritization process essential to perform the vulnerability assessment and loss estimation. Section 4.4 (step 4) presents the methodologies and results of loss estimation for the key hazards identified in step 2.

4.1. Hazard Identification

4.1.1. Hazard Screening Criteria

The Town of Apple Valley Planning Team determined that natural hazards would be the focus at this time, in order to become eligible for mitigation funds following any future declared disaster after November 1, 2004. Through selectively identified analysis following hazard-specific meetings, the Planning Team reviewed eight natural hazards (listed below). The Planning Team determined that although seven hazards were identified, some of these hazards were ranked low risk/low impact or medium risk/medium impact or could potentially be secondary to higher ranked hazards. As a result, it was the consensus of the Planning Team to focus on the three hazards that scored "High" in the Hazard Assessment Matrix (located on page 38 of this Plan):

Earthquake, Flooding, and Wildfires.

- Dam Failure
- Drought and Water Shortage
- **Earthquake**
- Extreme Heat
- **Flooding**
- High Winds/Straight Line Winds
- **Wildfires**

The hazard data was analyzed in view of how it impacts public safety, health, buildings, transportation, infrastructure, critical facilities and the economy. The discussion of the problem and vulnerability assessment for each hazard is presented in the sections for each hazard.

The identification of each hazard was based upon the following sources:

1. Historic Occurrence of the Hazard - Assessment is based on frequency, magnitude and potential impact of the hazard.



2. Mitigation Potential for the Hazard - This criterion considers if there are mitigation or counter measures possible to prevent or alleviate the risk.
3. Expert Opinion - Evaluation of threats includes a literature review and the expertise of the Planning Team.
4. Published Data and Information - Assessment is based on data and/or information from credible publications or websites. (i.e., U.S. Geological Survey, California Geological Survey, National Weather Service - National Climatic Data Center, or academic publications)

4.1.2. Hazard Assessment Matrix

Rankings used for the hazard screening were defined as follows:

<u>Probability</u>		<u>Impact</u>	
High:	Highly Likely/Likely	High:	Catastrophic/Critical
Medium:	Possible	Medium:	Limited
Low:	Unlikely	Low:	Negligible

High- There may or may not have been historic occurrences of the hazard in the community or region but experts feel that it is likely that the hazard will occur in the community and the risk is significant. Citizens feel that there is a likelihood of occurrence and the consequences will be significant in terms of building damage and loss of life.

Medium- There may or may not have been a historic occurrence of the hazard in the community or region but experts feel that it is possible that the hazard could occur in the community. Citizens may feel that there is a likelihood of occurrence but the consequences will be negligible in terms of building damage and loss of life.

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

Hazards Identified

The Planning Team determined that although seven hazards were identified, some of these hazards were ranked low risk/low impact or medium risk/medium impact or could potentially be secondary to higher ranked hazards. As a result, it was the consensus of the Planning Team to focus on the three hazards that scored “High” in the Hazard Assessment Matrix (located on page 38 of this Plan):

Earthquake, Flooding, and Wildfires. The following natural hazards were reviewed and analyzed by the Planning Team:

1. Dam Failure ranked low or insignificant disaster and may be secondary to earthquakes. A dam is defined as a barrier constructed across a watercourse for the purpose of storage, control, or diversion of water. Dams typically are constructed of earth, rock, concrete, or mine tailings. A dam failure is the collapse, breach, or other failure resulting in downstream flooding or a severe natural occurrence, such as an earthquake.



A dam impounds water in the upstream area, referred to as the reservoir. The amount of water impounded is measured in acre-feet. An acre-foot is the volume of water that covers an acre of land to a depth of one foot. As a function of upstream topography, even a very small dam may impound or detain many acre-feet of water. Two factors influence the potential severity of a full or partial dam failure: the amount of water impounded, and the density, type, and value of development and infrastructure located downstream.

Of the approximately 80,000 dams identified in the National Inventory of Dams, the majority are privately owned, Federal agencies own 2,131; States own 3,627; local agencies own 12,078; public utilities own 1,626; and private entities or individuals own 43,656. Ownership of over 15,000 is undetermined.

The Inventory categorizes the dams according to their primary function: Recreation (31.3 percent), Fire and farm ponds (17.0 percent), Flood control (14.6 percent), Irrigation (13.7 percent), Water supply (9.8 percent), Tailings and other (8.1 percent), Hydroelectric (2.9 percent), Undetermined (2.3 percent) and Navigation (0.3 percent).

Each dam in the inventory is assigned a downstream hazard classification based on the potential loss of life and damage to property should the dam fail. The three classifications are high, significant and low. With changing demographics and land development in downstream areas, hazard classifications are updated continually.

The hazard classification is not an indicator of the adequacy of a dam or its physical integrity. Dam failures typically occur when spillway capacity is inadequate and excess flow overtops the dam, or when internal erosion (piping) through the dam or foundation occurs.

Dam failure can result from any one or a combination of the following causes:

- Prolonged periods of rainfall and flooding, which causes most failures;
- Inadequate spillway capacity, resulting in excess overtopping flows;
- Internal erosion caused by embankment or foundation leakage or piping;
- Improper maintenance, including failure to remove trees, repair internal seepage problems, replace lost material from the cross section of the dam and abutments;
- Improper design, including the use of improper construction materials and construction practices;
- Negligent operation, including failure to remove or open gates or valves during high flow periods;
- Failure of upstream dams on the same waterway;
- Landslides into reservoirs, which cause surges that result in overtopping; and
- High winds, which can cause significant wave action and result in substantial erosion; and Earthquakes, which typically cause longitudinal cracks at the tops of embankments that weaken entire structures.

Description:

Two major dams -- Cedar Springs Dam and Mojave Dam -- could have a significant impact on the Town of Apple Valley in the event of dam failure. Both are located in the San Bernardino National Forest in the upper portion of the Mojave River Basin, southwest of Apple Valley. The Cedar Springs Dam and the Mojave Dam are both managed and operated by the State Department of Water Resources.

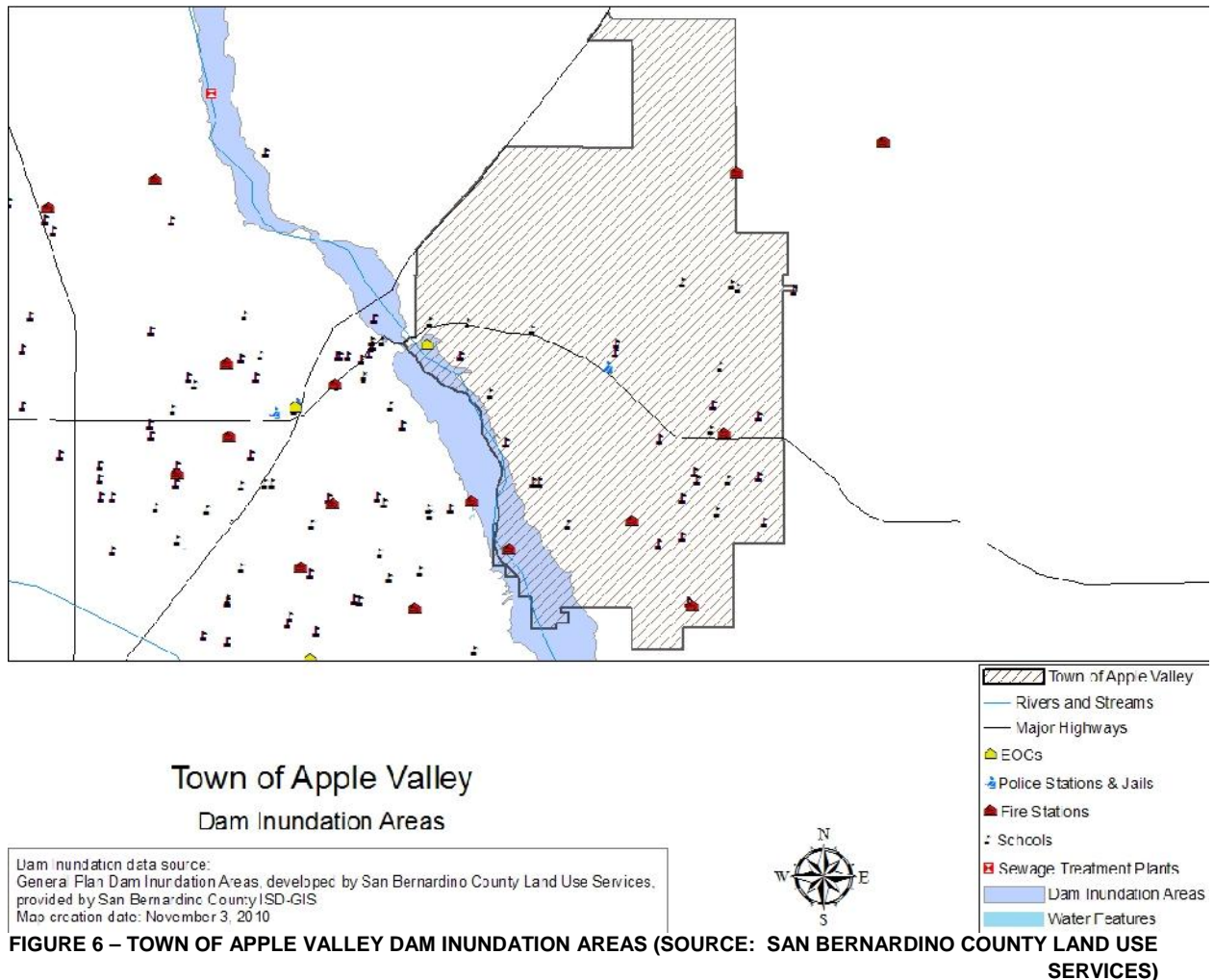
DATA OF LOCAL DAMS



	Cedar Springs Dam	Mojave Dam
DWR Number	1-063	9000-021
National ID	CA00049	CA10021
Dam Type	Rock	Earth
Crest Length	2,235 ft.	2,200 ft.
Height (measured above the dam crest)	236 ft.	204 ft.
Crest Width	42 ft.	20 ft.
Total Freeboard	23 ft.	21 ft.
Reservoir	Lake Silverwood	Mojave River Forks
Reservoir Storage Capacity	78,000 acre-ft.	89,700 acre-ft.
Reservoir Drainage Area	34.0 sq. miles	70.3 sq. miles

Fortunately, neither the Cedar Springs Dam nor the Mojave Dam have experienced dam failure. For Apple Valley to be affected by flood waters due to dam failure, both of these dams would need to fail simultaneously or the failure of the Cedar Springs Dam would need to occur at a time when rising flood waters were already a problem at the Mojave Dam. Failure of these dams during a catastrophic event, such as a severe earthquake, is considered to be an unlikely event. Both dams have performed well in past earthquakes due to the type and method of construction.

The area subject to extreme hazardous conditions due to dam failure is the area along the Mojave River.



2. Drought and Water Shortage ranked medium hazard. A drought is a period of drier-than-normal conditions that results in water-related problems. Precipitation (rain or snow) falls in uneven patterns across the country. When no rain or only a small amount of rain falls, soils can dry out and plants can die. If dry weather persists and water supply problems develop, the dry period can become a drought. Droughts differ from typical emergency events such as floods or forest fires, in that they occur slowly over a multiyear period. California has faced numerous challenges in recent years, including a nearly decade-long drought on the Colorado River, snowpacks that are below normal, and court-mandated reductions in the amount of water available for delivery by the State Water Project. Drought impacts increase with the length of a drought, as carry-over supplies in reservoirs are depleted and water levels in groundwater basins decline. Climate change, population growth, and the increasing instability of the water supplies in the delta formed by the confluence of the Sacramento and San Joaquin rivers threaten to exacerbate the crisis.

3. Earthquake ranked high hazard. A number of active and potentially active fault zones exist within the High Desert. The zones of greatest seismic hazard have been identified as Alquist-Priolo



Special Studies Zones. The Alquist-Priolo Earthquake Fault Zoning Act was signed into California law in 1972, and was intended to mitigate the hazards of fault rupture by prohibiting the location of structures for human occupancy across active fault traces. As required by the Act, the State Geologist is required to delineate active (showing evidence of Holocene surface displacement along one or more of their segments) "earthquake fault zones", and are clearly detectable by a trained geologist as a physical feature at or just below the ground surface.

An earthquake fault zone boundary is generally about 500 feet from major active faults, and 200 to 300 feet from well defined minor faults. Counties and cities are also required to condition development permit approval for sites within earthquake fault zones to perform geologic investigation that demonstrate that the sites are safe from surface displacement associated with future faulting. Of the types of development that are regulated are defined by State law, however, local regulations may prove even more restrictive.

Currently (2008) there are no Alquist-Priolo Earthquake Fault Zones mapped within the Apple Valley corporate limits or the annexation areas. However, there are two zones extending across portions of the town's Sphere of Influence, and a third Alquist-Priolo zone approaches the Sphere of Influence from the east-southeast. It should be noted that the State Geologist periodically revises the Alquist-Priolo Earthquake Fault Zones based upon new scientific research or fault studies' data. Local agencies, either at the county or local level, can designate additional fault hazard study zone.

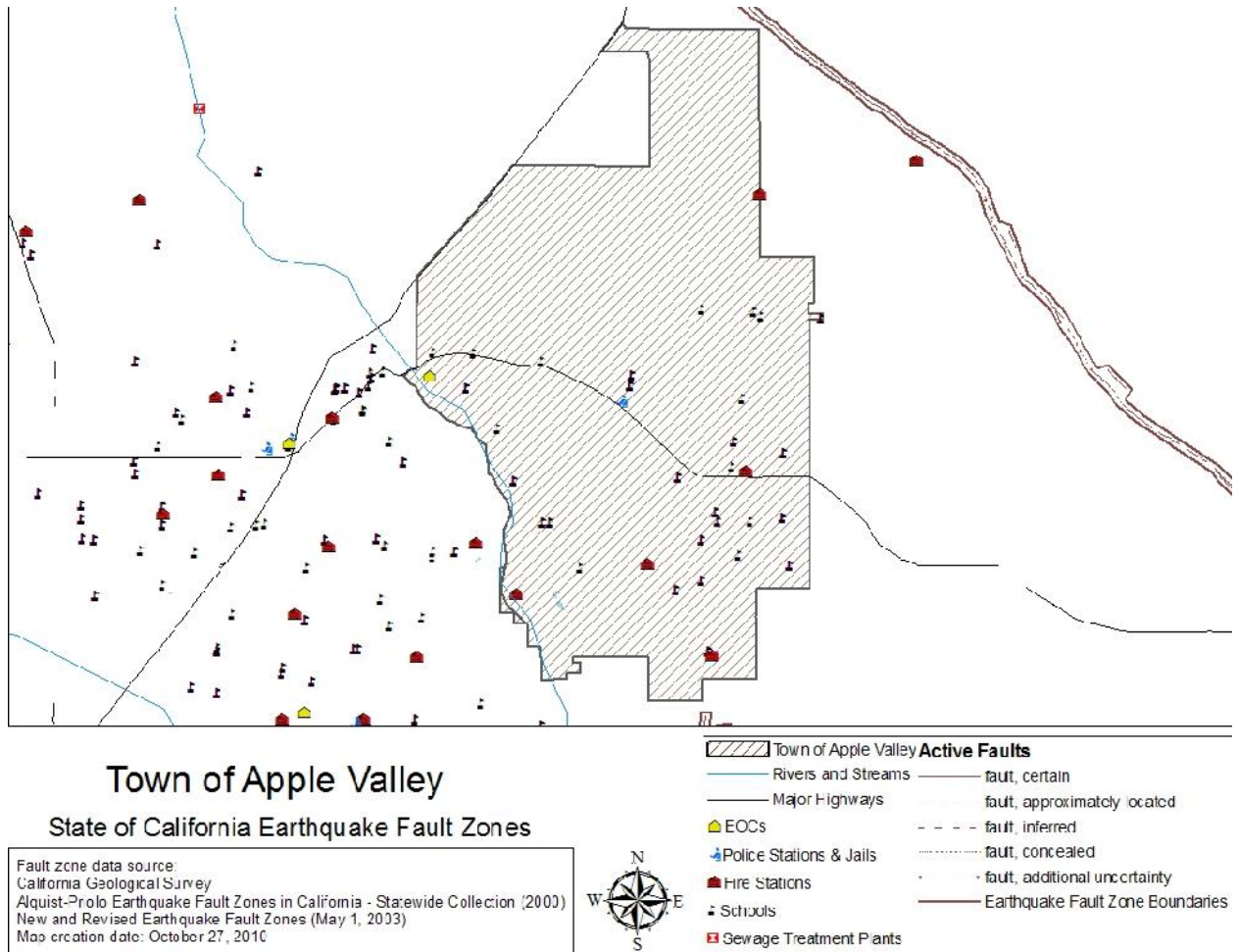


Figure 7 – Apple Valley Earthquake Fault Zones (Fault Zone Data Source: California Geological Survey)

- Extreme Heat ranked medium hazard. Temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks are defined as extreme heat.
- Flooding ranked high hazard. Most of the drainages from the surrounding hills and mountains in Apple Valley terminate in desert playas (dry lakes). The Apple Valley Dry Lake is the largest playa in the area, collecting runoff from most of Apple Valley. A smaller playa (Reeves Dry Lake) is present in the central part of Fairview Valley, where it receives runoff from the adjacent mountains. In the southeast corner of Apple Valley, drainages from the Ord Mountains, including the Juniper Flats, Arrastre Canyon, and Lovelace Canyon watersheds, lead to Rabbit Dry Lake in Fifteenmile Valley. Along the eastern edge of the Sphere of Influence, drainages from the Granite Mountains flow eastward to Lucerne Dry Lake in Lucerne Valley. Drainage channels in Apple Valley's local mountains are well carved, however they lose their strong definition upon reaching the valley floor, where sediment-laden water typically spreads out into braided ephemeral stream channels and as sheet flow. Drainages along the western side of Apple Valley eventually discharge into the Mojave River. The largest tributary to the Mojave River within Apple Valley is Bell Mountain Wash, a natural channel that collects runoff primarily in the area north and west of Bell Mountain. The area west of Catholic Hill is drained by the smaller, partially modified, Desert



Knolls Wash. In the southwest corner of Apple Valley, numerous small, unnamed drainages draining the western part of the Ord Mountains flow towards the Mojave River.

6. High Winds/Straight Line Winds ranked medium hazard. High winds can result from thunderstorm inflow and outflow, or downburst winds when the storm cloud collapses, and can result from strong frontal systems, gradient winds (high or low pressure systems), or foehn winds, such as the Santa Ana's. High winds are speeds reaching 50 miles per hour or greater, either sustaining or gusting.
7. Wildfires ranked high hazard. Wildfires present a significant potential for disaster in the southwest, a region of relatively high temperatures, low humidity, and low precipitation during the summer, and during the spring, moderately strong daytime winds. Combine these severe burning conditions with people or lightning and the stage is set for the occurrence of large, destructive wildfires.

4.1.3 Hazard Prioritization

The results of the screening process described above are presented as a hazard assessment matrix in Table 2 (below). The matrix illustrates the nature and potential of threats from natural disasters to the Town of Apple Valley. The Planning Team reviewed the probability and impact for each screened hazard and the potential for implementing mitigation measures to reduce the risk. The results were reviewed and modified during stakeholder meetings and a prioritized ranking of the hazards was developed.

As shown in the table below, there are three hazards that were given a high priority: earthquake, flooding, and wildfires.

		Impact		
		High	Medium	Low
Probability	High	Earthquake Flooding Wildfires		
	Medium	Drought and Water Shortage	Extreme Heat High Winds Straight Line Winds	
	Low			Dam Failure

Red boxes represent the higher priority hazards; "Orange" and "Yellow" boxes represent additional levels of priority.

FIGURE 8 – HAZARD ASSESSMENT MATRIX



The following sections profile these three hazards (Section 4.2), inventories assets in the Town (Section 4.3), and estimates losses or assesses risk for significant events associated with these three hazards (Section 4.4). This Plan Update continues to describe occurrences of hazards included in the previously approved (2005) Plan and, where applicable, incorporates new occurrences of hazard events, historical records, and hazard data related to profiling hazards.

4.2 Hazard Profile

4.2.1. Earthquake

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

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

Earthquakes strike suddenly, without warning. Earthquakes can occur at any time of the year and at any time of the day or night. On a yearly basis, 70 to 75 damaging earthquakes occur throughout the world. Estimates of losses from a future earthquake in the United States approach \$200 billion.

There are 45 states and territories in the United States at moderate to very high risk from earthquakes, and they are located in every region of the country. California experiences the most frequent damaging earthquakes; however, Alaska experiences the greatest number of large earthquakes--most located in uninhabited areas. The largest earthquakes felt in the United States were along the New Madrid Fault in Missouri, where a three-month long series of quakes from 1811 to 1812 included three quakes larger than a magnitude of 8 on the Richter Scale. These earthquakes were felt over the entire Eastern United States, with Missouri, Tennessee, Kentucky, Indiana, Illinois, Ohio, Alabama, Arkansas, and Mississippi experiencing the strongest ground shaking.

Much of southern California is located along the boundary between the North American and Pacific tectonic plate. This boundary, also known as the San Andreas Fault Zone, could generate strong seismic activities. The Pacific Plate is moving in a northwesterly direction, approximately 50 millimeters per year in relationship to the North American Plate. In southern California, the San Andreas Fault consists of three segments: the Mojave Desert segment, the San Bernardino Mountains segment, and the Coachella Valley segment.

The Town of Apple Valley's planning area is located near this boundary, and there are several active faults in the region. These include the Helendale fault, the San Andreas fault, the North Frontal fault, the Cleghorn fault, the Cucamonga fault, and the San Jacinto fault. Of these, the North Frontal fault has the potential to generate the strongest seismic shaking in Apple Valley.



Measuring Seismic Events

Classification of seismic events is based on their magnitude and intensity. The intensity of ground shaking is determined by several factors, such as the earthquake's magnitude, the distance from the epicenter, and the geologic composition of local soils and rocks. Seismic intensity is most commonly measured by the Modified Mercalli Intensity (MMI) scale, which includes twelve levels of damage. The MMI is derived from actual observations of damage to structures and human reactions to earthquakes. Based on this scale, an earthquake tremor at Level I earthquake tremor is generally not felt and is considered unlikely to result in damage, whereas a Level XII earthquake results in total destruction. Earthquake intensities may result in damage such as partial or complete collapse of masonry structures, severe damage to complete destruction of underground pipelines, rock and landslides, and massive damage or destruction of

bridges, overpasses and other improvements.

Earthquake magnitude is measured by the Richter Scale on a continuum of one to nine, with each level-of-magnitude increase representing a tenfold increase in the amplitude of the waves on a seismogram. The most notable historic earthquake in the Apple Valley region was the Landers earthquake of 1992, which had a magnitude of 7.3 on the Richter Scale. The Landers earthquake, so named for its epicenter near the small desert community of Landers, also ruptured five other separate faults.

The largest earthquake likely to occur on a fault or fault segment within a specified period of time is considered the Maximum Probable Earthquake (MPE). The MPE is useful during emergency and engineering planning. It provides a means to assess the potential seismic risk within a region, is referenced to establish safe construction and design parameters, and facilitates the preparation of policies and programs that are responsive to the potential impacts of an earthquake.

Defined as the largest earthquake a fault is estimated to be capable of generating, the Maximum Credible Earthquake (MCE) also provides a useful gauge for emergency and engineering planning efforts. In the Apple Valley area, the North Frontal fault (West) is expected to generate a magnitude 7.2 earthquake with a Peak Ground Acceleration (PGA) ranging from 1.13g to 0.38g, which is equivalent to a Level XI to X on the Modified Mercalli Intensity Scale (MMI). Table IV-1 shows a list of faults that could generate significant impacts within Apple Valley and the surrounding area.



Table IV-1
Estimated Horizontal Peak Ground Accelerations and
Seismic Intensities in the Apple Valley Area

Fault Name	Distance to Apple Valley (km)	Distance to Apple Valley (mi)	Magnitude of M_{max} *	PGA (g) from M_{max}	MMI from M_{max}
North Frontal Fault (West)	<0.5 – 16.2	0.5 – 26.1	7.2	1.13 – 0.38	XI - X
Helendale – South Lockhart	<0.5 – 13.9	0.5 – 22.4	7.3	0.75 – 0.33	XI - IX
San Andreas (Whole Southern)	14.4 – 31.4	23.1 – 50.6	8.0	0.48 – 0.25	X - IX
Lenwood – Lockhart – Old Woman Springs	12.1 – 28.7	19.4 – 46.2	7.5	0.42 – 0.19	IX - VIII
San Andreas (San Bernardino – Coachella)	14.4 – 31.4	23.1 – 50.6	7.7	0.41 – 0.20	X - VIII
San Andreas (1857 Rupture or Cholame – Mojave)	16.9 – 33.2	27.2 – 53.5	7.8	0.38 – 0.20	IX - VIII
San Andreas (San Bernardino)	14.4 – 31.4	23.1 – 50.6	7.5	0.36 – 0.17	IX – VIII
Cleghorn	8.1 – 24.4	13.1 – 39.2	6.5	0.33 – 0.11	IX - VII
San Andreas (Mojave)	16.9 – 32.2	27.2 – 53.5	7.4	0.30 – 0.15	IX - VIII
Cucamonga	18 – 34.4	29 – 55.3	6.9	0.28 – 0.15	IX - VIII
Landers	17.3 – 34.5	27.9 – 55.6	7.3	0.27 – 0.14	IX - VIII
North Frontal (East)	17.3 – 32.2	27.9 – 51.9	6.7	0.26 – 0.14	IX – VIII
Sierra Madre	29.6 – 45.1	47.7 – 72.6	7.2	0.21 – 0.14	VIII
Gravel Hills – Harper Lake	20.8 – 37.5	33.5 – 60.3	7.1	0.20 – 0.11	VIII - VII
Calico – Hidalgo	29.1 – 43.6	43.1 – 70.2	7.3	0.18 – 0.11	VIII - VII
San Jacinto (San Bernardino)	18.6 – 35.7	29.9 – 57.4	6.7	0.17 – 0.09	VIII - VII
Johnson Valley (Northern)	19.9 – 32.4	32 – 52.1	6.7	0.16 – 0.10	VIII – VII
Puente Hills Blind Thrust	42.7 – 58.9	68.7 – 94.8	7.1	0.14 – 0.10	VIII - VII
Blackwater	30 – 45.2	46.8 – 72.8	7.1	0.14 – 0.09	VIII - VII
San Jacinto (San Jacinto Valley)	26.2 – 42.8	42.2 – 68.8	6.9	0.14 – 0.09	VIII - VII
Pinto Mountain	31.5 – 48.8	50.7 – 78.5	7.2	0.14 - 0.09	VIII - VII
Pisgah – Bullion Mtn. – Mesquite Lake	35.5 – 51.4	57.1 – 82.7	7.3	0.13 – 0.09	VIII - VII
Emerson South – Copper Mtn.	29 – 40.6	46.7 – 65.3	7.0	0.13 – 0.09	VIII - VII

Abbreviations: mi – miles; km – kilometer; M_{max} – maximum magnitude earthquake; PGA – peak ground acceleration as a percentage of “g”, which is the acceleration of gravity; MMI – Modified Mercalli Intensity.

Source: Technical Background Report to the Safety Element for the Town of Apple Valley, prepared by Earth Consultants International, 2007.

Potential adverse effects from earthquakes may be substantial and range from property damage, to the loss of public services and facilities, to loss of life. Apple Valley and the surrounding area are most susceptible to severe impacts associated with strong ground shaking. Strong ground shaking can cause other geologic hazards, including landslides, ground lurching, structural damage or destruction, and liquefaction, which can further disrupt affected areas through fire, the interruption of essential services or damage to facilities and infrastructure, such as water, sewer, gas, electric, transportation, communications, drainage, as well as release of hazardous materials. Dam or water tank failure brought about by seismic activity can result in flood inundation.



There are no faults mapped by the State of California within the Town's corporate limits or within either of the proposed annexation areas; however two faults occur within portions of the Town's Sphere of Influence. The following discussion describes the faults in the region that are most likely to impact Apple Valley. Faults within the Apple Valley study area are illustrated in Exhibit IV-3, Faults in Apple Valley Area.

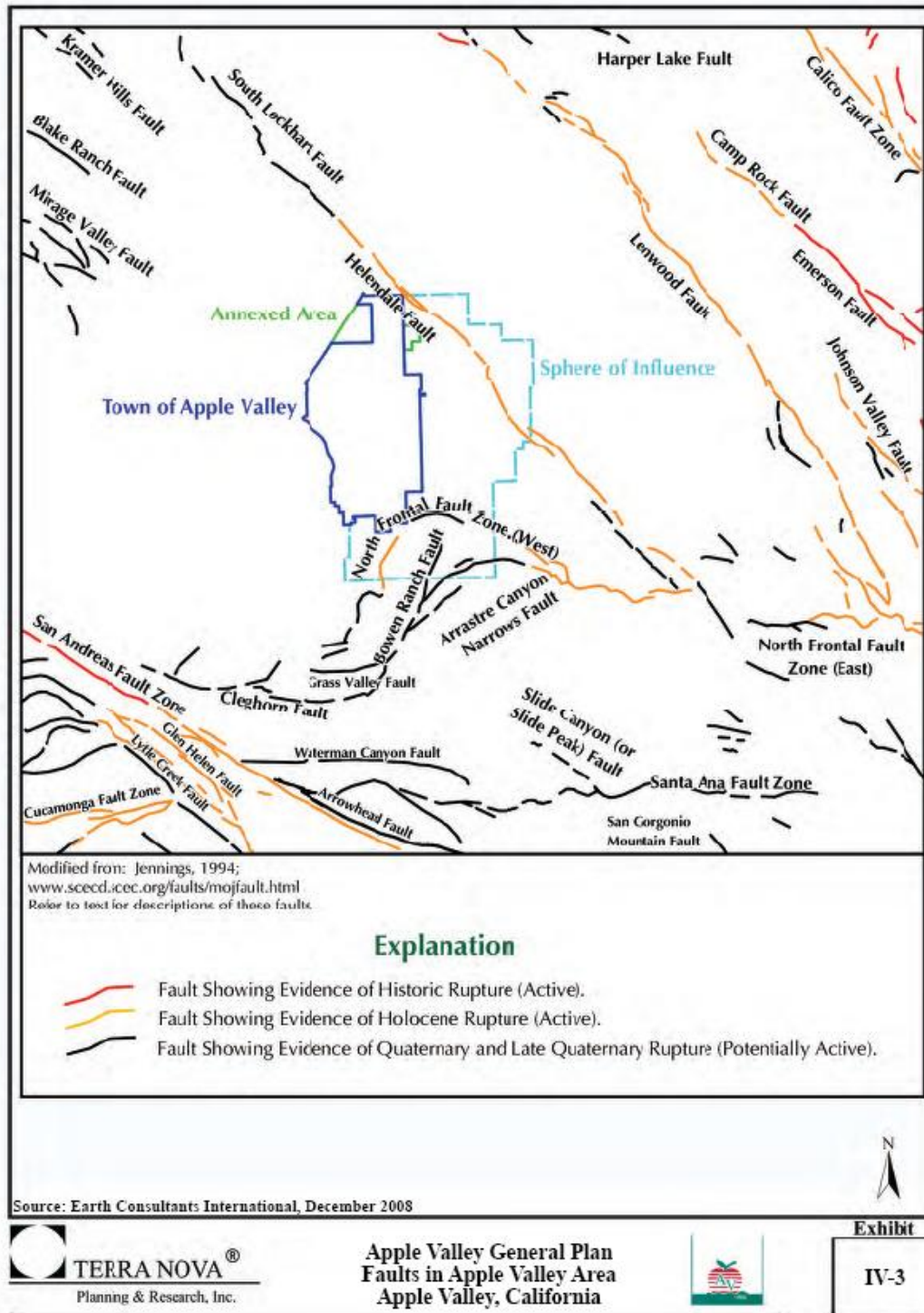


Figure 9 – Faults in Apple Valley



North Frontal Fault

The North Frontal fault is closest to and therefore has the potential to generate the strongest seismic shaking in the area. The North Frontal fault is a partially blind reverse fault zone comprised of several fault splays; it trends south along the eastern flank of the San Bernardino Mountains, and has a combined total length of approximately 40 miles. Several of the fault splays interact with other faults that traverse the region. The most significant fault with which the North Frontal relates is the Helendale fault, which offsets and divides the North Frontal into two main segments, referred to as the East and West segments. The West segment is approximately 22 miles long, and is less than 0.5 miles from Apple Valley at the closest point.

The North Frontal fault is considered an active fault, based on its having moved within the last 10,000 years. However, it has not been studied in detail, and while it has been attributed a slip rate of approximately 0.5 mm per year, the parameters of this fault are not well understood. It is thought that movement on this fault causes an average uplift rate of the San Bernardino Mountains of about 1 mm per year. The West segment of the North Frontal fault zone is considered capable of generating a maximum magnitude 7.2 earthquake, based on its length. Such an earthquake on this fault would generate peak ground accelerations in the planning area of between about 1.1g and 0.4g, which converts to Modified Mercalli intensities as high as XI. Based on rupture of the East segment of the North Frontal fault zone in a 6.7 earthquake, ground shaking of about 0.26g to 0.14g would be felt in the planning area. This converts to Modified Mercalli intensities in the IX to VIII range.

Helendale Fault

There are several right-lateral strike-slip faults within what is known as the Eastern California Shear Zone, of which the Helendale fault is the westernmost. Approximately 9 to 23% of the total movement along the North American/Pacific plate boundary motion occurs along this zone. The Helendale fault itself is 56 miles long, but it also seems to form a continuous fault with the South Lockhart fault to the north. The southern end of the Helendale fault apparently offsets the North Frontal fault, as discussed above, forming the East and West segments. The Helendale fault extends to the northeast of the planning area, outside of Apple Valley's northeastern corporate limits and within the Sphere of Influence. The Helendale fault has an annual slip rate calculated at 0.8 mm/year; it has a recurrence interval for large surface-rupturing events of 3,000 to 5,000 years. Based on currently available data, the California Geological Survey estimates that a maximum earthquake of magnitude 7.3 along the combined Helendale-South Lockhart faults would generate horizontal peak ground accelerations in Apple Valley of between 0.75g and 0.3g, with Modified Mercalli Intensities of between XI

and IX.

San Andreas Fault



The San Andreas Fault zone is located approximately 23 miles southwest of Apple Valley. The longest fault in the State of California, it extends approximately 750 miles from Cape Mendocino in northern California to the Salton Sea in southern California. The San Andreas, a right-lateral transform fault, is regarded as a “Master Fault” that controls the seismic hazard for central and southern California. The magnitude 8.0 Fort Tejon earthquake, which occurred in 1857, is the last major earthquake to have occurred on the southern San Andreas. As previously discussed, at least one other fault occurs closer to Apple Valley and has the potential to cause stronger ground

shaking, and therefore more damage, than the San Andreas Fault. Nonetheless, the San Andreas Fault is considered to have a high probability of causing an earthquake in the near future and should therefore be considered in all seismic hazard assessment studies in southern California given its.

The Fort Tejon earthquake in 1857 ruptured the Cholame, Carrizo, and Mojave segments of the San Andreas fault, and displacements occurred along of as much as 27 feet of the rupture zone. It is estimated that peak ground accelerations in Apple Valley as a result of the 1857 earthquake may have been as high as 0.38g. Another similar earthquake that ruptured the entire southern San Andreas Fault, with its epicenter along the section of fault closest to Apple Valley, could generate even higher peak ground accelerations in Apple Valley, estimated at between 0.48g and 0.25g.

Lenwood – Lockhart – Old Woman Springs Faults

Another of the Eastern California Shear Zone faults is the Lenwood fault, a right-lateral strike slip fault approximately 47 miles long. It has a slip rate of about 0.8 mm/year. Based on trenching studies, this fault has ruptured at least three times and these ruptures have occurred as recently as approximately 200 to 400 years ago. Other ruptures are estimated as occurring between 5,000 and 6,000 years ago, and 8,300 years ago. Therefore a recurrence between major surface ruptures is estimated at between 4,000 to 5,000 years. Prior to the 1992 Landers earthquake the yearly slip rate on this fault had been recorded but not verified.

The Lockhart fault is approximately 44 miles long and is north of the Lenwood fault. The North Lockhart fault, a segment that evidences no activity within the last 11,000 years, is approximately 6 miles. The Lockhart fault is estimated to have an interval of between 3,000 and 5,000 years for major surface-rupture.

The Old Woman Springs segment is about 6 miles long and is the main trace in a complex fault system where the Eastern segment of the North Frontal Fault Zone and the Lenwood fault intersect. It is considered an active fault.

The Lenwood and Lockhart faults essentially form a continuous, 90-miles long system. While there is no evidence that both of these faults have ruptured together in the past, such an event may be possible, as evidenced by rupture of five separate fault segments during the Landers earthquake. The technical



background study assumes a scenario wherein the Lenwood and Lockhart faults, together with the Old Woman Springs fault, rupture together in a magnitude 7.5 maximum earthquake. Such an event would generate peak ground accelerations in Apple Valley of about 0.42g to 0.19g, with Modified Mercalli Intensities in the IX to VIII range. A smaller magnitude event involving rupture along only one of these faults ruptures would cause lesser ground motions in Apple Valley than those reported above.

Cleghorn Fault

The Cleghorn fault, also known as the Silverwood Lake fault due to its extension across the lake, is approximately 19-miles long. Studies suggest that the fault zone has had about 650 feet of motion in the last 50,000 to 100,000 years, which results in a slip rate of 2 to 4 mm/year. A magnitude 6.5 earthquake on this fault is considered capable of generating horizontal peak ground accelerations in the Apple Valley area of between about 0.33g and 0.11g, with Modified Mercalli Intensities in the IX to VII range.

Cucamonga Fault

The Cucamonga fault zone is approximately 16-miles long. As one element of the Transverse Ranges family of thrust faults, it runs along the southern front of the San Gabriel Mountains from San Antonio Canyon eastward to the Lytle Creek area. It has a slip rate of between approximately 5.0 and 2.0 mm/year with an estimated average recurrence interval of 625 years. The Cucamonga fault is thought capable of generating a maximum magnitude 6.9 earthquake, based on length, and such a scenario would result in peak horizontal ground acceleration in the Apple Valley area of between about 0.28g and 0.15g, with Modified Mercalli intensities in the IX to VIII range.

Landers (or Kickapoo) Fault

The group of faults that ruptured during the 1992 Landers earthquake, including the Homestead Valley, Kickapoo, and Johnson Valley faults, and segments of the Burnt Mountain and Eureka Peak faults, are known as the Landers fault. The Landers fault now refers to the Kickapoo fault. These faults are part of the Eastern Mojave Shear Zone and were discovered after they ruptured the surface during the 1992 Landers earthquake. It is estimated that intervals between major ruptures is in the thousands of years, The 1992 earthquake resulted in substantial lateral displacement along some of these faults, for instance nearly 9.5 feet in the case of the Kickapoo fault. Individually, these faults could rupture in smaller earthquakes. Their combined lengths allowed for the magnitude 7.3 earthquake that shook southern California on June 28, 1992.

Ground shaking in the Apple Valley area due to a Landers-type earthquake on these faults would cause horizontal ground accelerations of between 0.27g and 0.14g, with Modified Mercalli intensities in the IX to VIII range.

Sierra Madre Fault



The Sierra Madre fault zone or complex is approximately 47 miles long and extends along the base of the San Gabriel Mountains from the San Fernando Valley to San Antonio Canyon; from there it continues southeastward as the Cucamonga fault. The estimated slip rate of the Sierra Madre fault is estimated to be approximately 0.6 mm/year with a recurrence interval of about 8,000 years. Recent studies suggest that the last rupture event on the eastern segments of the fault occurred about 8,000 years ago, therefore, the Sierra Madre fault may be near the end of its cycle, and therefore it has potential generate an earthquake in the not too distant future. The Sierra

Madre fault is estimated to be capable of producing a magnitude 7.2 earthquake, resulting in peak horizontal ground accelerations in Apple Valley of between about 0.21g and 0.14g.

Gravel Hills – Harper Lake Fault

This fault zone is between 31 and 44 miles long, depending on how many fault segments are included and is considered active. The estimated annual slip rate on this fault zone is 0.9 mm/year; the recurrence interval between earthquakes is about 3,500 years. The combined fault segments are estimated to be capable of generating 7.1 magnitude earthquake, which would generate peak horizontal ground accelerations in the Apple Valley area of between 0.20g and 0.11g, with Modified Mercalli intensities in the VIII to VII range.

Previous Occurrences/Magnitude for Earthquake

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

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

This is mostly due to the "big bend" of the San Andreas fault, from the southern end of the San Joaquin Valley to the eastern end of the San Bernardino mountains (see Figure 10, "Big Bend" at left.) Where the fault bends, the Pacific and North American plates push into each other, compressing the earth's crust into the mountains of Southern California and creating hundreds of additional faults (many more than shown in the fault map). These faults produce thousands of small earthquakes each year, and the other half of our significant earthquakes. Examples



A schematic block model of Southern California showing the motion of the Pacific and North American plates, and the big bend of the San Andreas fault where the plates squeeze together.



include the 1994 Northridge and 1987 Whittier Narrows earthquakes.

FIGURE 10 - "BIG BEND"

Of the 119 California earthquakes cited in the list (below), the Town of Apple Valley is in the area of potential effect of 25 of them (**as indicated below ***). This means that 20 percent of these earthquakes either had the opportunity to produce some damage to Apple Valley or may have produced injuries, fatalities and damages to surrounding communities.

- 2010 04 05 - Sierra El Mayor Earthquake (Northern Baja California) - M 7.2
- 2010 03 16 - Near Pico Rivera, Los Angeles Basin - M 4.4
- 2010 01 10 - Gorda Plate Earthquake - M 6.5
- 2010 01 10 - Offshore Northern California - M 6.5
- 2009 06 08 - San Francisco Bay Area, California - M 3.5
- *2009 05 18 - Greater Los Angeles Area, California - M 4.7**
- 2009 04 30 - Northern California - M 3.5
- 2009 03 30 - Northern California - M 4.3
- 2009 03 08 - San Francisco Bay area, California - M 3.5
- *2009 01 09 - Greater Los Angeles Area, California - M 4.5**
- *2008 07 29 - Greater Los Angeles area, California - M 5.5**
- 2008 04 30 - Northern California - M 5.4
- 2007 10 31 - San Francisco Bay Area, California - M 5.6
- 2007 08 09 - Greater Los Angeles area, California - M 4.4**
- 2007 07 20 - San Francisco Bay area, California - M 4.2
- 2007 07 02 - Central California - M 4.3
- 2007 05 09 - Offshore Northern California - M 5.2
- 2006 10 20 - Northern California - M 4.5
- 2005 09 22 - Central California - M 4.7
- 2005 06 17 - Off the Coast of Northern California - M 6.6
- *2005 06 16 - Greater Los Angeles Area, California - M 4.9**
- 2005 06 15 - Off the Coast of Northern California - M 7.2
- *2005 06 12 - Southern California - M 5.2**
- 2005 05 06 - Central California - M 4.1
- 2004 09 28 - Central California - M 6.0
- 2004 05 30 - Pine Mountain Club, California - M 3.0
- 2003 12 22 - San Simeon, California - M 6.6 Fatalities 2
- 2003 10 19 - near Orinda, California - M 3.5
- 2003 10 07 - near Imperial Beach, California - M 3.6
- 2003 09 13 - near Simi Valley, California - M 3.4
- 2003 09 05 - near Piedmont, California - M 4.0
- 2003 08 27 - Val Verde, California - M 3.9
- 2003 08 15 - Humboldt Hill, California - M 5.3
- 2003 05 26 - Seven Trees, California - M 3.8
- 2003 05 26 - Muir Beach, California - M 3.4
- 2003 05 25 - Santa Rosa, California - M 4.2
- 2003 05 24 - Brawley, California - M 4.0
- *2003 03 11 - Twentynine Palms Base, California - M 4.6**
- *2003 02 22 - Big Bear City, California - M 5.2**
- 2003 02 02 - Dublin, CA, Swarm - M 4.1
- 2003 01 25 - Keene, California - M 4.7
- 2002 12 24 - Pacifica, California - M 3.6
- 2002 11 24 - Swarm near San Ramon, California - M 3.9
- 2002 09 03 - Yorba Linda, California - M 4.8
- 2002 06 17 - Bayview, California - M 5.3
- 2002 05 14 - Gilroy, California - M 4.9



2002 03 16 - near Channel Islands Beach, California - M 4.6
2000 09 03 - Napa, California - M 5.0
***1999 10 16 - Hector Mine, California - M 7.1**
1994 09 01 - Cape Mendocino, California - M 7.0
***1994 01 17 - Northridge, California - M 6.7 Fatalities 60**
***1992 06 28 - Landers, California - M 7.3 Fatalities 3**
***1992 06 28 - Big Bear, California - M 6.5**
1992 04 25 - Cape Mendocino, California - M 7.2
***1992 04 23 - Joshua Tree - M 6.2**
1991 08 17 - Honeydew, California - M 7.0
1991 06 28 - Sierra Madre, California - M 5.6 Fatalities 2
1989 10 18 - Loma Prieta, California - M 6.9 Fatalities 63
1989 08 08 - Santa Cruz County, California - M 5.4 Fatalities 1
1987 11 24 - Superstition Hills, California - M 6.7
1987 11 24 - Superstition Hills, California - M 6.5 Fatalities 2
***1987 10 04 - Whittier Narrows, California - M 5.6 Fatalities 1**
***1987 10 01 - Whittier Narrows, California - M 5.9 Fatalities 8**
1986 07 21 - Chalfant Valley, California - M 6.2
***1986 07 08 - North Palm Springs, California - M 6.1**
1984 11 23 - Round Valley, California - M 5.8
1984 04 24 - Morgan Hill, California - M 6.2
1983 05 02 - Coalinga, California - M 6.4
1980 11 08 - Humboldt County, California - M 7.2
1980 05 27 - Mammoth Lakes, California - M 6.0
1980 05 25 - Mammoth Lakes, California - M 6.2
1980 01 27 - Livermore, California - M 5.8
1980 01 24 - Livermore Valley, California - M 5.8
***1979 10 15 - Imperial Valley, Mexico - California Border - M 6.4**
1979 08 06 - Coyote Lake, California - M 5.7
1975 08 01 - Oroville, California - M 5.8
***1971 02 09 - San Fernando, California - M 6.6 Fatalities 65**
1969 10 02 - Santa Rosa, California - M 5.7 Fatalities 1
1966 09 12 - Truckee, California - M 5.9
1966 06 28 - Parkfield, California - M 6.1
1957 03 22 - Daly City, California - M 5.3 Fatalities 1
1955 10 24 - Concord, California - M 5.4 Fatalities 1
1954 12 21 - Eureka, California - M 6.5 Fatalities 1
1952 08 22 - Kern County, California - M 5.8 Fatalities 2
1952 07 21 - Kern County, California - M 7.3 Fatalities 12
***1940 05 19 - Imperial Valley, California - M 7.1 Fatalities 9**
1934 06 08 - Parkfield, California - M 6.1
***1933 03 11 - Long Beach, California - M 6.4 Fatalities 115**
1932 06 06 - Eureka, California - M 6.4 Fatalities 1
1927 11 04 - Lompoc, California - M 7.1
1926 10 22 - Monterey Bay, California - M 6.1
1926 06 29 - Santa Barbara, California - M 5.5 Fatalities 1
1925 06 29 - Santa Barbara, California - M 6.8 Fatalities 13
1923 01 22 - Humboldt County, California - M 7.2
1922 03 10 - Parkfield, California - M 6.1
1922 01 31 - Eureka, California - M 7.3
***1918 04 21 - San Jacinto, California - M 6.8 Fatalities 1**
***1915 06 23 - Imperial Valley, California - M 6.3 Fatalities 6**
1911 07 01 - Calaveras fault, California - M 6.5
1906 04 18 - San Francisco, California - M 7.8 Fatalities 3000
1901 03 03 - Parkfield, California - M 6.4



- *1899 12 25 - San Jacinto, California - M 6.7 Fatalities 6**
- 1899 04 16 - Eureka, California - M 7.0
- 1898 04 15 - Mendocino County, California - M 6.8
- 1898 03 31 - Mare Island, California - M 6.3
- 1897 06 20 - Calaveras fault, California - M 6.3
- 1892 04 21 - Winters, California - M 6.4
- 1892 04 19 - Vacaville, California - M 6.4 Fatalities 1
- *1892 02 24 - Imperial Valley, California - M 7.8**
- 1890 02 24 - Corralitos, California - M 6.3
- 1873 11 23 - California - Oregon Coast - M 7.3
- 1872 03 26 - Owens Valley, California - M 7.4 Fatalities 27
- 1868 10 21 - Hayward, California - M 6.8 Fatalities 30
- 1865 10 08 - Santa Cruz Mountains, California - M 6.5
- 1857 01 09 - Fort Tejon, California - M 7.9 Fatalities 1
- 1838 06 - San Francisco area, California - M 6.8
- 1836 06 10 - South San Francisco Bay region, California - M 6.5
- 1812 12 21 - West of Ventura, California - M 7.1 Fatalities 1
- *1812 12 08 - Southwest of San Bernardino County, California - M 6.9 Fatalities 40**

TABLE 1 - CALIFORNIA EARTHQUAKES

The following provides information on the probability of future events. In addition, the data provides an overall summary of the Town's vulnerability and impact of each hazard.

The entire geographic area of California is prone to the effects of an earthquake. Figure 11 represents the UCERF probabilities of having a nearby earthquake rupture (within 3 or 4 miles) of magnitude 6.7 or larger in the next 30 years. As shown in the table, the chance of having such an event somewhere in California exceeds 99%. The 30-year probability of an even more powerful quake of magnitude 7.5 or larger is about 46%.

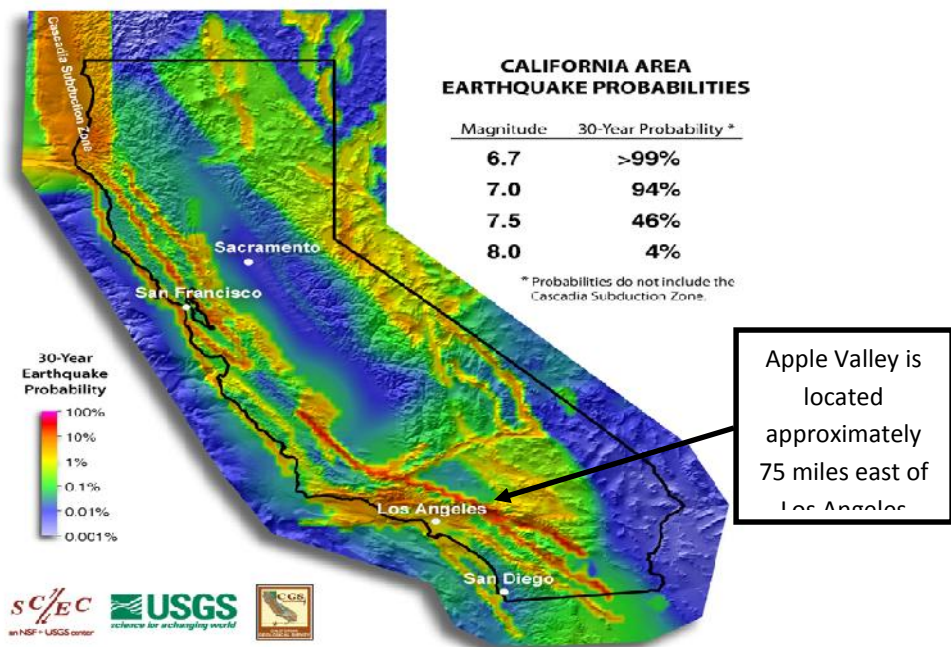


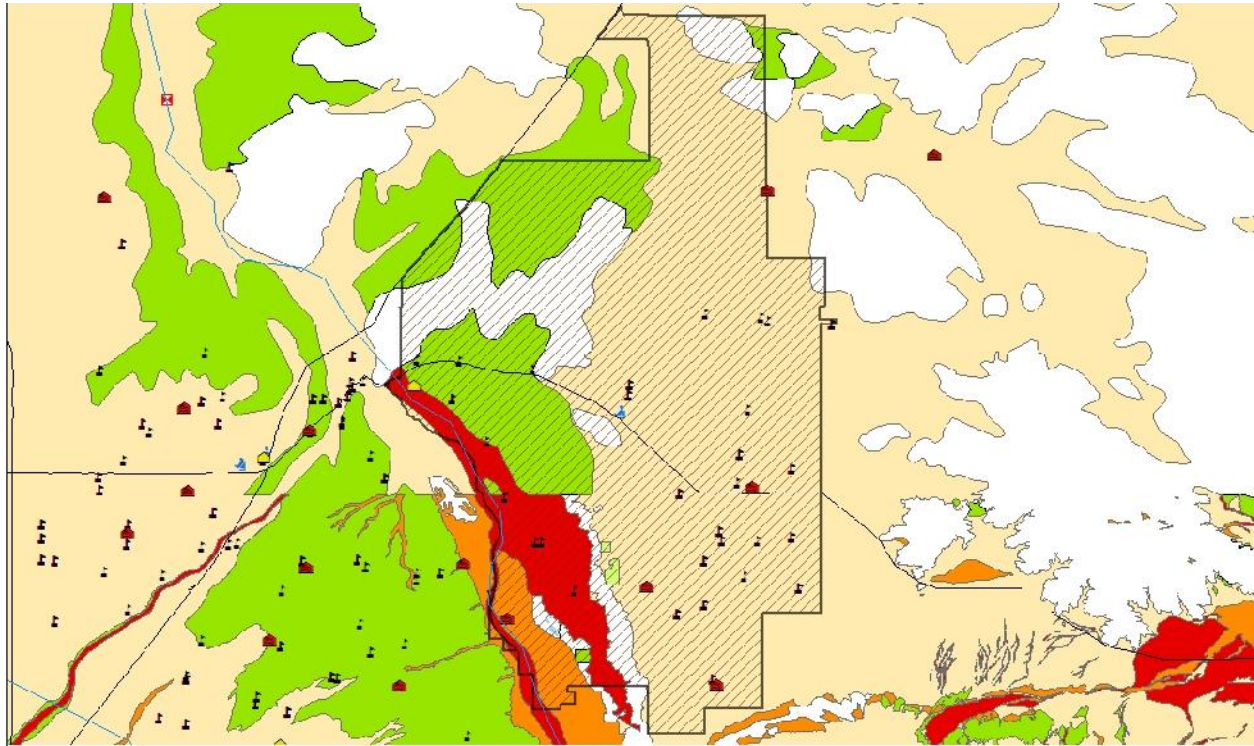


FIGURE 11 - UCERF EARTHQUAKE PROBABILITY MAPPING

Liquefaction

Where loose, saturated, sandy sediments are subjected to ground vibrations greater than 0.2 g, liquefaction may occur, causing the total or substantial loss of shear strength in the affected sediments. During this process, wherein soils behave like a liquid or semi-viscous substance, structural distress or failure due to ground settlement can occur. These conditions may cause foundation soils to lose load-bearing capacity in foundation soils and the buoyant rise of buried structures.

Liquefaction is induced by three general conditions: 1) strong ground shaking over a relatively long period; 2) the presence of unconsolidated granular sediments; and 3) the occurrence of water-saturated sediments within 50 feet of the ground surface. These general conditions appear to occur in the planning area, thereby allowing the potential for liquefaction. There are a number of active faults in the region that could potentially generate earthquake characterized by strong ground shaking of long durations. Along major drainages in the planning area and vicinity, granular loose sediments occur. The alluvium underlying Apple Valley is coarsely granular and percolates well; the water table is below 50 feet of the ground surface throughout most of the area, with the exception of locally within the Mojave River floodplain, where water-saturated sediments occur within about 50 feet of the surface. These areas are likely vulnerable to liquefaction during an earthquake.



Town of Apple Valley
USGS Liquefaction Susceptibility Zones

Liquefaction Susceptibility data source:
Liquefaction susceptibility data developed for the "ShakeOut" Scenario,
USGS Open File Report 2038-1150, Chap. 3C (p. 48-87)
Map creation date: October 26, 2010



Liquefaction Susceptibility	
Town of Apple Valley	Water Features
Rivers and Streams	None
Major Highways	Very Low
EOCs	Low
Police Stations & Jails	Moderate
Fire Stations	High
Schools	Very High
Sewage Treatment Plants	

4.2.2 Flooding

Floods are the most common and widespread of all natural disasters--except fire. Most communities in the United States have experienced some kind of flooding, after spring rains, heavy thunderstorms, or winter snow thaws.

A flood, as defined by the National Flood Insurance Program is:

"A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties (at least one of which is your property) from:

**Overflow of inland or tidal waters, *Unusual and rapid accumulation or runoff of surface waters from any source, or a mudflow.*

The collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood."

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



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

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

The standard for flooding is the so-called "100-year flood," a benchmark used by the Federal Emergency Management Agency to establish a standard of flood control in communities throughout the country. Thus, the 100-year flood is also referred to as the "regulatory" or "base" flood. Actually, there is little difference between a 100-year flood and what is known as the 10-year flood. Both terms are really statements of probability that scientists and engineers use to describe how one flood compares to others that are likely to occur. In fact, the 500-year flood and the 10-year flood are only a foot apart on flood elevation-which means that the elevation of the 100-year flood falls somewhere in between.

The term 100-year flood is often incorrectly used and can be misleading. It does not mean that only one flood of that size will occur every 100 years. What it actually means is that there is a one percent chance of a flood of that intensity and elevation happening in any given year. In other words, it is the flood elevation that has a one percent chance of being equaled or exceeded each year. And it could occur more than once in a relatively short period of time. (By comparison, the 10-year flood means that there is a ten percent chance for a flood of its intensity and elevation to happen in any given year.) Rod Bolin, The Ponca City News, July 18, 2002. Page 5-A

While not considered a "high risk area", the Town does have areas that are considered "flood potential". ***The most crucial areas pertaining to flooding are the dry lake bed (consisting of limited residential) and Desert Knolls. Flooding is expected to occur within the general location of these risk areas, and not expected to threaten or endanger the safety or well being of the entire community. It is noted that flooding in the risk areas can occur rapidly depending on the heaviness and severity of rainfall and run-off. However, since the installation of dry wells in low-lying areas, severe flooding occurrences have become less frequent.***

Since incorporation in 1988, the Emergency Operations Center has activated more often due to flooding than any other type disaster. The Town's emergency responders continue to rely on the National Weather Service for weather advisories, storm watch conditions, and storm warnings.

National Flood Insurance Program (NFIP)

The Town joined the National Flood Insurance Program (NFIP) on June 16, 1995. The federal government administers the NFIP with communities that have been identified as flood prone. The Federal Emergency Management Agency (FEMA), through the Federal Insurance Administration, makes flood insurance available to the residents of Apple Valley provided the Town adopts and enforces adequate floodplain management regulations that meet the minimum NFIP requirements.

Previous Occurrences/Severity of Flooding

Winter storms in the past have caused waters in one or more of the natural drainage channels to overflow onto Town streets, parks and private property. Street embankments adjacent to the storm



channels have been damaged and required road closure. Normal traffic flow is significantly affected by water and silt deposits in the low water crossings.

Flash Flooding

Historical Events: The following describes the historical events associated with this hazard:

1. Series of Rainstorms; 1/22/10 (FEMA-1844-DR)

A series of severe rainstorms occurred in southern California on or about January 17, 2010 to February 6, 2010. A local declaration was issued by the Town Manager on January 21, 2010 (Resolution #2010-08). Governor Schwarzenegger proclaimed a State of Emergency for San Bernardino County on January 22, 2010, and President Bush declared a major for public assistance. The local Emergency Operations Center was activated to a level 1.

The series of rainstorms caused 0.43 inches of rainfall in Apple Valley over one 24-hour period. About 6,000 sandbags were issued throughout the week. A Sewer Lift Station suffered major damage to the facility, sewer pipes, and manhole. Other work throughout the community included:

- Debris removal
- Sandbagging and road closures
- Remove/replace asphalt and curbing
- Repair severe road edge erosion
- Base fill, grade, and recompact

Source: Town of Apple Valley records; Daily Press newspaper

Hazard: Flooding
Deaths: 0
Injuries: 0
Displaced People: unknown

2. Series of Rainstorms; 1/8/2005 (FEMA-1577-DR)

A series of severe rainstorms occurred in southern California on or about December 27, 2004 to January 11, 2005. A local declaration was issued by the Town Manager on January 21, 2005 (Resolution #2005-06), and ratified by the Town Council on January 25, 2005 (Resolution #2005-07). Governor Schwarzenegger proclaimed a State of Emergency for San Bernardino County on January 15, 2005, and President Bush declared a major disaster on February 4, 2005 for public assistance. The local Emergency Operations Center was not activated.

The series of rainstorms caused 0.43 inches of rainfall in Apple Valley over one 24-hour period. About 3,000 sandbags were issued throughout the week. The rainstorms caused the release of up to 5,500 CFS of water from Silverwood Lake reservoir over a 3-4 day period. At one point the water in the Mojave River measured at 6-feet, and caused minor damage to rear yard properties along the west side of Riverside Drive. Sewer Lift Station 3-A suffered major damage (approximately \$500,000) to the facility, sewer pipes, and manhole. Other work throughout the community included:



- Debris removal
- Sandbagging and road closures
- Remove/replace asphalt and curbing
- Repair severe road edge erosion
- Base fill, grade, and recompact

Source: Town of Apple Valley records; Daily Press newspaper

Hazard: Flooding
Deaths: 0
Injuries: 0
Displaced People: 0

3. 7/11/1999 (NDAA 99-04; OES #99-04-010)

On or about 4:00 p.m. on July 11, 1999, local flooding due to heavy rains occurred at various locations throughout the community. Resolution #99-27 confirming existence of a local emergency was signed by the Mayor. The Emergency Operations Center was partially activated.

Flooding led to multiple road closures, including the major arterial of Highway 18 and Tao Road. Approximately 29 other areas of road damage were noted. Water and mud damage destroyed three apartment units forcing the evacuation of residents. Apple Valley Fire Protection District conducted numerous rescues from stranded motorists. Apple Valley Chamber of Commerce went door-to-door to businesses in the Desert Knolls area (hardest hit area) to assist as necessary with storm damage. Approximately 14 businesses suffered moderate damage, as well as 34 single family residences.

Activities included:

- Sandbagging and road closures
- Remove/replace asphalt and curbing
- Repair severe road edge erosion
- Base fill, grade, and recompact

Source: Town of Apple Valley records; Daily Press newspaper

Hazard: Flash Flooding
Deaths: 0
Injuries: Unknown
Displaced People: Unknown

4. El Nino Conditions; 2/23/1998 (FEMA-1203-DR; NDAA-OES #98-01-285)

On or about 10:00 p.m. on February 23, 1998, local flooding due to heavy rains occurred at various locations. Resolution #98-13 confirming existence of a local emergency was issued, and the Emergency Operations Center was activated.

A total of 2.87-inches of rain poured on the High Desert in a 24-hour period. It was thought to be the third wettest month in Apple Valley since 1938 as the rain total for the month was 5.03-inches! Major damage occurred to 6 businesses and 21 apartment units and minor damage to another 35 apartment units, for a total of \$8.9 million in damages.



Activities included:

- Sandbagging and road closures
- Debris removal; barricade placement
- Road shoulder erosion protection
- Repair to concrete casing for sewer line crossing at the wash
- Clean manholes and repair potholes
- Remove/replace asphalt

Source: Town of Apple Valley records, Daily Press Newspaper, Apple Valley News

Hazard: Flash Flooding
Deaths: 0
Injuries: 0
Displaced People: Unknown

5. 1/12/1993

On or about midnight on January 12, 1993, local flooding due to heavy rains occurred at various locations throughout the community. Resolution #93-05 confirming existence of a local emergency was signed by the Mayor.

The rainstorm dumped nearly 9-inches of water in two days, with a constant rain lasting 11 days. The conditions worsened when there was a release of water from the Lake Silverwood reservoir.

Activities included:

- Sandbagging and road closures
- Debris removal
- Rescue of two rafters in the Mojave River (AVFPD)
- Construction of embankment to redirect flow of the Mojave River (San Bernardino County Flood Control)

Source: Town of Apple Valley records and Daily Press Newspaper

Hazard: Flash Flooding
Deaths: 0
Injuries: Unknown
Displaced People: Unknown

6. 12/7/1992

On or about 8:00 a.m. on December 7, 1992, local flooding due to heavy rains occurred at various locations throughout the community. Town of Apple Valley Resolution #92-80 confirming existence of a local emergency was signed by the Mayor. In fact, all four cities in the High Desert proclaimed a local emergency.

A total of 2.4-inches of rain poured down in the High Desert in an 18-hour period. It was thought to be the most rain to drop in the High Desert in the past ten years.

Activities included:

- Evacuation of residents (6 apartment units)



- Sandbagging and road closures
- Debris removal

Source: Town of Apple Valley records; Daily Press Newspaper

Hazard: Flash Flooding
 Deaths: 0
 Injuries: 0
 Displaced People: Unknown

7. El Nino Conditions; 2/12/1992

On or about 7:30 p.m. on February 12, 1992, local flooding due to heavy rains occurred at various locations throughout the community. A resolution proclaiming existence of a local emergency was signed by the Assistant Director of Emergency Services and the Deputy Town Manager.

Activities included:

- Sandbagging and road closures
- Debris removal
- Barricade placement and placement of cold mix asphalt into potholes
- Remove/replace asphalt, repaint stop bars/legends; replace striping
- Asphalt overlay and asphalt berms

Source: Town of Apple Valley records and Daily Press Newspaper

Hazard: Flash Flooding
 Deaths: 0
 Injuries: Unknown
 Displaced People: Unknown

The following table summarizes the occurrences, impact and costs of this hazard. "Other" is costs associated with the Apple Valley Fire Protection District.

Hazard: Flash Flooding	Response and Recovery Costs (dollar amounts in thousands)						
Name	Date	Town	County	State	Federal	Other	Total
Series of Severe Rainstorms	12/27/04-1/11/05	\$684	Unk	Unk	Unk	\$2	\$686
N/A	7/11/1999	\$60	\$0	\$0	\$0	\$98	\$158
El Nino Conditions	2/23/1998	\$2,027	\$0	\$0	\$0	\$0	\$2,027
N/A	1/12/1993	\$0	\$0	\$0	\$0	\$0	\$0
N/A	12/7/1992	\$150	\$0	\$0	\$0	\$160	\$310
El Nino Conditions	2/12/1992	\$423	\$0	\$0	\$0	\$149	\$572



Totals:	\$3,344	\$0	\$0	\$0	\$409	\$3,753
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The following map illustrates FEMA Flood Hazards located within the Town of Apple Valley.

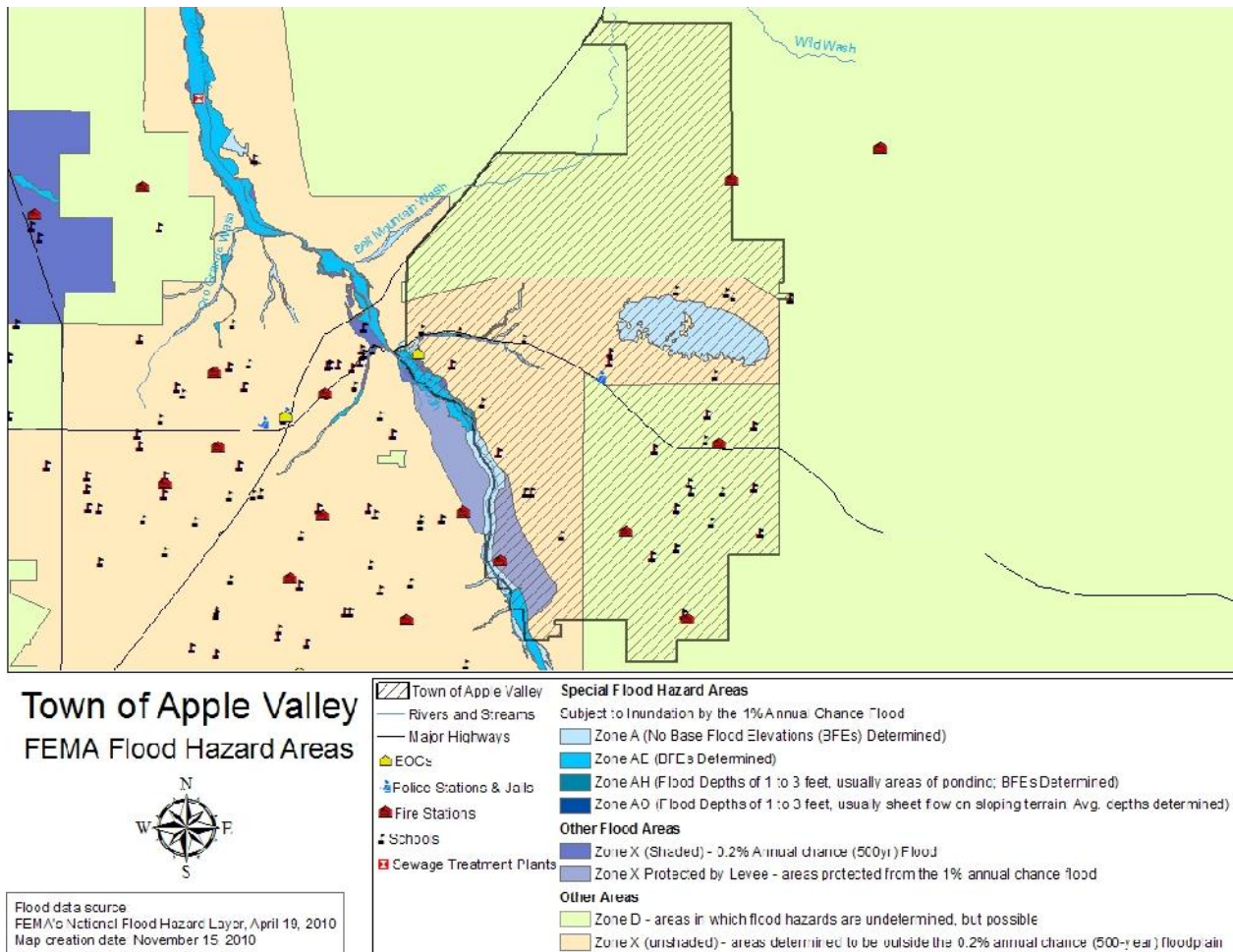


FIGURE 3- TOWN OF APPLE VALLEY FEMA FLOOD HAZARD AREAS

4.2.3 Wildfires

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

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

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



the fire (referred to as the “fuel load”). The ratio of living to dead plant matter is also important. The risk of fire is increased significantly during periods of prolonged drought as the moisture content of both living and dead plant matter decreases. The fuel’s continuity, both horizontally and vertically, is also an important factor.

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

Fire Hazard Severity

Wildfires present a significant threat in the unincorporated area of Apple Valley, particularly in the summer months when temperatures are high and precipitation is rare. The period between June and September is typically considered "fire season".

The area known as the Marianas in the southern foothill area of Apple Valley is a fire hazard area due to the abundance of brush and mountainous terrain, which makes it difficult to gain access to fight fire. This area is primarily in the unincorporated region of Apple Valley with homes scattered throughout the vegetation.

The Mojave Riverbed is the second significant threat of wildland fire in the Apple Valley area. Because of its significant slope to the bottom of the riverbed and the soft soil, it is difficult to gain access to this area to fight fire. The Mojave River is the Town’s western boundary with residential properties along Riverside Drive. Schools are located on the southernmost and northernmost ends of the natural extension of Riverside Drive.

The CPRI and wildfire statistics in this plan pertain to a potential fire in the Marianas.

Previous Occurrences of Wildfires

Historical Events: The following section lists and describes the historical events associated with this hazard in Town of Apple Valley.

1. **Old Fire; 10/27/2003** (FEMA-1498-DR)

On or about 2:00 p.m. on October 27, 2003, the Old Fire started threatening the mountain communities near Big Bear Lake forcing the evacuation of the entire community. The only passageway off the mountain at this point was through the High Desert and Apple Valley. The Emergency Operations Center was activated to accommodate the evacuated residents.

While monitoring the direction and rate of spread of the Old Fire, the Town was never in a real or direct threat. However, the EOC supported many activities for the evacuees from Big Bear.

Activities included:

- Emergency shelter for livestock-type animals at Horseman’s Center; secured 24-hours a day; opportunity for the first time to test the Town’s new animal evacuation plan; over 100 animals were sheltered over a 6 day period



- Coordination with American Red Cross to open a shelter at Apple Valley High School for six days averaging a daily attendance of 160 evacuees and 10 staff
- Apple Valley Unified School District closed its schools for 2.5 days because of the inability of the possible threat of fire, disruption to transportation services throughout the High Desert (as neighboring cities were sheltering Crestline and Running Springs residents), and due to the severe unhealthful smokey conditions in the area
- Public information -- press releases, web site updates, telephone recording updates, shelter flyers, evacuation flyers
- Voluntary evacuation notice for the southern portion of unincorporated and incorporated Apple Valley with preparation for large volume evacuation operations, non-ambulatory evacuations, and animal evacuations

Source: Town of Apple Valley records; Apple Valley Fire Protection District records

Hazard: Wildfires
Deaths: 0
Injuries: 0
Displaced People: 0

2. Willow Fire; 8/29/1999

On or about 3:30 p.m. on August 29, 1999, the Willow Fire that had been burning in the San Bernardino National Mountains near Lake Arrowhead was threatening the Town of Apple Valley. The Emergency Operations Center was partially activated at that time.

While the Willow Fire did not make its way into the Town boundaries, it did affect the unincorporated area south of Apple Valley. Ultimately, a few homes were lost in this area.

Activities included:

- Coordinating requests for information
- Coordination with the American Red Cross to open a shelter at Apple Valley High School
- Evacuations by Apple Valley Police Department and Town of Apple Valley Animal Control
- Fire response by Apple Valley Fire Protection District
- Activation of Apple Valley Radio Amateur Civil Emergency Services

Source: Town of Apple Valley records; AVFPD records

Hazard: Wildfires
Deaths: Unknown
Injuries: Unknown
Displaced People: Unknown

The following table summarizes the occurrences, impact and costs of this hazard. "Other" is cost associated with the Apple Valley Fire Protection District.

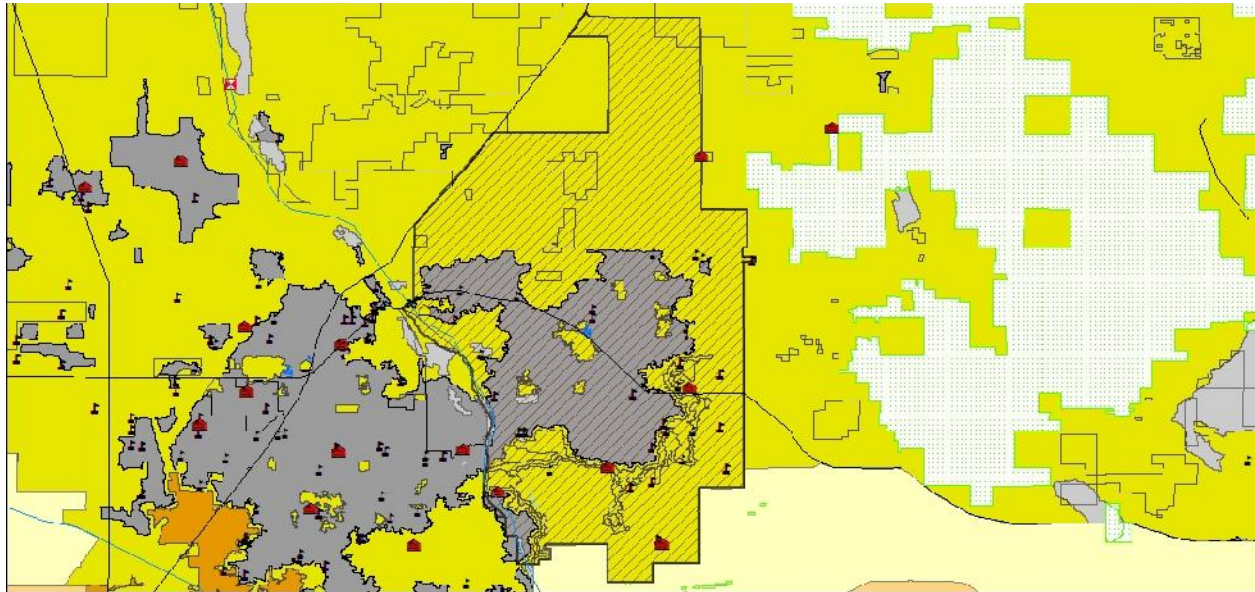
Hazard: Wildfires		Response and Recovery Costs (dollar amounts in thousands)					
Name	Date	City Town	County	State	Federal	Other	Total
Old Fire	10/27/2003	\$4	\$0	\$0	\$0	\$97	\$101
Willow Fire	8/29/1999	\$0	\$0	\$0	\$0	\$0	\$0
Totals:		\$4	\$0	\$0	\$0	\$97	\$101



Hazard Summary for Wildfires

Fire prevention strategies concentrate on educating the public and enforcement of fire codes. Fire suppression strategies focus around containment and control while protecting structures in the threatened areas. Suppression activities may utilize natural firebreaks; direct suppression of the fire by hose lines, aircraft, bulldozers and hand crews; increasing defensible spaces around homes; utilizing fire suppression foams; and mop up and total extinguishment of the fire.

The following map illustrates the Fire Hazard Severity Zones for the Town of Apple Valley.



Town of Apple Valley
CAL FIRE Fire Hazard Severity Zones

Fire hazard data source:
 CAL FIRE Fire Resource and Assessment Program (FRAP) Data,
 Recommended County Maps of Very High Fire Hazard Severity Zones in Local
 Responsibility Areas (LRA) 5/2008
 Draft Fire Hazard Severity Zones in Local Responsibility Areas (LRA) 9/2007
 Adopted Fire Hazard Severity Zones for State Responsibility Areas (SRA) 11/2007
 Map creation date: November 3, 2010



4.3 Inventory Assets

Step three in the risk assessment process involves inventorying assets located in the community. Section 4.1 profiled the hazards in Apple Valley. This information was used to identify the assets at risk from those hazards. Some hazards (such as earthquakes) may affect the entire community while some affect limited areas (flooding incidents). This section provides a description of the inventory development and prioritization process.

4.3.1 Population

The population statistics for the Town of Apple Valley are based on US Census data.

	Town of Apple Valley, California
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Total Population	
July 1, 2009	70,109
July 1, 2008	69,731
July 1, 2007	69,594
July 1, 2006	67,791
July 1, 2005	64,338
July 1, 2004	61,872
July 1, 2003	59,555
July 1, 2002	57,516
July 1, 2001	55,967
July 1, 2000	54,597
April 1, 2000 (Estimates Base)	54,254
April 1, 2000 (Census 2000)	54,239

Source: US Census Bureau, Population Estimates Program

4.3.2 Buildings

HAZUS default building inventory indicates there are about 21,396 buildings in the Town of Apple Valley and a total estimated replacement value of buildings of \$13.8 billion, excluding building contents. Approximately 96% of the buildings are residential, and 28% of the building value is associated with residential housing. More than 90% of the structures are wood. Figure 16 provides the building counts by occupancy and structure type for the Town of Apple Valley (HAZUS).

Building Inventory Information by General Occupancy	Building Replacement Value (\$1,000)	Contents Replacement Value (\$1,000)	Building Square Footage (1,000 Sq. Ft.)	Building Count
Residential	\$3,845,815	\$1,922,862	38,863	20,559
Commercial	\$9,694,660	\$9,702,272	86,145	313
Industrial	\$27,624	\$41,432	367	40
Other	\$259,945	\$123,505	1,625	484
TOTAL	\$13,828,044	\$11,790,071	127,000	21,396



Selected Building Inventory Data by General Building Type	Building Replacement Value (\$1,000)	Building Replacement Value (%)	Estimated Building Count	% of Building Count
Concrete	\$1,065,909	7.7%	77	0%
Manufactured Housing	\$53,502	0.4%	1,186	6%
Precast Concrete	\$904,295	6.5%	64	0%
Reinforced Masonry	\$3,036,080	22.0%	293	1%
Steel	\$506,147	3.7%	48	0%
Unreinforced Masonry	\$155,132	1.1%	5	0%
Wood Frame (Other)	\$4,503,771	32.6%	487	2%
Wood Frame (Single-family)	\$3,603,208	26.1%	19,236	90%
TOTAL	\$13,828,044		21,396	

Figure 4 - HAZUS Building Counts by Occupancy and Structure Type (Earthquake)

4.3.3 Critical Facility List

The Apple Valley Emergency Operations Plan lists critical facilities as "essential facilities". They are defined as structures, areas, or systems that significantly or directly affect the public health and safety of the community, i.e., police and fire stations, hospitals, utilities, and shelters/schools. A list of critical facilities with their respective organizations includes:

- Fire Stations (7) - Apple Valley Fire Protection District
- Hospital (1) - St. Mary Regional Medical Center
- Police Station (1) - San Bernardino County Sheriff's Department
- Shelter/Community Center (1) - Town of Apple Valley
- Shelter/Schools (14) - Apple Valley Unified School District
- Utility/Electrical (2) - Southern California Edison
- Utility/Natural Gas (2) - Southwest Gas Corporation
- Utility/Sewer (8) - Town of Apple Valley
- Utility/Telephone (6) – Verizon
- Utility/Water (7) - Southern California Water Company
- Utility/Water (30) - Apple Valley Ranchos Water Company
- Utility/Water (3) - Rancharitos Mutual Water Company

Name	Facility Type	Critical Rank
St. Mary Medical Center	Medical Facilities	Critical
Apple Valley Fire District – Station #331	Fire Stations	Critical



Apple Valley Fire District – Station #332	Fire Stations	Critical
Apple Valley Fire District – Station #333	Fire Stations	Critical
Apple Valley Fire District – Station #334	Fire Stations	Critical
Apple Valley Fire District – Station #335	Fire Stations	Critical
Apple Valley Fire District – Station #336	Fire Stations	Critical
Apple Valley Fire District – Station #337	Fire Stations	Critical
Apple Valley Police Department	Police Stations	Critical
James A. Woody Community Center	Government Facilities	Critical
Southwest Gas Corporation	Other	Critical
Apple Valley Ranchos Water Co.	Water and Sewer	Critical
Rancheritos Mutual Water Company	Water and Sewer	Critical
Southern California Water Company	Water and Sewer	Critical
TAV Sewer Lift Station – Jess Ranch #1	Water and Sewer	Critical
TAV Sewer Lift Station – Jess Ranch #2	Water and Sewer	Critical
TAV Sewer Lift Station - Kissell	Water and Sewer	Critical
TAV Sewer Lift Station 2-A-1	Water and Sewer	Critical
TAV Sewer Lift Station 2-A-2	Water and Sewer	Critical
TAV Sewer Lift Station 2-B	Water and Sewer	Critical
TAV Sewer Lift Station 3-A-1	Water and Sewer	Critical
TAV Sewer Lift Station 3-A-2	Water and Sewer	Critical
Apple Valley High School	Child Care Facilities	Critical
Desert Knolls Elementary School	Child Care Facilities	Critical
Granite Hills High School	Child Care Facilities	Critical
High Desert Premier Academy	Child Care Facilities	Critical
Lewis Center	Child Care Facilities	Critical
Mariana Elementary School	Child Care Facilities	Critical
Mojave Mesa Elementary School	Child Care Facilities	Critical
Phoenix Academy	Child Care Facilities	Critical
Rancho Verde Elementary School	Child Care Facilities	Critical
Rio Vista Elementary School	Child Care Facilities	Critical
Sandia Elementary School	Child Care Facilities	Critical
Sitting Bull Elementary	Child Care Facilities	Critical
Sitting Bull Middle	Child Care Facilities	Critical
Sycamore Rocks Elementary School	Child Care Facilities	Critical
Vanguard Preparatory	Child Care Facilities	Critical
Vista Campana Middle School	Child Care Facilities	Critical
Willow Park High School	Child Care Facilities	Critical
Yucca Loma Elementary School	Child Care Facilities	Critical
Apple Valley Animal Control Facility	Other	Critical
Apple Valley Public Works	Other	Critical
Apple Valley Town Hall	High Economic Importance	Critical



Apple Valley Unified School Dist	High Economic Importance	Critical
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**St. Mary Medical Center
Medical Facilities**

Size: 250000

Facility Description: St. Mary Medical Center is a 186-bed acute care hospital serving residents of Apple Valley, Adelanto, Hesperia, Lucerne Valley, and Victorville. The hospital was constructed prior to 1973 and is non-conforming to California seismic requirements enacted with Senate Bill 1953. The building consists of two separate additions to the original main hospital that are joined together. The building is extremely irregular in plan with several wings and re-entrant corners. Estimated square feet of main building and related campus buildings (MOB, Finance, Education/IS, and Marketing/Communications buildings) is 250,000 square feet.

Primary Contact:

Robert Suchomel, Director of Facilities
 18300 Highway 18, Apple Valley, CA 92307
 Phone: 760-242-2311 Ext. 8139
 E-mail: Robert.suchomel@stjoe.org
 Lon: 117.26
 Lat: 34.5427

Apple Valley Fire Protection District

Fire Stations:

**Apple Valley Fire Station 331 & Headquarters
Fire Station**

Size: 10,060

Facility Description: Station 331 and the adjoining headquarters facility are of wood frame construction with a 6-unit bay area. The station side is a typical fire station with office, kitchen, sleeping, and restroom facilities. The 6-unit bay has six bay doors and meets California safety guidelines for fire stations. The headquarters side of the building contains various office space and restrooms, and also includes a large training room and small conference room. The training room serves as the Town’s Emergency Operations Center upon its activation.

Primary Contact:

Joseph A. Guarrera Emergency Services Officer
 22400 Headquarters Drive, Apple Valley, CA 92307
 Phone: 760-247-7618
 E-mail: jguarrera@applevalleyfd.com

**Apple Valley Fire Station 332
Fire Station**

Size: 3,250

Facility Description: Station 332 is of wood frame construction with a 4-unit bay area. The station includes a small office, kitchen, sleeping, and restroom facilities. The 4-unit bay has two bay doors and meets California safety guidelines for fire stations. Station 335 was constructed over 40 years ago.

Primary Contact:

Joseph A. Guarrera Emergency Services Officer
 22400 Headquarters Drive, Apple Valley, CA 92307



Phone: 760-247-7618
E-mail: jguarrera@applevalleyfd.com

Apple Valley Fire Station 333
Fire Station

Size: 10,060

Facility Description: Station 333 is of wood frame construction with a 4-unit bay area. The station includes a small office, kitchen, sleeping, and restroom facilities. The 4-unit bay has two bay doors and meets California safety guidelines for fire stations. Station 333 was constructed over 50 years ago.

Primary Contact:

Joseph A. Guarrera Emergency Services Officer
22400 Headquarters Drive, Apple Valley, CA 92307
Phone: 760-247-7618
E-mail: jguarrera@applevalleyfd.com

Apple Valley Fire Station 334
Fire Station

Size: 5,615

Facility Description: Station 334 is of wood frame construction with a 4-unit bay area. The station includes a small office, kitchen, sleeping, and restroom facilities. The 4-unit bay has two bay doors and meets California safety guidelines for fire stations.

Primary Contact:

Joseph A. Guarrera Emergency Services Officer
22400 Headquarters Drive, Apple Valley, CA 92307
Phone: 760-247-7618
E-mail: jguarrera@applevalleyfd.com

Apple Valley Fire Station 335
Fire Station

Size: 4,100

Facility Description: Station 335 is of metal construction with a 4-unit bay area. The station includes a small office, training room, kitchen, sleeping, and restroom facilities. The 4-unit bay has four bay doors and meets California safety guidelines for fire stations. Station 335 was constructed over 40 years ago.

Primary Contact:

Joseph A. Guarrera Emergency Services Officer
22400 Headquarters Drive, Apple Valley, CA 92307
Phone: 760-247-7618
E-mail: jguarrera@applevalleyfd.com

Apple Valley Fire Station 336
Fire Station

Size: 9,762

Facility Description: Station 336 is of wood frame construction and was built in 2003. The station includes an office area with kitchen, sleeping, and restroom facilities. The station also has a large training/community room that serves as the Town's alternate Emergency Operations Center upon its activation. The 6-unit bay has six bay doors and meets California safety guidelines for fire stations.



Primary Contact:

Joseph A. Guarrera Emergency Services Officer
22400 Headquarters Drive, Apple Valley, CA 92307
Phone: 760-247-7618
E-mail: jguarrera@applevalleyfd.com

Apple Valley Fire Station 336
Fire Station

Size: 9,762

Facility Description: Station 336 is of wood frame construction and was built in 2007. The station includes an office area with kitchen, sleeping, and restroom facilities. The 6-unit bay has six bay doors and meets California safety guidelines for fire stations.

Primary Contact:

Joseph A. Guarrera Emergency Services Officer
22400 Headquarters Drive, Apple Valley, CA 92307
Phone: 760-247-7618
E-mail: jguarrera@applevalleyfd.com

Apple Valley Police Department
Police Stations

Size: 13,000 square feet

Facility Description: The Apple Valley Police Department facility consists of 13,000 square feet.

Primary Contact:

Susan Ward
14931 Dale Evans Parkway, Apple Valley, CA 92307
Phone: 760-240-7000 Ext. 7601
Fax: 760-961-6240
E-mail: sward@applevalley.org
Lon: 117.12
Lat: 34.31

James A. Woody Community Center
Government Facilities

Size: 8,500

Facility Description: The James A. Woody Community Center includes an auditorium with stage, kitchen, two meeting rooms, second floor conference room, storage area, and office space. The original facility was constructed over 50 years ago, but has since undergone improvements. The facility is also an approved shelter site for the American Red Cross.

Primary Contact:

Ralph Wright, Parks/Rec Manager
13467 Navajo Road, Apple Valley, CA 92307
Phone: 760-240-7884
Fax: 760-240-7887
E-mail: rwright@applevalley.org
Lon: 117.11
Lat: 34.29

Southwest Gas Corporation
Utility

Facility Description: Southwest Gas Corporation, a private utility, owns a natural gas high pressure system within the Town of Apple Valley, consisting of approximately 120 miles of underground pipelines. The system also includes some aboveground facilities.



Primary Contact:

Roy Meyers, Superintendent/Construction
13471 Mariposa Road, PO Box 1498, Victorville, CA 92393-1498
Phone: 760-951-4023

Apple Valley Ranchos Water Company
Water and Sewer

Facility Description: Apple Valley Ranchos Water Company, a private utility, is the largest water purveyor in the Town of Apple Valley with the following facilities:

- Active Deep Wells (22)
- Reservoirs (11)
- Booster Pump Sites (5)

Primary Contact:

Jeff Kinnard, production Supervisor
21760 Ottawa Road, PO Box 7005, Apple Valley, CA 92307
Phone: 760-240-8323
E-mail: jeff@avrwater.com

Rancheritos Mutual Water Company
Water and Sewer

Facility Description: Rancheritos Mutual Water Company owns three deep wells in southwest Apple Valley that provides water to 238 customers.

Primary Contact:

Frank Aubel, Jr., General Manager
10382 Caribou Road, PO Box 348, Apple Valley, CA 92307
Phone: 760-247-3730
Fax: 760-247-3730
E-mail: Waterboy7F8@msn.com

Southern California Water Company
Water and Sewer

Facility Description: Southern California Water Company, a private water utility, owns a number of water facilities in the Town of Apple Valley:

- Anoka Plant (well, booster pumps, and reservoir)
- Bear Valley Plant (well and chlorine building)
- Mesquite Plant (well and pressure tank)
- Mohawk Plant (well, booster pumps, reservoir, and chlorine buildings)
- Central Plant (wells and chlorine buildings)
- Central Tanks (reservoirs)
- Papago Plant (well and chlorine building)
- Yucca Booster (booster pumps)

Primary Contact:

Daniel Juare
13608 Hitt Road, Apple Valley, CA 92308
Phone: 760-247-3391 Ext. 710

Town of Apple Valley Sewer Lift Station - Jess Ranch #1
Water and Sewer

Size: 1,500

Facility Description: Contains duplex, submersible pumps.

Primary Contact:

Mike Cady, Supervisor
18878 Town Center Drive, Apple Valley, CA 92308
Phone: 760-240-7500



Fax: 760-240-7599
E-mail: mcady@applevalley.org
Lon: 117.15
Lat: 34.28

Town of Apple Valley Sewer Lift Station - Jess Ranch #2
Water and Sewer

Facility Description: *Contains* duplex, submersible pumps.

Primary Contact:

Mike Cady, Supervisor
10900 Apple Valley Road, Apple Valley, CA 92308
Phone: 760-240-7500
Fax: 760-240-7599
E-mail: mcady@applevalley.org
Lon: 117.14
Lat: 34.27

Town of Apple Valley Sewer Lift Station - Kissell
Water and Sewer

Size: 2,500

Facility Description: *Contains* duplex, submersible pumps.

Primary Contact:

Mike Cady, Supervisor
22484 Hurons Road, Apple Valley, CA 92307
Phone: 760-240-7500
Fax: 760-240-7599
E-mail: mcady@applevalley.org
Lon: 11.1
Lat: 34.31

Town of Apple Valley Sewer Lift Station 2-A-1
Water and Sewer

Size: 600

Facility Description: *Contains a* duplex, submersible pump.

Primary Contact:

Mike Cady, Supervisor
Valley Drive, Apple Valley, CA 92307
Phone: 760-240-7500
Fax: 760-240-7599
E-mail: mcady@applevalley.org
Lon: 117.89
Lat: 34.3

Town of Apple Valley Sewer Lift Station 2-A-2
Water and Sewer

Size: 625

Facility Description: *Contains a* duplex, submersible pump.

Primary Contact:

Mike Cady, Supervisor
22458 Ottawa Road, Apple Valley, CA 92308
Phone: 760-240-7500
Fax: 760-240-7599
E-mail: mcady@applevalley.org
Lon: 117.1
Lat: 34.29



**Town of Apple Valley Sewer Lift Station 2-B
Water and Sewer**

Size: 2,500

Facility Description: Concrete block building.

Primary Contact:

Mike Cady, Supervisor
21012 Otoe Road, Apple Valley, CA 92307

Phone: 760-240-7500

Fax: 760-240-7599

E-mail: mcady@applevalley.org

Lon: 117.1

Lat: 34.31

**Town of Apple Valley Sewer Lift Station 3-A-1
Water and Sewer**

Size: 6,300 square feet

Facility Description: Concrete block building.

Primary Contact:

Mike Cady, Supervisor
13980 Riverside Drive, Apple Valley, CA 92307

Phone: 760-240-7500

Fax: 760-240-7599

E-mail: mcady@applevalley.org

Lon: 117.15

Lat: 34.3

**Town of Apple Valley Sewer Lift Station 3-A-2
Water and Sewer**

Size: 5,000

Facility Description: Concrete block building.

Primary Contact:

Mike Cady, Supervisor
15036 Riverside Drive, Apple Valley, CA 92307

Phone: 760-240-7500

Fax: 760-240-7599

E-mail: mcady@applevalley.org

Lon: 117.16

Lat: 34.3

**Apple Valley High School
Child Care Facility/School**

Size: 199,266

Facility Description: Apple Valley High School (AVHS) is a 9-12th grade school with a student population of approximately 1,900. AVHS is also an approved shelter site for the American Red Cross.

Primary Contact:

Pat Schlosser

11837 Navajo Road, Apple Valley, CA 92308

Phone: 760-247-7206

Fax: 760-247-2092

E-mail: Pat_schlosser@avusd.org

High Desert Premier Academy



Educational Support Services Complex/Police Department

Child Care Facility/School

Size: 93,600

Facility Description: High Desert Premier Academy is a K-12 grade school with a student population of approximately 500. HDP is also an approved shelter site for the American Red Cross.

Primary Contact:

Dale Folkens- Principal
12555 Navajo Road, Apple Valley, CA 92308
Phone: 760-247-7267
Fax: 760-247-1226
E-mail: dale_folkens@avusd.org

Desert Knolls Elementary School

Child Care Facility/School

Size: 43,337

Facility Description: Desert Knolls Elementary school is a K-6 school with a student population of approximately 700. Desert Knolls is also an approved shelter site for the American Red Cross.

Primary Contact:

Claudia Schmitt, Principal
18213 Symeron Road, Apple Valley, CA 92307
Phone: 760-242-3441
Fax: 760-242-7274
E-mail: claudia_schmidt@avusd.org

Granite Hills High School

Child Care Facility/School

Size: 186,357

Facility Description: Granite Hills High School is a 9-12th grade school with a student population of approximately 1,975. Granite Hills is also an approved shelter site for the American Red Cross.

Primary Contact:

Michael Kincaid, Principal
22900 Esaws Road, Apple Valley, CA 92307
Phone: 760-961-2290
Fax: 760-961-7555
E-mail: michael_kincaid@avusd.org

Mariana Elementary School

Child Care Facility/School

Size: 47,984

Facility Description: Mariana Elementary School is a K-6th grade school with a student population of 675. Mariana is also an approved shelter site for the American Red Cross. The school was originally constructed about 50 years ago.

Primary Contact:

Viola Sims, Principal
10601 Manhasset Road, Apple Valley, CA 92308
Phone: 760-247-7258
Fax: 760-247-4406
E-mail: viola_sims@avusd.org

Rancho Verde Elementary School

Child Care Facility/School



Size: 47,360

Facility Description: Rancho Verde Elementary School is a K-6 grade school with a student population of approximately 650. Rancho Verde is also an approved shelter site for the American Red Cross.

Primary Contact:

Claudia Dimit, Principal
14334 Pioneer Road, Apple Valley, CA 92307
Phone: 760-247-2663
Fax: 760-247-4947
E-mail: claudia_dimit@avusd.org

Rio Vista Elementary School
Child Care Facility/School

Size: 51,703

Facility Description: Rio Vista Elementary School is a K-6 grade school with a student population of approximately 725. Rio Vista is also an approved shelter for the American Red Cross.

Primary Contact:

Theda Smith, Principal
13590 Havasu Road, Apple Valley, CA 92307
Phone: 760-240-0280
Fax: 760-240-0899
E-mail: theda_smith@avusd.org

Sandia Elementary School
Child Care Facility/School

Size: 49,933

Facility Description: Sandia Elementary School is a K-6 grade school with a student population of approximately 525. Sandia is also an approved shelter site for the American Red Cross.

Primary Contact:

Pat Shelby, Principal
21331 Sandia Road, Apple Valley, CA 92308
Phone: 760-240-5125
Fax: 760-240-0515
E-mail: pat_shelby@avusd.org

Sycamore Rocks Elementary School
Child Care Facility/School

Size: 55,972

Facility Description: Sycamore Rocks Elementary School is a K-6 grade school with a student population of approximately 725. Sycamore Rocks is also an approved shelter site for the American Red Cross.

Primary Contact:

Jane Beckman, Principal
23450 South Road, Apple Valley, CA 92307
Phone: 760-240-3332
Fax: 760-240-3440
E-mail: jane_beckman@avusd.org

Phoenix Academy (Upper and Lower Campus)
Family Preschool Center
Child Care Facility/School
Size: 100,850



Facility Description: Phoenix Academy is a K-8th grade school with a student population of approximately 2,100. PA is also an approved shelter site for the American Red Cross.

Primary Contact:

Daryl Bell, Principal
20700 Thunderbird Road, Apple Valley, CA 92307
Phone: 760-242-7011
Fax: 760-242-7005
E-mail: daryl_bell@avusd.org

Sitting Bull Academy (Upper and Lower Campus)
Child Care Facility/School

Size: 100,850

Facility Description: Phoenix Academy is a K-8th grade school with a student population of approximately 2,100. PA is also an approved shelter site for the American Red Cross.

Primary Contact:

Phyllis Carnahan, Principal
19445 Sitting Bull Rd., Apple Valley, CA 92308
Phone: 760-961-8479
Fax: 760-2408763
E-mail: phyllis_carnahan@avusd.org

Vanguard Preparatory
Child Care Facility/School

Size: 47,863

Facility Description: Vanguard Preparatory is a K-8 grade school with a student population of approximately 625. The school is also an approved shelter site for the American Red Cross.

Primary Contact:

Brian Goodrow, Principal
12951 Mesquite Road, Apple Valley, CA 92308
Phone: 760-961-1066
Fax: 760-961-1069
E-mail: brian_goodrow@avusd.org

Willow Park High School
Child Care Facility/School

Size: 33,409

Facility Description: Willow Park High School is a 9-12th grade school with a student population of approximately 175 students. Willow Park is also an approved shelter site for the American Red Cross. These statistics take into consideration the Alternative Education Center located on campus.

Primary Contact:

Dale Folkens
21950 Nisqually Road, Apple Valley, CA 92308
Phone: 760-240-4252
Fax: 760-240-1261
E-mail: dale_folkens@avusd.org



**Yucca Loma Elementary School
Child Care Facility/School**

Size: 55,294

Facility Description: Yucca Loma Elementary School is a K-6 grade school with a student population of approximately 850. Yucca Loma is also an approved shelter site for the American Red Cross. The school was originally constructed over 50 years ago.

Primary Contact:

Rey Rodriguez, Principal
21351 Yucca Loma Road, Apple Valley, CA 92307
Phone: 760-247-2623
Fax: 760-247-4300
E-mail: rey_rodriguez@avusd.org

Apple Valley Municipal Animal Shelter

Other – Government Building

Size: 36,000

Facility Description: The Animal Services facility includes office space for field and shelter services, including indoor/outdoor runs for animals, cat adoption colonies, exotic habitats, livestock holding space and a public education room.

Primary Contact:

Gina Schwin-Whiteside, Animal Services Manager
22131 Powhatan Road, Apple Valley, CA 92308
Phone: 760-240-7000 Ext. 7060
E-mail: gwhiteside@applevalley.org

Apple Valley Public Works

Other – Government Building

Size: 24,073

Facility Description: Apple Valley Public Works facility includes office and warehouse space.

Primary Contact:

Mike Cady, Supervisor
13450 Nomwakett Rd, Apple Valley, CA 92307
Phone: 7602407542
E-mail: mcady@applevalley.org

**Apple Valley Town Hall & Development Services buildings
High Economic Importance**

Size: 61,115

Facility Description: Apple Valley Town Hall houses the daily activities of a municipality. The building is a 25,000 square foot single-story facility. Apple Valley Development Services building is a new facility that houses the daily activities of a municipality to serve the community. This building is also a conference center and is equipped with a kitchen facility. The building is a 26,115 square foot single-story facility.

Primary Contact:

Susan Ward
14955 Dale Evans Parkway, Apple Valley, CA 92307



Phone: 760-240-7000 Ext. 7601
Fax: 760-961-6241
E-mail: sward@applevalley.org
Lon: 117.12
Lat: 34.31

Apple Valley Unified School District
High Economic Importance

Size: 54,500

Facility Description: The administration buildings for the Apple Valley Unified School District include offices, warehousing, and the bus transportation terminal

Primary Contact:

Lynette Kachelmeyer, Director of Facilities
22974 Bear Valley Road, Apple Valley, CA 92308
Phone: 760-247-8001
Fax: 760-247-8907
E-mail: lynette_kachelmeyer@avusd.org

James A. Woody Gymnasium

Other – Sports/Government Facility

Size: 8,811

Facility Description: The James A. Woody Gymnasium consists of hardwood floors, office space, weight room, storage, and restrooms. The facility is used by the general public on a daily basis.

Primary Contact:

Ralph Wright, Parks/Recreation Manager
13413 Navajo Road, Apple Valley, CA 92308
Phone: 760-240-7884
Fax: 760-240-7887
E-mail: rwright@applevalley.org
Lon: 117.11
Lat: 34.29

4.4 Vulnerability Assessment

This section provides an assessment of vulnerability for the three hazards (earthquake, flooding, and wildfires) that pose significant threats to the Town of Apple Valley. This is the final step in the four-step risk assessment process and utilizes data and information collected from the Town and various external agencies. It provides loss estimates and vulnerability of general buildings, key facilities with critical functions and governance relationships, and people living and working in the Town of Apple Valley. The vulnerability assessment provides a solid basis for analyzing the risk, the potential exposure, and consequences to Town operations and safety.

The following were taken into account when assessing the vulnerability:



- Updates to inventories of existing structures in hazard areas, including new development, redeveloped areas or structures located in annexed areas
- Potential impacts of future land development, including areas that may be annexed in the future
- New buildings that house special high-risk populations (i.e., elderly, low-income, disabled)
- Completed mitigation actions that reduced overall vulnerability

4.4.1. Methodology

To conduct the vulnerability assessment, a combination of quantitative and qualitative approaches was used. A quantitative assessment of earthquake risk was performed with Town provided data and FEMA's HAZUS software. For flooding, the Town used reports available from the Town and various other public sources.

4.4.2. Methodology and Results for Earthquakes

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

Given an earthquake fault or epicenter, magnitude, and location as input, the HAZUS earthquake module produces quantitative estimates of losses to buildings and lifeline infrastructure, estimates of impact on the functionality of facilities, and casualty and other population impacts. Alternatively, the users may import "user-supplied" hazard data, such as a ShakeMap generated by the USGS. Output from HAZUS includes several items. Losses are presented as direct economic losses from building and lifeline damage, as well as selected indirect economic losses. Functionality estimates are calculated in terms of restoration time for critical facilities, such as highway bridges, water treatment plants, and electric power substations, and system restoration assessments for potable water and electrical power networks.

Casualty estimates are provided as various levels of injury severity and death. The model also estimates losses due to fire-following earthquake and the quantity of earthquake-related debris generated.

HAZUS-MH: Methodology

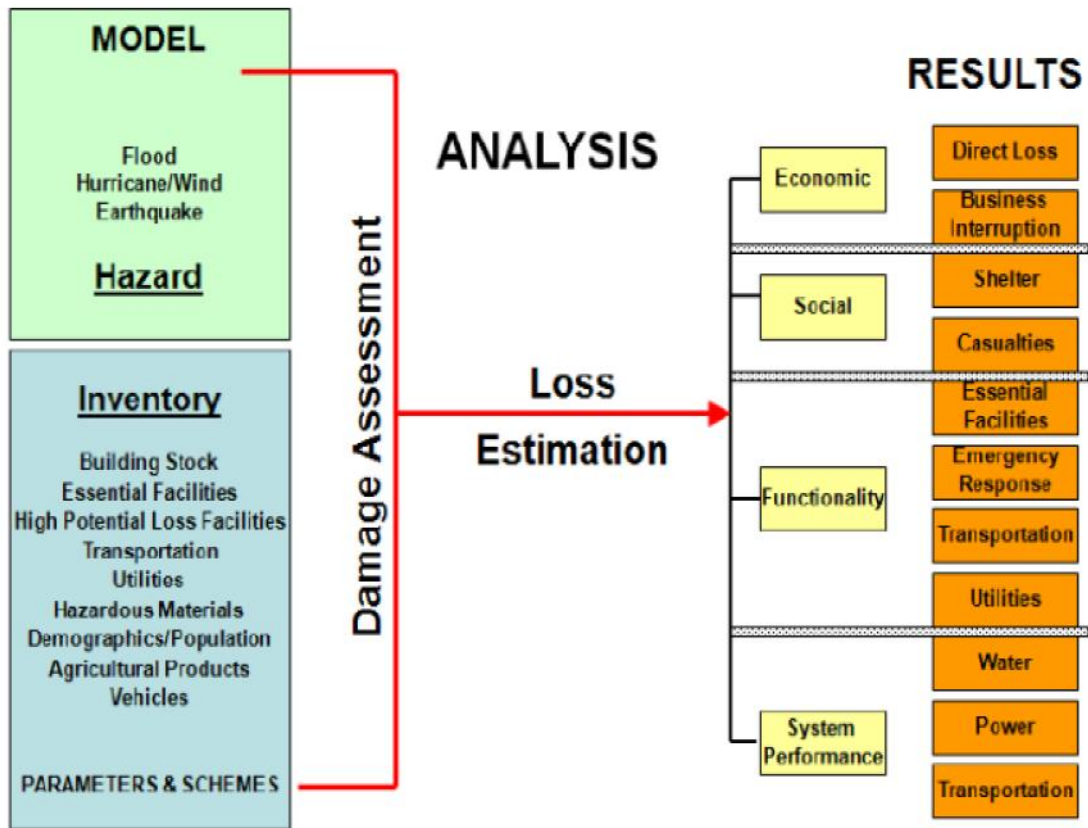


FIGURE 5 - HAZUS METHODOLOGY



Damage to Vital Public Services, Systems & Facilities

Medical

Emergency Management, upon proclamation of local emergency, will notify the San Bernardino County Director of Public Health through designated channels, and participate in evacuation and treatment of victims and casualties in accordance with his directives.

Medical communications will be established and coordinated through the San Bernardino County Communications Center. Emergency medical management on a local level will be coordinated through the local EOC communications system.

It is anticipated that transportation resources normally utilized in medical movement will be unable to readily respond due to highway damage and requirements of hospital facilities. Therefore, utilization of public and private vehicle resources will be required. Medical supplies should be consumed at a rapid rate and requests will be made, through the local EOC, to county level Emergency Management.

Local emergency management will establish tactical divisions of operation based upon severity of the event and assessed needs. These divisions will include a designated local Casualty Collection Point (CCP). Divisional commanders shall appoint a divisional medical officer for purposes of medical coordination and management.

Communications

Communications effected by a major earthquake would include telephone systems and governmental radio systems, primarily. Loss to the telephone system would be through damages to utility poles, vaults and microwave repeaters. It is virtually certain that telephone systems will fail with the onset of the event. Repair to the system in this area will attain 25% effectiveness three days after the event, with first service being returned to emergency and governmental facilities. A major element in post-event effectiveness deals with the amount of overload by non-essential usage. Usage should be limited to life-threatening or emergency situations.

Governmental and emergency radio systems will be primarily impacted by loss of repeater stations and power failures. While the impact of power failure can be somewhat mitigated by use of portable and permanent electrical generators, the loss of repeater stations will have a more lasting effect and will require mitigation through planning procedures.



Electric Power

Major power plants are expected to sustain some damage due to liquefaction and the intensity of the earthquake. Up to 60% of the system load may be interrupted immediately following the initial shock. According to representatives of Southern California Edison Company, the electrical power will not be rerouted and will be lost for an undefined period of time. Much of the imported power is expected to be lost. In some areas of greatest shaking it should be anticipated that some of the distribution lines, both underground and surface, will be damaged. Much of the affected area may have service restored in days; damaged area with underground distribution may require a longer time. Loss of Edison transmission lines is possible.

Natural Gas Pipelines

Damage to pipeline facilities will consist primarily of (a) some isolated breaks in major transmission lines, and (b) innumerable breaks in mains and individual service connections within the distribution systems, particularly in the areas of intense ground shaking. These many leaks in the distribution system will affect a major portion of the community, resulting in a loss of service for extended periods. Fires should be expected at the sites of a small percentage of ruptures both in the transmission lines and the distribution system.

Fire Operations

Although total collapse of fire stations is not expected, possible disruption of utilities, twisted doors and loss of power can create major problems. Numerous fires due to disruption of power and natural gas networks can be expected. The area's water supply may be greatly impacted. Connections to major water sources, water mains and storage facilities may be damaged resulting in an unstable water supply for fire and rescue operations. Fire and rescue personnel will need to complete a preliminary assessment to determine and establish response and recovery needs. In addition, Fire and rescue operations may take days because of the disruption to the transportation corridors.

Secondary response by the fire service after assessment will be to accomplish search and rescue of trapped persons. Major problems the fire service should expect are loss of power and water, jammed doors, restricted mobility due to debris, possible loss of primary dispatch capability and delays in reaching maximum effectiveness due to personnel shortages.

Highways and Bridges

Damage to freeway systems and bridges is expected to be major. Inner surface transportation routes could be subject to delays and detours. A major portion of surface streets in the vicinity of freeways will be blocked due to collapsed overpasses.