CITY OF PALO ALTO ANNEX

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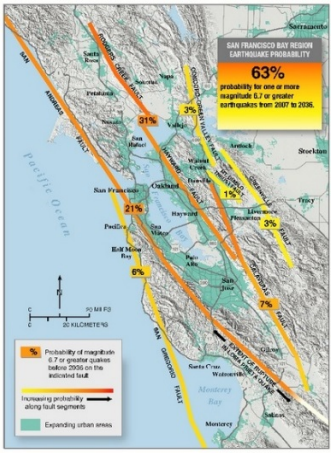

3/20/2017

SANTA CLARA OPERATIONAL AREA HAZARD MITIGATION PLAN

CONTENTS

1. CITY OF PALO ALTO

1.1 HAZARD MITIGATION PLAN POINT OF CONTACT

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1.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation**—April 23, 1894
- **Current Population**—68,207 as of January 1, 2016
- **Population Growth and Demographics**—Palo Alto's population has increased only slightly during the last 30 years compared to Santa Clara County as a whole. The number of residents increased by 4.7 percent from 55,966 in 1970 to 58,598 in 2000, and 9.9 percent between 2000 and 2010 (U.S. Census 1980, 1990, 2000, and 2010). As of the 2010 Census, population in the City has increased to 64,403. While the average number of people per household declined from 2.7 in 1970 to 2.3 in 2000, the number of housing units increased (See Table 1-1).

Table 1-1. Historical Population Growth in Palo Alto, 1990-2010

Year	Population	Numerical Change	Percent Change
1990	55,225	741	1.3
2000	58,598	675	1.2
2010	64,403	5,805	9.9

Source: US Census 1990, 2000, 2010.

Although 64.2 percent of Palo Alto's population is White, the City is becoming more ethnically diverse. Asians, Native Hawaiian, and Other Pacific Islanders comprise 27.3 percent, while 0.2 percent are American Indian/Alaska Native, 6.2 percent are Hispanic, 1.9 percent are Black and 6.4 percent identify themselves as some other race or two or more races.

The median age of Palo Alto's population has increased dramatically over the last few decades. In 1970, the median age was 29.5 for men and 33.7 for women. By 1990, these figures had increased to 36.7 and 40.0 respectively. In the year 2000, the median age for the entire population of Palo Alto was 40.2 years, which is considerably higher than the County median age of 34 years, and in 2010 it raised further to 41.9

years. The increase in median age has been accompanied by an increase in Palo Alto's senior population; the number of persons over 65 increased from 10 to 15.6 percent of the population between 1970 and 2000, and 17.1 percent in 2010. The number of older adults is expected to continue to increase in the future. At the other end of the age spectrum, the number of children under five has increased significantly over the last two decades and has resulted in an increase in the number of children entering childcare and school. However, the number of women of childbearing age has decreased markedly after increasing during the 1980s and 1990s and the middle-aged population has increased significantly indicating that Palo Alto will continue to grow older during the next decade.

- **Location and Description**—Part of the metropolitan San Francisco Bay Area and the Silicon Valley, Palo Alto is located within Santa Clara County and borders San Mateo County.

  The City's boundaries extend from San Francisco Bay on the east to the Skyline Ridge of the coastal mountains on the west, with Menlo Park to the north, and Mountain View to the south. The City encompasses an area of approximately 26 square miles, of which one-third is open space. The city shares its borders with East Palo Alto, Los Altos, Los Altos Hills, Stanford, Menlo Park, Mountain View, Portola Valley, and portions of unincorporated San Mateo County and Santa Clara County (including the unincorporated areas of Cupertino and Saratoga in the foothills). It is named after a redwood tree called El Palo Alto. The city includes portions of Stanford University and its affiliates, is headquarters to a number of Silicon Valley high-technology companies, including Hewlett-Packard, VMware, Tesla Motors, SAP and Palintir and has served as an incubator to several other high-technology companies, such as Google, Facebook, Logitech, Intuit, and PayPal.

  A blend of business and residential neighborhoods, anchored by a vibrant downtown, defines Palo Alto's unique character. A charming mixture of old and new, Palo Alto's tree-lined streets and historic buildings reflect its California heritage. At the same time, Palo Alto is recognized worldwide as a leader in cutting-edge development, as a quintessential part of Silicon Valley.

  Based on data from the City's business registry in January 2016, there are 168 Firms in Palo Alto with over 50 employers collectively employing 56,410 employees. While this doesn't account for all businesses it shows that the business community is at least the size of the residential population of Palo Alto. So while the City's public services are sized for the residential community, they are serving a population at least double that size.

  The City Auditor's Sales Tax Digest Summary Report from January 2016 lists the top 25 Sales/Use Tax contributors. The list is in alphabetical order and represents the year ended 2nd Quarter 2015. The Top 25 Sales/Use Tax contributors generate 48.5 percent of Palo Alto's total sales and use tax revenue are as follows:

  - Anderson Honda
  - Apple Stores
  - Audi Palo Alto
  - Bloomingdale's
  - Critchfield Mechanical
  - CVS/Pharmacy
  - Eat Club
  - Fry's Electronics
  - Hewlett-Packard
  - Integrated Archive Systems
  - Loral Space Systems
  - Macy's Department Store
  - Magnussen's Toyota
  - Neiman Marcus Department Store
  - Nordstrom Department Store
  - Pottery Barn Kids
  - Shell Service Stations
  - Stanford University Hospital
  - Tesla Lease Trust
  - Tesla Motors
  - Tiffany & Company
  - Urban Outfitters
  - Valero Service Stations
  - Varian Medical Systems
  - Wilkes Bashford

- **Brief History**—Palo Alto was incorporated in 1894 and received its name from the tall landmark Redwood tree, *El Palo Alto*, which still grows on the east bank of San Francisquito Creek across from Menlo Park. One trunk of the twin-trunked tree can still be found by the railroad trestle near Alma Street in El Palo Alto Park.

  Leland Stanford Junior University opened to 465 students in 1891, as a memorial by Leland and Jane Stanford to their son who died in 1884 while traveling in Europe. Stanford University played a significant role in the development of the Palo Alto landscape; it has since grown into a world renowned teaching and research university with more than 16,000 undergraduate and graduate students.

  In 1925 the town of Mayfield, the original settlement that developed in the area in 1853, was annexed to the larger Palo Alto. In the decades that followed, Palo Alto continued to expand southward reaching the border it currently shares with Mountain View.

  The population more than doubled from 25,000 to 55,000 residents by 1960, and since then has increased to roughly 68,000 today. During these boom years Palo Alto was transformed from agricultural fields to urban forest and became the birthplace of the Silicon Valley.

- **Climate**—Typical of the San Francisco Bay Area, Palo Alto has a Mediterranean Climate with cool, wet winters and warm, dry summers. Typically, in the warmer months, as the sun goes down, the fog bank flows over the foothills to the west and covers the night sky, thus creating a blanket that helps trap the summer warmth absorbed during the day (USClimateData.com, 2017). Average high and low temperature and precipitation by month are shown in Table 1-2.

Table 1-2. Average High and Low temperature and Precipitation by Month

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average high in °F:	58	62	66	70	74	78	79	79	80	74	65	58
Average low in °F:	38	41	43	45	49	52	57	55	53	48	42	38
Av. precipitation in inch:	3.07	3.19	2.48	0.98	0.47	0.08	0.04	0.04	0.16	0.75	1.97	2.95

  The record high temperature was 107 °F (42 °C) on June 15, 1961, and the record low temperature was 15 °F (−9 °C) on November 17, 2003. Temperatures reach 90 °F (32 °C) or higher on an average of 9.9 days. Temperatures drop to 32 °F (0 °C) or lower on an average of 16.1 days.

  Due to the Santa Cruz Mountains to the west, there is a "rain shadow" in Palo Alto, resulting in an average annual rainfall of only 15.32 inches (389 mm). Measurable rainfall occurs on an average of 57 days annually. The wettest year on record was 1983 with 32.51 inches (826 mm) and the driest year was 1976 with 7.34 inches (186 mm). The most rainfall in one month was 12.43 inches (316 mm) in February 1998 and the most rainfall in one day was 3.75 inches (95 mm) on February 3, 1998. Measurable snowfall is very rare in Palo Alto, but 1.5 inches (38 mm) fell on January 21, 1962.

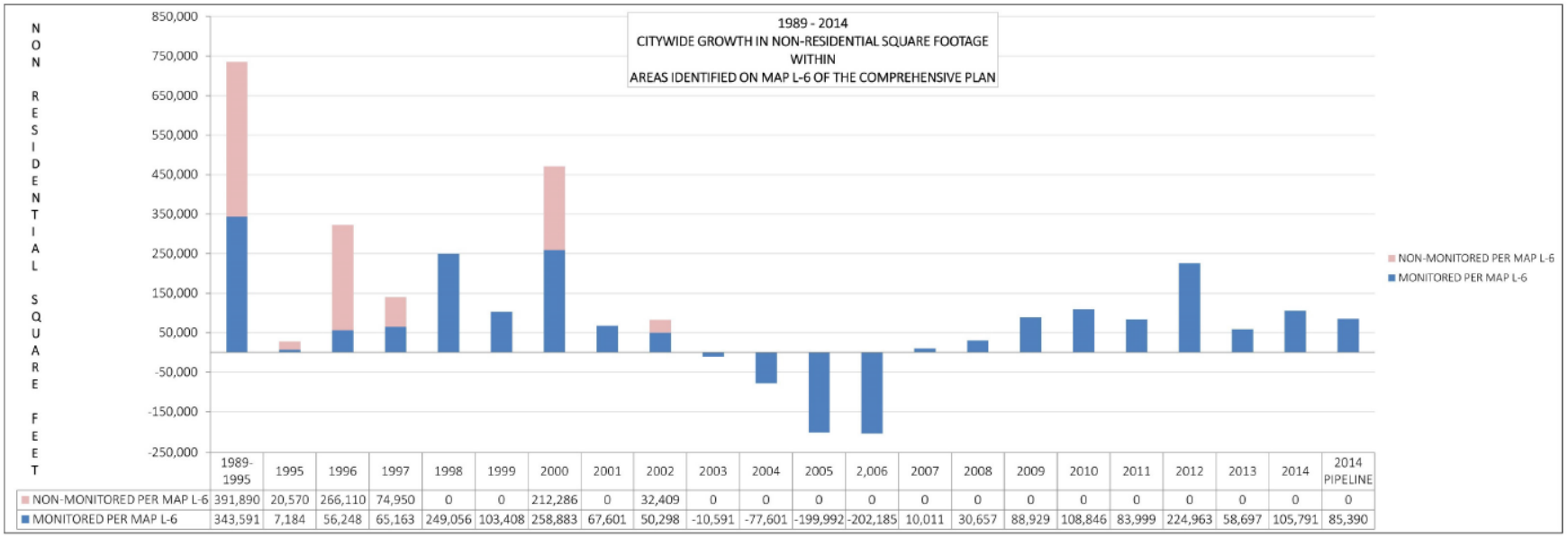
- **Governing Body Format**—Palo Alto is a Charter City and has a council-manager form of government in which the nine-member, popularly-elected City Council appoints the City Manager, who in turn oversees a dynamic Executive Leadership Team in the operation of thirteen departments employing 1,000 staff. This vibrant organization enjoys a strong, collaborative, and open environment. The Fiscal Year 2016 citywide expenditure budget amounts to $563.6 million, with a General Fund budget of $185.7 million, a Capital Budget of $124.7 million, and Enterprise Funds of $342.5 million. The City Council assumes responsibility for the adoption of this plan, the Office of Emergency Services, on behalf of the City Manager, will oversee its implementation.

1.3 DEVELOPMENT TRENDS

Palo Alto comprises 16,627 acres, or about 26 square miles. Approximately 40 percent of this area is in parks and preserves and another 15 percent consists of agriculture and other open space uses. The remaining area is nearly completely developed, with single family uses predominating. Less than one percent of the City's land area consists of vacant, developable land (City of Palo Alto, 2007). The City of Palo Alto Comprehensive Plan 2007, Land Use & Community Design Element and 2007 Zoning Regulations guide the development of public and private property of which local land use and growth management is a central topic. Figure 1-1 shows the annual net change in non-residential square footage, based on project applications processed by the Department of Planning and Community Environment. Net square footage numbers shown represent the total square footage added by all developments approved in the planning area for the given period, minus the total square footage demolished. Negative numbers in the table indicate that more non-residential square footage was demolished (or approved for demolition) than was approved or constructed. As shown, the period between 2010 and 2014 has seen by far the greatest net increase in non-residential square footage (City of Palo Alto, 2014). Table 1-3 summarizes development trends in the performance period since development of the previous hazard mitigation plan and expected future development trends.

Table 1-3. Recent and Expected Future Development Trends

Criterion	Response					
Has your jurisdiction annexed any land since the development of the previous hazard mitigation plan? • If yes, give the estimated area annexed and estimated number of parcels or structures.	No N/A					
Is your jurisdiction expected to annex any areas during the performance period of this plan? • If yes, please describe land areas and dominant uses. • If yes, who currently has permitting authority over these areas?	No N/A N/A					
Are any areas targeted for development or major redevelopment in the next five years? • If yes, please briefly describe, including whether any of the areas are in known hazard risk areas	Yes Commercial and some residential redevelopment occurs continually within Palo Alto through the normal course of property management. However, one project in the Fry's Building / California Avenue area may be redeveloped in the next five years in which the City will play a leading role. All of Palo Alto is in a seismic risk area, so any development will have seismic risks.					
How many building permits were issued in your jurisdiction since the development of the previous hazard mitigation plan?		2011	2012	2013	2014	2015
	Single Family	87	99	113	90	246
	Multi-Family	1	12	4	2	5
	Other (commercial, mixed use, etc.)	17	25	16	13	17
Please provide the number of permits for each hazard area or provide a qualitative description of where development has occurred.	• Special Flood Hazard Areas: 129 • Landslide: 2 • High Liquefaction Areas: 40 • Wildfire Risk Areas: 4					
Please describe the level of buildout in the jurisdiction, based on your jurisdiction's buildable lands inventory. If no such inventory exists, provide a qualitative description.	Palo Alto is 99% built out.					



	1989-1995	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2,006	2007	2008	2009	2010	2011	2012	2013	2014	2014 PIPELINE
NON-MONITORED PER MAP L-6	391,890	20,570	266,110	74,950	0	0	212,286	0	32,409	0	0	0	0	0	0	0	0	0	0	0	0	0
MONITORED PER MAP L-6	343,591	7,184	56,248	65,163	249,056	103,408	258,883	67,601	50,298	-10,591	-77,601	-199,992	-202,185	10,011	30,657	88,929	108,846	83,999	224,963	58,697	105,791	85,390

	1989-1995	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2014 Pipeline	Totals
Non-Monitored	391,890	20,570	266,110	74,950	0	0	212,286	0	32,409	0	0	0	0	0	0	0	0	0	0	0	0	0	998,215
Monitored	343,591	7,184	56,248	65,163	249,056	103,408	258,883	67,601	50,298	-10,591	-77,601	-199,992	-202,185	10,011	30,657	88,929	108,846	83,999	224,963	58,697	105,791	85,390	1,508,346
Total	**735,481**	**27,754**	**322,358**	**140,113**	**249,056**	**103,408**	**471,169**	**67,601**	**82,707**	**-10,591**	**-77,601**	**-199,992**	**-202,185**	**10,011**	**30,657**	**88,929**	**108,846**	**83,999**	**224,963**	**58,697**	**105,791**	**85,390**	**2,506,561**

Highlights:

- Average Annual Growth (Monitored) 1989-2014 = 58,013 sq ft/yr
- Average Annual Growth (Monitored) 1989-2007 = 37,951 sq ft/yr
- Average Annual Growth (Monitored) 2008-2014 = 112,467 sq ft/yr
  Average Annual Growth = (Sum of Total gain /number of years)

Average Annual Growth (All) 1989-2014 = 96,406 sq ft/yr
Average Annual Growth (All) 1989-2007 = 90,489 sq ft/yr
Average Annual Growth (All) 2008-2014 = 112,467 sq ft/yr

Notes:

- 1989-1995 Data no available on Annual Basis
- Data excludes Mayfield Development Agreement Projects which demolishes approximately 323k of non-residential square feet and replaces 300k of the demolished square feet into Stanford Research Park
- Data excludes the Stanford Medical Center (SMC) expansion, although it has Planning Entitlements and Building Permits, total buildout and occupancy is expected in the year 2025

Figure 1-1. Citywide Growth in Non-Residential Square Footage 1989-2014

1.4 CAPABILITY ASSESSMENT

1.4.1 Resources for the 2017 Planning Initiative

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for inclusion into the 2017 Multi-Jurisdiction Hazard Mitigation Plan for both Volume 1 and Volume 2 (Palo Alto Annex). All of the below items were additionally reviewed as part of the full capability assessment for Palo Alto.

- **City of Palo Alto Comprehensive Plan**—The Comprehensive Plan was reviewed for information regarding goals and policies consistent with hazard mitigation for carry over as goals and objectives. Additionally, development trends from the Land Use section of the Comprehensive Plan informed the development section of this annex.
- **City of Palo Alto Municipal Code**—The Municipal Code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **Flood Damage Prevention Ordinance**—The Flood Damage Prevention Ordinance was reviewed for compliance with the National Flood Insurance Program.
- **Capital Improvements Plan**—The Capital Improvements Plan was reviewed to identify cross-planning initiatives for inclusion as mitigation projects.
- **State of California Local Hazards Mitigation Plan**—The state plan was helpful for reviewing goals and also in assessing hazards.
- **County of Santa Clara and City of Palo Alto Local Hazards Mitigation Plan (2012)**—The previous LHMP provided a baseline of information for the writing of this document.
- **Palo Alto Threats and Hazards Identification and Risk Assessment (THIRA)**—The THIRA helped to inform the hazard analysis portion of this plan, as well as a source for mitigation actions.
- **Palo Alto Energy Assurance Plan**—The Energy Assurance Plan provided information for the jurisdiction profile as well as a source for mitigation actions.
- **Sustainability / Climate Adaptation Plan**—This plan provided information for our hazards analysis as well as identification of mitigation actions.
- **Foothills Wildfire Management Plan / Santa Clara County Community Wildfire Prevention Plan**—These plans informed our hazards analysis as well as identifying wildfire mitigation actions.
- **Technical Reports and Information**—Outside resources and references used to complete the City of Palo Alto Annex are identified in Section 1.13 of this annex.

1.4.2 Full Capability Assessment

An assessment of legal and regulatory capabilities is presented in Table 1-4. An assessment of fiscal capabilities is presented in Table 1-5. An assessment of administrative and technical capabilities is presented in Table 1-6. Information on National Flood Insurance Program (NFIP) compliance is presented in Table 1-7. An assessment of education and outreach capabilities is presented in Table 1-8. Classifications under various community mitigation programs are presented in Table 1-9. Development and permitting capabilities are presented in Table 1-10, and the community's adaptive capacity for the impacts of climate change is presented in Table 1-11.

Table 1-4. Legal and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code	Yes	Yes	Yes	No
Comment: Palo Alto has adopted the 2016 California Building Code				
Zoning Code	Yes	Yes	Yes	No
Comment: Municipal Code, Title 18, effective 13 June 2016				
Subdivisions	Yes	No	No	No
Comment: Municipal Code, Title 21, effective 13 June 2016				
Stormwater Management	No	No	No	No
Comment: None located.				
Post-Disaster Recovery	No	No	No	No
Comment: None located.				
Real Estate Disclosure	No	No	Yes	No
Comment: Cal. Civ. Code §1102 et seq.				
Growth Management	Yes	Yes	Yes	No
Comment: Growth management falls under Palo Alto's 2007 Zoning Regulations and is more discreetly addressed in the City's Comprehensive Plan; Cal. Gov. Code §65300 et seq.				
Site Plan Review	Yes	Yes	Yes	No
Comment: Site Plan review falls under Palo Alto's 2007 Zoning Regulations and is well practiced in the permitting process.				
Environmental Protection	Yes	Yes	Yes	No
Comment: Ordinance 5107, 13 December 2010, to provide green building standards and environmental protections; California Environmental Quality Act (Guideline: California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000–15387)				
Flood Damage Prevention	Yes	Yes	No	No
Comment: Municipal Code, Chapter 16.52 effective 13 June 2016				
Emergency Management	Yes	Yes	Yes	No
Comment: Municipal Code, Chapter 2.12 effective 13 June 2016				
Climate Change	Yes	No	Yes	No
Comment: Ordinance No. 5345, 31 August 2015, to comply with California Energy Code 2013 edition; California SB-379: Land Use: General Plan: Safety Element				
Other: Seismic Hazards Identification Program	Yes	Yes	No	No
Comment: In 1986, the City Council adopted the Seismic Hazards and Identification Program codified at Section 16.42 of the Municipal Code. This ordinance established a mandatory evaluation and reporting program and created incentives for property owners to voluntarily upgrade their structurally deficient buildings.				
Planning Documents				
General Plan (As Comprehensive Plan)	Yes	No	Yes	No
Palo Alto is undergoing an update to the comprehensive plan, which will be completed in 2017. This updated plan will be compliant with Assembly Bill 2140.				
Comment: The 2007 City of Palo Alto Comprehensive Plan (Comp Plan) and 2007 Zoning Regulations guide land use and growth management decisions in the City. The Land Use & Design, Housing, and Natural Environment Elements contain goals, policies, and programs related to natural hazards; however, the City is in the process of updating the current Comprehensive Plan which will derive a new Safety Element from the Natural Environment Element.				
Capital Improvement Plan	Yes	Yes	Yes	Yes
Comment: The 2017-2021 Capital Improvement Program Plan for the City of Palo Alto guides the City in the planning and scheduling of infrastructure improvement projects over the five year period. Annually, the City publishes a Capital Improvement Program budget to guide annual funding of scheduled projects.				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Floodplain or Watershed Plan	No	Yes	No	Yes
Comment: Santa Clara Valley Water District				
Stormwater Plan	Yes	No	No	No
Comment: The City has a Storm Drain Master Plan, see Other plans below.				
Urban Water Management Plan	Yes	No	Yes	No
Comment: . The 2010 Urban Water Management Plan (UWMP) outlines actions that the City could take to achieve varying degree of water use reduction. The UWMP will be updated by June 30, 2016. Urban Water Management Plans are designed to assess the reliability of the City's water sources, support to our long-term resource planning, and ensure adequate water supplies are available to meet existing and future water demands. Every five years, an Urban Water Management Plan (UWMP) is prepared and submitted as required to the California Department of Water Resources, per the Urban Water Management Planning Act.				
Habitat Conservation Plan	No	Yes	No	Yes
Comment: 2013 - Santa Clara Valley Habitat Plan				
Economic Development Plan	No	No	No	No
Comment: The primary considerations for this are included in the City's Comprehensive Plan.				
Shoreline Management Plan	Yes	No	No	No
Comment: Baylands Master Plan 2008. The 2008 plan is an information update with the goal of producing an up-to-date record of Council approved policies and actions in the Baylands. It includes the history, environmental setting and adopted planning goals and policies for the Baylands area.				
Community Wildfire Protection Plan	Yes	Yes	No	Yes
Comment: Palo Alto has integrated our local CWPP into the Santa Clara County CWPP.				
Forest Management Plan	Yes	No	No	No
Comment: 2013 - The purpose of the plan is to establish long-term management goals and strategies to foster a sustainable urban forest in Palo Alto. It was developed using an inter-departmental team of staff in conjunction with Canopy and community partners.				
Climate Action Plan	Yes	No	No	Yes
Comment: 2014 - The City of Palo Alto launched a new Sustainability and Climate Action Plan (S/CAP) initiative in August 2014 to chart a path to a more sustainable future, find ways to improve our quality of life, grow prosperity and create a thriving and resilient community—all while dramatically reducing our carbon footprint. Palo Alto is already a world leader in climate protection strategies. The S/CAP will build on that leadership — and our successes exceeding the goals of our 2007 climate plan — to create an ambitious plan that also considers broader issues of sustainability, such as land use and biological resources. Palo Alto staff is already integrating our efforts with other Bay Area communities and agencies involved in these efforts.				
Emergency Operations Plan	Yes	No	No	Yes
Comment: 2016 - The Palo Alto Emergency Operations Plan (EOP) identifies the City's emergency planning, organization, and response policies and procedures. The EOP also addresses the integration and coordination with other governmental levels and volunteer agencies when required. It is meant to be considered as a preparedness document, intended to be read and understood before an emergency occurs. The major purposes of the plan are to distinguish who is in charge, to ensure essential jobs are accomplished, to provide for the continuity of government, to help citizens and City staff understand the City's emergency organization, to provide guidance for disaster education and training, and to provide for the proper transfer of command during an emergency. Palo Alto integrated this effort with the other jurisdictions in the Northern geography of Santa Clara County including Los Altos, Mountain View, and Sunnyvale.				
Threat & Hazard Identification & Risk Assessment (THIRA)	Yes	Yes	No (Partial)	No
Comment: City of Palo Alto THIRA, 2014: To evaluate the City of Palo Alto's capabilities for addressing all hazard incidents, the City of Palo Alto Office of Emergency Services (OES) conducted a collaborative planning process in order to develop the City of Palo Alto 2014 Threat and Hazard Identification and Risk Assessment (THIRA). It is compliant with the U.S. Department of Homeland Security (DHS) Comprehensive Preparedness Guide (CPG) 201, Second Edition, released in August 2013, which outlines a process to help communities identify capability targets and resource requirements necessary to address anticipated and unanticipated risks. The result of the THIRA process is an organized evaluation of vulnerability and implementation measures based on the necessary capabilities to deal with the hazards/threats of most concern. This report should inform ongoing City and University planning efforts. Bay Area UASI, 2016: The Bay Area UASI is required to develop a THIRA as part of grant funding requirements.				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Post-Disaster Recovery Plan	No	No	No	Yes
Comment: Palo Alto does not currently have a Post Disaster Recovery Plan				
Continuity of Operations Plan	Yes	No	No	No
Comment: In 2015-2016 Palo Alto initiated planning activities to develop a Continuity of Governance / Continuity of Operations Plan. We will complete this planning effort in 2017.				
Public Health Plan	No	Yes	Yes	No
Comment: The Santa Clara County Department of Public Health has responsibility for public health planning across the County.				
Other:	Yes	Yes	No	Yes
WUI/Foothills Fire Management Plan: This plan was recently updated in 2016. As part of the City's mitigation of wildland and urban fires, we have implemented the Palo Alto Foothills Fire Management Plan in cooperation with the Santa Clara County Midpeninsula Fire Safe Council. This plan pertains to the Palo Alto Foothills area west of the Foothills Expressway and Junipero Serra Boulevard, which represents a Wildland Urban Interface (WUI) area. Storm Drain Master Plan: To mitigate ongoing flood risks, in 1990, the City created an independent enterprise fund to fund needed improvements to the storm drain system with revenue generated through user fees and developed a Storm Drain Master Plan in 1993 to identify and prioritize a set of projects to increase system capacity and reduce the incidence of street flooding. Property owners approved a ballot measure in 2005 to increase the City's monthly storm drain fee and thereby provided funding to implement a set of seven high-priority capital improvement projects to upgrade the storm drain system.				

Table 1-5. Fiscal Capability

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	Yes

Table 1-6. Administrative and Technical Capability

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Planning & Community Environment/Planner Community Services Department/Open Space Ranger
Engineers or professionals trained in building or infrastructure construction practices	Yes	Public Works/Engineer Development Services/Building Inspector
Planners or engineers with an understanding of natural hazards	Yes	Public Works/Engineer Development Services/Building Inspector
Staff with training in benefit/cost analysis	Yes	Administrative Services/Program Manager Planning & Community Environment/Program Manager
Surveyors	Yes	Public Works/Surveyor
Personnel skilled or trained in GIS applications	Yes	Planning & Community Environment, Technical Analyst Police Department
Scientist familiar with natural hazards in local area	Yes	USGS, NWS
Emergency manager	Yes	Office of Emergency Services/Coordinator
Grant writers	No	

Table 1-7. National Flood Insurance Program Compliance

Criteria	Response
What local department is responsible for floodplain management?	Public Works
Who is your floodplain administrator? (department/position)	Public Works Engineer
Are any certified floodplain managers on staff in your jurisdiction?	Yes
What is the date of adoption of your flood damage prevention ordinance?	2004
Does your floodplain management program meet or exceed minimum requirements?	Meets
When was the most recent Community Assistance Visit or Community Assistance Contact?	2015
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? • If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? • If no, please state why.	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? • If so, what type of assistance/training is needed?	Yes Additional staffing
Does your jurisdiction participate in the Community Rating System (CRS)? • If yes, is your jurisdiction interested in improving CRS Classification? • Is your jurisdiction interested in joining the CRS program?	Yes Yes (currently class 7)
How many flood insurance policies are in force in your jurisdiction? • What is the insurance in force? • What is the premium in force?	3,665[a] $957,293,500 [a] $4,126,988 [a]
How many total loss claims have been filed in your jurisdiction? • How many claims were closed without payment/are still open? • What were the total payments for losses?	473 [a] 104 / 0 [a] $ 8,984,657.71 [a]

a. According to FEMA statistics as of October 31, 2017

Table 1-8. Education and Outreach

Criteria	Response
Do you have a Public Information Officer or Communications Office?	Yes. The City Communications Office, Public Safety public information officers, and Utilities Communication Manager provide public information officer functions.
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe.	Yes. www.cityofpaloalto.org/lhmap & www.cityofpaloalto.org/thira Palo Alto maintains and follows an Open data initiative that makes large amounts of governmental information available to the public. We have a local hazards mitigation page on the city website.
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe.	Yes We have implemented the use of social media using Nextdoor to communicate these types of information to the public at large.
Do you have any citizen boards or commissions that address issues related to hazard mitigation?	Yes - Citizen Corps is a best practice and model advocated by the federal government to integrate volunteers, non-government entities, the private sector, and other groups with local programs related to homeland security and emergency management (HS/EM). The City first formed a Citizen Corps Council (CCC) in 2004. The City later revised the structure of the in 2009.
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe.	Yes The City of Palo Alto Website also provides several sources for hazard related information including a threats and hazards page, but also in our comprehensive plan. Our emergency services volunteer program also serves as a communications network in their outreach to neighborhood members as well as their participation in community events.
Do you have any established warning systems for hazard events? • If yes, please briefly describe.	Yes The City participates in the County of Santa Clara mass notification system, AlertSCC, to get emergency warnings sent directly to cell phone, mobile device, email, or landline.

Table 1-9. Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	Yes	7	1990
Building Code Effectiveness Grading Schedule	Yes	1	2015
Public Protection (Palo Alto Fire Department)	Yes	2	2012
Storm Ready	Yes	N/A	2015
Firewise	No	N/A	N/A

Table 1-10. Development and Permit Capabilities

Criterion	Response
Does your jurisdiction issue development permits? • If no, who does? If yes, which department?	Yes Development Services Department
Does your jurisdiction have the ability to track permits by hazard area?	Yes
Does your jurisdiction have a buildable lands inventory?	No

Table 1-11. Adaptive Capacity for Climate Change

Adaptive Capacity Assessment	Jurisdiction Rating
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts	High
Comment: The City has a Sustainability Officer who manages a stakeholder team of both internal staff members and external agency representatives to understand the climate change issues in our area. The City's Sustainability and Climate Action Plan demonstrates our understanding of climate change impacts; Palo Alto in engaged in Bay Area conservation planning groups that are also involved in climate change impacts.	
Jurisdiction-level monitoring of climate change impacts	High
Comment:	
Technical resources to assess proposed strategies for feasibility and externalities	High
Comment: Staff members are assigned to assess and propose strategies for climate change impacts. These strategies are then included in our Comprehensive Plan, Hazard Mitigation Planning, and Sustainability and Climate Action Plan.	
Jurisdiction-level capacity for development of greenhouse gas emissions inventory	High
Comment: In 2009 Palo Alto published the City's Climate Protection Plan to reduce greenhouse gas emissions. The Climate Protection Plan provides a comprehensive inventory of emissions, reduction targets, and steps to reach those targets (http://www.cityofpaloalto.org/civicax/filebank/documents/9986). In 2014 the City updated this plan with new emissions data, goals, and actions. Additionally, the City has developed several programs to further reduce emissions including a long term road map coordinated through the Sustainability and Climate Action Plan as well as the City's carbon neutral electric plan. http://www.cityofpaloalto.org/gov/depts/utl/residents/resources/pcm/carbon_neutral_portfolio.asp	
Capital planning and land use decisions informed by potential climate impacts	High
Comment: As a result of the technical resources assigned to this planning element, Palo Alto incorporates decisions into Comprehensive Planning, Local Hazard Mitigation Planning, and Sustainability and Climate Action Planning.	
Participation in regional groups addressing climate risks	High
Comment: Palo Alto staff members are involved in Local, Regional, and National groups studying climate/change and adaption issues.	
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes	High
Comment: The Palo Alto City Council has established an aggressive GHG reduction goal and is in process of updating its Comprehensive Plan and adopting a Sustainability and Climate Action Plan that will mandate considering climate change impacts during public decision-making processes	
Identified strategies for greenhouse gas mitigation efforts	High
Comment: The City's Sustainability and Climate Action Plan (scheduled for approval 11/28) identifies strategies for reducing GHG emissions 80 percent by 2030 (against a 1990 baseline) and for adapting to expected climate change impacts. These include strong energy efficiency requirements in building codes; exploring electrification (switching customers from natural gas to carbon neutral electricity); embedding sustainability and climate considerations into the city's purchasing, operations and capital investment processes; encouraging shift of private and public vehicles to EVs, supported by expanded EV infrastructure; continued pursuit of the City's zero waste goals.	
Identified strategies for adaptation to impacts	High
Comment: Sustainability and Climate Action Plan	
Champions for climate action in local government departments	High
Comment: Chief Sustainability Officer sitting on City's Executive Leadership Team; multi-department Sustainability Board composed of department directors; 5 to 10 percent of City employees membership of voluntary "green team"	
Political support for implementing climate change adaptation strategies	High
Comment: Strong community and Council support	
Financial resources devoted to climate change adaptation	Low
Comment: Currently, the city provides funding for staff members to engage in change adaptation planning including a Chief Sustainability Officer, and additional departmental staff members on an ad hoc basis. The City has a Capital Improvement Plan (CIP) fund that will provide funding for designated projects. The City Council can allocate funding for change adaptation projects as well.	
Local authority over sectors likely to be negatively impacted	Low
Comment: The City has not studied intently the sectors likely to be negatively impacted by climate change.	

Adaptive Capacity Assessment	Jurisdiction Rating
Public Capacity	
Local residents knowledge of and understanding of climate risk	High
Comment: Palo Alto includes a highly educated community, many of whom we believe understand climate risks. Palo Alto OES hosted a keynote speaker at a 2016 community town-hall event who spoke on the theory of sea level rise and the worldwide and local impacts of this threat.	
Local residents support of adaptation efforts	High
Comment: There is strong local support from what we can tell now for adaptation efforts. The City sponsored a public facing sustainability workshop in 2016 with the participation of hundreds of community members; many community members are speaking up about their concerns of climate change, and several organizations have organized action groups (i.e. Palo Alto Green, Save Palo Alto Groundwater)	
Local residents' capacity to adapt to climate impacts	Medium
Comment: TBD. Overall, Palo Alto is one of the national jurisdictions leading the country in consciousness and thought; but the Palo Alto environment may challenge residential adaptation given our moderate climate (so temperature impacts will probably not be severe except for our elderly population), and the lifestyle of many high income residents. However, Palo Alto has launched an active "cool block" pilot program engaging neighbors in joint mitigation/adaptation efforts.	
Local economy current capacity to adapt to climate impacts	Medium
Comment: Generally strong economy; very energy efficient compared to US; substantial local food production capacity; but generally unrecognized risk to long term water supplies (impacting potable water, hydropower and agriculture).	
Local ecosystems capacity to adapt to climate impacts	Medium
Comment: Depends on the extent of the impacts. We can expect successional pressure on ecosystems from temperature and precipitation changes, other impacts from wildfires and flooding.	

1.5 INTEGRATION WITH OTHER PLANNING INITIATIVES

The following describe the jurisdiction's process for integrating the hazard mitigation plan into local planning.

1.5.1 Existing Integration

The following plans and programs currently integrate the goals, risk assessment and/or recommendations of the hazard mitigation plan:

- **Comprehensive Plan**—The Local Hazard Mitigation Plan is nested within the City's Comprehensive Plan, and many of the policies and programs in the Comprehensive Plan now have mitigation linkages for the hazards addressed in this plan.
- **Municipal Code**—The City of Palo Alto Municipal Code establishes risk mitigation standards for building codes that impact our seismic and flood risks.
- **Sustainability / Climate Action Plan**—The City's Sustainability and Climate Action Plan will be the primary document that addresses our programs and mitigation actions for climate adaptation.
- **Seismic Hazards Identification Program**—This program will evolve in the near future to provide additional policies to reduce risks to seismic prone buildings.
- **Community Rating System**—Palo Alto will continue efforts to reduce our CRS rating to reduce flood risks to those property owners in FEMA designated flood zones.
- **Energy Assurance Plan**—Palo Alto will continue to develop programs and actions that improves our energy assurance for certain critical infrastructure.
- **Foothills Fire Management Plan**—This plan addresses a broad range of integrated activities and planning documents to identify and mitigate the impacts of fire hazards in the Palo Alto Foothills Area. Fire mitigation project areas include the boundaries of Foothills Park and Pearson-Arastradero Preserve and each year the City allocates resources to treat segments of the project area and to provide public education and awareness.

- **Water Conservation Best Management Practices (BMP)—**Since 2002, the City has partnered with the Santa Clara Valley Water District (SCVWD) to promote and cost-share water efficiency programs for Palo Alto customers. Through this cost-sharing agreement, the City pays roughly half of the cost of the programs, with SCVWD administering many of these programs including onsite water audits, and rebates for landscape conversion as well as water efficient fixtures and appliances. The City also administers other water conservation programs in-house or through separate contracts with outside vendors, such as the Home Water Report program. The City continues to evaluate opportunities for program partnership opportunities with the Bay Area Water Supply and Conservation Agency and other regional alliances.

1.5.2 Opportunities for Future Integration

The following plans and programs do not currently integrate the goals, risk assessment and/or recommendations of the hazard mitigation plan, but provide an opportunity for future integration. They will be reviewed, developed and updated to include information on hazard risk reduction as feasible and appropriate.

- **Capital Improvement Program (CIP)**—Many of the CIP projects being implemented have a direct or indirect application to local hazards. Specific projects will become part of our mitigation action plan.
- **Foothills Fire Management Plan /Community Wildfire Prevention Plan**—These action plans will have a direct correlation to the mitigation action plan in the reduction of fire hazards to our wildland urban interface area.
- **Post Disaster Recovery Plan**—The City does not have a Post-Disaster Recovery Plan and intends to develop one as a mitigation planning action during the next five years.
- **Sustainability/Climate Action Plan**—The plan will provide strategies for dealing with anticipated impacts of climate change in our community. Some of these strategies will manifest mitigation actions that may be incorporated into future local hazard mitigation planning.
- **Floodplain Management Plan**—The City intends to develop a Floodplain Management Plan.
- **Firewise**—The City intends to meet the Firewise requirements as a public education mitigation action during the next five years.
- **Comprehensive Conservation Plan**—The City will develop two habitat related plans during the next five years. The Baylands Comprehensive Conservation Plan will be completed in FY 2017 to address our shoreline/baylands region; and in FY 2019 we will develop the Foothills, Arastradero, and Esther Clarke Comprehensive Conservation Plan to cover our additional highlands open spaces.

1.6 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 1-12 lists all past occurrences of natural hazards within the jurisdiction.

Table 1-12. Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment[a]
Flood	DR-1203	1998	$23 million[a]
Earthquake	DR-845	1989	Unknown[a]
Flood	None	1982	Unknown[a]
Flood	None	1967	Unknown[a]
Flood	None	1958	Unknown[a]
Flood	None	1955	Unknown[a]
Flood	None	1911	Unknown[a]
Flood	None	1862	Unknown

a. Damage assessment information from San Francisquito Creek Joint Powers Authority (2006), except 1862 flood information from PaloAltoHistory.org (2017).

1.7 JURISDICTION-SPECIFIC VULNERABILITIES

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 1
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: 0

Other noted vulnerabilities include:

- Preponderance of city staff employees reside outside of Palo Alto
- Seismically as risk essential services and public facilities
- High density of seismically at risk soft story, concrete tilt up, concrete shear wall buildings
- Roughly 20 percent of Palo Alto is exposed to special flood hazard areas
- Single grid tied high voltage transmission connection to PG&E
- Palo Alto Critical Infrastructure is at risk to the natural hazards identified in this report; the City's Threat and Hazards Identification and Risk Analysis provides impacts to Critical Infrastructure.

1.8 HAZARD RISK RANKING

Table 1-13 presents the ranking of the hazards of concern.

Table 1-13. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake	48	High
2	Flood	42	High
3	Severe Weather	33	Medium
4	Wildfire	15[a]	Medium
4	Dam and Levee Failure	15[a]	Medium
5	Drought	9	Low
6	Landslide	0	None

a. Results were modified based on institutional knowledge not fully captured in the quantitative risk assessment.

1.9 STATUS OF PREVIOUS PLAN ACTIONS

The status of previous actions from the 2011 ABAG LHMP for Santa Clara County can be found in Appendix D of this volume.

1.10 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 1-14 lists the actions that make up the City of Palo Alto hazard mitigation action plan. Table 1-15 identifies the priority for each action. Table 1-16 summarizes the mitigation actions by hazard of concern and the six mitigation types.

Table 1-14. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
PA-1—San Francisquito Creek Lower Reach Flood Reduction and Ecosystem Restoration Project						
New	Flood / Severe Weather	5, 6, 8	San Francisquito Creek Joint Powers Authority	$34 million: Low	General Fund; HMGP; FMA	0-1 Years (Short-term)
PA-2— San Francisquito Creek Upper Reach Flood Reduction and Ecosystem Restoration Project						
New	Severe Storm / Flood	2, 5, 6, 8	San Francisquito Creek Joint Powers Authority	Medium	General Fund; HMGP; FMA	1-2 Years (Short-term)
PA-3—Newell Creek Bridge replacement project to accommodate a 100 year flood event						
New	Flood / Severe Weather	2, 5, 6, 8	Palo Alto Public Works	Low	CALTRANS / SCVWD	2-5 Years (Short-term)
PA-4—Pope Chaucer Street Bridge replacement project to address 100 year flood event						
Existing	Flood / Severe Weather	2, 5, 6, 8	Santa Clara Valley Water District	Low	SCVWD	2-5 Years (Short-term)
PA-5—Matadero Creek Storm Water Pump Station Improvements						
New	Flood / Severe Weather	6, 8	Palo Alto Public Works	$6 million: Low	CIP: SD-13003	0-1 Years (Short-term)
PA-6—Storm Drain System Replacement and Rehabilitation						
Existing	Flood / Severe Weather	6, 8	Palo Alto PW	$ 1.5 million: Low	CIP: SD-06101	Annually (Ongoing)
PA-7—Recycled Water Pipeline Expansion Project to expand the recycled water purple pipeline within South Palo Alto towards Stanford Research Park						
Existing	Drought	5, 6	Palo Alto Public Works	$30 million: Low	CIP: WS-07001	1-3 Years (Short-term)
PA-8—Continue to maintain good standing and compliance in the NFIP and improve Community Rating System Class to provide higher CRS premium discounts						
Existing	Flood / Severe Weather	1, 2, 3, 4	Palo Alto Public Works	Low	General Fund	2-3 Years (Short-term)
PA-9—Execute the SAFER Bay Project to protect critical infrastructure and property and restore historic marshlands						
New	Severe Storm / Flood / Sea Level Rise	2, 5, 6, 8	San Francisquito Creek Joint Powers Authority	High	Combination CIP: OS-09002	Unknown (Long-term)
PA-10—Construct new Public Safety Building to mitigate current risks to public safety essential services						
New	Earthquake	6, 9	Palo Alto Public Works	$57 million: Medium	CIP: PE-15001	5 -7 Years (Long-term)
PA-11—Rebuild Fire Stations 3 and 4 to mitigate current risks to essential services						
New	Earthquake / Flood / Sea Level Rise	6, 8	Palo Alto Public Works	$15 million: Low	CIP: PE-15003	2-4 Years (Short-term)
PA-12—Continue 7 year cycle for high priority of tree trimming						
Existing	Earthquake/ Flood / Severe Weather	6,8	Palo Alto Public Works	Low	General Fund	Annually (Ongoing)
PA-13—Replace the Baylands Tide Gate						
Existing	Flood / Severe Weather	6, 8	Santa Clara Valley Water District	Medium	SCVWD	Unknown (Long-term)
PA-14—Consider the use of alternative energy sources for critical infrastructure (essential facilities, key resources)						
Existing	Earthquake / Severe Weather	3, 5	Palo Alto Office of Sustainability	High	Staff Time; General Fund	Unknown (Long-term)

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
PA-15—Implement Wastewater Long-Range Facilities Plan						
Existing	Flood / Severe Weather / Earthquake / Sea Level Rise	6, 8	Palo Alto Public Works	$3-20 million: Low	CIP: WQ-10001	Annually (Ongoing)
PA-16—Conduct a feasibility analysis concerning the continued use of water reservoirs in the Foothills region						
Existing	Earthquake / Wildfire / Drought	5, 6	Palo Alto Utilities	Medium	General Fund	3-5 Years (Short-term)
PA-17—Consider construction of a new water reservoir in the low lying areas of Palo Alto						
New	Earthquake / Drought	5, 6	Palo Alto Utilities	Medium	General Fund; Possibly HMGP	3-5 Years (Short-term)
PA-18—Rebuild and Reconfigure Electric System in Stanford Hospital/Mall Area to increase reliability during emergencies						
Existing	Earthquake / Severe Weather	5, 8	Palo Alto Utilities	Low	CIP: EL-17004	3-5 Years (Short-term)
PA-19—Install Fiber Optic Service to Black Mountain Radio Repeater Site to improve public safety communications along Skyline Drive						
New	Earthquake / Severe Weather / Wildfire	9	Palo Alto Utilities	Medium	CIP: TBD	2-3 Years (Short-term)
PA-20—Convert overhead utility lines to underground transmission. Installation of new underground electric, communication, and cable television systems in Electric Underground Districts 46 and 47						
Existing	Earthquake / Severe Weather	6, 8	Palo Alto Utilities	$2.0 million: Low	CIP: EL-12001 / EL-11010	1-4 Years (Short-term)
PA-21—Construct a second electrical transmission interconnection to PG&E using a new corridor						
New	Earthquake / Severe Weather	1, 5	Palo Alto Utilities	High	CIP; Possible HMGP, PDM	Unknown (Long-term)
PA-22—Construct a second water interconnection from Palo Alto Utilities to Stanford Hospital						
New	Earthquake / Severe Weather	2, 6	Palo Alto Utilities	High	CIP; Possible HMGP, PDM	3-5 Years (Short-term)
PA-23—Connect Palo Alto to adjacent Public Safety agencies' Public Safety Answering Points by Fiber						
Existing	Earthquake / Severe Weather	9	Palo Alto Police Department	High	CIP; Possible HMGP, PDM	Unknown (Long-term)
PA-24—Implement a Public Safety Wireless Data Network						
New	Earthquake / Severe Weather /	9	Palo Alto Police Department	High	CIP; Possible EMPG	Unknown (Long-term)
PA-25—Conduct a Hydrology Study on Buck-Eye Creek for flood protection and erosion control at Foothills Park						
Existing	Flood / Severe Weather	6, 8	Palo Alto Community Services Department	$105 K: Low	CIP: PG-15000	2-4 Years (Short-term)
PA-26—Develop a Baylands Comprehensive Conservation Plan						
Existing	Flood / Severe Weather / Sea Level Rise	1, 3	Palo Alto Community Services Department	$330 K: Low	CIP: PG-17000	1-2 Years (Short-term)
PA-27—Address hazardous fuels and reduce structural ignitability in the Foothills region in accordance with the Community Wildfire Protection Plan and Foothills Fire Management Plan						
Existing	Wildfire	2, 3, 6, 8	Palo Alto Fire Department	$150 K: Low	General Funds	Annually (Ongoing)
PA-28—Encourage creation by Foothills Residents of a Firewise Ready Community						
Existing	Wildfire	2, 3, 4, 8	Palo Alto OES	Low	Staff Time; General Funds	1-2 Years (Short-term)

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
PA-29—Consider a policy for Seismic Retrofitting of earthquake prone structures						
Existing	Earthquake	2, 3, 5, 8	Palo Alto Development Services	Low	Staff Time; General Funds	1-2 Years (Short-term)
PA-30—Develop a Policy for Sea-Level Rise considerations (what actions should the City take)						
Existing	Sea Level Rise	2, 3, 5 , 8	Sustainability	Low	Staff Time; General Funds	1-2 Years (Short-term)
PA-31—Develop a post-disaster Community Long-term Recovery Plan						
New	All Hazards	1, 2, 4	Palo Alto OES	Medium	Staff Time; General Funds	3-5 Years (Short-term)
PA-32—Conduct public education that raises awareness of Palo Alto threats and hazards and improves community resilience						
Existing	All Hazards	1, 2, 4	Palo Alto OES	Low	Staff Time; General Funds	Annually (Ongoing)
PA-33—Maintain Storm Ready Community designation						
Existing	Severe Storm	2, 4, 9	Palo Alto OES	Low	Staff Time; General Funds	Annually (Ongoing)
PA-34—Improve Palo Alto Fire Department ISO rating						
Existing	All Hazards	1, 2, 3, 4,	Palo Alto Fire Department	Low	Staff Time; General Funds	1-2 Years (Short-term)
PA-35—Maintain Building Effectiveness Grading Schedule classification of 1						
Existing	All Hazards	3, 8	Palo Alto Development Services	Low	Staff Time; General Funds	Annually (Ongoing)
PA-36—Where appropriate, support retro-fitting, purchase or relocation of structures located in high hazard areas and prioritize those structures that have experienced repetitive losses						
Existing	All Hazards	4, 5, 6, 7, 8	Palo Alto Development Services	High	HMGP, PDM, FMA	Short-term
PA-37—Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions within the community						
New and Existing	All Hazards	2, 4,	Development Services Department	Low	Staff Time, General Funds	Ongoing
PA-38—Actively participate in the plan maintenance protocols outlined in Volume 1 of the hazard mitigation plan.						
New and Existing	All Hazards	1, 5	Palo Alto OES	Low	Staff Time; General Funds	Short-term

Table 1-15. Mitigation Strategy Priority Schedule

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Pursuit Priority[a]
PA-1	3	High	Low	Yes	Yes	Yes	High	High
PA-2	4	High	Medium	Yes	Yes	Yes	High	High
PA-3	4	High	Low	Yes	Yes	Yes	High	High
PA-4	4	High	Low	Yes	Yes	Yes	High	High
PA-5	2	Medium	Low	Yes	Yes	Yes	High	High
PA-6	2	Medium	Low	Yes	Yes	Yes	High	High
PA-7	2	Low	Low	Yes	No	Yes	High	Low
PA-8	4	Medium	Low	Yes	No	Yes	High	Low
PA-9	4	Medium	High	No	Yes	No	Low	Low
PA-10	2	High	Medium	Yes	No	Yes	High	Low
PA-11	2	High	Low	Yes	No	Yes	High	Low
PA-12	2	High	Low	Yes	No	Yes	High	Low
PA-13	2	Medium	Medium	Yes	No	Yes	Medium	Low
PA-14	2	Low	High	No	Yes	No	Low	Low
PA-15	2	Medium	Low	Yes	No	Yes	High	Low
PA-16	2	Medium	Medium	Yes	No	No	Medium	Low
PA-17	2	Medium	Medium	Yes	Yes	No	Medium	Medium
PA-18	2	High	Low	Yes	No	Yes	High	Low
PA-19	1	Medium	Medium	Yes	No	No	Low	Low
PA-20	2	High	Low	Yes	No	Yes	High	Low
PA-21	2	Medium	High	No	No	No	Medium	Low
PA-22	2	Medium	High	No	No	No	Medium	Low
PA-23	1	Medium	High	No	Yes	No	Low	Low
PA-24	1	Medium	High	No	No	No	Medium	Low
PA-25	2	Low	Low	Yes	No	Yes	High	Low
PA-26	2	Medium	Low	Yes	No	Yes	High	Low
PA-27	4	High	Low	Yes	Yes	Yes	High	High
PA-28	4	High	Low	Yes	No	Yes	High	Low
PA-29	4	Medium	Low	Yes	Yes	Yes	High	High
PA-30	4	Medium	Low	Yes	Yes	Yes	High	High
PA-31	3	Medium	Medium	Yes	Yes	Yes	High	Medium
PA-32	3	High	Low	Yes	No	Yes	High	Low
PA-33	3	High	Low	Yes	No	Yes	High	Low
PA-34	4	High	Low	Yes	No	Yes	High	Low
PA-35	2	High	Low	Yes	No	Yes	High	Low
PA-36	5	High	High	Yes	Yes	No	Medium	High
PA-37	2	Medium	Low	Yes	No	Yes	High	Low
PA-38	2	Low	Low	Yes	No	Yes	High	Low

a. See the introduction to this volume for explanation of priorities.

Table 1-16. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type[a]						
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects	7. Climate Resilient
Earthquake	PA-14, PA-15, PA-35, PA-37, PA-38	PA-16, PA-29, PA-36	PA-31, PA-32		PA-14, PA-18, PA-19, PA-22, PA-23, PA-24, PA-34, PA35	PA-10, PA-11, PA-17, PA-20, PA-21	
Flood	PA-1, PA-2, PA-3, PA-4, PA-5, PA-6, PA-9, PA-13, PA-15, PA-25, PA-26, PA-30, PA-35, PA-37, PA-38	PA-1, PA-2, PA-3, PA-4, PA-5, PA-6, PA-9, PA-13, PA-30, PA-36	PA-8, PA-31, PA-32	PA-9, PA-25, PA-26	PA-8, PA-34, PA-35	PA-11, PA-17, PA-21	PA-1, PA-2, PA-9
Severe Weather	PA-1, PA-2, PA-3, PA-4, PA-5, PA-6, PA-9,PA-15, PA-26, PA-35, PA-37, PA-38	PA-1, PA-2, PA-3, PA-4, PA-5, PA-6, PA-9, PA-36	PA-8, PA-31, PA-32, PA-33	PA-26	PA-8, PA-18, PA-19, PA-22, PA-23, PA-24, PA-33, PA-34, PA35	PA-20, PA-21	
Wildfire	PA-27, PA-35, PA-37, PA-38	PA-16, PA-27, PA-28, PA-36	PA-28, PA-31, PA-32	PA-27	PA-27, PA-34, PA-35		
Dam and Levee Failure	PA-37, PA-38	PA-36	PA-31, PA-32		PA-34	PA-9	
Drought	PA-37, PA-38	PA-16, PA-36	PA-31, PA-32	PA-7			PA-17

a. See the introduction to this volume for explanation of mitigation types.

1.11 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

The City of Palo Alto has identified that more information is needed to understand the potential for impacts from the Searsville Dam. Palo Alto's susceptibility to risks associated with inundation caused by the failure of local Dams is a function of how much water is actually stored in the three dams within the watersheds that flow through Palo Alto. The City of Palo Alto Comprehensive Plan Environmental Impact Report provides an analysis of the risks provided by Felt Lake Dam, Lagunitas Reservoir Dam, and Searsville Dam (City of Palo Alto, 2016). We have strong evidence that Felt Lake and Lagunitas Reservoir Dams have negligible impact due to the low volumes of water they store. Searsville Dam is now heavily silted and stores only approximately 30 percent of its total capability. We will work with Stanford University to develop a better understanding of risks and impacts from this Dam.

1.12 PALO ALTO PLANNING PROCESS

The City of Palo Alto began our LHMP planning process in 2015 by participating in the Association of Bay Area Governments (ABAG) mitigation planning workshops. We followed up this preparation in January 2016 with the development of a project management plan that described how we would implement the local mitigation planning process. This effort was started in advance of the Santa Clara County effort to receive Mitigation Planning Grant funding. Palo Alto created two planning structures as recommended by ABAG and included an inter-departmental city staff planning team as well as an external stakeholder group comprised of various local organizations

representative of our 'whole community.' Over the year, the planning process followed the recommended steps in the FEMA Process Map and joined the Santa Clara County planning process in August 2016.

Palo Alto also created an online website (cityofpaloalto.org/lhmap) in February 2016 that described our planning process and served as a data repository for our project teams and for the general public. In May 2016 we highlighted this process on the City's Homepage.

Meeting documentation including internal planning team minutes, stakeholder team minutes and community engagement summaries can be found at the end of this annex and are available online at www.cityofpaloalto.org/lhmap.

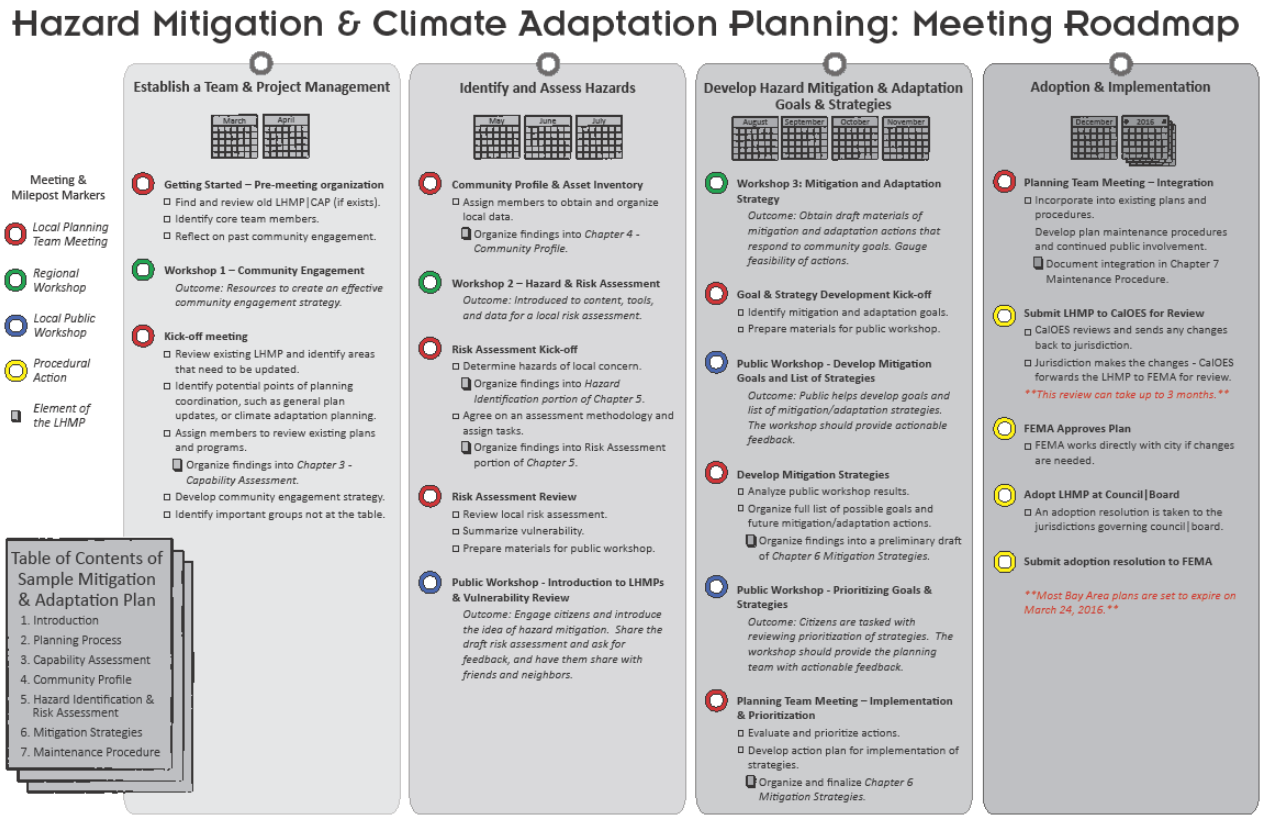


Figure 1-2. Meeting Roadmap for ABAG Planning Process

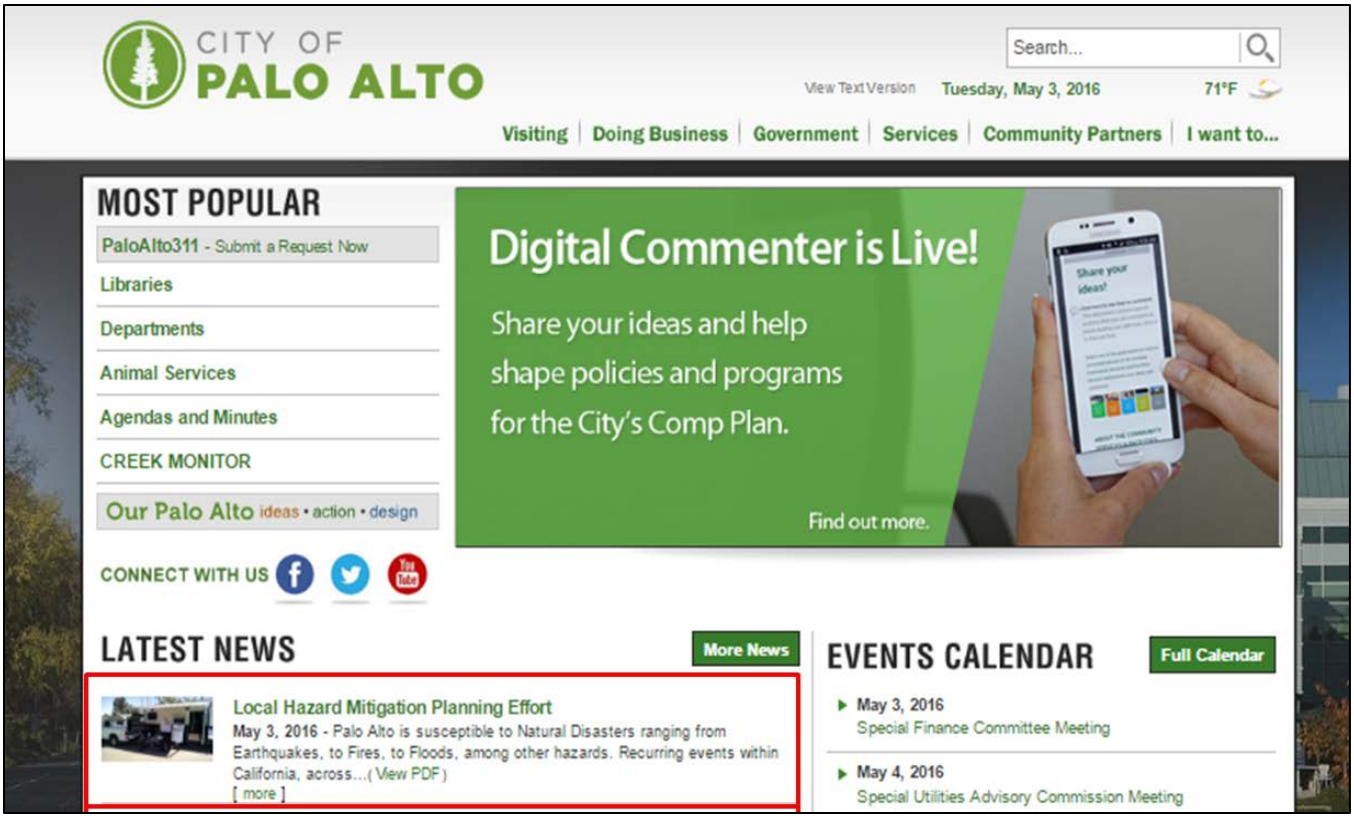


Figure 1-3. City of Palo Alto Homepage with Information on Local Hazard Mitigation Plan

1.13 ADDITIONAL RESOURCES

The following sources were used for information throughout this annex:

City of Palo Alto. 2007. City of Palo Alto Comprehensive Plan 2007, p. L-4. Accessed online at http://www.cityofpaloalto.org/civicax/filebank/documents/8170

City of Palo Alto. 2014. Comprehensive Plan Update: Land Use; Draft Existing Conditions Report – City of Palo Alto, August 29, 2014, p. 8-31. http://www.paloaltocompplan.org/wp-content/uploads/2014/09/8_LandUse.pdf

City of Palo Alto. 2016. City of Palo Alto Comprehensive Plan Environmental Impact Report, 2016. Hydrology and Water Quality, p. 4.8-38 & 39. Accessed online at http://www.paloaltocompplan.org/wp-content/uploads/2016/02/4-8_HydrologyWaterQuality.pdf

PaloAltoHistory.org. 2017. The Christmas Flood: "All Through the House… was Mud". Web page accessed online at http://www.paloaltohistory.org/the-christmas-flood.php.

San Francisquito Creek Joint Powers Authority Proposition 1E Grant Proposal. http://www.water.ca.gov/irwm/grants/docs/Archives/Prop1E/Submitted_Applications/P1E_Round1_SWFM/San%20Francisquito%20Creek%20Joint%20Powers%20Authority/Att7_SWF_DReduc_1of3.pdf.

San Francisquito Creek Joint Powers Authority. 2006. San Francisquito Creek Flood Damage Reduction and Ecosystem Restoration Project Report. Accessed online at http://www.cityofpaloalto.org/cityagenda/publish/jpa-meetings/63.pdf.

USClimateData.Com. 2017. Palo Alto Climate Data web page. Accessed online at http://www.usclimatedata.com/climate/palo-alto/california/united-states/usca0830

Stakeholder Team Minutes and Community Engagement Summaries

OFFICE OF EMERGENCY SERVICES
CITY OF PALO ALTO
275 Forest Avenue
Palo Alto, CA 94301
650.617.3197

Local Hazard Mitigation and Adaptation Plan
Kick Off Meeting: 25 February 2016

Meeting Date, Location, Time

Palo Alto Emergency Operations Center
A Level, 275 Forest Ave
Palo Alto, CA 94301

February 25, 2016
9 am – 10 am

Meeting Objectives

- Establish project organization
- Validate core team members and determine external stakeholders
- Determine community engagement strategies

Pre-Meeting Materials

- LHMAP Project Plan
- Agenda

At-Meeting Materials

- LHMAP Reference Materials

Agenda

9:00 am	**Welcome - Purpose of meeting / purpose of planning effort**	**Nathan Rainey**
9:05 am	**Introductions**	**All**
9:10 am	**Review of planning team members** • Confirm list of team members • Add / Delete from list	**All**
9:20 am	**Recommend external stakeholders to engage** • Are there adjustments to the ones listed in your handout	**All**
9:30 am	**Review planning timeline**	**Nathan Rainey**
9:40 am	**Discuss community engagement strategies** • Are the items listed appropriate and sufficient?	**All**
9:55 am	**Next steps** • March meetings: Prepare for internal and Public / Stakeholder meeting	**Nathan Rainey**

Local Hazard Mitigation and Adaptation Plan
Kick Off Meeting: 25 February 2016

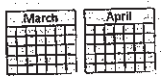
Initials	Name	Attendance	Response
	Rainey, Nathaniel	Meeting Organizer	Accepted
	Ramberg, David	Required Attendee	Accepted
	Peterson, Lon	Required Attendee	Accepted
	Friend, Gil	Required Attendee	Tentative
	Fehrenbach, Thomas	Required Attendee	Declined
	Halpern, Rhyena	Required Attendee	Declined
	Anderson, Daren	Required Attendee	Accepted
	Hoyt, George	Required Attendee	Accepted
	Yarbrough, Shane	Required Attendee	Tentative
	Roderick, Kim	Required Attendee	Tentative
	Frost, Jasmine	Required Attendee	Accepted
	Garcia, RuthAnn	Required Attendee	Accepted
	Blanch, Sandra	Required Attendee	None
	Lee, Elena	Required Attendee	Accepted
	Cullen, Charles	Required Attendee	Accepted
	Bobel, Phil	Required Attendee	Accepted
	Swanson, Andrew	Required Attendee	None
	Ratchye, Jane	Required Attendee	None
	Macartney, Cody	Required Attendee	Accepted
	Howard, Adam	Optional Attendee	Accepted
	Batchelor, Dean	Optional Attendee	Accepted
	Dueker, Kenneth	Optional Attendee	Declined
	Williams, Simon	Optional Attendee	None

Hazard Mitigation & Climate Adaptation Planning: Meeting Roadmap

Meeting & Milepost Markers

- *Local Planning Team Meeting*
- *Regional Workshop*
- *Local Public Workshop*
- *Procedural Action*
- *Element of the LHMP*

Establish a Team & Project Management



Getting Started – Pre-meeting organization
- ☐ Find and review old LHMP|CAP (if exists).
- ☐ Identify core team members.
- ☐ Reflect on past community engagement.

Workshop 1 – Community Engagement
Outcome: Resources to create an effective community engagement strategy.

Kick-off meeting
- ☐ Review existing LHMP and identify areas that need to be updated.
- ☐ Identify potential points of planning coordination, such as general plan updates, or climate adaptation planning.
- ☐ Assign members to review existing plans and programs.
  - Organize findings into *Chapter 3 - Capability Assessment.*
- ☐ Develop community engagement strategy.
- ☐ Identify important groups not at the table.

Table of Contents of Sample Mitigation & Adaptation Plan

1. Introduction
2. Planning Process
3. Capability Assessment
4. Community Profile
5. Hazard Identification & Risk Assessment
6. Mitigation Strategies
7. Maintenance Procedure

Identify and Assess Hazards

Community Profile & Asset Inventory
- ☐ Assign members to obtain and organize local data.
  - Organize findings into *Chapter 4 - Community Profile.*

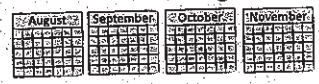
Workshop 2 – Hazard & Risk Assessment
Outcome: Introduced to content, tools, and data for a local risk assessment.

Risk Assessment Kick-off
- ☐ Determine hazards of local concern.
  - Organize findings into *Hazard Identification portion of Chapter 5.*
- ☐ Agree on an assessment methodology and assign tasks.
  - Organize findings into Risk Assessment portion of *Chapter 5.*

Risk Assessment Review
- ☐ Review local risk assessment.
- ☐ Summarize vulnerability.
- ☐ Prepare materials for public workshop.

Public Workshop - Introduction to LHMPs & Vulnerability Review
Outcome: Engage citizens and introduce the idea of hazard mitigation. Share the draft risk assessment and ask for feedback, and have them share with friends and neighbors.

Develop Hazard Mitigation & Adaptation Goals & Strategies



Workshop 3: Mitigation and Adaptation Strategy
Outcome: Obtain draft materials of mitigation and adaptation actions that respond to community goals. Gauge feasibility of actions.

Goal & Strategy Development Kick-off
- ☐ Identify mitigation and adaptation goals.
- ☐ Prepare materials for public workshop.

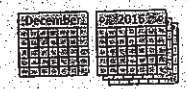
Public Workshop - Develop Mitigation Goals and List of Strategies
Outcome: Public helps develop goals and list of mitigation/adaptation strategies. The workshop should provide actionable feedback.

Develop Mitigation Strategies
- ☐ Analyze public workshop results.
- ☐ Organize full list of possible goals and future mitigation/adaptation actions.
  - Organize findings into a preliminary draft of *Chapter 6 Mitigation Strategies.*

Public Workshop - Prioritizing Goals & Strategies
Outcome: Citizens are tasked with reviewing prioritization of strategies. The workshop should provide the planning team with actionable feedback.

Planning Team Meeting – Implementation & Prioritization
- ☐ Evaluate and prioritize actions.
- ☐ Develop action plan for implementation of strategies.
  - Organize and finalize *Chapter 6 Mitigation Strategies.*

Adoption & Implementation



Planning Team Meeting – Integration
- ☐ Incorporate into existing plans and procedures.

  Develop plan maintenance procedures and continued public involvement.
  - Document integration in Chapter 7 Maintenance Procedure.

Submit LHMP to CalOES for Review
- ☐ CalOES reviews and sends any changes back to jurisdiction.
- ☐ Jurisdiction makes the changes - CalOES forwards the LHMP to FEMA for review.

This review can take up to 3 months.

FEMA Approves Plan
- ☐ FEMA works directly with city if changes are needed.

Adopt LHMP at Council|Board
- ☐ An adoption resolution is taken to the jurisdictions governing council|board.

Submit adoption resolution to FEMA

Most Bay Area plans are set to expire on March 24, 2016.

City of Palo Alto Local Hazard Mitigation and Adaptation Planning Effort: 2016-2017

Recommended Planning Team Members:

City Departments	Last Name	First Name
Office of City Manager	Shikada	Ed
Office of City Manager	Peterson	Lon
Business Development Manager	Fehrenbach	Tom
Office of Sustainability	Friend	Gil
Animal Services	Macartney	Cody
Administrative Services Department	Ramberg	David
Community Services Department	Halpern	Rhyena Adam
Palo Alto Open Space	Anderson	Darren
Development Services Department	Hoyt	George
Fire Department	Yarbrough	Shane
Fire Department - EMS	Roderick	Kim
Information Technology Department	Frost	Jasmine
Library Department	Garcia	Ruth Ann
Office of Emergency Services	Rainey	Nathan
People Strategy and Operations Department	Blanch	Sandra
Planning and Community Environment Department	Lee	Elena
Police Department	Cullen	Charlie
Public Works Department	Bobel	Phil
Palo Alto Airport	Swanson	Andy
Utilities Department	Ratchye	Jane Dean

City of Palo Alto Local Hazard Mitigation and Adaptation Planning Effort: 2016-2017

Stakeholder Team:	Last Name	First Name
City Council	TBD	
PAUSD	Gen Lew	Victoria
PAUSD School Board	TBD	
Faith Based Organizations	Altman	Eileen
Stanford University	Perry	Keith
Stanford Healthcare	Bond	Brandon
Palo Alto Medical Foundation VA HOSPITAL	Glotzer	Jerry
Santa Clara Valley Water District	Jacques	Dale
Santa Clara Valley Transportation Agency	TBD	
California Resiliency Alliance	Ohtaki	Peter
Chamber of Commerce	Kleinburg	Judy
Sandhill Corridor Business District		
California Avenue Business District		
Downtown Business District		
Sandhill Corridor Business District		
Stanford Business Park → stanford		
Acterra	Stern	Adam
Firesafe Council	Nadim	Mark
American Red Cross	Matzke	Karl
Invision Shelter Network	TBD (Van Der Zwaag Minka)	
Palo Alto Human Services Commission	TBD (Van Der Zwaag Minka)	
Palo Alto Pilots Association		
Palo Alto Neighborhoods	Glanckopf	Annette
Palo Alto Emergency Services Volunteers	Team Leaders	

TRANSPORTATION
- CALTRANS
- CALTRAIN

Environmental
- Save The Bay - Sea Level Rise - Becky?
- Canopy - Tree Impacts -

Service
- Kiwanis
- Rotary
- Maintenance
- VFW
- American Legion

Animal - Pagemill Partners - Peninsula Humane Society -

MAJOR BUSINESSES
Palantir
HP
VM ware

City of Palo Alto Local Hazard Mitigation and Adaptation Planning Effort: 2016-2017

Local Hazard Mitigation Plan Revision

The federal Disaster Mitigation Act of 2000 (DMA) requires all cities, counties, and special districts to adopt a Local Hazard Mitigation Plan (LHMP) to receive disaster mitigation funding from the Federal Emergency Management Agency (FEMA). The DMA provides that a local agency may adopt a Local Hazard Mitigation Plan or participate in the preparation of and adopt a Multi-Jurisdictional Hazard Mitigation Plan. In 2011, The Association of Bay Area Governments received funds from FEMA to serve as the lead agency in the creation of a Multi-Jurisdictional Hazard Mitigation Plan for the nine-county Bay Area. With participation from the City of Palo Alto and other local agencies, ABAG created an umbrella Hazard Mitigation Plan entitled "Taming Natural Disasters."

Pursuant to the Disaster Mitigation Act (2000), the Santa Clara County's Office of Emergency Services prepared an annex to the 2010 ABAG Local Hazard Mitigation Plan (LHMP) to serve as Santa Clara County's Local Hazard Mitigation Plan. The LHMP emerged from a collaborative planning effort that involved the assembly of a Local Planning Team comprised of representatives from County departments, private sector businesses, stakeholders, and 13 of the 15 incorporated cities in Santa Clara County, including Palo Alto. The LHMP identifies and prioritizes potential and existing hazards across jurisdictional borders, including hazards that may be further amplified by climate change. In an effort to guide the County's ongoing hazard mitigation efforts through the life of the LHMP, mitigation objectives were identified.

In order to meet these priority mitigation objectives, the LHMP further identifies and prioritizes specific actions for each objective. In addition, the responsible departments, potential funding sources, and target completion date are identified for each mitigation action with the highest priority to guide their implementation. Since that time, some progress has been made.

It is now time for Palo Alto to revise the existing Local Hazard Mitigation and Adaptation Plan. Santa Clara County intends to once again develop a multi-jurisdictional plan as before. They are seeking a federal grant to assist in facilitating the process; regardless of this, we will need to develop local content as required by FEMA.

FEMA has placed a higher emphasis on adaptation planning so this year's effort will draw heavily on the S/CAP. FEMA has also created an incentive for LHMAPs to be linked to jurisdictional General Plans or Comprehensive Plans to demonstrate the strong relationship between mitigation and comprehensive planning.

Our strategy for this linkage is to use existing goals and policies from the Natural Environment and Public Safety Elements to shape mitigation objectives and projects.

We will also leverage representatives from each department to assist in the revision of this document, as we did in 2011.

City of Palo Alto Local Hazard Mitigation and Adaptation Planning Effort: 2016-2017

Milestones:

February: Getting Started Meeting: Internal City Planning Team
- Pre-meeting organization
- Validate core team members and determine external stakeholders
- Determine community engagement strategies

} City Manager Briefing / involvement

March: Kickoff Meeting: Stakeholder Team Meeting
- Results of Community Survey
- Status of Comprehensive Plan: Natural Environment and Safety Elements
- Hazard and Risk Assessment Results
- Outreach Strategy Framework

March: Public Workshop 1: Introduction to LHMP and Vulnerability Review
Can we nest this with other community engagement efforts? Solicit feedback on our vulnerabilities.

must do, if you want to do on later

April: Goal & Strategy Development Meeting: Internal City Planning Team
- Identify mitigation and adaptation goals
- Prepare materials for public workshop

May: Stakeholder (Public) Workshop 2: Develop Mitigation Goals and List of Strategies
Public helps develop goals and list of mitigation/adaptation strategies. Actionable Feedback.

June: Develop Mitigation Strategies: Internal City Planning Team
- Analyze public workshop results
- Organize full list of possible goals and future mitigation / adaptation strategies
- Organize findings into a preliminary draft of Chapter 6 Mitigation Strategies

July: Website Survey – Prioritizing Goals and Strategies

August: Implementation and Prioritization of Strategies & Actions (Objectives and Projects): Internal Planning Team
- Evaluate and prioritize actions
- Develop action plan for implementation of strategies

September: Finalize Draft Plan: Internal Planning Team

October: Publish Draft Plan for stakeholder / public comment

15 November 2017: Plan submitted to for Review by CalOES and FEMA
1 April 2018: Plan Approved by FEMA
1 June 2018: Plan Approved by City Council

- Incorporate
- Update Minutes
- Turn on website
- May 9 Sea Level Rise - Kirsten - Study Session
  & definitions of Protect, Adapt, Retreat

OFFICE OF EMERGENCY SERVICES
CITY OF PALO ALTO
275 Forest Avenue
Palo Alto, CA 94301
650.617.3197

Local Hazard Mitigation and Adaptation Plan
Internal Planning Meeting #2: 31 March 2016

Meeting Date, Location, Time

Palo Alto Emergency Operations Center
A Level, 275 Forest Ave
Palo Alto, CA 94301

March 31, 2016
2pm – 3:30pm

Meeting Objectives

- Status of Comprehensive Plan: Natural Environment and Safety Elements
- Hazard and Risk Assessment Results
- Outreach Strategy Framework

Pre-Meeting Materials

- LHMAP Project Plan
- Agenda

At-Meeting Materials

- Agenda
- Final Stakeholder List
- Meeting #2 Powerpoint
- Hazard Assessment Worksheet
- Hazard Mapping

Meeting Participants

- See Attached Roster

Agenda

2:00 pm	**Welcome – Introductions** • Nathan provided new information to the group concerning the Santa Clara County OES LHMAP effort. They have received federal mitigation grant funds for planning assistance with this current effort. Palo Alto will continue our planning effort and join the County effort once the contractor is available, estimated for June 2016.	**Nathan Rainey**
2:05 pm	**Provide Stakeholder List / Review members** • Nathan provided the updated stakeholder list, provided as an attachment to this report, for the group to review. No changes were made to this roster.	**All**
2:10 pm	**Review Results of Community Preparedness Survey** • Each meeting participant completed a Hazards Summary Worksheet from the FEMA Local Mitigation Planning Handbook, March 2013. A sample of the worksheet is provided as an attachment. The three highest assessed threats were Earthquake, Wildfire, and Flooding (which results from Severe Winter Weather). After discussion we also added Sea Level Rise as a fourth high hazard. • Nathan then described the results of the 2015 Community Preparedness Survey concerning the community's hazard assessment. 854 Survey participants responded to how concerned they were with specific hazards identified in the City's Threats and Hazards Identification and Risk	**Nathan Rainey**

	Assessment (THIRA) report. Earthquake was of most concern to 53% of respondents, with Fire being the next highest Natural Hazard. This information is depicted in slides 7-8 in the LHMAP Planning Meeting #2 file. • Nathan also compared these results to the State of California Declared Disasters results, which is a FEMA database of Emergency declarations since 1954. The types of Hazards with the most declarations are Wildfires, Floods, Earthquakes.	
2:20 pm	**Status of Comprehensive Plan: Natural Environment and Safety Elements – Discuss what goals, policies we should focus on** • Elena described the current Comprehensive (Comp) Plan update process. The update will create a new Safety Element from the existing Natural Environment Element where safety related goals and policies are located. The current citizen advisory committee and city staff will likely not make significant changes to the current language in the creation of the Comp Plan Safety Element. The existing document is a good place to look to in the establishment of goals for the LHMAP. • In the upcoming Stakeholder Workshop, we will also ask for the stakeholder group to propose high level goals that they would like to see in the LHMAP.	**Elena Lee**
2:50 pm	**Hazard and Risk Assessment Results** • OES Staff described the high hazard assessment and exposure analysis using Geographic Information System maps with the various exposure layers. • Nathan described the type of critical infrastructure (CI) that FEMA recommends each jurisdiction consider in the LHMAP and those CI that we have incorporated into our Palo Alto plan currently. This can be found on slides 9-10 in the LHMAP Planning Meeting #2 file. • Nathan and Simon identified CI that needs to be corrected, and the final list will be updated for Chapter 5 (Hazard Identification, Analysis, Assessment.	**Nathan Rainey / Simon Williams**
3:15 pm	**Discuss community engagement strategies** – CMO feedback. • Nathan discussed how OES would leverage existing community events as a core strategy to engage the community in a public facing manner. Events that support this aim are the Save the Water Fun Run, May Fete Parade (both in May) and the 4th of July Chili Cook-off. Additionally, OES will consider a specific LHMAP session in August –September timeframe. • Additionally, Elena Lee recommended that we attempt to conduct specific outreach sessions with stakeholder groups. OES will add this to our	**Nathan Rainey**

	stakeholder workshop #1 agenda and seek opportunities to address specific stakeholder communities.	
3:25 pm	**Next steps** • Prepare for Public / Stakeholder Meeting • Update LHMAP Planning Draft with Hazard and Risk Assessment Results, publish this chapter to the Stakeholder Group and publish on the Website	**Nathan Rainey**

Action Items

Item	Task	Suspense	Assigned To
1	Publish Minutes	11 April 2016	Nathan Rainey
2	Publish public facing content on the LHMAP Website	15 April 2016	Nathan Rainey
3	Publish documents on the OES Microsoft Sharepoint Drive	11 April 2016	Nathan Rainey
4	Discuss the method to develop draft goals	18 April 2016	Nathan Rainey / Elena Lee
5	Review and Update Chapter 5: Hazard Identification, Analysis, and Risk Assessment	22 April 2016	Nathan Rainey / Simon Williams
6	Update Chapter 3: Capability Assessment with Internal Planning Team feedback / participation	31 May 2016	All Team Members – Nathan will provide specific instructions to team members
7	Update Chapter 4: Community Profile	31 May 2016	Nathan Rainey, with specific input from certain planning team members

Enclosures:

1. Attendance Roster
2. Final Stakeholder List
3. Meeting #2 Powerpoint
4. Hazard Assessment Worksheet

Palo Alto Local Hazard Mitigation Planning:
Internal Planning Team Meeting #2

Initials	Name	Attendance	Response
	Rainey, Nathaniel	Meeting Organizer	None
	Peterson, Lon	Required Attendee	Accepted
	Friend, Gil	Required Attendee	None
	Macartney, Cody	Required Attendee	Accepted
	Ramberg, David	Required Attendee	Accepted
	Hoyt, George	Required Attendee	Accepted
	Yarbrough, Shane	Required Attendee	Declined
	Roderick, Kim	Required Attendee	Declined
	Frost, Jasmine	Required Attendee	Declined
	Blanch, Sandra	Required Attendee	Accepted
	Cullen, Charles	Required Attendee	Accepted
	Bobel, Phil	Required Attendee	Accepted
	Swanson, Andrew	Required Attendee	None
	Batchelor, Dean	Required Attendee	Accepted
	Williams, Simon	Required Attendee	Accepted
	Howard, Adam	Required Attendee	Accepted
	Anderson, Daren	Required Attendee	Accepted
	Garcia, RuthAnn	Required Attendee	None
	Lee, Elena	Required Attendee	Accepted
	Dueker, Kenneth	Optional Attendee	Tentative

City of Palo Alto LHMP
Stakeholders
Updated: 2 March 2016 (N. Rainey)

Lastname	Firstname	Organization	Title/Rank	Sector
Altman	Eileen	First Congregational Church, UCC, Palo Alto	Associate Pastor	Community Resource
Andonian	Amy	Avenidas	President & CEO	Special Population
Baeta	Dan	Palintir	Director of Security	Business
Ball	Donna	Save the Bay	Habitat Restoration Director	Environmental
Barcomb	Linda	Stanford University	School of Medicine: Director EH&S	Education
Barry	Robert	Hewlett-Packard Company	Sr. Regional Security Manager - Western US	Business
Bartshire	Corinne	UASI	Resilience and Recovery Regional Project Manager	Special District
Baruch	Stephen	Independent Consultant		
Beecham	Bern	Palo Alto Emergency Services Volunteers	CERT	Community Resource
Bennett	Keith	Save Palo Alto Groundwater	Resident	Environmental
Bencala	Kenneth		Resident	Environmental
Bond	Brandon	Stanford Health Care (Hospital)	Admin. Director, Office of Emergency Management	Medical
Brechwald	Dana	Association of Bay Area Governments	Resilience Planner	Local Government
Cassel	Phyllis	League of Women Voters of Palo Alto (LWVPA)	2nd Vice President	Special Population
Chakos	Arrietta	Urban Resilience Strategies	President	
Charles	Stephanie	Silicon Valley Red Cross		
Clark-Ginsberg	Aaron	Stanford CISAC	Post-Doctoral Scholar	Community Resource
Dah	Phiip	LifeMoves (InnVision Shelter Network)	Local Program Director	Special Population
Dunbar	Tammy	Santa Clara County	OES Planner	Local Government
Dunnegan	Jim	Varian Medical Systems	EH&S Manager	Business

City of Palo Alto LHMP
Stakeholders
Updated: 2 March 2016 (N. Rainey)

Lastname	Firstname	Organization	Title/Rank	Sector
Edwards	Josh	Civil Air Patrol - Palo Alto (Sq10)	Captain	Community Resource
Ellis	Ron	Palo Alto Unified School District (PAUSD)	Manager of Maintenance, Operations and Transportation	Education
Emanuel	David	Vista Center for the Blind & Visually Impaired		Special Population
Engeldinger	David			Business
Estinos	Joeffrey	SAP	Director of Security	Business
Flamm	David	County of Santa Clara	OES Assistant Director	Local Government
Friedman	Laurie	Stanford University EH&S		Education
Glanckopf	Annette	Palo Alto Emergency Services Volunteers	Team Leader (TL)	Community Resource
Glotzer	Jerry	Palo Alto Medical Foundation PAMF	Director of Environmental Health Safety / Emergency Management	Medical
Gonzales	Candace	Palo Alto Housing Corporation	CEO	Special Population
Halliburton	Jyllian	Avenidas	Director, Volunteer Program	Special Population
Hibbs	Linda	Lytton Gardens (SNF)	Director	Special Population
Holgado	Ruben	Wilson Sonsini Goodrich & Rosati	Security Manager	Business
Hudson	Sharon	Vista Center for the Blind & Visually Impaired	Associate Director	Special Population
Ives	Bruce	LifeMoves (InnVision Shelter Network)	CEO	Special Population
Jacques	Dale	Santa Clara Valley Water District	Emergency Manager	Special District
Jones	Ron	VA Hospital - Palo Alto	Chief of Police	Medical
Jung	Matt	VA Hospital - Palo Alto	GEMS Industiral Hygienist	Medical
Kalkhorst	Josh	Stanford Shopping Center (Simon Properties)	Mall Director	Business
Kissinger	Carmen	Stanford Ronald McDonald House	Director	Medical

City of Palo Alto LHMP
Stakeholders
Updated: 2 March 2016 (N. Rainey)

Lastname	Firstname	Organization	Title/Rank	Sector
Kleinberg	Judy	Palo Alto Chamber of Commerce	Chief Executive Officer (CEO)	Business
Kou	Lydia	Palo Alto resident		
Lam	Elizabeth	City of East Palo Alto	CSO, Police Dept.	Local Government
Law	Pamela	Palo Alto Opportunity Center	Property Manager	Special Population
Lougee	Lance	SLAC National Acclerator Laboratory	Emergency Manager	Education
Lynch	Denis J.	Hewlett-Packard Company		
Martineau	Catherine	Canopy	Executive Director	Environmental
Materman	Len	San Francisquito Creek Joint Powers Authority (SFC JPA)	Director	Special District
Matsumoto	Mel	Channing House (SNF)	Director	Special Population
Matzke	Karl	American Red Cross, Silicon Valley Chapter	Mass Care Administrator	Community Resource
Meiss	Bill	Hewlett-Packard Company	Regional Security Manager	Business
Micetich	Doug	Silicon Valley Independent Living Center		Special Population
Moro	Craig	Varian Medical Systems	Security Manager	Business
Nadim	Mark	Fire Safe Council (FSC)	Midpeninsula Manager	Community Resource
Nigenda	Esther	Palo Alto Emergency Services Volunteers	Volunteer	Community Resource
Norris	Jeff	San Mateo County Sheriff's Office	OES	Local Government
Ohtaki	Peter	California Resiliency Alliance	Director	Business
Perez	Adolfo	Webster House	Director of Facilities	Special Population
Perry	Tim	Space Systems Loral	Director of Security	Business
Perry	Keith	Stanford University	Emergency Manager	Education

City of Palo Alto LHMP
Stakeholders
Updated: 2 March 2016 (N. Rainey)

Lastname	Firstname	Organization	Title/Rank	Sector
Quan	Kelvin	MayView Community Health Center	CEO	Special Population
Ray	Darrell	Santa Clara County Office of Emergency Services	Planner	Local Government
Reed	Dana	Santa Clara County	OES Director	Local Government
Rice	Jayson	Stanford Shopping Center (Simon Properties)	Security Director	Business
Rice	Caroll			Environmental
Richardson	Eileen	Downtown Streets Team/ Peninsula HealthCare Connections	CEO	Special Population
Richardson	Chris	Downtown Streets Team/ Peninsula HealthCare Connections	Assistant Director	Special Population
Schubek	Alex	Santa Clara County Department of Public Health	Emergency Manager	Local Government
Schultz	Deane	Hewlett-Packard Company		Business
Sheffield	John	Avenidas	Facility Manager	Special Population
Stern	Adam	Acterra	Executive Director	Environmental
Stoeffl	Monika	California Resiliency Alliance	Executive Director (int.)	Business
Storm	Kevin	VA Hospital - Palo Alto	Emergency Manager	Medical
Talavera	Victor	Xerox Palo Alto Research Center (PARC) (Stanford Industrial Park)	Safety	Business
Turchett	Giselle	Page Mill Pastures		Animal
Van Buskirk	Lisa	Peninsula Human Society		Animal
Weidanz	Charlie	Abilities United	Executive Director	Special Population
Wilson	Laura	Stanford University	Police Chief / Director, Dept. of Public Safety	Education
Wu	Shannon	MayView Community Health Center	Executive Assistant	Special Population
Young	Kate	Palo Alto Housing Corporation	Resident Services Manager	Special Population
Zollicoffer	Ryan	Menlo Park Fire Protection District	Emergency Manager	Local Government
Charles	Stephanie	American Red Cross, Silicon Valley Chapter		Community Resource

Office of Emergency Services

LHMAP Internal Planning Meeting #2 31 March 2016

Agenda

- Introduction
- Community Preparedness Survey
- Status of Comprehensive Plan: Natural Environment and Safety Elements
- Hazard and Risk Assessment Results
  - Review Hazards
  - Review Critical Infrastructure Exposure Analysis
  - Quantify Results
- Outreach Strategy / Project Plan Update

LHMAP Roadmap

Public Workshops:

- May (Risk Exposure): May Fete
- July (Goals and Strategies): Chili Cookoff / Online Survey
- September: Special Session

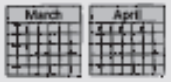
CITY OF PALO ALTO

Hazard Mitigation & Climate Adaptation Planning: Meeting Roadmap

Meeting & Milepost Markers

- *Local Planning Team Meeting*
- *Regional Workshop*
- *Local Public Workshop*
- *Procedural Action*
- *Element of the LHMP*

Establish a Team & Project Management



Getting Started – Pre-meeting organization
- ☐ Find and review old LHMP|CAP (if exists).
- ☐ Identify core team members.
- ☐ Reflect on past community engagement.

Workshop 1 – Community Engagement

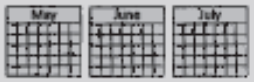
Outcome: Resources to create an effective community engagement strategy.

Kick-off meeting
- ☐ Review existing LHMP and identify areas that need to be updated.
- ☐ Identify potential points of planning coordination, such as general plan updates, or climate adaptation planning.
- ☐ Assign members to review existing plans and programs.
  - Organize findings into *Chapter 3 - Capability Assessment.*
- ☐ Develop community engagement strategy.
- ☐ Identify important groups not at the table.

Table of Contents of Sample Mitigation & Adaptation Plan

1. Introduction
2. Planning Process
3. Capability Assessment
4. Community Profile
5. Hazard Identification & Risk Assessment
6. Mitigation Strategies
7. Maintenance Procedure

Identify and Assess Hazards



Community Profile & Asset Inventory
- ☐ Assign members to obtain and organize local data.
  - Organize findings into *Chapter 4 - Community Profile.*

Workshop 2 – Hazard & Risk Assessment

Outcome: Introduced to content, tools, and data for a local risk assessment.

Risk Assessment Kick-off
- ☐ Determine hazards of local concern.
  - Organize findings into *Hazard Identification portion of Chapter 5.*
- ☐ Agree on an assessment methodology and assign tasks.
  - Organize findings into Risk Assessment portion of *Chapter 5.*

Risk Assessment Review
- ☐ Review local risk assessment.
- ☐ Summarize vulnerability.
- ☐ Prepare materials for public workshop.

Public Workshop - Introduction to LHMPs & Vulnerability Review

Outcome: Engage citizens and introduce the idea of hazard mitigation. Share the draft risk assessment and ask for feedback, and have them share with friends and neighbors.

Develop Hazard Mitigation & Adaptation Goals & Strategies

Workshop 3: Mitigation and Adaptation Strategy

Outcome: Obtain draft materials of mitigation and adaptation actions that respond to community goals. Gauge feasibility of actions.

Goal & Strategy Development Kick-off
- ☐ Identify mitigation and adaptation goals.
- ☐ Prepare materials for public workshop.

Public Workshop - Develop Mitigation Goals and List of Strategies

Outcome: Public helps develop goals and list of mitigation/adaptation strategies. The workshop should provide actionable feedback.

Develop Mitigation Strategies
- ☐ Analyze public workshop results.
- ☐ Organize full list of possible goals and future mitigation/adaptation actions.
  - Organize findings into a preliminary draft of *Chapter 6 Mitigation Strategies.*

Public Workshop - Prioritizing Goals & Strategies

Outcome: Citizens are tasked with reviewing prioritization of strategies. The workshop should provide the planning team with actionable feedback.

Planning Team Meeting – Implementation & Prioritization
- ☐ Evaluate and prioritize actions.
- ☐ Develop action plan for implementation of strategies.
  - Organize and finalize *Chapter 6 Mitigation Strategies.*

Adoption & Implementation

Planning Team Meeting – Integration
- ☐ Incorporate into existing plans and procedures.

  Develop plan maintenance procedures and continued public involvement.
  - Document integration in Chapter 7 Maintenance Procedure.

Submit LHMP to CalOES for Review
- ☐ CalOES reviews and sends any changes back to jurisdiction.
- ☐ Jurisdiction makes the changes - CalOES forwards the LHMP to FEMA for review.

This review can take up to 3 months.

FEMA Approves Plan
- ☐ FEMA works directly with city if changes are needed.

Adopt LHMP at Council|Board
- ☐ An adoption resolution is taken to the jurisdictions governing council|board.

Submit adoption resolution to FEMA

Most Bay Area plans are set to expire on March 24, 2016.

CITY OF PALO ALTO

Hazard Analysis

- What hazards do we analyze?
- What type, location, what extents are the greatest threats? (Worksheet & Mapping)
- What assets do we analyze? How? (See current listing)
- How do these shape our Community Goals? (Next time)

Hazard Profile

- Worksheet – 10 mins

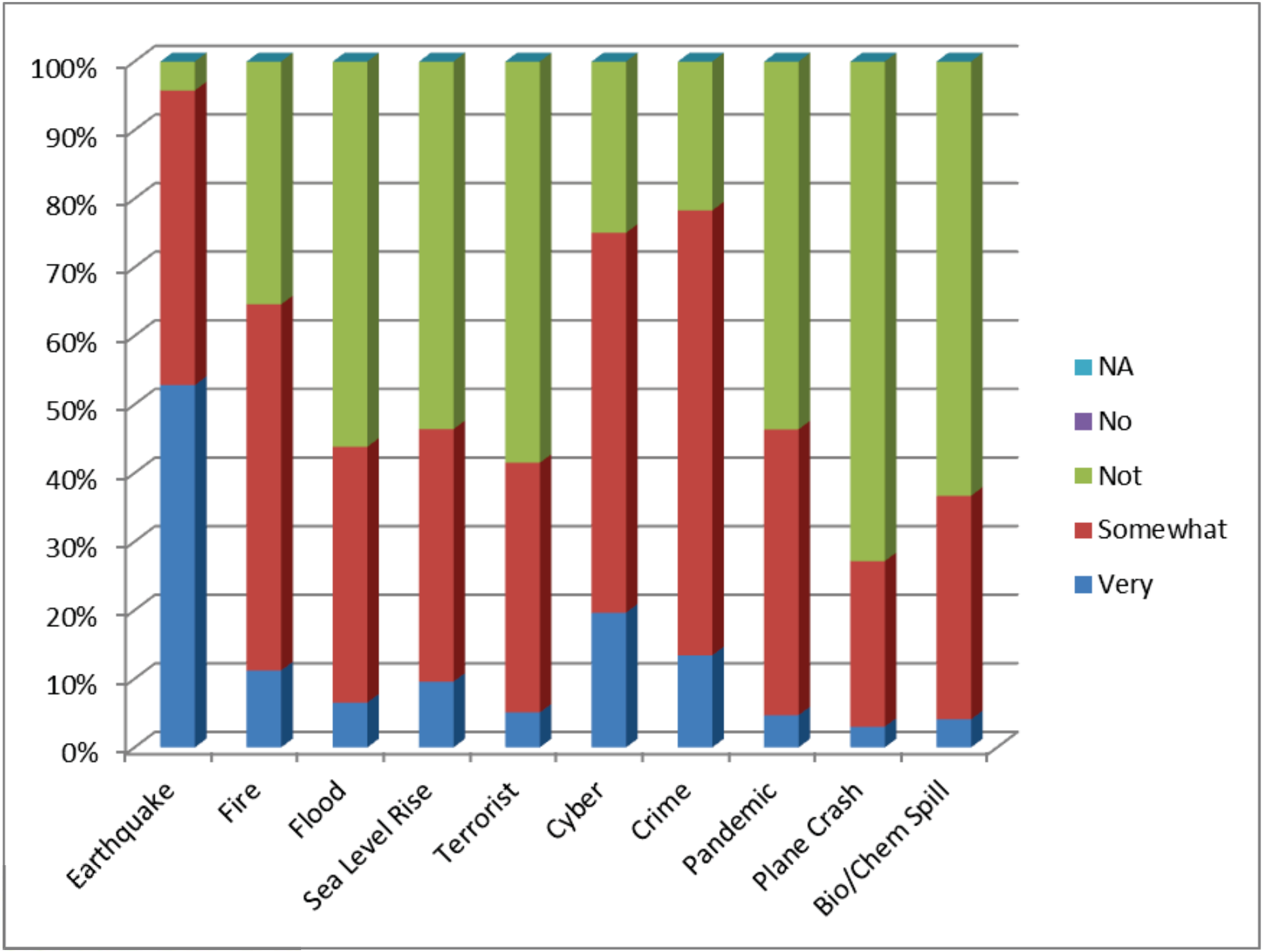
CITY OF PALO ALTO

Q13: How concerned are you about the following?

- Answered: 854 Skipped: 89

	Very Concerned	Somewhat concerned	Not concerned	No	N/A	Total Respondents
Earthquake	**52.87%** 451	**43.02%** 367	**4.22%** 36	**0.00%** 0	**0.00%** 0	853
Fire	**11.26%** 94	**53.65%** 448	**35.57%** 297	**0.00%** 0	**0.00%** 0	835
Flood	**6.54%** 54	**37.29%** 308	**56.17%** 464	**0.00%** 0	**0.00%** 0	826
Sea level rising	**9.69%** 80	**37.17%** 307	**54.12%** 447	**0.00%** 0	**0.00%** 0	826
Terrorist	**5.10%** 42	**36.45%** 300	**58.57%** 482	**0.00%** 0	**0.00%** 0	823
Cyber Attack	**19.79%** 166	**55.78%** 468	**25.15%** 211	**0.00%** 0	**0.00%** 0	839
Crime	**13.48%** 112	**65.10%** 541	**21.78%** 181	**0.00%** 0	**0.00%** 0	831
Pandemic	**4.72%** 39	**41.89%** 346	**53.87%** 445	**0.00%** 0	**0.00%** 0	826
Plane crash	**3.02%** 25	**24.15%** 200	**72.83%** 603	**0.00%** 0	**0.00%** 0	828
Bio-chemical spill	**4.13%** 34	**32.93%** 271	**63.91%** 526	**0.00%** 0	**0.00%** 0	823

Another View of the Same Data



Asset Classes:

- People (functional needs, vulnerable populations)
- Building stock (public, residential, commercial, soft story, multi-unit)
- Critical response facilities (PD, Fire Stations, MSC)
- Utilities infrastructure (E, W, G, W)
- Transportation infrastructure (Roads, Signals, Bridges)
- Communications infrastructure (Cell sites, radio sites, ISP)
- Recreation and open spaces (Parks, Preserves, Baylands, Tidal Basins)
- Hazardous Material sites / contaminated lands (Tier 2 locations)

Current CI/KR List

- **Critical Response Facilities**
- **Energy / Utilities**
- Transportation
- Communications
- Open Space
- Governmental (Includes Schools)
- Commercial
- Public Health / Healthcare
- Dams
- Defense Industrial Base
- Information Tech

129 Assets listed

- What else should be here?
- What can be made public?

CITY OF PALO ALTO

Exposure Analysis

- Mapping Critical Infrastructure against identified hazards: Simon Williams
  - Hazarding Mapping
  - High Hazard Sites

Hazards Summary Worksheet

Use this worksheet to summarize hazard description information and identify which hazards are most significant to the planning area. The definitions provided on the following page can be modified to meet local needs and methods.

Hazard	Location (Geographic Area Affected)	Maximum Probable Extent (Magnitude/Strength)	Probability of Future Events	Overall Significance Ranking
Avalanche				
Dam Failure				
Drought				
Earthquake				
Erosion				
Expansive Soils				
Extreme Cold				
Extreme Heat				
Flood				
Hail				
Hurricane				
Landslide				
Lightning				
Sea Level Rise				
Severe Wind				
Severe Winter Weather				
Storm Surge				
Subsidence				
Tornado				
Tsunami				
Wildfire				

OFFICE OF EMERGENCY SERVICES
CITY OF PALO ALTO
275 Forest Avenue
Palo Alto, CA 94301
650.617.3197

Local Hazard Mitigation and Adaptation Plan
Internal Planning Meeting #3: 26 April 2016

Meeting Date, Location, Time

Palo Alto Emergency Operations Center
A Level, 275 Forest Ave
Palo Alto, CA 94301

April 26, 2016
9am – 10:30pm

Meeting Objectives

- Identify mitigation and adaptation goals

Pre-Meeting Materials

- LHMAP Project Plan
- Meeting Agenda
- Meeting Slideshow
- Draft Plan

At-Meeting Materials

- Agenda
- Meeting Slideshow
- Hazard Assessment Problem Statements
- Mitigation Actions Handout

Meeting Participants

- See Attached Roster

Agenda

9:00 am	**Welcome – Introductions** • Nathan demonstrated the Public Site located at cityofpaloalto.org/lhmap. • Nathan also mentioned that during the previous mention a recommendation was made to use "Climate Adaptation" instead of simply "Adaptation" in the title. Phil Bobel mentioned that we can still be focused on adaptation from all hazards and not limit the descriptor to Climate Adaptation. As a result, we will keep the LHMAP title.	**Nathan Rainey**
9:05 am	**Review Mitigation Goals Framework** • Nathan walked the group through the FEMA framework to develop goals based on the 2013 Local Mitigation Planning Handbook. He compared the FEMA framework of Goals, Objectives, Actions to the Comprehensive Plan framework of Goals, Policies, Programs. • The main output of the Goals and strategies phase is to develop a list of mitigation actions that can be pursued to mitigate our known risks. Phil Bobel requested that Nathan make available the list of projects from the previous plan. • The City is already involved in a number of actions that will likely be included in this process; departmental representatives should review their list of near term planned actions that should be considered in the development of mitigation actions.	**All**

	• Phil Bobel also requested that the LHMAP planning process, as closely as possible, be aligned to the Floodplain Management Planning (FMP) process to be in compliance with the Community Rating System (CRS) Section 510 requirements. Generally, the LHMAP process we are implementing follows the 10 step process (see attachment).	
9:35 am	**Discuss Mitigation Goals and Strategies – List Draft Goals Developed** • Nathan offered examples of community goals from the current State and Association of Bay Area Governments LHMP, and then briefed three community goals for the planning team to consider. • David Ramberg asked how many goals we should include in our planning. Nathan Rainey mentioned that 2-5 goals is a manageable list. • The planning team discussed the three draft goals and recommended three goals as possible LHMAP Goals: 1. Protect Life and Property from Natural Hazards, such as Earthquake, Landslide, Flooding, and Fire. (Direct link to the Comprehensive Plan). 2. Promote hazard mitigation as a guiding principal in City of Palo Alto planning frameworks, i.e. Comprehensive Plan, Sustainability/Climate Action Plan, Energy Assurance/Resiliency Plan. 3. Inform and Engage the public on our mitigation and preparation to Palo Alto hazards. These goals will be discussed in Stakeholder Meeting #2.	**All**
10:05 am	**Review Results of Hazard Exposure – Discuss Problem Statements** • Simon Williams displayed the Hazard Mapping products we have prepared to date, to demonstrate the hazard impacts to Palo Alto. The group discussed and developed high level problem statements for each of the Hazards currently with a Hazard map. Nathan will revise these problem statements for inclusion in Chapter 5.	**All**
10:25 am	**Review Status of LHMCAP, Chapters 3-5** • We did not have time to review these chapters. Nathan has the current draft planning document loaded on the sharepoint site and has asked representatives to start looking at the plan. Nathan will be directing planning team members review certain portions of the plan that pertain to them.	**Nathan Rainey**
10:25 am	**Review Stakeholder Meeting Plan for 27 April 2016.**	**Nathan Rainey**

	• We did not have time to review this in any detail, but Nathan quickly mentioned that the focus of the meeting would follow what the internal planning team accomplished at our second meeting – hazard analysis. • Generally, the stakeholder workshops will follow one meeting behind the Internal Planning Team meetings.	
10:30 am	**Next steps** • Prepare for Public / Stakeholder Meeting • Update LHMAP Planning Draft Chapters 3-5 between now and 25 May 2016.	**Nathan Rainey**

Action Items

Item	Task	Suspense	Assigned To
1	Publish Minutes / Publish documents on the OES Microsoft Sharepoint Drive and Public Website	28 April 2016	Nathan Rainey
2	Nathan will update draft Goals and republish for IPT members	28 April 2016	Nathan Rainey
3	Nathan will revise these problem statements for inclusion in Chapter 5	6 May 2016	Nathan Rainey
4	Nathan make available the list of projects from the previous LHMAP plans	6 May 2016	
5	Review and Update Chapter 5: Hazard Identification, Analysis, and Risk Assessment	14 May 2016	Nathan Rainey / Simon Williams
6	Update Chapter 3: Capability Assessment with Internal Planning Team feedback / participation	24 May 2016	All Team Members – Nathan will provide specific instructions to team members
7	Update Chapter 4: Community Profile	24 May 2016	Nathan Rainey, with specific input from certain planning team members
8	Departmental representatives should review their list of near term planned actions that should be considered in the development of mitigation actions.		

Enclosures

1. Attendance Roster
2. Meeting Slideshow
3. CRS Section 510 Checklist

LHMAP Sharepoint

Site: https://paloalto365.sharepoint.com/sites/CityCenter/publicsafety/oes/Local%20Hazard%20Mitigation%20Plan/Forms/AllItems.aspx

LHMAP Public Site: www.cityofpaloalto.org/lhmap

City of Palo Alto Local Hazard Mitigation and Climate Adaptation
Internal Plannning Team Meeting: 26 April 2016

Initial	Name	Attendance	Response
	Rainey, Nathaniel	Meeting Organizer	None
	Peterson, Lon	Required Attendee	Accepted
	Fehrenbach, Thomas	Required Attendee	None
	Friend, Gil	Required Attendee	None
	Macartney, Cody	Required Attendee	Accepted
	Ramberg, David	Required Attendee	Accepted
	Hoyt, George	Required Attendee	Declined
	Yarbrough, Shane	Required Attendee	Tentative
	Roderick, Kim	Required Attendee	Tentative
	Frost, Jasmine	Required Attendee	Accepted
	Blanch, Sandra	Required Attendee	Declined
	Cullen, Charles	Required Attendee	Accepted
	Bobel, Phil	Required Attendee	Accepted
	Swanson, Andrew	Required Attendee	None
	Batchelor, Dean	Required Attendee	Accepted
	Williams, Simon	Required Attendee	Accepted
	Howard, Adam	Required Attendee	Accepted
	Anderson, Daren	Required Attendee	Accepted
	Garcia, RuthAnn	Required Attendee	None
	Lee, Elena	Required Attendee	None
	Dueker, Kenneth	Required Attendee	Accepted

Office of Emergency Services

LHMAP Internal Planning Meeting #3
26 April 2016

Agenda

- Introduction
- Review Mitigation Goals Framework
- Discuss Mitigation Goals and Strategies – List Draft Goals Developed
- Review Results of Hazard Exposure – Discuss Problem Statements
- Review Status of LHMCAP, Chapters 3-5
- Review Stakeholder Meeting Plan for 27 April 2016

LHMAP Roadmap

Public Workshops:

- May (Risk Exposure): May Fete
- July (Goals and Strategies): Chili Cookoff / Online Survey
- September: Special Session

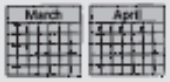
CITY OF PALO ALTO

Hazard Mitigation & Climate Adaptation Planning: Meeting Roadmap

Meeting & Milepost Markers

- *Local Planning Team Meeting*
- *Regional Workshop*
- *Local Public Workshop*
- *Procedural Action*
- *Element of the LHMP*

Establish a Team & Project Management



Getting Started – Pre-meeting organization
- Find and review old LHMP|CAP (if exists).
- Identify core team members.
- Reflect on past community engagement.

Workshop 1 – Community Engagement

Outcome: Resources to create an effective community engagement strategy.

Kick-off meeting — IPT 1
- Review existing LHMP and identify areas that need to be updated.
- Identify potential points of planning coordination, such as general plan updates, or climate adaptation planning.
- Assign members to review existing plans and programs.
  - Organize findings into *Chapter 3 - Capability Assessment.*
- Develop community engagement strategy.
- Identify important groups not at the table.

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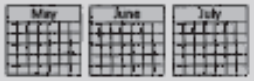
Identify and Assess Hazards



Community Profile & Asset Inventory
- Assign members to obtain and organize local data.
  - Organize findings into *Chapter 4 - Community Profile.*

Workshop 2 – Hazard & Risk Assessment

Outcome: Introduced to content, tools, and data for a local risk assessment.

Risk Assessment Kick-off — IPT 2
- Determine hazards of local concern.
  - Organize findings into *Hazard Identification portion of Chapter 5.*
- Agree on an assessment methodology and assign tasks.
  - Organize findings into Risk Assessment portion of *Chapter 5.*

Risk Assessment Review
- Review local risk assessment.
- Summarize vulnerability.
- Prepare materials for public workshop.

Public Workshop - Introduction to LHMPs & Vulnerability Review

Outcome: Engage citizens and introduce the idea of hazard mitigation. Share the draft risk assessment and ask for feedback, and have them share with friends and neighbors.

SHM 1

Develop Hazard Mitigation & Adaptation Goals & Strategies

Workshop 3: Mitigation and Adaptation Strategy

Outcome: Obtain draft materials of mitigation and adaptation actions that respond to community goals. Gauge feasibility of actions.

Goal & Strategy Development Kick-off — IPT 3
- Identify mitigation and adaptation goals.
- Prepare materials for public workshop.

Public Workshop - Develop Mitigation Goals and List of Strategies

Outcome: Public helps develop goals and list of mitigation/adaptation strategies. The workshop should provide actionable feedback.

SHM 2

Develop Mitigation Strategies — IPT 4
- Analyze public workshop results.
- Organize full list of possible goals and future mitigation/adaptation actions.
  - Organize findings into a preliminary draft of *Chapter 6 Mitigation Strategies.*

Public Workshop - Prioritizing Goals & Strategies

Outcome: Citizens are tasked with reviewing prioritization of strategies. The workshop should provide the planning team with actionable feedback.

SHM 3

Planning Team Meeting – Implementation & Prioritization
- Evaluate and prioritize actions.
- Develop action plan for implementation of strategies.
  - Organize and finalize *Chapter 6 Mitigation Strategies.*

IPT 5

Adoption & Implementation

Planning Team Meeting – Integration
- Incorporate into existing plans and procedures.

  Develop plan maintenance procedures and continued public involvement.
  - Document integration in Chapter 7 Maintenance Procedure.

Submit LHMP to CalOES for Review
- CalOES reviews and sends any changes back to jurisdiction.
- Jurisdiction makes the changes - CalOES forwards the LHMP to FEMA for review.

This review can take up to 3 months.

FEMA Approves Plan
- FEMA works directly with city if changes are needed.

Adopt LHMP at Council|Board
- An adoption resolution is taken to the jurisdictions governing council|board.

Submit adoption resolution to FEMA

Most Bay Area plans are set to expire on March 24, 2016.

CITY OF PALO ALTO

IPT: Internal Planning Team Meeting
SHM: Stakeholder Meeting

Mitigation Goals

- **Mitigation goals** are general guidelines that explain what the community wants to achieve with the plan. They are usually broad policy-type statements that are long-term, and they represent visions for reducing or avoiding losses from the identified hazards
- **Mitigation actions** are specific projects and activities that help achieve the goals.
- Although not required, some choose to develop objectives to help define or organize mitigation actions.

CITY OF PALO ALTO

Mitigation Actions

- FEMA suggests four categories for Mitigation Actions
  - Local Plans and Regulations
  - Structure and Infrastructure Projects
  - Natural Systems Protection
  - Education and Awareness Programs
- Review problem statements from hazards summary for potential actions.

Community Goals

- ID Community Goals to help frame and guide the assessment
  - What are the overarching goals we believe this plan should address
  - Make decisions about prioritizing strategies
  - Get stakeholders and the public on board
- Can be in relation to asset classes:
  - People
  - Building stock
  - Critical infrastructure
  - Utilities infrastructure
  - Transportation infrastructure
  - Communications infrastructure
  - Recreation and open spaces
  - Hazardous Material sites / contaminated lands
- Do themes develop?

CITY OF PALO ALTO

2013 State HMP Goals

- Significantly reduce life loss and injuries
- Minimize damage to structures and property, as well as minimizing interruption of essential services and activities
- Protect the environment
- Promote hazard mitigation as an integrated public policy and as a standard business practice

2011 ABAG HMP Goal

- To maintain and enhance a disaster-resistant region by reducing the potential loss of life, property damage, and environmental degradation from natural disasters, while accelerating economic recovery from those disasters.

Draft Overarching Goals

- Protect Life and Property from Natural Hazards, including Earthquake, Landslide, Flooding, and Fire. (From Comp Plan Goal N:10)
- Prepare for Climate Adaptation (From the S/CAP)
- Promote hazard mitigation as an integrated public policy and as a standard business practice (From State HMP)
  - Integrate mitigation planning with other related *comprehensive or strategic* planning efforts; for example, Comprehensive Plan, S/CAP, THIRA, Energy Resilience.

Hazard Problem Statements

- Sea Level Rise (From Draft S/CAP p. 8)

"Palo Alto recognizes that some of the City's critical utility infrastructure, including the Regional Water Quality Control Plant and the Utility Control Center, is located in a flood basin or in close proximity to the low-lying shoreline where risk of damage or disruption from sea level rise is significant."

Sea Level Rise (Climate Risks) Policies and Programs

S/CAP P.69

- **Promote and participate in cooperative planning with other public agencies** and regional and adjacent jurisdictions, especially regarding issues related to climate change, such as water supply, sea level rise, fire protection services, emergency medical services, and emergency response planning.
- **Develop new requirements for shoreline development** to ensure that new development is designed and located to provide protection from potential impacts of flooding resulting from sea level rise and significant flood events. Requirements may include: new setbacks to ensure to structures are set back far enough inland that they will not be endangered by erosion; limits on subdivisions and lot line adjustments in areas vulnerable to sea level rise to avoid the creation of new shoreline lots; incentive or transfer of development rights (TDR) programs to relocate existing development away from high risk areas; and/or triggers for relocation or removal of existing structures based on changing site conditions and other factors.
- **Continue to build resilience into City planning and capital projects**, especially near the San Francisco Bay shoreline. With the Municipal Service Center (MSC) located in a potential future inundation zone, emergency response capabilities may be affected and further analysis is needed to determine the best approach to protect the emergency response capabilities and other services that the MSC provides.
- **Pursue "green infrastructure"** as required by the Regional Water Quality Control Board and as warranted by staff analysis; include supporting policies in the Comp Plan Update aimed at increasing storm water infiltration.
- **Evaluate and strengthen SLR and flooding concerns** in planning, zoning, permitting and insurance requirements

Hazard Problem Statements

- Sea Level Rise (From Draft S/CAP p. 8)

"Palo Alto recognizes that some of the City's critical utility infrastructure, including the Regional Water Quality Control Plant and the Utility Control Center, is located in a flood basin or in close proximity to the low-lying shoreline where risk of damage or disruption from sea level rise is significant."

510 FLOODPLAIN MANAGEMENT PLANNING—Summary

Maximum credit: 622 points

512 Elements

a. **Floodplain management planning (FMP)**: 382 points for a community-wide floodplain management plan that follows a 10-step planning process:

   Step 1. Organize
   Step 2. Involve the public
   Step 3. Coordinate
   Step 4. Assess the hazard
   Step 5. Assess the problem
   Step 6. Set goals
   Step 7. Review possible activities
   Step 8. Draft an action plan
   Step 9. Adopt the plan
   Step 10. Implement, evaluate, revise.

b. **Repetitive loss area analysis (RLAA)**: 140 points for a detailed mitigation plan for a repetitive loss area.

c. **Natural floodplain functions plan (NFP)**: 100 points for adopting plans that protect one or more natural functions within the community's floodplain.

Credit Criteria

Each element has a separate section discussing credit criteria.

Impact Adjustment

The impact adjustments for FMP and RLAA are described in separate sections. There is no impact adjustment for NFP.

Documentation Provided by the Community

Each element has a separate section describing needed documentation.

OFFICE OF EMERGENCY SERVICES
CITY OF PALO ALTO
275 Forest Avenue
Palo Alto, CA 94301
650.617.3197

Local Hazard Mitigation and Adaptation Plan
Internal Planning Meeting #4: 26 July 2016

Meeting Date, Location, Time

Palo Alto Emergency Operations Center
A Level, 275 Forest Ave
Palo Alto, CA 94301

July 26, 2016
9:00am – 10:30am

Meeting Objectives

- Update planning team on County Multi-Jurisdictional Process (10 mins)
- Analyze public workshop results (15 minutes)
- Organize full list of possible future mitigation / adaptation strategies (45 mins)

Pre-Meeting Materials

- 2005 LHMP Project Listing
- Agenda

At-Meeting Materials

- Agenda
- 2005 LHMP Project Listing
- City of Belmont Draft LHMP Annex
- 2017 Draft Action Plan Spreadsheet

Meeting Participants

- See attached roster

Agenda

9:00 am	**Welcome – Introductions**	**Nathan Rainey**
9:05 am	**Review SCC Project Roadmap** Nathan described the Santa Clara County Multi-Jurisdictional planning process with their Consultant Tetra-Tech. Tetra-Tech planners lead the San Mateo county planning process (now complete), as well as a great number of other LHMPs; and they have an excellent track record with FEMA plan reviews. Palo Alto will be joining this planning process to be synchronized with the other jurisdictions from the County. Since we began our planning process in February, the County planning team will take two months to catch up to where we are. The planning and documentation OES has created to this point has been shared with the Tetra-Tech planners to incorporate into their jurisdictional templates. The County plan will have two volumes: the first volume will include the common information across the county where the second volume will contain an Annex for each Jurisdiction. This is the information we will be providing. An example is the City of Belmont plan handed out during the meeting. The Tetra-Tech timeline anticipates the planning process to conclude in December, with a 45-60 plan review timeframe for CalOES and FEMA.	**Nathan Rainey**
9:15 am	**Review Results of Community Outreach** Nathan presented the results from two outreach efforts from the Great Race to Save Water and May Fete Parade. We asked participants to choose the 3 most significant hazards facing Palo Alto. The results are posted in the supporting slideshow. The feedback was	**Nathan Rainey**

	very similar to that of the planning teams analysis of highest natural hazard risk. We now have a good hazard assessment on which to base mitigation action planning projects.	
9:30 am	**Discuss Mitigation Action Planning Projects** Nathan led an open discussion on the types of projects to consider to mitigate our highest natural hazards. Planning team members provided project ideas which Nathan captured in an action plan spreadsheet. Nathan will update this spreadsheet and then send to the internal planning team members for further consideration. This will also be the basis for the External Stakeholder Meeting next week.	**All**
10:15 am	**Wrap up / Conclude Meeting**	**Nathan Rainey**
	Next steps • Prepare for Public / Stakeholder Meeting • Participate in County meetings • Finalize initial Palo Alto input for local chapter • Department reps to review mitigation actions with internal staff members	

Action Items

Item	Task	Suspense	Assigned To	Status
1	Nathan will update draft Goals and republish for IPT members	28 April 2016	Nathan Rainey	Now a part of the County Plan
2	Nathan will revise these problem statements for inclusion in Chapter 5	6 May 2016	Nathan Rainey	Now a part of the County Plan
3	Nathan make available the list of projects from the previous LHMAP plans	6 May 2016		Complete
4	Review and Update Chapter 5: Hazard Identification, Analysis, and Risk Assessment	14 May 2016	Nathan Rainey / Simon Williams	Now a part of the County Plan
5	Update Chapter 3: Capability Assessment with Internal Planning Team feedback / participation	24 May 2016	All Team Members – Nathan will provide specific instructions to team members	Complete
6	Update Chapter 4: Community Profile	24 May 2016	Nathan Rainey, with specific input from certain planning team members	Complete
7	Departmental planners to review their list of near term planned actions for inclusion in the development of mitigation actions.			

Enclosures

1. Attendance Roster
2. Meeting Slideshow
3. 2017 Draft Action Plan Spreadsheet

- Documents can be found on OES Sharepoint: LHMAP
- Project documentation can be found on OES Internet: www.cityofpaloalto.org/lhmap.

Next Meeting: 30 August 2016

Office of Emergency Services

LHMAP Internal Planning Meeting #4 26 July 2016

CITY OF PALO ALTO

http://www.cityofpaloalto.org/publicsafety

Agenda

- Introduction
- Review Mitigation Goals Framework
- Discuss Mitigation Goals and Strategies – List Draft Goals Developed
- Review Results of Hazard Exposure – Discuss Problem Statements
- Review Status of LHMCAP, Chapters 3-5
- Review Stakeholder Meeting Plan for 27 April 2016

LHMAP Roadmap

Public Workshops:

- May (Risk Exposure): May Fete
- July (Goals and Strategies): Chili Cookoff / Online Survey
- September: Special Session

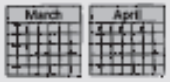
CITY OF PALO ALTO

Hazard Mitigation & Climate Adaptation Planning: Meeting Roadmap

Meeting & Milepost Markers

- *Local Planning Team Meeting*
- *Regional Workshop*
- *Local Public Workshop*
- *Procedural Action*
- *Element of the LHMP*

Establish a Team & Project Management



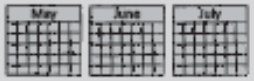
Getting Started – Pre-meeting organization
- Find and review old LHMP|CAP (if exists).
- Identify core team members.
- Reflect on past community engagement.

Workshop 1 – Community Engagement
Outcome: Resources to create an effective community engagement strategy.

Kick-off meeting — IPT 1
- Review existing LHMP and identify areas that need to be updated.
- Identify potential points of planning coordination, such as general plan updates, or climate adaptation planning.
- Assign members to review existing plans and programs.
  - Organize findings into *Chapter 3 - Capability Assessment.*
- Develop community engagement strategy.
- Identify important groups not at the table.

Table of Contents of Sample Mitigation & Adaptation Plan
1. Introduction
2. Planning Process
3. Capability Assessment
4. Community Profile
5. Hazard Identification & Risk Assessment
6. Mitigation Strategies
7. Maintenance Procedure

Identify and Assess Hazards



Community Profile & Asset Inventory
- Assign members to obtain and organize local data.
  - Organize findings into *Chapter 4 - Community Profile.*

Workshop 2 – Hazard & Risk Assessment
Outcome: Introduced to content, tools, and data for a local risk assessment.

Risk Assessment Kick-off — IPT 2
- Determine hazards of local concern.
  - Organize findings into *Hazard Identification portion of Chapter 5.*
- Agree on an assessment methodology and assign tasks.
  - Organize findings into Risk Assessment portion of *Chapter 5.*

Risk Assessment Review
- Review local risk assessment.
- Summarize vulnerability.
- Prepare materials for public workshop.

Public Workshop - Introduction to LHMPs & Vulnerability Review — SHM 1
Outcome: Engage citizens and introduce the idea of hazard mitigation. Share the draft risk assessment and ask for feedback, and have them share with friends and neighbors.

Develop Hazard Mitigation & Adaptation Goals & Strategies

Workshop 3: Mitigation and Adaptation Strategy
Outcome: Obtain draft materials of mitigation and adaptation actions that respond to community goals. Gauge feasibility of actions.

Goal & Strategy Development Kick-off — IPT 3
- Identify mitigation and adaptation goals.
- Prepare materials for public workshop.

Public Workshop - Develop Mitigation Goals and List of Strategies — SHM 2
Outcome: Public helps develop goals and list of mitigation/adaptation strategies. The workshop should provide actionable feedback.

Develop Mitigation Strategies — IPT 4
- Analyze public workshop results.
- Organize full list of possible goals and future mitigation/adaptation actions.
  - Organize findings into a preliminary draft of *Chapter 6 Mitigation Strategies.*

Public Workshop - Prioritizing Goals & Strategies — SHM 3
Outcome: Citizens are tasked with reviewing prioritization of strategies. The workshop should provide the planning team with actionable feedback.

Planning Team Meeting – Implementation & Prioritization — IPT 5
- Evaluate and prioritize actions.
- Develop action plan for implementation of strategies.
  - Organize and finalize *Chapter 6 Mitigation Strategies.*

Adoption & Implementation

Planning Team Meeting – Integration
- Incorporate into existing plans and procedures.
  Develop plan maintenance procedures and continued public involvement.
  - Document integration in Chapter 7 Maintenance Procedure.

Submit LHMP to CalOES for Review
- CalOES reviews and sends any changes back to jurisdiction.
- Jurisdiction makes the changes - CalOES forwards the LHMP to FEMA for review.

This review can take up to 3 months.

FEMA Approves Plan
- FEMA works directly with city if changes are needed.

Adopt LHMP at Council|Board
- An adoption resolution is taken to the jurisdictions governing council|board.

Submit adoption resolution to FEMA

Most Bay Area plans are set to expire on March 24, 2016.

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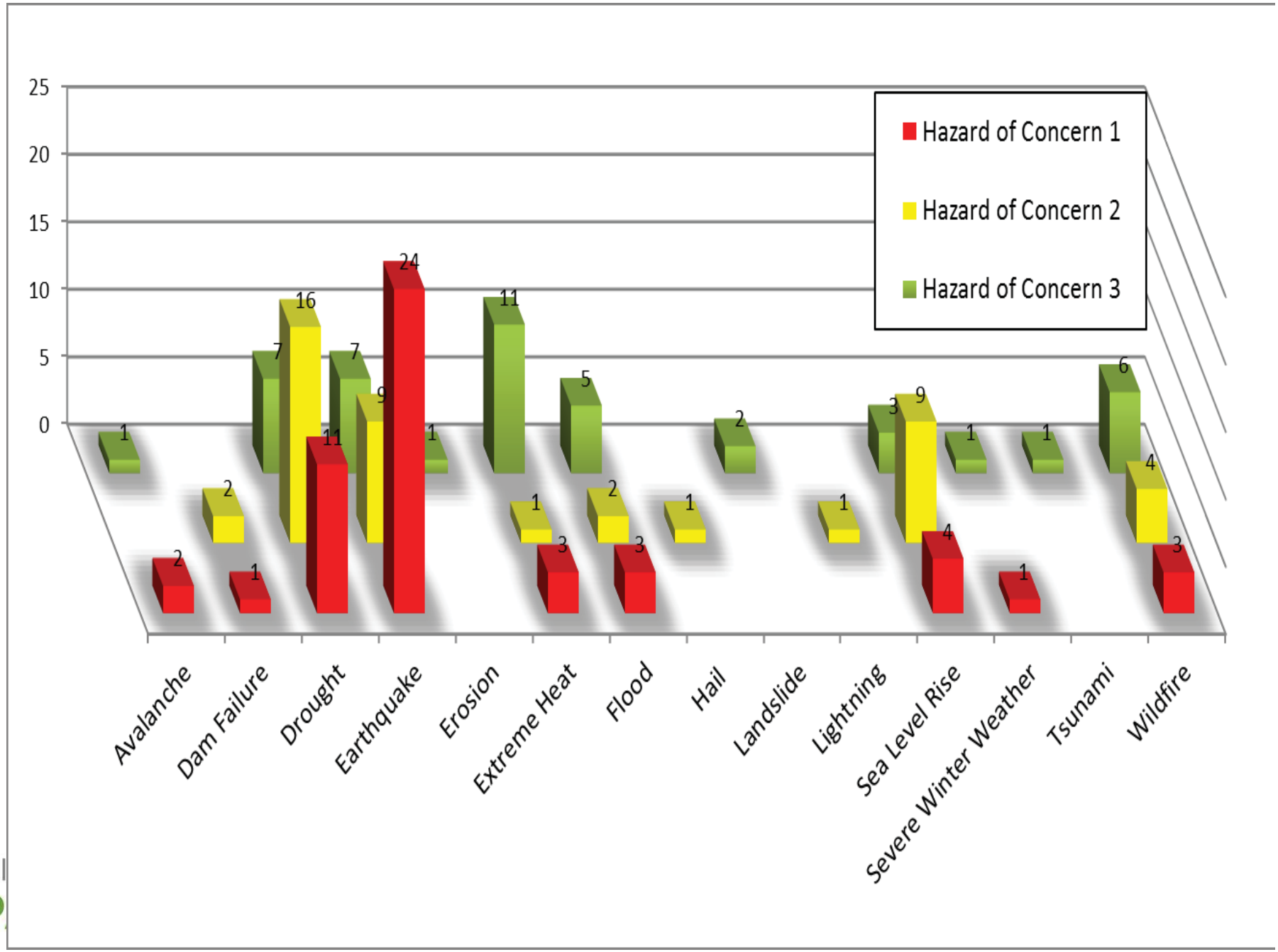
IPT: Internal Planning Team Meeting
SHM: Stakeholder Meeting

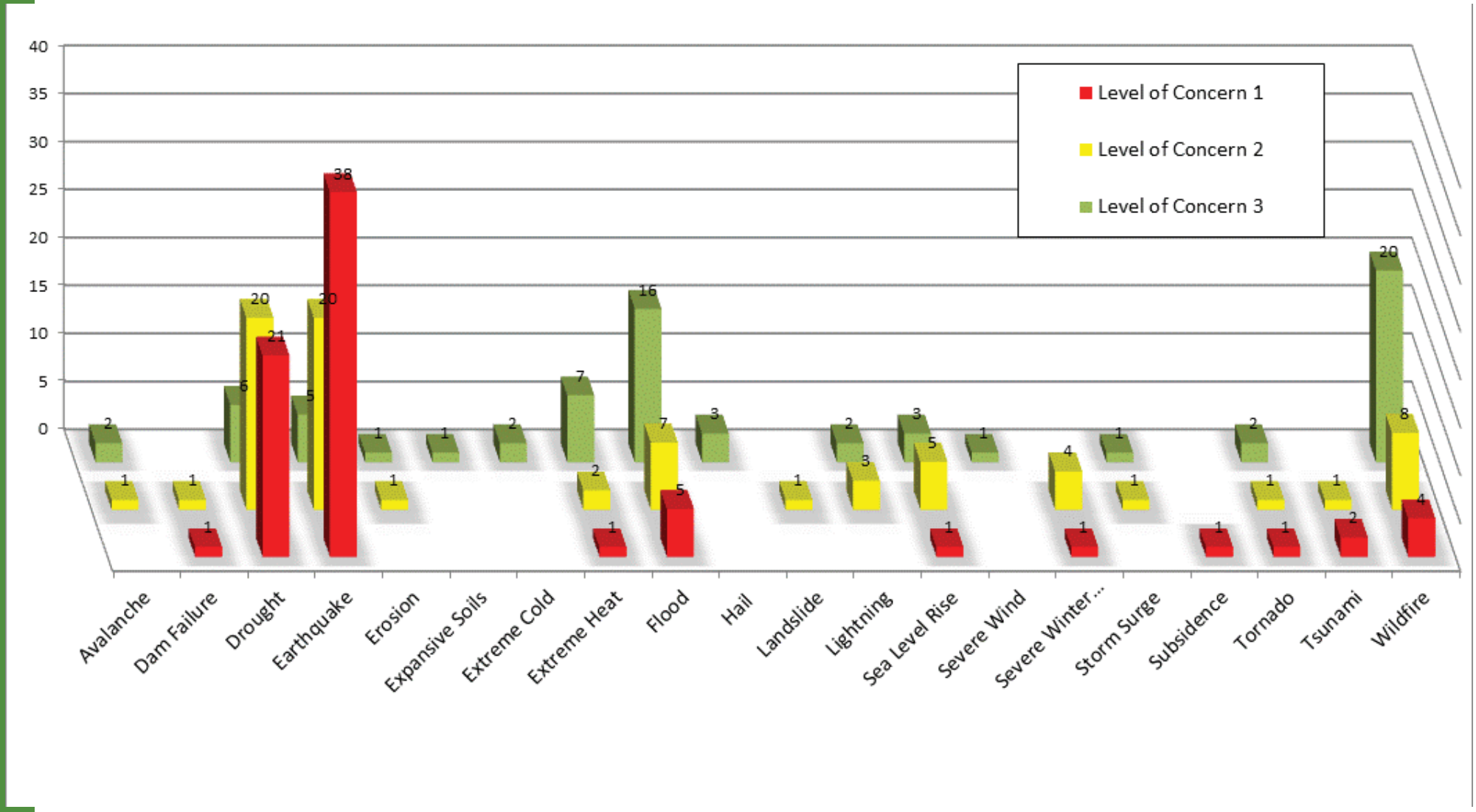
Public Outreach: Hazards Assessment

Great Race for Saving Water



Public Outreach: Hazards Assessment

May Fete Parade



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Top Natural Hazards

- Earthquake
- Flood
- Sea-Level Rise
- Wildfire
- Drought
- Extreme Heat

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Mitigation Actions

- FEMA suggests four categories for Mitigation Actions
  - Local Plans and Regulations
  - Structure and Infrastructure Projects
  - Natural Systems Protection
  - Education and Awareness Programs
- Review problem statements from hazards summary for potential actions.

Sea Level Rise (Climate Risks) Policies and Programs

S/CAP P.69

- **Promote and participate in cooperative planning with other public agencies** and regional and adjacent jurisdictions, especially regarding issues related to climate change, such as water supply, sea level rise, fire protection services, emergency medical services, and emergency response planning.
- **Develop new requirements for shoreline development** to ensure that new development is designed and located to provide protection from potential impacts of flooding resulting from sea level rise and significant flood events. Requirements may include: new setbacks to ensure to structures are set back far enough inland that they will not be endangered by erosion; limits on subdivisions and lot line adjustments in areas vulnerable to sea level rise to avoid the creation of new shoreline lots; incentive or transfer of development rights (TDR) programs to relocate existing development away from high risk areas; and/or triggers for relocation or removal of existing structures based on changing site conditions and other factors.
- **Continue to build resilience into City planning and capital projects**, especially near the San Francisco Bay shoreline. With the Municipal Service Center (MSC) located in a potential future inundation zone, emergency response capabilities may be affected and further analysis is needed to determine the best approach to protect the emergency response capabilities and other services that the MSC provides.
- **Pursue "green infrastructure"** as required by the Regional Water Quality Control Board and as warranted by staff analysis; include supporting policies in the Comp Plan Update aimed at increasing storm water infiltration.
- **Evaluate and strengthen SLR and flooding concerns** in planning, zoning, permitting and insurance requirements

Next Steps

- Brain Storm mitigation actions (now)
- Seek additional input from your departments
- Send updates to Nathan
- OES will attend Santa Clara County planning meetings and provide feedback / additional planning tasks

Palo Alto OES:
LHMAP Internal Planning
Meeting #4

26 July 2016

Iniitals	Name	Attendance	Response
NR	Rainey, Nathaniel	Meeting Organizer	None
	Peterson, Lon	Required Attendee	Accepted
	Fehrenbach, Thomas	Required Attendee	None
	Friend, Gil	Required Attendee	Tentative
CM	Macartney, Cody	Required Attendee	Accepted
	Ramberg, David	Required Attendee	Accepted
	Hoyt, George	Required Attendee	Tentative
	Yarbrough, Shane	Required Attendee	Tentative
	Roderick, Kim	Required Attendee	Tentative
	Frost, Jasmine	Required Attendee	Accepted
	Blanch, Sandra	Required Attendee	None
	Cullen, Charles	Required Attendee	Accepted
	Bobel, Phil	Required Attendee	Accepted
	Swanson, Andrew	Required Attendee	Tentative
	Batchelor, Dean	Required Attendee	Accepted
	Williams, Simon	Required Attendee	Accepted
	Howard, Adam	Required Attendee	Accepted
	Anderson, Daren	Required Attendee	Accepted
	Lee, Elena	Required Attendee	Accepted
	Perez, Alexander	Required Attendee	None
	Dueker, Kenneth	Required Attendee	Accepted
	Struve, Kirsten	Optional Attendee	Accepted
RH	Hada, Rajeev	Required Attendee	None
	Moitra, Chitra (Chitra.M	Optional Attendee	Accepted

TETRA TECH

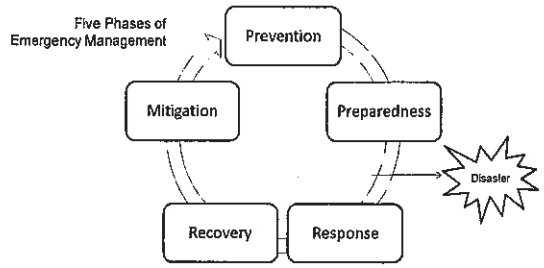
Santa Clara County
Hazard Mitigation Plan - Update

Kick-Off Meeting

Tuesday, July 19th 2016

complex world | CLEAR SOLUTIONS™

What is Mitigation?



"Sustained action taken to reduce or eliminate long-term risk to life and property"

Examples of Mitigation Strategies

- Seismic retrofit of buildings and bridges
- Redundancy of water systems and fuel systems
- Tree planting to reduce heat in urban cores
- Education programs to be better informed of risks
- Policies– building codes and zoning
- Incentives – grants or financial assistance for risk reduction at business and household level

What is the Disaster Mitigation Act (DMA)?

Federal legislation that establishes a pre-disaster hazard mitigation program and new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP).

=

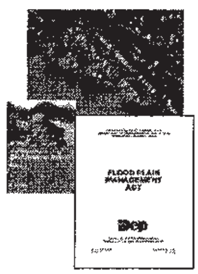
Federal $$$ for pre-disaster and post-disaster hazard mitigation projects in Santa Clara County

What is the Community Rating System (CRS)?

- A voluntary incentive program
- Part of the National Flood Insurance Program
- Administered by the Federal Emergency Management Agency (FEMA)
- Encourages National Flood Insurance Program (NFIP) Communities to perform floodplain management activities that exceed the minimum NFIP requirements.

CRS program Goals

- Reduce flood damages to insurable property
- Strengthen and support the insurance aspects of the NFIP
- Promote a comprehensive approach to floodplain management



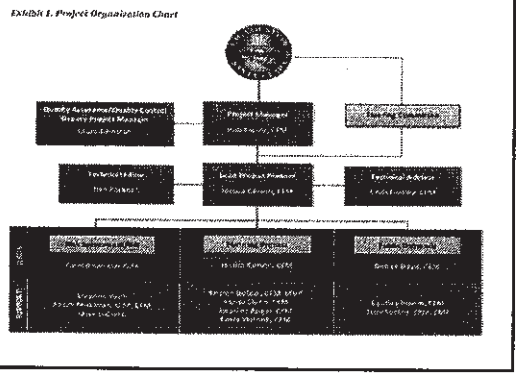
CRS and Santa Clara County

City	Community ID #	CRS Class	CRS Discount (%)	# Insurance Policies	Annual Premium ($)	CRS Savings
Cupertino	[illegible]	7	15	146	$102,595	[illegible]
Gilroy	060340	8	10	[illegible]	$241,724	[illegible]
Los Altos	[illegible]	8	10	209	[illegible]	[illegible]
Milpitas	060344	7	15	1,656	$1,672,179	[illegible]
Morgan Hill	[illegible]	7	15	[illegible]	[illegible]	[illegible]
Mountain View	060347	8	10	[illegible]	[illegible]	[illegible]
San Jose	[illegible]	7	15	[illegible]	[illegible]	[illegible]
Santa Clara	060350	8	10	1,029	$748,490	[illegible]
Santa Clara Co.	060337	10	0	[illegible]	[illegible]	$0
Sunnyvale	060352	7	15	[illegible]	[illegible]	[illegible]
Campbell	[illegible]	NP	0	[illegible]	[illegible]	$0
Los Altos Hills	060342	NP	0	77	$55,053	$0
Los Gatos	[illegible]	NP	0	[illegible]	[illegible]	$0
Monte Sereno	060345	NP	0	20	$7,443	$0
Santa Clara	[illegible]	NP	0	[illegible]	[illegible]	$0
Saratoga	060351	NP	0	190	$96,118	$0
				15,816	[illegible]	[illegible]

* As of 02/29/2016
NP: Not Participating

Didn't include Palo Alto in the slide

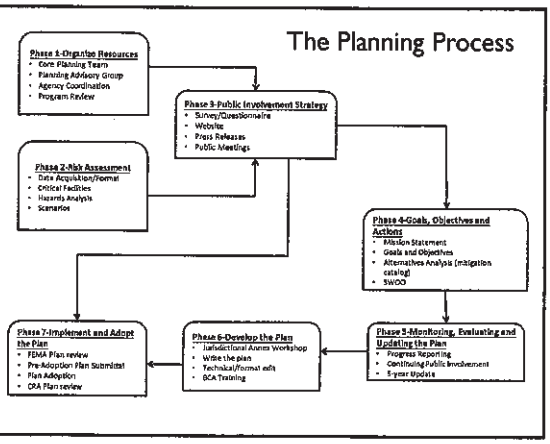
The Tetra Tech Team



The Core Planning Team

- The Core Planning Team is ultimately responsible for all production activities including: proposing plan scope & framework, performing research & information validation, initiating the recruitment & continuing the management of needed planning partners, as well as drafting & editing of the planning document.
- Will be made up of Tetra Tech Discipline leads and appropriate personnel from County OES

The Planning Process



Follows CRS - 10 Step process

Estimated Level of Effort

- For those partners not sitting on the OA Planning Advisory Group (PAG)
  - Generally about 36 hours of effort over a 6-8 month time frame
    - Participation in jurisdictional annex workshop
    - Completion of the Jurisdictional Annex template (phased approach)
    - Participation in Public Outreach Strategy
    - Plan adoption
  - Critical facility update may require an additional 8-10 hours over the course of one month

The Operational Area (OA) Planning Advisory Group (Organization Highlights)

- Oversight committee that will be built of existing OES planning guidance
- Will be augmented to meet CRS requirements
- For efficiency purposes, a Working Group will be established that does not include every planning partner, BUT rather a downsized number who will represent everyone involved
- Multi-disciplined representation – very important
  - *Planning partners representative(s)*
  - *Citizens*
  - *Stakeholders (Business, academia, government)*
  - *Emergency Management*
- Will meet periodically based on need during plan development

The OA Planning Advisory Group

The Planning Advisory Group	Will operate under a set of ground rules
	Will participate in the Public Involvement Strategy
	Will act as spokespersons for the process
	Will meet 6 to 8 times for a minimum of 2 hours per meeting
	Will oversee plan development

Table 6.1: Types of Mitigation Actions

Mitigation Type	Description	Examples
Local Plans and Regulations	These actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.	• Comprehensive plans • Land use ordinances • Subdivision regulations • Development review • Building codes and enforcement • NFIP Community Rating System • Capital improvement programs • Open space preservation • Stormwater management regulations and master plans
Structure and Infrastructure Projects	These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards. Many of these types of actions are projects eligible for funding through the FEMA Hazard Mitigation Assistance program. *Task 9 – Create a Safe and Resilient Community* provides more information on these programs.	• Acquisitions and elevations of structures in flood prone areas • Utility undergrounding • Structural retrofits. • Floodwalls and retaining walls • Detention and retention structures • Culverts • Safe rooms
Natural Systems Protection	These are actions that minimize damage and losses and also preserve or restore the functions of natural systems.	• Sediment and erosion control • Stream corridor restoration • Forest management • Conservation easements • Wetland restoration and preservation
Education and Awareness Programs	These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady[1] or Firewise[2] Communities. Although this type of mitigation reduces risk less directly than structural projects or regulation, it is an important foundation. A greater understanding and awareness of hazards and risk among local officials, stakeholders, and the public is more likely to lead to direct actions.	• Radio or television spots • Websites with maps and information • Real estate disclosure • Presentations to school groups or neighborhood organizations • Mailings to residents in hazard-prone areas. • StormReady • Firewise Communities

1 For more information on the National Weather Service's StormReady, see http://www.stormready.noaa.gov/.

2 For more information on the Firewise Communities program, see http://www.firewise.org/.

Chapter 3.
City of Belmont

3.1 Hazard Mitigation Plan Point of Contact

Primary Point of Contact
Captain Pat Halleran, Emergency Coordinator
One Twin Pines Lane, Suite 230
Belmont, CA 94002
Telephone: 650-595-7430
e-mail Address: phalleran@belmont.gov

Alternate Point of Contact
Matt Lucett, Management Analyst
One Twin Pines Lane, Suite 230
Belmont, CA 94002
Telephone: 650-595-7437
e-mail Address: mlucett@belmont.gov

3.2 Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation**— 1926
- **Current Population**— 27,834 (as of January 1, 2016 – CA DOF)
- **Population Growth**—According to the state Department of Finance, it is estimated that Belmont experienced a 0.7% increase in population between 2014 (26,573) & 2015 (26,748). Although 2020 & 2030 projections are not available for Belmont, the Department of Finance projects a 3.2% increase in population within San Mateo County between 2015 & 2020 and a 5.9% increase between 2020 & 2030.
- **Location and Description**— Known for its wooded hills, views of the San Francisco Bay and stretches of open space, Belmont is a quiet residential community in the midst of the culturally and technologically rich Bay Area. Belmont is located in San Mateo County, half-way between San Francisco and San Jose. The city is within easy driving distance of the Pacific Ocean, three major airports, and major employment centers including San Francisco, Silicon Valley and the East Bay. Belmont borders the cities of San Mateo, San Carlos and Redwood City as well as unincorporated San Mateo County.
- **Brief History**— Since its incorporation in 1926, Belmont has grown from a small town of less than 1,000 residents to a community of over 26,000. Much of the city's population and housing growth occurred during the 1950s and 1960s during the post-war periods.
- **Climate**— The City of Belmont enjoys the San Francisco Bay Area's Mediterranean-style climate with mild temperatures during the summer months and cool temperatures during the winter months. The warmest month of the year is July with an average maximum temperature of 80.80 degrees Fahrenheit while to coldest month is in December with an average minimum temperature of 38.60 degrees Fahrenheit. The annual average precipitation is 20.16 inches, with the wettest month of the year being January with an average rainfall of 4.20 inches.
- **Governing Body Format**—The City of Belmont is governed by a five-member city council elected to four-year terms. The council also serves as the governing body of the Belmont Fire Protection

District, a subsidiary district providing fire services to Belmont and the Harbor Industrial Area (HIA) located in unincorporated San Mateo County. Other departments within the city include Administrative Services, Community Development, Police and Public Works. The city has two commissions: Planning and Parks & Recreation, both of which make recommendations to the council in their respective areas. The City Council assumes responsibility for the adoption of this plan; and the city's designated Emergency Management Coordinator will oversee its implementation.

- **Development Trends**— Since its incorporation in 1926, Belmont has grown from a small town of less than 1,000 to a community of 26,748 (2015 Department of Finance estimate). Much of the City's population and housing growth occurred during the 1950s and 1960s during the post-war periods. Most of the residential neighborhoods are found on the hillsides with many open spaces and parks.

  With much of the city currently "built out", or developed, and with the preservation of open space a priority, undeveloped land available for development is limited. Most of the development over the next 20 years is likely to take place on sites that are currently vacant and/or on sites that are currently underutilized. Additionally, future development may come from expanded development of sites with existing structures or redevelopment of sites and structures that come to the end of their useful life over the next 20 years. Most of the vacant and underutilized sites in the Belmont Planning Area tend to be clustered in the eastern half of the city, especially in the Belmont Village Priority Development Area (PDA), along the El Camino Real transportation corridor and east of Highway 101. It is likely that much of the growth and change in Belmont over the next 20 years will occur in these areas. In August 2014, the city initiated a multi-year process of updating their General Plan and further details on develop trends are addressed in the Land Use Element of the draft plan.

3.3 Capability Assessment

An assessment of legal and regulatory capabilities is presented in Table 3-1. An assessment of fiscal capabilities is presented in Table 3-2. An assessment of administrative and technical capabilities is presented in Table 3-3. Information on National Flood Insurance Program (NFIP) compliance is presented in Table 3-4. Classifications under various community mitigation programs are presented in Table 3-5. An assessment of education and outreach capabilities is presented in Table 3-6.

TABLE 3-1. LEGAL AND REGULATORY CAPABILITY

	Local Authority	Other Jurisdiction Authority	State Mandated
Building Code	Yes	Yes	Yes
Comment: *Adopted City Ordinance #1073 on 12-12-13/Other Jurisdiction includes the California Building Standards Commission*			

TABLE 3-1. LEGAL AND REGULATORY CAPABILITY

	Local Authority	Other Jurisdiction Authority	State Mandated
Zoning Code	Yes	No	Yes
Comment: *Adopted City Ordinance #360 on 11-30-93/ City required to update zoning code to maintain General Plan consistency. Upon adoption of 2035 Belmont Comprehensive GP Update in first quarter 2017, the Belmont Zoning Code will be comprehensively updated accordingly. Various State Assembly bills or Federal Legislation enacted require local compliance (exp. Secondary Dwelling Units, Wireless Communications Facilities); Belmont complies as appropriate with these mandates.*			
Subdivisions	Yes	No	Yes
Comment: *City's Subdivision Ordinance Adopted 1985; amended periodically. Subject to on-going compliance and consistency with State of California Subdivision Map Act.*			
Stormwater Management	Yes	Yes	Yes
Comment: *Referenced in City Municipal Code Chapter 9(Grading) & Chapter 21 (Sewers and Sewage Disposal). City is also part of the San Mateo County Pollution Prevention Program(STOPPP). Other jurisdiction includes the State and Regional Water Quality Control Board.*			
Post-Disaster Recovery	No	No	No
Comment:			
Real Estate Disclosure	No	No	Yes
Comment:			
Growth Management	Yes	No	No
Comment: *Addressed in 2035 Belmont Comprehensive GP Update – see below.*			
Site Plan Review	Yes	No	Yes
Comment: Site Plan Reviews facilitated primarily through Community Development and Public Works. *California Building Code Section 107.2.1 Information on construction documents. Construction document shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules and regulations, as determined by the building official.*			
Environmental Protection	Yes	Yes	Yes
Comment: *City Municipal Code, Municipal Regional Permit (MRP) with Bay area Regional Water Quality Control Board, CEQA documentation, mitigations and Conditions of Approval*			
Flood Damage Prevention	Yes	Yes	Yes
Comment: *FEMA policy adopted in Belmont Municipal Code Sec. 7-208 on 11/27/01*			
Emergency Management	Yes	Yes	Yes
Comment: *Belmont Emergency Operations Plan*			
Climate Change	Yes	Yes	Yes
Comment: *To be addressed in Belmont Climate Action Plan; adoption first quarter 2017. See below.*			
Other			
Comment:			
General or Comprehensive Plan	Yes	No	Yes
Is the plan equipped to provide linkage to this mitigation plan? ***Yes***			

TABLE 3-1. LEGAL AND REGULATORY CAPABILITY

	Local Authority	Other Jurisdiction Authority	State Mandated
Comment: *2035 Belmont Comprehensive General Plan Update under preparation; adoption in first quarter 2017.*			
Capital Improvement Plan	Yes	No	No
What types of capital facilities does the plan address? The CIP addresses Streets, Technology, Facilities, Sewer/Storm and Parks/Open Space.			
How often is the plan updated? Annually			
Comment:			
Floodplain or Watershed Plan	Yes	Yes	Yes
Comment:*Flood Insurance Rate Map (FIRM) adopted by FEMA*			
Stormwater Plan	Yes	Yes	Yes
Comment: *Stormwater Master Plan adopted by Council in 2009*			
Habitat Conservation Plan	No	No	No
Comment:			
Economic Development Plan	Yes	No	No
Comment: *Addressed in 2035 Belmont Comprehensive GP Update – see above.*			
Shoreline Management Plan	No	No	No
Comment:			
Community Wildfire Protection Plan	No	No	No
Comment:			
Forest Management Plan	No	No	No
Comment:			
Climate Action Plan	Yes	No	Yes
Comment: *Draft Belmont CAP prepared; adoption will occur in conjunction with 2035 Belmont Comprehensive GP Update – see above.*			
Other: Belmont Village Specific Plan	Yes	No	No
Comment: *Belmont Village has been designated a "Priority Development Area (PDA)" by the Bay Area's regional planning agency.*			
Comprehensive Emergency Management Plan	Yes	No	No
Comment: *Last revision June, 2000*			
Threat & Hazard Identification & Risk Assessment	No	No	No
Comment: *Was part of initial Hazard Mitigation Plan Annex with ABAG in 2005.*			
Post-Disaster Recovery Plan	No	No	No
Comment:			
Continuity of Operations Plan	No	No	No
Comment:			
Public Health Plan	No	Yes	No
Comment: *Public Health Department part of San Mateo County Health System*			

TABLE 3-2. FISCAL CAPABILITY

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	No
Capital Improvements Project Funding	No
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	No
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No
Other	No

TABLE 3-3. ADMINISTRATIVE AND TECHNICAL CAPABILITY

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Department of Public Works/City Engineer, PW Director, Sr. Civil Engineer
Engineers or professionals trained in building or infrastructure construction practices	Yes	Department of Public Works/All Engineering and Inspection personnel
Planners or engineers with an understanding of natural hazards	Yes	Department of Public Works/City Engineer, Sr. Civil Engineer
Staff with training in benefit/cost an analysis	Yes	Department of Finance/Deputy Finance Director and Controller (Add Note)
Surveyors	Yes	Department of Public Works/Sr. Civil Engineer
Staff capable of making substantial damage estimates	Yes	Permit Center & Department of Public Works, Chief Building Official and Sr. Civil Engineer
Personnel skilled or trained in GIS applications	Yes	Department of Information Technology/GIS Coordinator, Department of Public Works/Engineering Technician/Associate Civil Engineer
Scientist familiar with natural hazards in local area	No	Insert appropriate information
Emergency manager	Yes	Police Department/Captain
Grant writers	No	Insert appropriate information

TABLE 3-4. NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

Criteria	Response
When did the community enter the NFIP?	March 9, 1982
When did the Flood Insurance Rate maps become effective?	July 16, 2015 (Latest Maps)

TABLE 3-4. NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

Criteria	Response
What local department is responsible for floodplain management?	Department of Public Works
Who is your floodplain administrator? (department/position)	Public Works Director
▪ Is this a primary or auxiliary role?	Primary
Are any certified floodplain managers on staff in your jurisdiction?	No
What is the date of adoption of your flood damage prevention ordinance?	11/27/01
▪ Does your floodplain management program meet or exceed minimum requirements?	Exceeds
▪ If so, in what ways?	Belmont Ordinance adopted exceeds the minimum requirements. For example, building in Zone A shall be elevated 2 feet higher than adjacent grade. This is more than the 1 foot required by FEMA.
When was the most recent Community Assistance Visit or Community Assistance Contact?	September 9, 2010
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed?	No
▪ If so, please state what they are.	Insert appropriate information
Do your flood hazard maps adequately address the flood risk within your jurisdiction?	Yes
▪ If no, please state why.	Insert appropriate information
Does your floodplain management staff need any assistance or training to support its floodplain management program?	Yes
▪ If so, what type of assistance/training is needed?	Staff may need continuous training to update their knowledge about most current requirements.
Does your jurisdiction participate in the Community Rating System (CRS)?	No
▪ If so, is your jurisdiction seeking to improve its CRS Classification?	N/A
▪ If not, is your jurisdiction interested in joining the CRS program?	Yes
How many Flood Insurance policies are in force in your jurisdiction?	110
▪ What is the insurance in force?	$39,753,300
▪ What is the premium in force?	$196,193
How many total loss claims have been filed in your jurisdiction?	12
▪ How many claims were closed without payment/are still open?	0
▪ What were the total payments for losses?	$170,678

TABLE 3-5. COMMUNITY CLASSIFICATIONS

	Participating?	Classification	Date Classified
Community Rating System	No		
Building Code Effectiveness Grading Schedule	No		
Public Protection	No		
Storm Ready	No		
Firewise	No		

TABLE 3-6. EDUCATION AND OUTREACH

Criteria	Response
Do you have a Public Information Officer or Communications Office?	Yes, PIO through Belmont Police Department
Do you have personnel skilled or trained in website development?	Yes, personnel within each city department as well as support through Information Technology Department
Do you have hazard mitigation information available on your website?	Yes
▪ If yes, please briefly describe.	Dedicated web page linked under "About Belmont"
Do you utilize social media for hazard mitigation education and outreach?	Yes
▪ If yes, please briefly describe.	Outreach/Education provided primarily through Nextdoor, Twitter, City Website and City Manager's Weekly Update
Do you have any citizen boards or commissions that address issues related to hazard mitigation?	Yes
▪ If yes, please briefly specify.	City of Belmont Planning Commission, Parks & Recreation Commission
Do you have any other programs already in place that could be used to communicate hazard-related information?	Yes, Limited
▪ If yes, please briefly describe.	Vegetation Management Program providing information on wildfire threat within community
Do you have any established warning systems for hazard events?	Yes
▪ If yes, please briefly describe.	SMC Alert in partnership with San Mateo County OES

3.4 Integration with Other Planning Initiatives

The following describe the jurisdiction's process for integrating the hazard mitigation plan into local planning mechanisms.

3.4.1 Existing Integration

The following plans and programs currently integrate the goals, risk assessment and/or recommendations of the hazard mitigation plan:

- **Belmont General Plan**- Belmont's 2035 General Plan Update which is currently under preparation with anticipated adoption expected in first quarter 2017, integrates the local hazard mitigation plan through the development of goals, policies and actions within the following elements:
  - **Safety**- is AB2140 compliant by referencing the city's hazard mitigation plan and associated planning efforts and plan development, and addresses vulnerabilities including seismic and geologic, flooding (including dam inundation & sea level rise), hazardous materials, utilities, fires (urban & wildland) hazards.
  - **Land Use**- references updating area plans with creating design standards for the interface between open spaces and neighborhoods within the wildland urban interface zone, as well as the combination of geologic, flood, steep slope and wildland fire hazards within both the San Juan and Western Hills Area Plans.
  - **Parks, Recreation and Open Space**- addresses the continuation of programs to reduce the fire danger in open space areas and evaluating the necessity of a stream buffer overlay zone around Belmont Creek to facilitate management and protection of the waterway and developed areas
  - **Conservation**- addresses the reduction of wildland fire and pathogen threats (such as Sudden Oak Death) throughout the open space areas, restoration of Belmont Creek to enhance flood control, preservation/conservation of water resources in partnership with Mid-Peninsula Water District, maintaining and improving the reliability of the city's storm drainage system to reduce flooding, and the development of a Climate Action Plan.
- **San Juan Hills Area Plan**- plan addresses unique conditions within the San Juan Hills area, including geologic (seismic, landslides, steep slope) and flooding as well as goals, objectives and policies addressing such conditions including adoption of geologic maps, requiring geologic investigations as part of applications for development and adherence to land use policies.
- **Western Hills Area Plan**- plan addresses unique conditions within the San Juan Hills area, including geologic (seismic, landslides, steep slope) and flooding as well as goals, objectives and policies addressing such conditions including adoption of geologic maps, requiring geologic investigations as part of applications for development and adherence to land use policies.
- **City of Belmont Emergency Operations Plan**—EOP includes a Threat Summary and Assessments chapter addressing earthquake, hazardous materials, flooding, dam failure, transportation accident, landslides, wildfire, oil spill, tsunami, civil unrest and national security emergency.

3.4.2 Opportunities for Future Integration

The following plans and programs do not currently integrate the goals, risk assessment and/or recommendations of the hazard mitigation plan, but provide an opportunity for future integration:

- **Notre Dame Dam Emergency Action Plan**- plan needs to be updated to better incorporate hazard mitigation goals, risk assessment and/or recommendations of the hazard mitigation plan.

- **San Juan Hills Plan**— update of plan is an implementation priority addressed in the Land Use Element of the General Plan and needs to better incorporate hazard mitigation goals, risk assessment and/or recommendations of this hazard mitigation plan, including the incorporation of the wildland-urban interface (WUI) threat.
- **Western Hills Area Plan**— update of plan is an implementation priority addressed in the Land Use Element of the General Plan and needs to better incorporate hazard mitigation goals, risk assessment and/or recommendations of this hazard mitigation plan, including the incorporation of the wildland-urban interface (WUI) threat.
- **City of Belmont Climate Action Plan**—Draft Climate Action Plan prepared and adoption will occur in conjunction with 2035 Belmont Comprehensive GP Update.
- **City of Belmont Emergency Operations Plan**—EOP needs to be updated to better incorporate goals, risk assessment and recommendations of this newly revised mitigation plan.

3.5 Jurisdiction-Specific Natural Hazard Event History

Table 3-6 lists all past occurrences of natural hazards within the jurisdiction.

TABLE 3-6. NATURAL HAZARD EVENTS

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Severe Storm	N/A	December 11, 2014	Unknown
Severe Storm	N/A	December 17-19, 2010	Unknown
Severe Storm	N/A	January 18-22, 2010	Unknown
Severe Storm	N/A	October 13, 2009	Unknown
Severe Storm	N/A	January 25-28, 2008	Unknown
Severe Storm	N/A	January 3-7, 2008	Unknown
Severe Storm	N/A	April 3-5, 2006	Unknown
Severe Storm	N/A	March 27, 2006	Unknown
Landslides (Courtland & Vine)	N/A	February, 2005	Unknown
Severe Storm	DR-1203	December 1997- February 1998	Unknown
Loma Prieta Earthquake	DR-845	October 17, 1989	$37,662

3.6 Jurisdiction-Specific Vulnerabilities

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 0
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: 0

Other noted vulnerabilities include:

- Drainage issue associated with creek which results in consistent flooding during heavy rains at Harbor Blvd. & Old County Road.
- Downed trees and landslides which occur during severe weather along the Ralston Avenue corridor which is the primary transportation thoroughfare through the city.

3.7 Hazard Risk Ranking

Table 3-7 presents the ranking of the hazards of concern.

TABLE 3-7. HAZARD RISK RANKING

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake	48	High
2	Wildfire	36	High
3	Severe Weather	33	High
4	Landslide	18	Medium
5	Flood	18	Medium
6	Dam Failure	6	Low
7	Drought	3	Low
8	Tsunami	0	Low

3.8 Hazard Mitigation Action Plan and Evaluation of Recommended Actions

Table 3-8 lists the actions that make up the City of Belmont hazard mitigation action plan. Table 3-9 identifies the priority for each action. Table 3-10 summarizes the mitigation actions by hazard of concern and the six mitigation types.

TABLE 3-8. HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
BM-1—Where appropriate, support retro-fitting, purchase or relocation of structures located in high hazard areas and prioritize those structures that have experienced repetitive losses.						
Existing	All Hazards	4, 5, 7, 9, 10	Community Development	High	HMGP, PDM, FMA, CDBG-DR	Short-term
BM-2—Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions within Belmont.						
New and Existing	All Hazards	2, 4,	Community Development	Low	Staff Time, General Funds	On-going
BM-3—Develop and implement a program to capture perishable data after significant events (e.g. high water marks, preliminary damage estimates, damage photos) to support future mitigation efforts including the implementation and maintenance of the hazard mitigation plan.						

TABLE 3-8. HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
Existing	All Hazards	1, 2, 4, 11	Emergency Management (PD & FD)	Medium	Staff Time, General Funds	Short-term
BM-4—Support the County-wide initiatives identified in Volume I of the hazard mitigation plan.						
New and existing	All	All	Emergency Management	Low	General Fund	Short- and long-term
BM-5—Actively participate in the plan maintenance protocols outlined in Volume I of the hazard mitigation plan.						
New and Existing	All	1, 4	Emergency Management	Low	Staff Time, General Funds	Short-term
BM-6— Continue to maintain good standing and compliance under the National Flood Insurance Program (NFIP). This will be accomplished through the implementation of floodplain management programs that will, at a minimum, meet the requirements of the NFIP: • Enforcement of the flood damage prevention ordinance • Participate in floodplain identification and mapping updates Provide public assistance/information on floodplain requirements and impacts.						
New and Existing	Flood	1, 4, 5, 9	Public Works	Low	Staff Time, General Funds	On-going
BM-7—Work with building officials to identify ways to improve the jurisdictions' BCEGS classification.						
New	Earthquake, Flood, Landslide, Severe weather, Tsunami, Wildfire	5, 6, 7, 10, 11	Community Development	Low	Staff Time, General Funds	Short-term
BM-8—Develop a post-disaster recovery plan and a debris management plan.						
Existing	All Hazards	1, 2, 4, 9	Emergency Management	Medium	EMPG	Long-term
BM-9—*Participate in programs such as Firewise, StormReady and the Community Rating System.*						
New	Dam Failure, Flood, Severe weather, Wildfire	1, 7	Emergency Management* and Public Works	Low	Staff Time, General Funds	Short-term
BM-10—Develop a Soft Story Retrofit Program requiring property owners to seismically strengthen vulnerable residential buildings in Belmont modeled after City & County of San Francisco's Program.						
Existing	Earthquake	1,2,3,4,7,10	Community Development*, Emergency Management (PD & Fire)	High	HMGP, PDM, FMA	Long-Term
BM-11—Develop a Continuity of Operations Plan (COOP) to ensure the continuation of government functions following a significant event.						
New and Existing	All Hazards	1,2,10	Emergency Management	Low	Staff Time, General Funds	Short-Term

TABLE 3-8. HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
BM12— Develop inventory of vulnerable populations (i.e. school children, elderly) within Belmont as well as a communications and resource allocation plan specific to target population.						
Existing	All Hazards	1,2,6,9	Emergency Management*, IT	Low	Staff Time, General Funds	Short-Term
BM-13—Develop emergency preparedness outreach program targeting vulnerable populations (i.e. school children, elderly) within community.						
Existing	All Hazards	2,3,6,7,9,10	Emergency Management	Low	Staff Time, General Funds	Short-Term
BM-14—Coordinate the dredging of Water Dog Lake to regain lost water storage capacity.						
Existing	Flooding, Dam Failure	1,4,5,7	Public Works*, Parks	High	HMGP, PDM, FMA	Long-Term
BM-15—Develop mapping of geologically active areas within Belmont for the purpose of adopting plans similar to the city's San Juan Area Plan, which serves as a means to develop focused policies designed to address unique problems and assets in the area.						
Existing	Landslide, Flood	1,3,7	Public Works*, Community Development	High	Staff Time, General Funds	Long-Term
BM-16—Identity needs associated with a permanent drainage solution for the areas east of Highway 101 in Belmont.						
Existing	Flooding,	1,3,5,7	Public Works*, Emergency Management	High	HMGP, PDM, FMA	Long-Term
BM-17—Coordinate with the California Department of Forestry and Fire Protection's Fire and Resource Assessment Program (FRAP) on expanding the Very High Fire Hazard Severity Zone (VHFHSZ) to the San Juan Canyon area of Belmont.						
Existing	Wildfire	1,2,3,7,	Emergency Management*, Community Development	Low	Staff Time, General Funds	Short-Term
BM-18— Facilitate improvements to Water Dog Lake Road for public safety access to open space areas in Belmont.						
Existing	Dam Failure, Landslide, Severe Weather, Wildfire	1,4,7	Public Works*, Parks	High	HMGP, PDM, FMA	Long-Term
BM-19—Partner with Mid-Peninsula Water District on providing water conservation outreach & education to community.						
Existing	Drought	1,2,3,10	Emergency Management	Low	Staff Time, General Funds	Short-Term
BM-20—Coordinate inventory and assessment of drought stressed and/or diseased trees within Belmont.						

TABLE 3-8. HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
Existing	Drought, Wildfire, Severe Weather, Landslide	1,3	Parks	High	HMGP, PDM	Long-Term
BM-21—Develop long-term strategy for replacement of distressed roadways throughout Belmont						
Existing	Flooding, Severe Weather	1,7	Public Works	High	State Gas Tax & Measure A Funds	Long-Term
BM-22—Work with Mid-Peninsula Water District on incorporating procedures into city's Emergency Operations Plan (EOP) addressing potential failure of non-seismic retrofitted water tanks.						
Existing	Flooding	1, 2,3,7	Emergency Management	Low	Staff Time, General Funds	Short-Term
BM-23—Map inundation areas associated with Water Dog Lake Dam failure.						
Existing	Dam Failure, Flooding	1,3,5	Public Works, Emergency Management*, IT	High	HMGP, PDM	Short-term
BM-24—Expand public outreach/education and emergency notification to include Water Dog Lake Dam failure threat.						
Existing	Dam Failure, Flooding	2,3,6,7,9,10	Emergency Management	Low	Staff Time, General Funds	Short-Term
BM-25—Continue to work with local electric utility on the city's Utilities Undergrounding Program						
Existing	Earthquake, Wildfire, Severe Weather, Flood, Landslide	1,2,4,6	Public Works	High	PG&E, Rule 20A Allocations	Long-Term
Action G-1—Provide incentives for eligible non-profits and private entities, including homeowners, to adapt to risks through structural and nonstructural retrofitting.						
New and existing	All	2, 3, 4, 5, 6, 7, 8, 10, 11	Jurisdictions	Low	Operating Budgets	Ongoing

TABLE 3-9. MITIGATION STRATEGY PRIORITY SCHEDULE

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Priority[a]
BM-1	5	High	High	Yes	Yes	No	Medium	High
BM-2	2	Medium	Low	Yes	No	Yes	High	Low
BM-3	4	Low	Medium	No	No	Maybe	Low	Low
BM-4	11	Low	Low	Yes	No	Yes	High	Low
BM-5	2	Low	Low	Yes	No	Yes	High	Low

TABLE 3-9. MITIGATION STRATEGY PRIORITY SCHEDULE

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Priority[a]
BM-6	4	Medium	Low	Yes	No	Yes	High	Low
BM-7	5	Medium	Low	Yes	No	Yes	High	Low
BM-8	4	Medium	Medium	Yes	Yes	No	Medium	High
BM-9	2	Medium	Low	Yes	No	Yes	High	Low
BM-10	6	High	Medium	Yes	Yes	Yes	High	High
BM-11	3	Low	Low	Yes	No	Yes	High	Low
BM-12	4	Medium	Low	Yes	No	Yes	High	Low
BM-13	6	Medium	Low	Yes	No	Yes	High	Low
BM-14	4	High	High	Yes	Yes	No	Medium	High
BM-15	3	Low	Medium	Yes	Yes	No	Medium	Medium
BM-16	4	Medium	High	Yes	Yes	No	Medium	Medium
BM-17	4	Low	Low	Yes	No	Yes	High	Low
BM-18	3	Low	High	No	No	No	Low	Low
BM-19	4	Medium	Low	Yes	No	Yes	High	Low
BM-20	2	Medium	High	No	No	No	Low	Low
BM-21	2	Low	High	No	No	No	Low	Low
BM-22	4	Low	Low	Yes	No	Yes	High	Low
BM-23	3	High	High	Yes	Yes	No	High	High
BM-24	6	Medium	Low	Yes	No	Yes	High	Low
BM-25	4	Low	Low	Yes	No	Yes	High	Low
G-1	9	Low	Low	Yes	No	Yes	Low	Low

a. See the introduction to this volume for explanation of priorities.

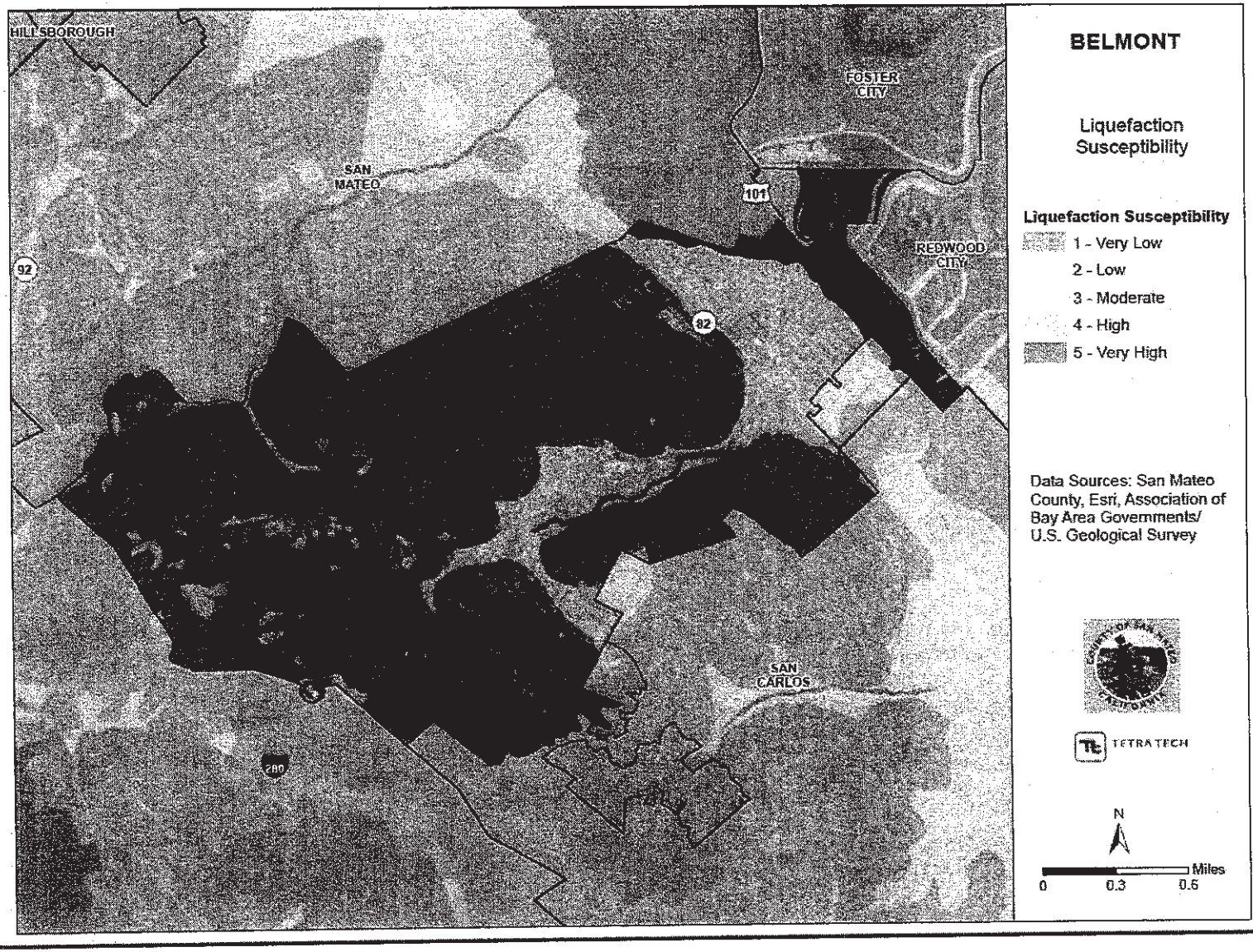
TABLE 3-10. ANALYSIS OF MITIGATION ACTIONS

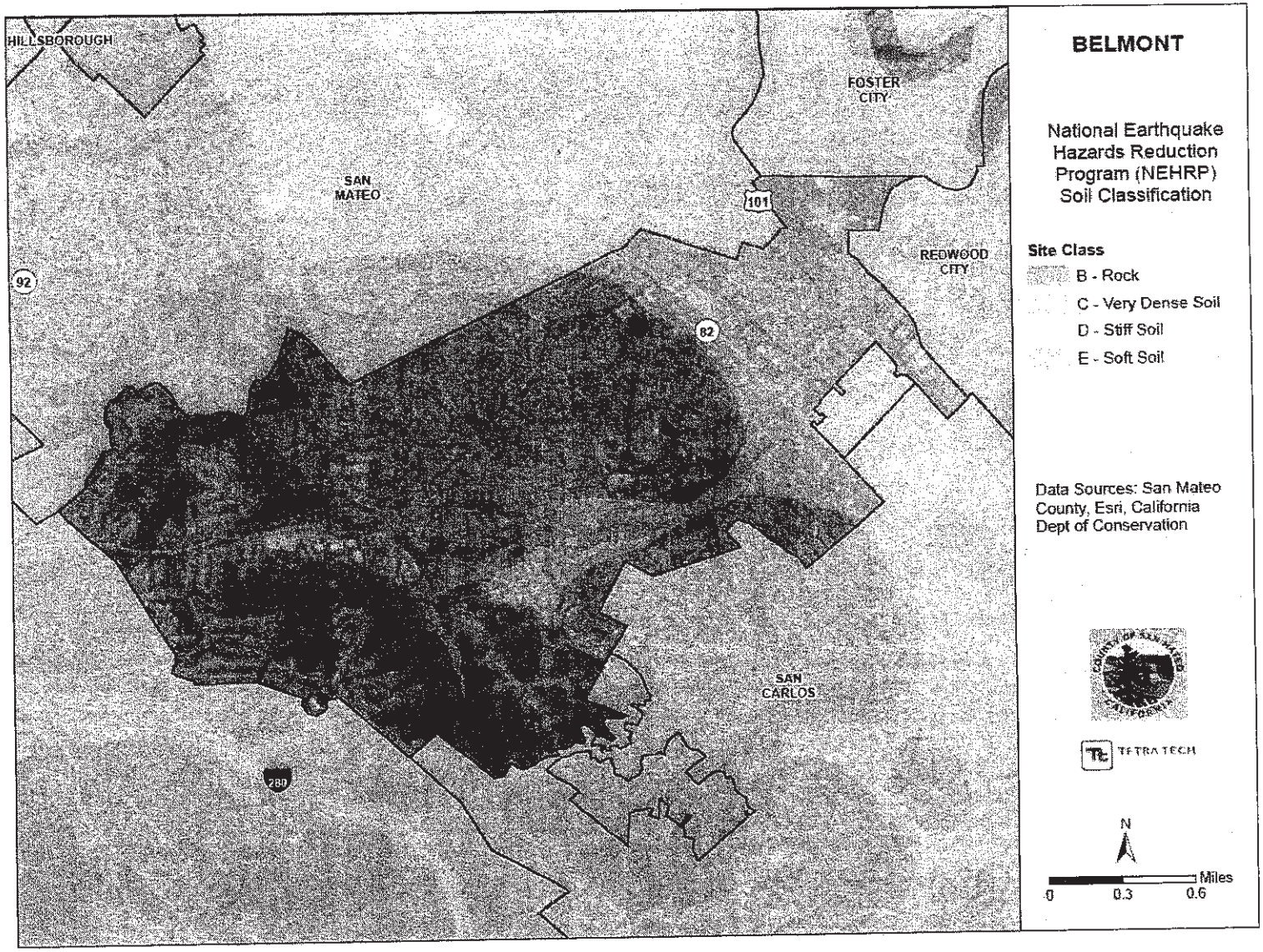
Hazard Type	Action Addressing Hazard, by Mitigation Type[a]					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Earthquake	BM-2, BM-3, BM-4, BM-5, BM-7, BM-8, BM-10	BM-1, BM-7, BM-10, BM-25	BM-4, BM-10, BM-12, BM-13		BM-8, BM-11, BM-12	
Wildfire	BM-2, BM-3, BM-4, BM-5, BM-7, BM-17	BM-1, BM-7, BM-9, BM-25	BM-4, BM-9, BM-12, BM-13	BM-9, BM-20	BM-11, BM-12, BM-18	BM-18

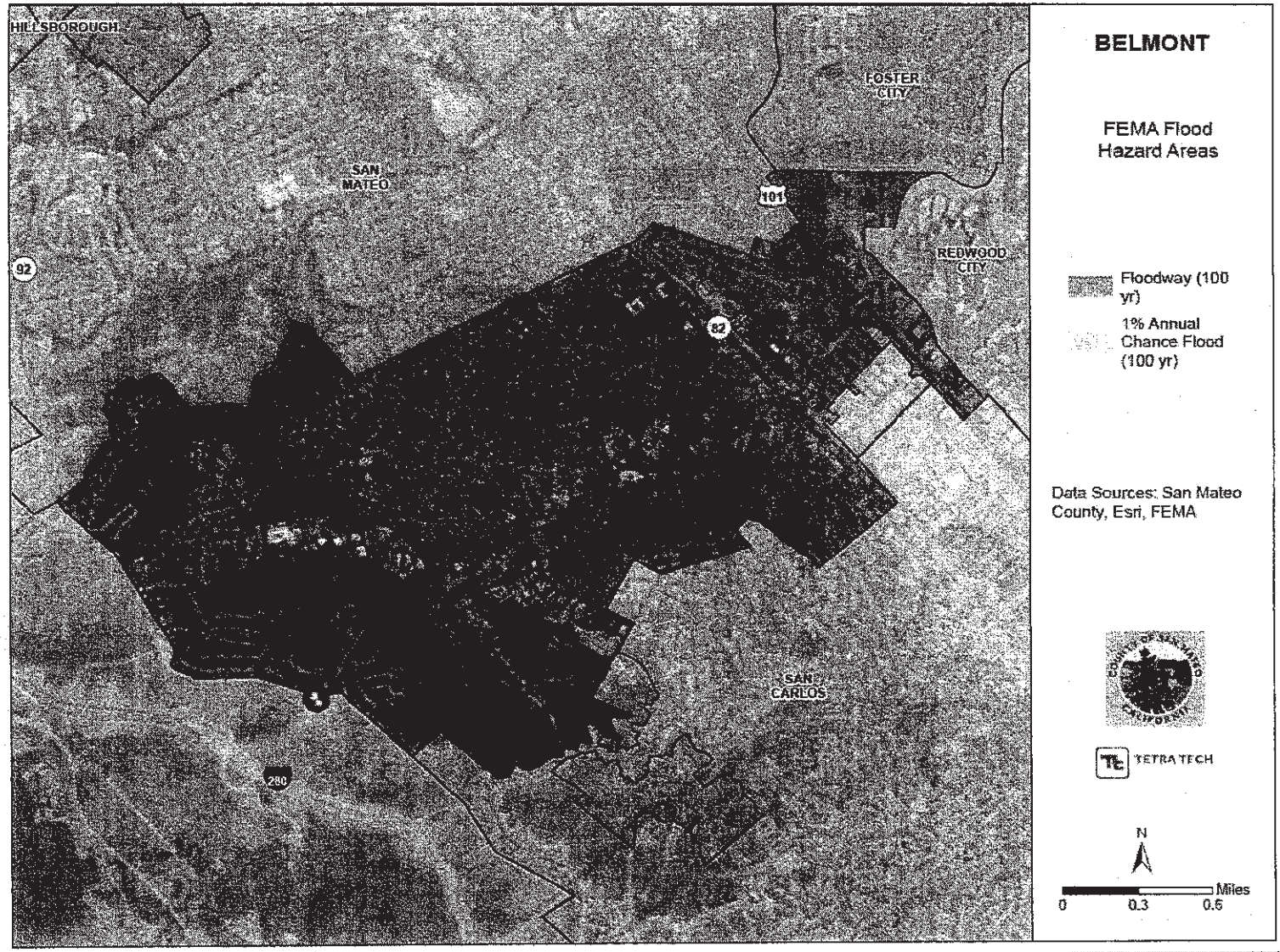
TABLE 3-10. ANALYSIS OF MITIGATION ACTIONS

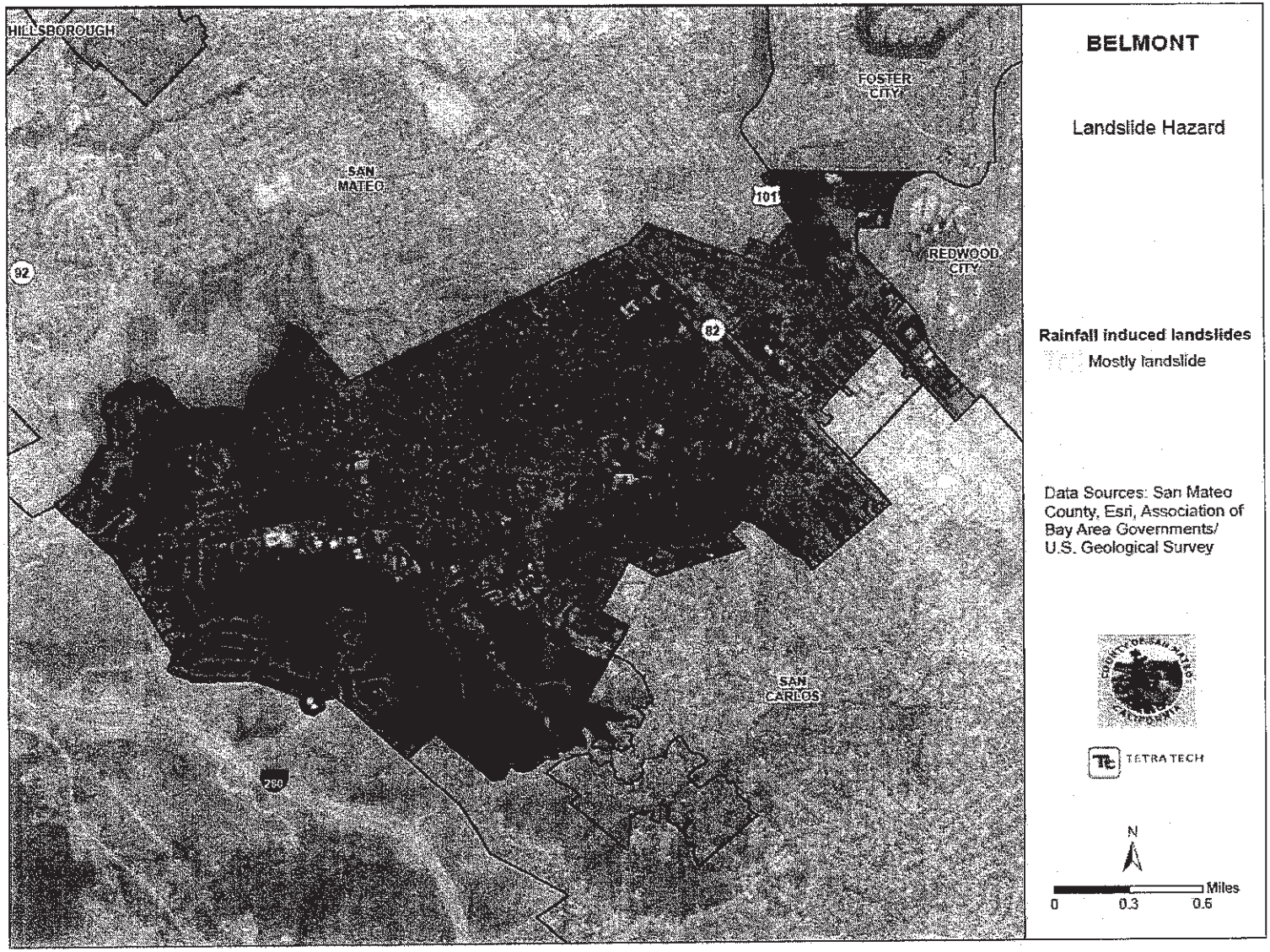
Hazard Type	Action Addressing Hazard, by Mitigation Type[a]					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Severe Weather	BM-2, BM-3, BM-4, BM-5, BM-7, BM-8	BM-1, BM-7, BM-9, BM-25	BM-4, BM-12, BM-13	BM-8, BM-9, BM-20	BM-11, BM-12, BM-18	BM-18, BM-21
Landslide	BM-2, BM-3, BM-4, BM-5, BM-7, BM-8, BM-15	BM-1, BM-7, BM-25	BM-4, BM-12, BM-13	BM-20	BM-8, BM-11, BM-12, BM-18	BM-18
Flood	BM-2, BM-3, BM-4, BM-5, BM-6, BM-7, BM-8, BM-15, BM-16, BM-23	BM-1, BM-6, BM-7, BM-25	BM-4, BM-6, BM-12, BM-13, BM-24	BM-9	BM-8, BM-11, BM-12, BM-22, BM-23	BM-14, BM-21
Dam Failure	BM-2, BM-3, BM-4, BM-5, BM-6, BM-8, BM-23	BM-1, BM-6	BM-4, BM-6, BM-12, BM-13, BM-24		BM-8, BM-11, BM-12, BM-18, BM-23	BM-14, BM-18
Drought	BM-2, BM-3, BM-4, BM-5, BM-8	BM-1	BM-4, BM-12, BM-13, BM-19	BM-20	BM-8, BM-11, BM-12	
Tsunami	BM-2, BM-3, BM-4, BM-5, BM-7, BM-8	BM-1, BM-7	BM-4, BM-12, BM-13		BM-8, BM-11, BM-12	

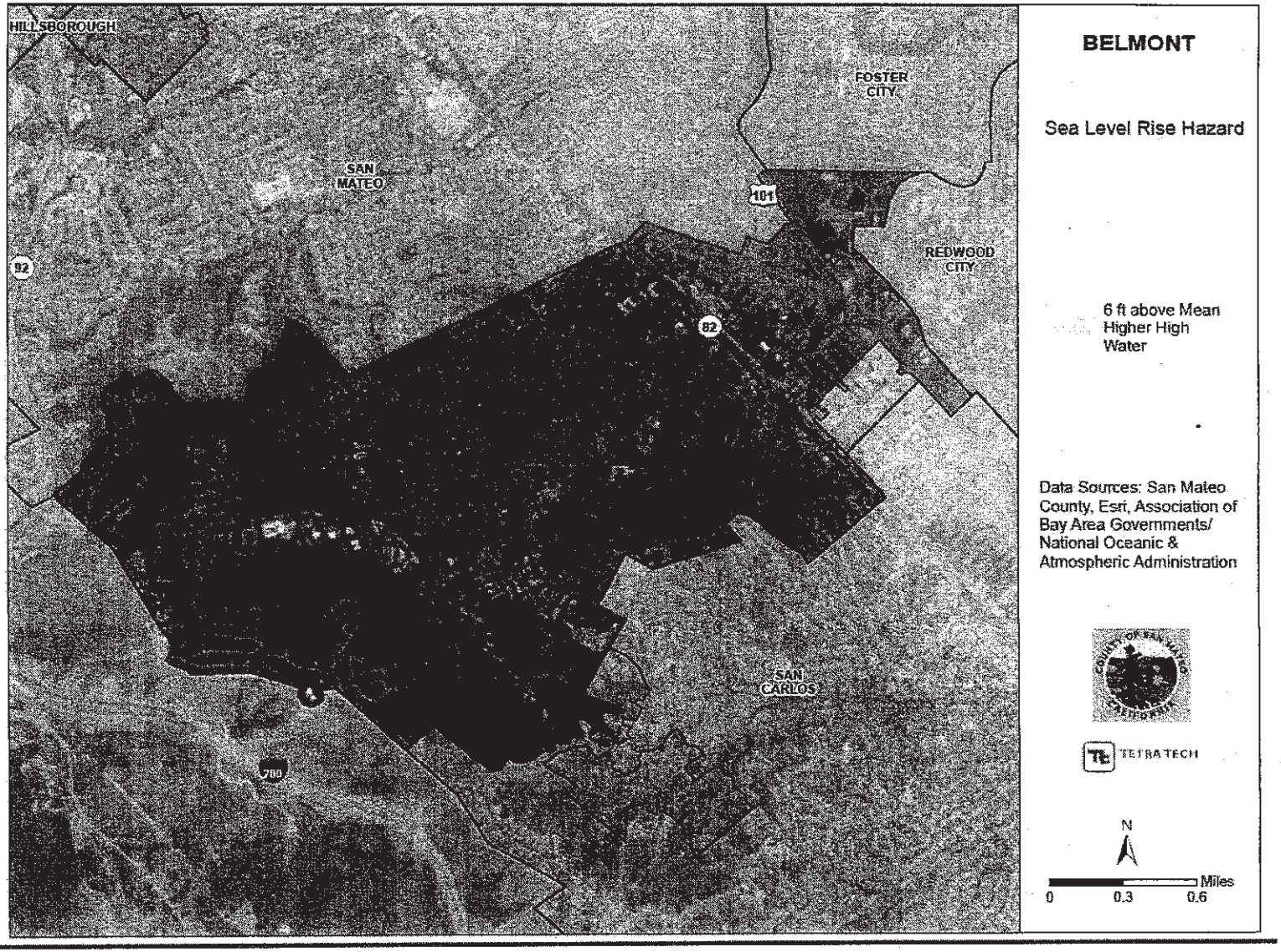
a. See the introduction to this volume for explanation of mitigation types.


BELMONT
Liquefaction Susceptibility
Liquefaction Susceptibility
1 - Very Low
2 - Low
3 - Moderate
4 - High
5 - Very High
Data Sources: San Mateo County, Esri, Association of Bay Area Governments/ U.S. Geological Survey
TETRA TECH
N
Miles
0
0.3
0.6
HILLSBOROUGH
SAN MATEO
FOSTER CITY
REDWOOD CITY
SAN CARLOS
92
82
101
280


HILLSBOROUGH
FOSTER CITY
SAN MATEO
101
REDWOOD CITY
92
82
SAN CARLOS
280
BELMONT
National Earthquake Hazards Reduction Program (NEHRP) Soil Classification
Site Class
B - Rock
C - Very Dense Soil
D - Stiff Soil
E - Soft Soil
Data Sources: San Mateo County, Esri, California Dept of Conservation
TETRA TECH
N
Miles
0
0.3
0.6


HILLSBOROUGH
FOSTER CITY
SAN MATEO
101
REDWOOD CITY
92
82
SAN CARLOS
280
BELMONT
FEMA Flood Hazard Areas
Floodway (100 yr)
1% Annual Chance Flood (100 yr)
Data Sources: San Mateo County, Esri, FEMA
TETRA TECH
N
Miles
0
0.3
0.6


HILLSBOROUGH
FOSTER CITY
SAN MATEO
101
REDWOOD CITY
92
82
SAN CARLOS
280
BELMONT
Landslide Hazard
Rainfall induced landslides
Mostly landslide
Data Sources: San Mateo County, Esri, Association of Bay Area Governments/ U.S. Geological Survey
TETRA TECH
N
Miles
0
0.3
0.6


HILLSBOROUGH
FOSTER CITY
SAN MATEO
101
REDWOOD CITY
92
82
SAN CARLOS
280
BELMONT
Sea Level Rise Hazard
6 ft above Mean Higher High Water
Data Sources: San Mateo County, Esri, Association of Bay Area Governments/ National Oceanic & Atmospheric Administration
TETRA TECH
N
Miles
0
0.3
0.6

OFFICE OF EMERGENCY SERVICES
CITY OF PALO ALTO
275 Forest Avenue
Palo Alto, CA 94301
650.617.3197

Local Hazard Mitigation and Adaptation Plan
Internal Planning Meeting #5: 30 August 2016

Meeting Date, Location, Time

Palo Alto Emergency Operations Center
A Level, 275 Forest Ave
Palo Alto, CA 94301

August 30, 2016
9:00am – 10:30am

Meeting Objectives

- Update planning team on County Multi-Jurisdictional Process (10 mins)
- Evaluate and prioritize community recommended actions (45 minutes)

Pre-Meeting Materials

- Agenda
- Community Recommended Actions Worksheet
- Tetra-Tech Project Prioritization Template

At-Meeting Materials

- Agenda
- Meeting Slideshow
- External Stakeholders Recommended Actions Worksheet
- Tetra-Tech Project Prioritization Template
- Project documentation can be found on OES Internet: www.cityofpaloalto.org/lhmap

Meeting Participants

- See attached roster

Agenda

9:00 am	**Welcome - Introductions**	**Nathan Rainey**
9:05 am	**Review SCC Project Roadmap** Nathan completed the initial Phase 1 planning element template. Mountain View will serve on the County LHMP steering committee as the North County representative.	**Nathan Rainey**
9:15 am	**Review Results of Community Outreach** Nathan described the External Stakeholder Meeting #2 agenda and outcomes. No other community outreach events were conducted specific to LHMAP efforts.	**Nathan Rainey**
9:30 am	**Evaluate and prioritize community recommended actions** Nathan provided to the internal planning team the results of the External Stakeholder Meeting #2 recommended mitigation actions (see the Meeting #2 minutes for the input of comment cards). Using the comment cards the stakeholder team submitted, Nathan developed a table to describe the recommended actions and the internal planning team responses to each action. These results can be found in this document.	**All**
10:15 am	**Wrap up / Conclude Meeting**	**Nathan Rainey**
	Next steps • Participate in County meetings • Finalize input for Phase 2 and Phase 3 input to County plan	

	Nathan completed the Phase 2 planning element with support from CoPA staff members. • Prepare for next Public Meeting (Oct 27, 1-3pm) This meeting was postponed due to the timing of the County planning process. Nathan will reschedule this meeting when we identify the appropriate timing for the meeting. • Department reps to review mitigation actions with internal staff members.	

Office of Emergency Services

LHMAP Internal Planning Meeting #5 30 August 2016

Agenda

- Introduction – Meeting 5a
- Update planning team on County Multi-Jurisdictional Process (10 mins)
  - Phase 1 document has been completed
  - LHMP Steering Committee: North County Rep = Mountain View
- Evaluate and prioritize community recommended actions (45 minutes)

LHMAP Roadmap

Public Workshops:

- May (Risk Exposure): May Fete
- July (Goals and Strategies): Chili Cookoff / Online Survey
- October: Special Session

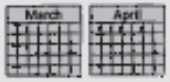
CITY OF PALO ALTO

Hazard Mitigation & Climate Adaptation Planning: Meeting Roadmap

Meeting & Milepost Markers

- *Local Planning Team Meeting*
- *Regional Workshop*
- *Local Public Workshop*
- *Procedural Action*
- *Element of the LHMP*

Establish a Team & Project Management



Getting Started – Pre-meeting organization
- Find and review old LHMP|CAP (if exists).
- Identify core team members.
- Reflect on past community engagement.

Workshop 1 – Community Engagement
Outcome: Resources to create an effective community engagement strategy.

Kick-off meeting — IPT 1
- Review existing LHMP and identify areas that need to be updated.
- Identify potential points of planning coordination, such as general plan updates, or climate adaptation planning.
- Assign members to review existing plans and programs.
  - Organize findings into *Chapter 3 - Capability Assessment.*
- Develop community engagement strategy.
- Identify important groups not at the table.

Table of Contents of Sample Mitigation & Adaptation Plan
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2. Planning Process
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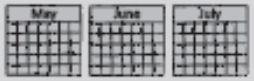
7. Maintenance Procedure

Identify and Assess Hazards



Community Profile & Asset Inventory
- Assign members to obtain and organize local data.
  - Organize findings into *Chapter 4 - Community Profile.*

Workshop 2 – Hazard & Risk Assessment
Outcome: Introduced to content, tools, and data for a local risk assessment.

Risk Assessment Kick-off — IPT 2
- Determine hazards of local concern.
  - Organize findings into *Hazard Identification portion of Chapter 5.*
- Agree on an assessment methodology and assign tasks.
  - Organize findings into Risk Assessment portion of *Chapter 5.*

Risk Assessment Review
- Review local risk assessment.
- Summarize vulnerability.
- Prepare materials for public workshop.

Public Workshop - Introduction to LHMPs & Vulnerability Review
Outcome: Engage citizens and introduce the idea of hazard mitigation. Share the draft risk assessment and ask for feedback, and have them share with friends and neighbors.
SHM 1

Develop Hazard Mitigation & Adaptation Goals & Strategies

Workshop 3: Mitigation and Adaptation Strategy
Outcome: Obtain draft materials of mitigation and adaptation actions that respond to community goals. Gauge feasibility of actions.

Goal & Strategy Development Kick-off — IPT 3
- Identify mitigation and adaptation goals.
- Prepare materials for public workshop.

Public Workshop - Develop Mitigation Goals and List of Strategies
Outcome: Public helps develop goals and list of mitigation/adaptation strategies. The workshop should provide actionable feedback.
SHM 2

Develop Mitigation Strategies — IPT 4
- Analyze public workshop results.
- Organize full list of possible goals and future mitigation/adaptation actions.
  - Organize findings into a preliminary draft of *Chapter 6 Mitigation Strategies.*

Public Workshop - Prioritizing Goals & Strategies
Outcome: Citizens are tasked with reviewing prioritization of strategies. The workshop should provide the planning team with actionable feedback.
SHM 3

Planning Team Meeting – Implementation & Prioritization
- Evaluate and prioritize actions.
- Develop action plan for implementation of strategies.
  - Organize and finalize *Chapter 6 Mitigation Strategies.*

IPT 5

Adoption & Implementation

Planning Team Meeting – Integration
- Incorporate into existing plans and procedures.
  Develop plan maintenance procedures and continued public involvement.
  - Document integration in Chapter 7 Maintenance Procedure.

Submit LHMP to CalOES for Review
- CalOES reviews and sends any changes back to jurisdiction.
- Jurisdiction makes the changes - CalOES forwards the LHMP to FEMA for review.

This review can take up to 3 months.

FEMA Approves Plan
- FEMA works directly with city if changes are needed.

Adopt LHMP at Council|Board
- An adoption resolution is taken to the jurisdictions governing council|board.

Submit adoption resolution to FEMA

Most Bay Area plans are set to expire on March 24, 2016.

IPT: Internal Planning Team Meeting
SHM: Stakeholder Meeting

CITY OF PALO ALTO

County Multi-Jurisdictional Process

- Phase 1 document (1 of 3) has been completed

- LHMP Steering Committee: North County Rep = Mountain View

Community Recommended Projects

- Review Worksheet
- Actions
  - Accept: Include as new project
  - Existing Project: Existing project exists
  - Completed Project: Project has already been resolved
  - Dismiss: Project not feasible
  - Evaluate: Continue to consider

Next Steps

- Complete Phase 2 and Phase 3 planning documents
- Integrate Project List into Tetra-Tech format
- Review project list
  - Prioritize
  - Develop Action Plans

Recommended Project	Hazard	Policy or Program Exists	Comment	Outcome
Make a law that you need to conserve more water	Drought	Yes	CPAU has programs in place for this. City compliance has been successful in reducing water conservation.	Existing
Fine people when sprinklers start after a rain	Drought	Yes	CPAU has a policy in place to influence water reductions at the parcel level through a series of escalations, including fines.	Existing
For drought tolerant landscapes, adjust watering schedules to suit the landscape	Drought	Yes	Such a system is implemented by the City as drought conditions exist. Public Education	Reject
Continue to educate public about earthquake prep and safety	Earthquake	Yes	Ongoing program of public education by Public Safety and other departments.	Existing
Earthquake communication & meet/find protocols	Earthquake	Yes	Public Education message – point to tools available for public use by third parties	Existing
Bury power lines	Earthquake, Severe Storms	Yes	CoPA has underground districts where power and communications lines are being buried. Utilities is moving forward in planning to underground all power lines.	Existing
Help offset flood and earthquake insurance with taxes	Flood, Earthquake	No	The City's direction is to implement flood control projects to lower or reduce Flood Insurance. This may incur a local fee (we won't subsidize specific sectors) to put projects in place.	Dismiss
Sell emergency kits and deliver with an online service	Multi	Yes	Public Safety attempted to do this in years past without much success; Community groups such as the Palo Alto ESV program or other special interests would be better suited to pursue such a program.	Dismiss
Make early warning system more well known	Earthquake, Flood	Yes	SFC JPA has a flood warning; we publish this warning as part of our public education [Creek Monitors will be connected by fiber optic within the next year]	Existing

Institute recycling laws		Yes	CoPA institutes recycling laws in the commercial section; residential recycling is currently a policy and program as part of our waste collection. Voluntary compliance is high, and such a law is not deemed necessary.	Dismiss
Prepare our neighbors	Multi	Yes	Palo Alto Public Safety Departments, as well as Public Works and Utilities all have public education and community outreach that seeks to prepare neighborhoods. A new Palo Alto pilot project in 2016, Cool Cities, has a preparedness element as well that encourages neighborhood preparedness.	Existing
No fee seismic retrofit	Earthquake		The Development Services Department in 2015 and 2016 has led a seismic risk hazard management advisory group (SRHMAG) that will provide policy considerations for the Palo Alto City Council. Various incentives will be considered as part of the overarching policy.	Existing
Protect and Wisely use Palo Alto's groundwater	Drought		Consider a new policy on sea level rise; and new 2017 revised ground water pumping restrictions	Accept
Revise zoning and building ordinances related to basement construction in areas with high groundwater	Drought / Sea Level Rise		Consider a new policy on sea level rise; seeking council direction on zoning considerations for basements	Accept
Consider joint project with Santa Clara County to prevent flooding of Alma underpass at Oregon	Flood		Santa Clara County has plans to add an emergency generator and a trash capture. Their plans do not include upsizing the pumps.	Accept
Consider a project to prevent flooding of Alma underpass at Embarcadero	Flood	Yes	One of the reasons for flooding is runoff overflow from the parking lot at Town and Country Plaza. A new upsized pipe from 12" CMP to 18" PVC has been installed under the rail tracks from Town	Existing

			& Country Plaza to Alma Street. Also, an underground pipe detention has been installed at the Parking Lot by the owners of Town & Country Plaza. This should alleviate a lot of the issues.	
Mitigation for drought related incursion of wild animals into urban / populated areas	Drought	No	Water sources at higher elevations – Boronda Lake in Palo Alto can partially offset this issue, other jurisdictions should consider similar watering sources given the range of wildlife.	Partially Existing
Decentralize waste water treatment plants	Earthquake		Working with Stanford University on their pilot decentralization plant and will evaluate their results.	Evaluating
Consider shallow groundwater as a resource, not "nuisance water" and restrict pumping and discharge on projects	Drought		Initiated a study on Groundwater use for Palo Alto.	Existing
Consider cross contamination of moving water when designing mitigation projects -	Sea Level Rise, Flooding		Not a mitigation action, this a planning consideration.	Evaluate

LHMP Internal Planning Meeting

Initials	Name	Attendance	Response
DA	Anderson, Daren	Required Attendee	None
DEB	Batchelor, Dean	Required Attendee	Accepted
	Blanch, Sandra	Required Attendee	None
PB	Bobel, Phil	Required Attendee	Accepted
CC	Cullen, Charles	Required Attendee	Accepted
KD	Dueker, Kenneth	Required Attendee	Accepted
	Friend, Gil	Required Attendee	Accepted
	Frost, Jasmine	Required Attendee	Accepted
RH	Hada, Rajeev	Required Attendee	Accepted
	Howard, Adam	Required Attendee	Accepted
	Hoyt, George	Required Attendee	Accepted
	Lee, Elena	Required Attendee	Accepted
CM	Macartney, Cody	Required Attendee	Accepted
CM	Moitra, Chitra	Required Attendee	Accepted
	Perez, Alexander	Required Attendee	Accepted
NR	Rainey, Nathaniel	Meeting Organizer	None
DR	Ramberg, David	Required Attendee	Accepted
	Roderick, Kim	Required Attendee	Tentative
	Swanson, Andrew	Required Attendee	Tentative
SW	Williams, Simon	Required Attendee	Accepted
	Yarbrough, Shane	Required Attendee	Tentative

OFFICE OF EMERGENCY SERVICES
CITY OF PALO ALTO
275 Forest Avenue
Palo Alto, CA 94301
650.617.3197

Local Hazard Mitigation and Adaptation Plan
Internal Planning Meeting #5b Minutes: 19 January 2017

Meeting Date, Location, Time

Palo Alto Emergency Operations Center
A Level, 275 Forest Ave
Palo Alto, CA 94301

January 19, 2017
2-3pm

Meeting Objectives

- Review Phase 3 Draft Submission
- Finalize Mitigation Projects and Priorities

Pre-Meeting Materials

- Hazard Risk Ranking
- Hazard Mitigation Action Plan Matrix
- Mitigation Strategy Priority Schedule

At-Meeting Materials

- Agenda
- Meeting Slideshow
- Hazard & Action Plan Matrices
- Project documentation can be found on OES Internet: www.cityofpaloalto.org/lhmap

Meeting Participants

- See attached roster

Agenda

2:00 pm	**Welcome - Introductions**	**Nathan Rainey**
2:05 pm	**Hazard Risk Ranking** George Hoyt asked about the earthquake models in terms of how the correlate with the Seismic Risk Management Study. Nathan provided George the Hazard Matrix so he could review the impact analysis. More follow up is required with Stanford University to better understand the risk of Searsville Dam, currently assessed as a Medium Risk.	**Nathan Rainey**
2:10 pm	**Review Hazard Mitigation Action Plan Matrix** Darren Anderson provided his feedback by email (could not attend today's meeting) Chitra Moitra recommended that the Transportation Division review the project list, as they may have projects for consideration. Nathan will accept input until Friday 27 January. George Hoyt also recommended that we add a project for the Building Department to maintain its ISO Level 1 rating. David Ramberg requested the CIP number be added where known.	**All**
2:30 pm	**Review Strategy Priority Schedule** • Explain rating scheme • Review Matrix No comments were made concerning this topic.	**All**

2: 45 pm	**Wrap up / Conclude Meeting**	**Nathan Rainey**
	Next steps • Make final updates to the planning template. • Provide final document for review by planning team. • Send final link to Community Stakeholders for their review. • Provide final submission to the County by 2 February 2017. • Post Palo Alto plan on LHMAP Website. • Prepare CMR package for council adoption in May/June 2017.	

Palo Alto LHMAP Internal Planning Meeting 5a
19 January 2017

Initials	Name	Attendance	Response
NM	Rainey, Nathaniel	Meeting Organizer	None
	Anderson, Daren	Required Attendee	None
PB	Bobel, Phil	Required Attendee	Accepted
CC	Cullen, Charles	Required Attendee	Accepted
KD	Dueker, Kenneth	Required Attendee	Accepted
	Friend, Gil	Required Attendee	Declined
	Hada, Rajeev	Required Attendee	Accepted
GH	Hoyt, George	Required Attendee	Accepted
CM	Moitra, Chitra	Required Attendee	Accepted
DR	Ramberg, David	Required Attendee	Accepted
	Shikada, Ed	Required Attendee	None
SW	Williams, Simon	Required Attendee	Accepted
	Yarbrough, Shane	Required Attendee	None
	Howard, Adam	Required Attendee	None
EB	Ballash, Evon	Required Attendee	Accepted
	Batchelor, Dean	Required Attendee	None
	Kanth, Gayathri	Required Attendee	Declined
	Macartney, Cody	Required Attendee	Declined
	Roderick, Kim	Required Attendee	Declined
	leConge Ziesenhenne, Monique	Optional Attendee	None
AP	Perez, Alexander	Optional Attendee	Accepted

Office of Emergency Services

LHMAP Internal Planning Meeting #5b
19 January 2017

Agenda

Welcome - Introductions
Hazard Risk Ranking
Review Hazard Mitigation Action Plan Matrix Darren Anderson provided his feedback by email (could not attend today's meeting)
Review Strategy Priority Schedule • Explain rating scheme • Review Matrix
Wrap up / Conclude Meeting

CITY OF PALO ALTO

LHMAP Roadmap

Palo Alto Public Workshops:

- May (Risk Exposure): May Fete
- July (Goals and Strategies): Chili Cookoff /
- December/January: Online Survey
- ~~October: Special Session~~

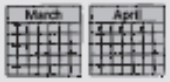
CITY OF PALO ALTO

Hazard Mitigation & Climate Adaptation Planning: Meeting Roadmap

Meeting & Milepost Markers

- *Local Planning Team Meeting*
- *Regional Workshop*
- *Local Public Workshop*
- *Procedural Action*
- *Element of the LHMP*

Establish a Team & Project Management



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- Find and review old LHMP|CAP (if exists).
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- Reflect on past community engagement.

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Kick-off meeting — IPT 1
- Review existing LHMP and identify areas that need to be updated.
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  - Organize findings into *Chapter 3 - Capability Assessment.*
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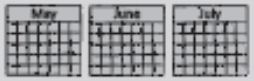

Community Profile & Asset Inventory
- Assign members to obtain and organize local data.
  - Organize findings into *Chapter 4 - Community Profile.*

Workshop 2 – Hazard & Risk Assessment
Outcome: Introduced to content, tools, and data for a local risk assessment.

Risk Assessment Kick-off — IPT 2
- Determine hazards of local concern.
  - Organize findings into *Hazard Identification portion of Chapter 5.*
- Agree on an assessment methodology and assign tasks.
  - Organize findings into Risk Assessment portion of *Chapter 5.*

Risk Assessment Review
- Review local risk assessment.
- Summarize vulnerability.
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Workshop 3: Mitigation and Adaptation Strategy
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Develop Mitigation Strategies — IPT 4
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Planning Team Meeting – Implementation & Prioritization
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Planning Team Meeting – Integration
- Incorporate into existing plans and procedures.
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Submit LHMP to CalOES for Review
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This review can take up to 3 months.

FEMA Approves Plan
- FEMA works directly with city if changes are needed.

Adopt LHMP at Council|Board
- An adoption resolution is taken to the jurisdictions governing council|board.

Submit adoption resolution to FEMA

Most Bay Area plans are set to expire on March 24, 2016.

IPT: Internal Planning Team Meeting
SHM: Stakeholder Meeting

CITY OF PALO ALTO

Review Hazard and Mitigation Worksheets

Table 1-9. Categorizes projects by Hazard, Objectives, and Funding

- Review the Projects that your department is the lead agency (and for PW the ones for SCVWD and SFCJPA)
- Look at the Sources of Funding. **Are the correct funds identified**? Let me know if there is an update.
- Look at the timeline. **Are the correct timeframe identified**?

Table 1-10. Prioritizes projects by cost/benefit, and funding availability.

- Review your projects and confirm, if you know or are aware, if these could be eligible for grant funds (I've made an initial determination, but don't know all grants your departments are eligible for)
- Review the column, "CAN BE FUNDED UNDER EXISTING PROGRAM/BUDGETS", If Yes, then the project has an established budget already.

Next Steps

- Make final updates to the planning template.
- Provide final document for review by planning team.
- Send final link to Community Stakeholders for their review.
- Provide final submission to the County by 2 February 2017.
- Post Palo Alto plan on LHMAP Website.
- Prepare CMR package for council adoption in May/June 2017.

CITY OF PALO ALTO

1.1 HAZARD RISK RANKING

Table 1-7 presents the ranking of the hazards of concern.

Table 1-7. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake	48	High
2	Flood	42	High
3	Severe Weather	33	Medium
4	Wildfire	15	Medium
5	Dam Failure	15	Medium
6	Drought	3	Low
7	Levee Failure	2	Low

1.2 STATUS OF PREVIOUS PLAN INITIATIVES

The status of previous actions from the 2011 ABAG LHMP for Santa Clara County can be found in Appendix A of this Volume.

1.3 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 1-9 lists the actions that make up the City of Palo Alto hazard mitigation action plan. Table 1-10 identifies the priority for each action. Table 1-11 summarizes the mitigation actions by hazard of concern and the six mitigation types.

Table 1-9. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
PA-1— San Francisquito Creek Lower Reach Flood Reduction and Ecosystem Restoration Project						
New	Flood / Severe Weather	2, 3, 12	San Francisquito Creek JPA	Low		0-1 Years
PA-2— San Francisquito Creek Upper Reach Flood Reduction and Ecosystem Restoration Project						
New	Severe Storm / Flood	2, 3, 12	San Francisquito Creek JPA	Medium		1-2 Years
PA-3— Newell Creek Bridge replacement project to accommodate a 100 year flood event						
New	Flood / Severe Weather	2, 3, 12	Palo Alto Public Works	Low	CALTRANS / SCVWD	2-5 Years
PA-4— Pope Chaucer Street Bridge replacement project to address 100 flood event						
Existing	Flood / Severe Weather	2, 3, 12	Santa Clara Valley Water District	Low	SCVWD	
PA-5— Matadero Creek Storm Water Pump Station Improvements						
New	Flood / Severe Weather	2, 3, 12	Palo Alto Public Works	$6 M: Low	CIP	0-1 Years
PA-6— Storm Drain System Replacement and Rehabilitation						
Existing	Flood / Severe Weather	2, 3, 12	Palo Alto PW	$ 1.5 M: Low	CIP	Annually
PA-7— Recycled Water Pipeline Expansion Project to expand the recycled water purple pipeline within South Palo Alto towards Stanford Research Park						
Existing	Drought	2, 3, 12	Palo Alto Public Works	$30 M: Low	CIP	1-3 Years
PA-8— Continue participation in NFIP and Improve Community Rating System Class to provide higher CRS premium discounts						
Existing	Flood / Severe Weather	1, 4, 7, 8, 10	Palo Alto Public Works	Low		2-3 Years
PA-9 — Execute the SAFER Bay Project to protect critical infrastructure and property and restore historic marshlands						
New	Severe Storm / Flood / Sea Level Rise	2, 3, 12	San Francisquito Creek JPA	High		Unknown
PA-10— Construct new Public Safety Building to mitigate current risks to public safety essential services						
New	Earthquake	3, 5, 12, 15	Palo Alto Public Works	$35M: Medium	CIP	5 -7 Years
PA-11— Rebuild Fire Stations 3 and 4 to mitigate current risks to essential services						
New	Earthquake / Flood / Sea Level Rise	3, 5, 12	Palo Alto Public Works	$15 M: Low	CIP	2-4 Years
PA-12— Continue 7 year cycle for high priority of tree trimming						
Existing	Earthquake/ Flood / Severe Weather	2, 3, 5	Palo Alto Public Works	Low	General Fund	Annual
PA-13— Replace the Baylands Tide Gate						
Existing	Flood / Severe Weather	2, 3, 12	Santa Clara Valley Water District	Medium	SCVWD	Unknown
PA-14— Consider the use of alternative energy sources for critical infrastructure (essential facilities, key resources)						

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
Existing	Earthquake / Severe Weather	5, 6, 12	Palo Alto Office of Sustainability	High		Unknown
PA-15— Implement Wastewater Long-Range Facilities Plan						
Existing	Flood / Severe Weather / Earthquake / Sea Level Rise	3, 5, 11, 12	Palo Alto Public Works	$3-20 M: Low	CIP	Annually
PA-16— Conduct a feasibility analysis concerning the continued use of water reservoirs in the Foothills region						
Existing	Earthquake / Wildfire / Drought	3, 5, 12	Palo Alto Utilities	Medium		3-5 Years
PA-17— Consider construction of a new water reservoir in the low lying areas of Palo Alto						
New	Earthquake / Drought	5, 12	Palo Alto Utilities	Medium		3-5 Years
PA-18— Rebuild and Reconfigure Electric System in Stanford Hospital/Mall Area to increase reliability during emergencies						
Existing	Earthquake / Severe Weather	5, 12	Palo Alto Utilities	Low	CIP	3-5 Years
PA-19— Install Fiber Optic Service to Black Mountain Radio Repeater Site to improve public safety communications along Skyline Drive						
New	Earthquake / Severe Weather / Wildfire	5, 11, 12, 15	Palo Alto Utilities	Medium	CIP	2-3 Years
PA 20— Convert overhead utility lines to underground transmission. Installation of new underground electric, communication, and cable television systems in Electric Underground Districts 46 and 47						
Existing	Earthquake / Severe Weather	5, 12	Palo Alto Utilities	$2.0 M: Low	CIP	1-4 Years
PA 21— Construct a second electrical transmission interconnection to PG&E using a new corridor						
New	Earthquake / Severe Weather	5, 12	Palo Alto Utilities	High		Unknown
PA 22— Construct a second water interconnection from Palo Alto Utilities to Stanford Hospital						
New	Earthquake / Severe Weather	5, 11, 12	Palo Alto Utilities	High		3-5 Years
PA 23— Connect by Fiber Palo Alto to adjacent Public Safety agencies' Public Safety Answering Points						
Existing	Earthquake / Severe Weather	5, 11, 15	Palo Alto Police Department	High		Unknown
PA 24— Implement a Public Safety Wireless Data Network						
New	Earthquake / Severe Weather /	5, 15	Palo Alto Police Department	High		Unknown
PA 25— Conduct a Hydrology Study on Buck-Eye Creek for flood protection and erosion control at Foothills Park						
Existing	Flood / Severe Weather	3, 12	Palo Alto Community Services Department	$105 K: Low	CIP	2-4 Years
PA 26— Develop a Baylands Comprehensive Conservation Plan						

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
Existing	Flood / Severe Weather / Sea Level Rise	5, 6, 9, 12,	Palo Alto Community Services Department	$330 K: Low	CIP	Annually
PA 27— Address hazardous fuels and reduce structural ignitability in the Foothills region in accordance with the Community Wildfire Protection Plan and Foothills Fire Management Plan						
Existing	Wildfire	2, 3, 12, 13, 14	Palo Alto Fire Department	Low		Annually
PA 28— Encourage creation by Foothills Residence of a Firewise Ready Community						
Existing	Wildfire	2, 3, 8, 10	Palo Alto OES	$150: Low	Various	1-2 Years
PA 29— Consider a policy for Seismic Retrofitting of earthquake prone structures						
Existing	Earthquake	2, 3, 9, 14	Palo Alto Development Services	Low		1-2 Years
PA 30— Develop a Policy for Sea-Level Rise considerations (what actions should the City take)						
Existing	Sea Level Rise	2, 3, 6	Sustainability	Low		1-2 Years
PA 31 — Develop a post-disaster Community Longterm Recovery Plan						
New	All Hazards	1, 2, 4, 7, 8, 10,	Palo Alto OES	Medium		3-5 Years
PA 32 — Conduct public education that raises awareness of Palo Alto threats and hazards and improves community resilience						
Existing	All Hazards	1, 2, 4, 7, 8, 10,	Palo Alto OES	Low		Annually
PA 33— Maintain Storm Ready Community designation						
Existing	Severe Storm	1, 4, 7, 10, 15	Palo Alto OES	Low		Annually
PA 34 — Improve PAFD ISO Rating						
Existing	All Hazards	2, 3, 5, 8, 9,	Palo Alto Fire Department	Low		1-2 Years

Table 1-10. Mitigation Strategy Priority Schedule

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Priority[a]
PA-1	3	High	Low	Yes	Yes	Yes	High	High
PA-2	3	High	Medium	Yes	Yes	Yes	High	High
PA-3	3	High	Low	Yes	Yes	Yes	High	High
PA-4	3	High	Low	Yes	Yes	Yes	High	High
PA-5	3	Medium	Low	Yes	Yes	Yes	High	High
PA-6	3	Medium	Low	Yes	Yes	Yes	High	High
PA-7	3	Low	Low	Yes	No	Yes	High	Low
PA-8	5	Medium	Low	Yes	No	Yes	High	Low

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority[a]	Grant Priority *a*
PA-9	3	Medium	High	No	Yes	No	Low	Low
PA-10	4	High	Medium	Yes	No	Yes	High	Low
PA-11	3	High	Low	Yes	No	Yes	High	Low
PA-12	3	High	Low	Yes	No	Yes	High	Low
PA-13	3	Medium	Medium	Yes	No	Yes	Medium	Low
PA-14	3	Low	High	Yes	Yes	No	Low	Low
PA-15	4	Medium	Low	Yes	No	Yes	High	Low
PA-16	3	Medium	Medium	Yes	No	No	Medium	Low
PA-17	2	Medium	Medium	Yes	Yes	No	Medium	Medium
PA-18	2	High	Low	Yes	No	Yes	High	Low
PA-19	4	Medium	Medium	Yes	No	No	Low	Low
PA-20	2	High	Low	Yes	No	Yes	High	Low
PA-21	2	Medium	High	No	No	No	Medium	Low
PA-22	3	Medium	High	No	No	No	Medium	Low
PA-23	3	Medium	High	No	Yes	No	Low	Low
PA-24	2	Medium	High	No	No	No	Medium	Low
PA-25	2	Low	Low	Yes	No	Yes	High	Low
PA-26	4	Medium	Low	Yes	No	Yes	High	Low
PA-27	5	High	Low	Yes	Yes	Yes	High	High
PA-28	4	High	Low	Yes	No	Yes	High	Low
PA-29	4	Medium	Low	Yes	Yes	Yes	High	High
PA-30	3	Medium	Low	Yes	Yes	Yes	High	High
PA-31	6	Medium	Medium	Yes	Yes	Yes	High	Medium
PA-32	6	High	Low	Yes	No	Yes	High	Low
PA-33	5	High	Low	Yes	No	Yes	High	Low
PA-34	5	High	Low	Yes	No	Yes	High	Low

1.3.1 Prioritization of Mitigation Actions

Complete the information in the table titled "Mitigation Strategy Priority Schedule" as follows:

- **Action #**—Indicate the action number from the previous annex table (Hazard Mitigation Action Plan Matrix).
- **# of Objectives Met**—Enter the number of objectives the action will meet.
- **Benefits**—Enter "High," "Medium" or "Low" as follows:

  - High: Project will have an immediate impact on the reduction of risk exposure to life and property.
  - Medium: Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.
  - Low: Long-term benefits of the project are difficult to quantify in the short term.

- **Costs**—Enter "High," "Medium" or "Low" as follows:

  - High: Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.
  - Medium: Could budget for under existing work-plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
  - Low: Possible to fund under existing budget. Project is or can be part of an existing ongoing program.

  If you know the estimated cost of a project because it is part of an existing, ongoing program, indicate the amount.

- **Do Benefits Exceed the Cost?**—Enter "Yes" or "No." This is a qualitative assessment. Enter "Yes" if the benefit rating (high, medium or low) is the same as or higher than the cost rating (high benefit/high cost; high benefit/medium cost; medium benefit/low cost; etc.). Enter "No" if the benefit rating is lower than the cost rating (medium benefit/high cost, low benefit/medium cost; etc.)
- **Is the Project Grant-Eligible?**—Enter "Yes" or "No." Refer to the fact sheet on HMGP and PDM.
- **Can Project Be Funded Under Existing Program Budgets?**—Enter "Yes" or "No." In other words, is this action currently budgeted for, or would it require a new budget authorization or funding from another source such as grants?
- **Implementation Priority**— Enter "High," "Medium" or "Low" as follows:

  - High Priority—An initiative that meets multiple objectives, has benefits that exceed cost, has funding secured or is an ongoing project and meets eligibility requirements for a grant program. High priority initiatives can be completed in the short term (1 to 5 years). The key factors for high priority initiatives are that they have funding secured and can be completed in the short term.
  - Medium Priority—An initiative that meets multiple objectives, that has benefits that exceed costs, and for which funding has not yet been secured, but is eligible for funding. Initiative can be completed in the short term, once funding is secured. Medium priority projects will become high priority projects once funding is secured. The key factors for medium priority

initiatives are that they are eligible for funding, but do not yet have funding secured, and they can be completed within the short term.

- Low Priority—An initiative that will mitigate the risk of a hazard, that has benefits that do not exceed the costs or are difficult to quantify, for which funding has not been secured, that is not eligible for grant funding, and for which the time line for completion is long term (1 to 10 years). Low priority initiatives may be eligible for grant funding from other programs that have not yet been identified. Low priority projects are generally "blue-sky" or "wish-list." projects. Financing is unknown, and they can be completed over a long term.

- **Grant Funding Priority**— Enter "High," "Medium" or "Low" as follows:

  - High Priority—An initiative that has been identified as meeting grant eligibility requirements, assessed to have high benefits, is listed as high or medium priority, and where local funding options are unavailable or where dedicated funds could be utilized for projects that are not eligible for grant funding.
  - Medium Priority—An initiative that has been identified as meeting grant eligibility requirements, assessed to have medium or low benefits, is listed as medium or low priority, and where local funding options are unavailable.
  - Low Priority—An initiative that has not been identified as meeting grant eligibility requirements, or has low benefits.

OFFICE OF EMERGENCY SERVICES
CITY OF PALO ALTO
275 Forest Avenue
Palo Alto, CA 94301
650.617.3197

Local Hazard Mitigation and Adaptation Plan
Stakeholder Planning Meeting #1: 27 April 2016
Meeting Minutes

Meeting Date, Location, Time

El Palo Alto Room
Mitchell Park Community Center
3700 Middlefield Rd, Palo Alto, CA 94306

27 April 2016
1:00-3:00 pm

Meeting Objectives

- Engage Stakeholder community
- Introduce hazard mitigation
- Hazard and risk assessment results

Pre-Meeting Materials

- Agenda
- Stakeholder Meeting #1 Slideshow

At-Meeting Materials

- Agenda & Slideshow
- LHMAP Stakeholder List
- Hazard Assessment Worksheet

Enclosures

- Participant Roster
- Slideshow
- Hazards Summary Worksheet (Template)

Agenda

1:00 pm	**Welcome –Participant Introductions** Ken Dueker provided welcoming comments and explained the importance of involving as many sectors and representatives of the Palo Alto community is important to this planning process. Each individual also introduced themselves.
1:15 pm	**Introduction to Hazard Mitigation – What is the purpose of the plan?** Nathan Rainey describe the hazard mitigation planning process and timeline we are operating under. See slides 4-5 in the enclosed slideshow.
1:30 pm	**Risk Assessment Exercise** Participants completed the FEMA Hazards Summary Worksheet to assess natural hazards in Palo Alto. Individuals discussed the worksheets in groups to determine the high hazards.
1:45 pm	**Hazard and Risk Assessment Results** Nathan facilitated a discussion on the Highest Hazards faced by Palo Alto. • There was large consensus that Earthquake, Wildfire, and Floods were high hazards. • There was also discussion that Drought and Sea Level Rise should also be high hazards. Water restrictions from the drought are already impacting the Palo Alto Unified School District maintenance operations. It was also mentioned that water restrictions would likely impact medical facilities as well, given their high use of water for treatment of patients. While the likelihood of Sea Level Rise is still unknown and the risk currently is low, in the future risks could increase greatly. The City of Palo Alto is planning for Sea Level rise now with an estimation of 55” of rise by 2100, along with certain actions the City can take now to start preparing. See the Sustainability and Climate Action Plan once released.
2:10 pm	**Vulnerability Analysis**

	Nathan started this topic with an introduction to asset types and described the types of critical assets included in the current vulnerability assessment. These are available on slides 11-12. • Nathan had the group examine hazard maps for the high hazards discussed by the group including the location of critical assets. These maps are available at www.cityofpaloalto.org/LHMAP and demonstrates the vulnerability of critical assets by hazard type. • Some members inquired about the status of utilities infrastructure and how safe they were. Ken Dueker mentioned that the electrical system is limited to one grid connection, and the City's water connection is limited to the Hetch Hetchy supply. Additionally, Nathan pointed out the risk to utilities infrastructure in the Foothills to three hazards: Earthquake, Wildfire, and Landslides. The City of Palo Alto Utilities has in the last five years completed various projects that have lessened the potential impact to these hazards including the new reservoirs and emergency water wells, seismic bracing of reservoir tanks, and replacement of underground pipelines (see http://www.cityofpaloalto.org/gov/depts/utl/projects/overview.asp) • Some members inquired about the risk of dam failure to Palo Alto. Jeff Norris, from the San Mateo County Office of Emergency Services discussed that Searsville Dam has an extremely low risk of failure given the type and method of construction. However inundation area could be significant to Palo Alto being in the downstream watershed. The resulting risk is low understanding that water release from a failure will be a partial release rather than total release since it is extremely unlikely to have a catastrophic failure, but rather a cascading type of partial failure.
2:45 pm	**Discuss upcoming stakeholder meeting schedule** The next meeting is on 26 May, 1-3pm, in the Mitchell Park Community Center El Palo Alto Room, 3700 Middlefield Road, Palo Alto.
2:50 pm	**Final Comments &Questions** Nathan wrapped up by asking the stakeholder members to send the information about this planning process to their networks with an open invitation to participate in future meetings and to follow our progress on our website. He also mentioned that the OES team is willing to come speak on this topic at stakeholder forums. Contact Nathan directly with specific requests.

LHMAP Online Link: www.cityofpaloalto.org/LHMAP

City of Palo Alto LHMP
Stakeholders
Updated: 2 March 2016 (N. Rainey)

Initials	Lastname	Firstname	Organization	Title/Rank	Email	Sector
BEA	Altman	Eileen	First Congregational Church, UCC, Palo Alto	Associate Pastor	[redacted]	Community Resource
	Anderson	Daren	City of Palo Alto	Open Spaces Manager	[redacted]	Local Government
	Andonian	Amy	Avenidas	President & CEO	[redacted]	Special Population
	Baeta	Dan	Palintir	Director of Security	[redacted]	Business
	Ball	Donna	Save the Bay	Habitat Restoration Director	[redacted]	Environmental
LB	Barcomb	Linda	Stanford University	School of Medicine: Director EH&S	[redacted]	Education
	Barry	Robert	Hewlett-Packard Company	Sr. Regional Security Manager - Western US	[redacted]	Business
	Bartshire	Corinne	UASI	Resilience and Recovery Regional Project Manager	[redacted]	Special District
	Baruch	Stephen	Independent Consultant		[redacted]	
	Batchelor	Dean	City of Palo Alto	Assistant Director, Utilities	[redacted]	Local Government
	Beecham	Bern	Palo Alto Emergency Services Volunteers	CERT	[redacted]	Community Resource
	Bobel	Phil	City of Palo Alto	Assistant Director of PW	[redacted]	Local Government
	Bond	Brandon	Stanford Health Care (Hospital)	Admin. Director, Office of Emergency Management	[redacted]	Medical
PC	Cassel	Phyllis	League of Women Voters of Palo Alto (LWVPA)	2nd Vice President	[redacted]	Special Population
KC	Chakos	Arrietta	Urban Resilience Strategies	President	[redacted]	
	BALLASH	EVAN	C.P.A.	ASSISTANT BUDGET OFFICER	[redacted]	

City of Palo Alto LHMP
Stakeholders
Updated: 2 March 2016 (N. Rainey)

Initials	Lastname	Firstname	Organization	Title/Rank	Email	Sector
	Cullen	Charlie	City of Palo Alto	Police Department Technical Services Director	[redacted]	Local Government
	Dah	Phiip	LifeMoves (InnVision Shelter Network)	Local Program Director	[redacted]	Special Population
	Dueker	Kenneth	City of Palo Alto	Director, Emergency Services	[redacted]	Local Government
	Dunbar	Tammy	Santa Clara County	OES Planner	[redacted]	Local Government
	Dunnegan	Jim	Varian Medical Systems	EH&S Manager	[redacted]	Business
	Edwards	Josh	Civil Air Patrol - Palo Alto (Sq10)	Captain	[redacted]	Community Resource
	Ellis	Ron	Palo Alto Unified School District (PAUSD)	Manager of Maintenance, Operations and Transportation	[redacted]	Education
	Estinos	Joeffrey	SAP	Director of Security	[redacted]	Business
	Flamm	David	County of Santa Clara	OES Assistant Director	[redacted]	Local Government
	Friedman	Laurie	Stanford University EH&S		[redacted]	Education
	Friend	Gil	City of Palo Alto	Chief Sustainability Officer	[redacted]	Local Government
	Frost	Jasmine	City of Palo Alto	IT Chief of Staff	[redacted]	Local Government
	Garcia	Ruth Ann	City of Palo Alto	Library Services Manager	[redacted]	Local Government
	Gen Lew	Victoria	Palo Alto Unified School District (PAUSD)	EHS Manager		Education
	Glanckopf	Annette	Palo Alto Emergency Services Volunteers	Team Leader (TL)	[redacted]	Community Resource

City of Palo Alto LHMP
Stakeholders
Updated: 2 March 2016 (N. Rainey)

Initials	Lastname	Firstname	Organization	Title/Rank	Email	Sector
	Lam	Elizabeth	City of East Palo Alto	CSO, Police Dept.	[redacted]	Local Government
	Lee	Elena	City of Palo Alto	Palo Alto Planning	[redacted]	Local Government
	Lougee	Lance	~~Stanford Linear Accelerator~~ SLAC NATIONAL ACCELERATOR LABORATORY	Emergency Manager	[redacted]	Education
	Macartney	Cody	City of Palo Alto	Police Department Animal Services	[redacted]	Local Government
	Martineau	Catherine	Canopy	Executive Director	[redacted]	Environmental
	Materman	Len	San Francisquito Creek Joint Powers Authority (SFC JPA)	Director	[redacted]	Special District
	Matsumoto	Mel	Channing House (SNF)	Director	[redacted]	Special Population
	Matzke	Karl	American Red Cross, Silicon Valley Chapter	Mass Care Administrator	[redacted]	Community Resource
	Meiss	Bill	Hewlett-Packard Company	Regional Security Manager	[redacted]	Business
	Micetich	Doug	Silicon Valley Independent Living Center		[redacted]	Special Population
	Moro	Craig	Varian Medical Systems	Security Manager	[redacted]	Business
	Nadim	Mark	Fire Safe Council (FSC)	Midpeninsula Manager	[redacted]	Community Resource
	Nigenda	Esther	Palo Alto Emergency Services Volunteers	Volunteer	[redacted]	Community Resource
	Norris	Jeff	San Mateo County Sheriff's Office	OES	[redacted]	Local Government
	Ohtaki	Peter	California Resiliency Alliance	Director	[redacted]	Business

City of Palo Alto LHMP
Stakeholders
Updated: 2 March 2016 (N. Rainey)

Initials	Lastname	Firstname	Organization	Title/Rank	Email	Sector
	Glotzer	Jerry	Palo Alto Medical Foundation PAMF	~~Security/Safety~~ DIRECTOR ENV HLTH & SAFETY/EMRGY MGMT	[redacted]	Medical
	Gonzales	Candace	Palo Alto Housing Corporation	CEO	[redacted]	Special Population
	Halliburton	Jyllian	Avenidas	Director, Volunteer Program	[redacted]	
	Hibbs	Linda	Lytton Gardens (SNF)	Director	[redacted]	Special Population
	Holgado	Ruben	Wilson Sonsini Goodrich & Rosati	Security Manager	[redacted]	Business
	Howard	Adam	City of Palo Alto	Community Services	[redacted]	Local Government
	Hoyt	George	City of Palo Alto	Chief Building Official	[redacted]	Local Government
	Hudson Emanuel	Sharon David	Vista Center for the Blind & Visually Impaired	Associate Director	[redacted]	Special Population
	Ives	Bruce	LifeMoves (InnVision Shelter Network)	CEO	[redacted]	Special Population
	Jacques	Dale	Santa Clara Valley Water District	Emergency Manager	[redacted]	Special District
	Jones	Ron	VA Hospital - Palo Alto	Chief of Police	[redacted]	Medical
	Kalkhorst	Josh	Stanford Shopping Center (Simon Properties)	Mall Director	[redacted]	Business
	Kissinger	Carmen	Stanford Ronald McDonald House	Director	[redacted]	Medical
	Kleinberg	Judy	Palo Alto Chamber of Commerce	Chief Executive Officer (CEO)	[redacted]	Business
	Kou	Lydia	Palo Alto resident		[redacted]	

Law Pamela Opportunity Center Property Manage [redacted] special population

City of Palo Alto LHMP
Stakeholders
Updated: 2 March 2016 (N. Rainey)

Initials	Lastname	Firstname	Organization	Title/Rank	Email	Sector
	Perez	Adolfo	Webster House	Director of Facilities	[redacted]	Special Population
	Perry	Tim	Space Systems Loral	Director of Security	[redacted]	Business
	Perry McMATH	Keith EUSE	Stanford University	Emergency Manager	[redacted]	Education
	Peterson	Lon	City of Palo Alto	City Public Communications	[redacted]	Local Government
SW	Quan / Wu	Kelvin / Shannon	MayView Community Health Center	CEO / EA	[redacted]	Special Population
	Rainey	Nathan	City of Palo Alto	Emergency Services Coordinator	[redacted]	Local Government
	Ramberg	David	City of Palo Alto	Assistant Director, Administrative Services	[redacted]	Local Government
	Reed	Dana	Santa Clara County	OES Director	[redacted]	Local Government
	Rice	Jayson	Stanford Shopping Center (Simon Properties)	Security Director	[redacted]	Business
	Richardson	Eileen	Downtown Streets Team/ Peninsula HealthCare Connections	CEO	[redacted]	Special Population
	Richardson	Chris	Downtown Streets Team/ Peninsula HealthCare Connections	Assistant Director	[redacted]	Special Population
KR	Roderick	Kim	City of Palo Alto	Palo Alto Fire Department	[redacted]	Local Government
	Schubek	Alex	Santa Clara County Department of Public Health	Emergency Manager	[redacted]	Local Government
	Shikada	Ed	City of Palo Alto	Assistant City Manager	[redacted]	Local Government
	Stern	Adam	Acterra	Executive Director	[redacted]	Environmental

John Sheffield Avenidas Facility Manager
Ray Darrell SCC OES Planner [redacted] County

City of Palo Alto LHMP
Stakeholders
Updated: 2 March 2016 (N. Rainey)

Initials	Lastname	Firstname	Organization	Title/Rank	Email	Sector
	Stoeffl	Monika	California Resiliency Alliance	Executive Director (int.)	[redacted]	Business
	Storm	Kevin	VA Hospital - Palo Alto	Emergency Manager	[redacted]	Medical
	Swanson	Andy	City of Palo Alto	Airport Manager	[redacted]	Local Government
V.T.	Talavera	Victor	Xerox Palo Alto Research Center (PARC) (Stanford Industrial Park)	Safety	[redacted]	Business
	Truchett	Giselle	Page Mill Pastures		[redacted]	Animal
	Van Buskirk	Lisa	Peninsula Human Society		[redacted]	Animal
	Weidanz	Charlie	Abilities United	Executive Director	[redacted]	Special Population
	Williams	Simon	City of Palo Alto	Emergency Services Specialist	[redacted]	Local Government
LW	Wilson	Laura	Stanford University	Police Chief / Director, Dept. of Public Safety	[redacted]	Education
	Yarbrough	Shane	City of Palo Alto	Fire Department Battalion Chief, Training	[redacted]	Local Government
	Young	Kate	Palo Alto Housing Corporation	Resident Services Manager	[redacted]	Special Population
	Zollicoffer	Ryan	Menlo Park Fire Protection District	Emergency Manager	[redacted]	Local Government

City of Palo Alto

Local Hazard Mitigation and Climate Adaptation Plan Stakeholder Meeting #1

27 April 2016

CITY OF PALO ALTO

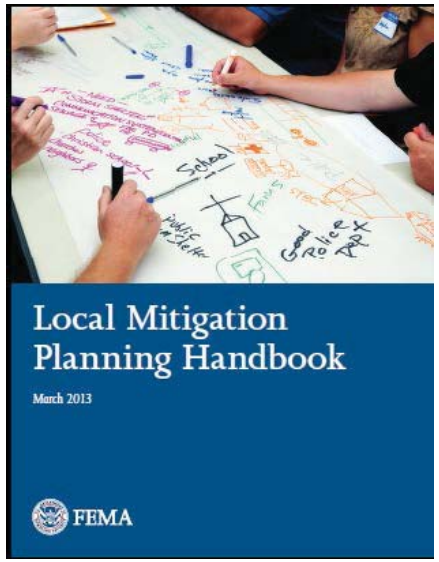
http://www.cityofpaloalto.org/lhmap

Agenda

- Introduction and Welcome
- Hazard Mitigation Planning Overview
- Planning Roadmap
- Hazard Analysis and Risk Assessment Results
  - Review Hazards
  - Review Critical Infrastructure Exposure Analysis
  - Quantify Results
- Wrap Up – Next Meeting & Questions/Comments

Mitigation Planning

- Hazard mitigation reduces disaster damages
- Local governments have the responsibility to protect the health, safety, and welfare of their citizens
- Planning identifies local policies and actions that can be implemented over the long term to reduce risk and future losses from hazards.
- Federal Disaster Mitigation Act of 2000



CITY OF PALO ALTO

LHMCAP Roadmap

Public Workshops:

- May (Risk Exposure): May Fete
- July (Goals and Strategies): Chili Cookoff / Online Survey
- September: Special Session

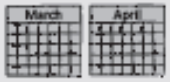
CITY OF PALO ALTO

Hazard Mitigation & Climate Adaptation Planning: Meeting Roadmap

Meeting & Milepost Markers

- *Local Planning Team Meeting*
- *Regional Workshop*
- *Local Public Workshop*
- *Procedural Action*
- *Element of the LHMP*

Establish a Team & Project Management



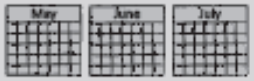
Getting Started – Pre-meeting organization
- Find and review old LHMP|CAP (if exists).
- Identify core team members.
- Reflect on past community engagement.

Workshop 1 – Community Engagement
Outcome: Resources to create an effective community engagement strategy.

Kick-off meeting — IPT 1
- Review existing LHMP and identify areas that need to be updated.
- Identify potential points of planning coordination, such as general plan updates, or climate adaptation planning.
- Assign members to review existing plans and programs.
  - Organize findings into *Chapter 3 - Capability Assessment.*
- Develop community engagement strategy.
- Identify important groups not at the table.

Table of Contents of Sample Mitigation & Adaptation Plan
1. Introduction
2. Planning Process
3. Capability Assessment
4. Community Profile
5. Hazard Identification & Risk Assessment
6. Mitigation Strategies
7. Maintenance Procedure

Identify and Assess Hazards



Community Profile & Asset Inventory
- Assign members to obtain and organize local data.
  - Organize findings into *Chapter 4 - Community Profile.*

Workshop 2 – Hazard & Risk Assessment
Outcome: Introduced to content, tools, and data for a local risk assessment.

Risk Assessment Kick-off — IPT 2
- Determine hazards of local concern.
  - Organize findings into *Hazard Identification portion of Chapter 5.*
- Agree on an assessment methodology and assign tasks.
  - Organize findings into Risk Assessment portion of *Chapter 5.*

Risk Assessment Review
- Review local risk assessment.
- Summarize vulnerability.
- Prepare materials for public workshop.

Public Workshop - Introduction to LHMPs & Vulnerability Review — SHM 1
Outcome: Engage citizens and introduce the idea of hazard mitigation. Share the draft risk assessment and ask for feedback, and have them share with friends and neighbors.

Develop Hazard Mitigation & Adaptation Goals & Strategies

Workshop 3: Mitigation and Adaptation Strategy
Outcome: Obtain draft materials of mitigation and adaptation actions that respond to community goals. Gauge feasibility of actions.

Goal & Strategy Development Kick-off — IPT 3
- Identify mitigation and adaptation goals.
- Prepare materials for public workshop.

Public Workshop - Develop Mitigation Goals and List of Strategies — SHM 2
Outcome: Public helps develop goals and list of mitigation/adaptation strategies. The workshop should provide actionable feedback.

Develop Mitigation Strategies — IPT 4
- Analyze public workshop results.
- Organize full list of possible goals and future mitigation/adaptation actions.
  - Organize findings into a preliminary draft of *Chapter 6 Mitigation Strategies.*

Public Workshop - Prioritizing Goals & Strategies — SHM 3
Outcome: Citizens are tasked with reviewing prioritization of strategies. The workshop should provide the planning team with actionable feedback.

Planning Team Meeting – Implementation & Prioritization
- Evaluate and prioritize actions.
- Develop action plan for implementation of strategies.
  - Organize and finalize *Chapter 6 Mitigation Strategies.*

Adoption & Implementation

Planning Team Meeting – Integration
- Incorporate into existing plans and procedures.
  Develop plan maintenance procedures and continued public involvement.
  - Document integration in Chapter 7 Maintenance Procedure.

Submit LHMP to CalOES for Review
- CalOES reviews and sends any changes back to jurisdiction.
- Jurisdiction makes the changes - CalOES forwards the LHMP to FEMA for review.

This review can take up to 3 months.

FEMA Approves Plan
- FEMA works directly with city if changes are needed.

Adopt LHMP at Council|Board
- An adoption resolution is taken to the jurisdictions governing council|board.

Submit adoption resolution to FEMA

Most Bay Area plans are set to expire on March 24, 2016.

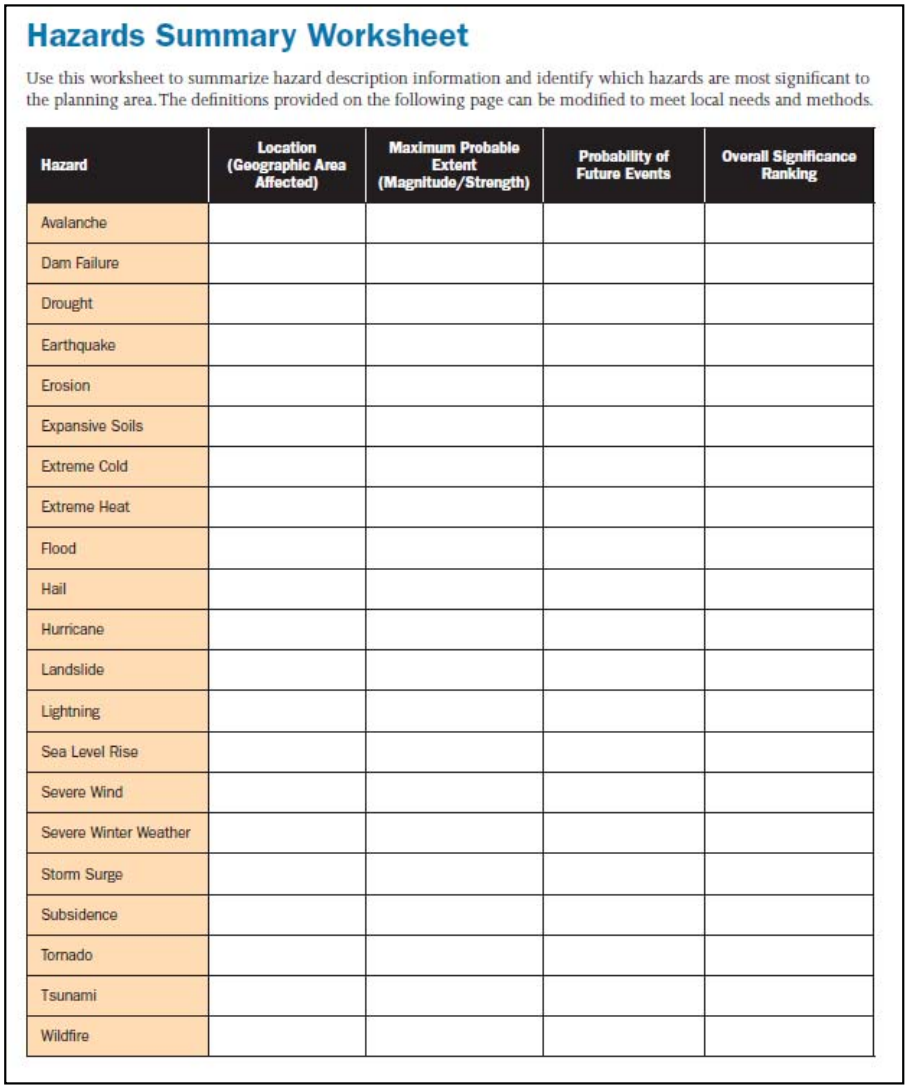
CITY OF PALO ALTO

Hazard Analysis

- What hazards do we assess?
- What type, location, extents pose the greatest threats?
- Where are we most vulnerable?
- How does this analysis shape our Community Goals and Actions?

Hazard Assessment

- Use FEMA Worksheet 5.1
- Assess Hazards to Palo Alto based on the criteria on the back of the form
- We will discuss this in 15 minutes



Hazards Summary Worksheet

Use this worksheet to summarize hazard description information and identify which hazards are most significant to the planning area. The definitions provided on the following page can be modified to meet local needs and methods.

Hazard	Location (Geographic Area Affected)	Maximum Probable Extent (Magnitude/Strength)	Probability of Future Events	Overall Significance Ranking
Avalanche				
Dam Failure				
Drought				
Earthquake				
Erosion				
Expansive Soils				
Extreme Cold				
Extreme Heat				
Flood				
Hail				
Hurricane				
Landslide				
Lightning				
Sea Level Rise				
Severe Wind				
Severe Winter Weather				
Storm Surge				
Subsidence				
Tornado				
Tsunami				
Wildfire				

CITY OF PALO ALTO

Hazard Assessment

Location (Geographic Area Affected)
Negligible: Less than 10 percent of planning area or isolated single-point occurrences
Limited: 10 to 25 percent
Significant: 25 to 75 percent of planning area
Extensive: 75 to 100 percent of planning area

Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)
Weak: Limited classification on scientific scale, slow speed of onset or short duration of event, resulting in little to no damage
Moderate: Moderate classification on scientific scale, moderate speed of onset, moderate duration of event, results in some damage and loss of services for days
Severe: Severe classification on scientific scale, fast speed of onset or long duration of event, results in devastating damage & loss of services – weeks/months
Extreme: Extreme classification on scientific scale, immediate onset or extended duration of event, resulting in catastrophic damage and uninhabitable conditions

Probability of Future Events
Unlikely: Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.
Occasional: 1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.
Likely: 10 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years
Highly Likely: 90 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.

Hazard Assessment

Overall Significance

Low: Two or more criteria fall in lower classifications or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record of occurrences or for hazards with minimal mitigation potential.

Medium: The criteria fall mostly in the middle ranges of classifications and the event's impacts on the planning area are noticeable but not devastating. This rating is sometimes used for hazards with a high extent rating but very low probability rating.

High: The criteria consistently fall in the high classifications and the event is likely/highly likely to occur with severe strength over a significant to extensive portion of the planning area.

Palo Alto THIRA
Natural Hazards Assessment (2014)

Natural Hazard	Probability	Impact	Survey	Rating Score
Earthquake	2	4	9	15
Extreme Heat	2	1	0	3
Flood*	3	2	4	9
High Wind	2	1	0	3
Landslides	3	1	0	4
Public Health Pandemic	2	3	2	7
Severe Winter Storm*	3	2	6	11
Tornado	1	1	0	2
Tsunami	1	1	0	2
Wildland Fire	3	3	1	7

*Most severe impacts of winter storms are flooding. These two hazards were combined for a Rating Score of 10.

www.cityofpaloalto.org/thira

CITY OF PALO ALTO

Asset Classes:

- People (functional needs, vulnerable populations)
- Building stock (public, residential, commercial, soft story, multi-unit)
- Critical response facilities (PD, Fire Stations, MSC)
- Utilities infrastructure (E, W, G, W)
- Transportation infrastructure (Roads, Signals, Bridges)
- Communications infrastructure (Cell sites, radio sites, ISP)
- Recreation and open spaces (Parks, Preserves, Baylands, Tidal Basins)
- Hazardous Material sites / contaminated lands (Tier 2 locations)

Current Asset Types

- **Critical Response Facilities**
- **Energy / Utilities**
- Transportation
- Communications
- Open Space
- Governmental (Includes Schools)
- Commercial
- Public Health / Healthcare
- Dams
- Defense Industrial Base
- Information Tech

129 Assets listed

CITY OF PALO ALTO

Exposure Analysis

- Mapping Critical Infrastructure against identified hazards:
  - Hazard Mapping
  - High Hazard Sites

Upcoming Workshops

- 26 May 2016, 1-3pm: Meeting #2

  Review Mitigation Strategies and Actions

- 5 Aug 2016: Meeting #3

  Develop Mitigation Goals and List of Strategies - stakeholders help develop goals and list of mitigation/adaptation strategies.

Closing Comments

- Stakeholders have a familiarization of
  - Hazard Mitigation Planning
  - Palo Alto Natural Hazard
  - Community exposure to these hazards
  - Access to this information

  www.cityofpaloalto.org/LHMAP
- Please share this information with your networks

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Hazards Summary Worksheet

Use this worksheet to summarize hazard description information and identify which hazards are most significant to the planning area. The definitions provided on the following page can be modified to meet local needs and methods.

Hazard	Location (Geographic Area Affected)	Maximum Probable Extent (Magnitude/Strength)	Probability of Future Events	Overall Significance Ranking
Avalanche				
Dam Failure				
Drought				
Earthquake				
Erosion				
Expansive Soils				
Extreme Cold				
Extreme Heat				
Flood				
Hail				
Hurricane				
Landslide				
Lightning				
Sea Level Rise				
Severe Wind				
Severe Winter Weather				
Storm Surge				
Subsidence				
Tornado				
Tsunami				
Wildfire				

Worksheet 5.1
Hazard Summary Worksheet

Definitions for Classifications

Location (Geographic Area Affected)

- **Negligible:** Less than 10 percent of planning area or isolated single-point occurrences
- **Limited:** 10 to 25 percent of the planning area or limited single-point occurrences
- **Significant:** 25 to 75 percent of planning area or frequent single-point occurrences
- **Extensive:** 75 to 100 percent of planning area or consistent single-point occurrences

Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)

- **Weak:** Limited classification on scientific scale, slow speed of onset or short duration of event, resulting in little to no damage
- **Moderate:** Moderate classification on scientific scale, moderate speed of onset or moderate duration of event, resulting in some damage and loss of services for days
- **Severe:** Severe classification on scientific scale, fast speed of onset or long duration of event, resulting in devastating damage and loss of services for weeks or months
- **Extreme:** Extreme classification on scientific scale, immediate onset or extended duration of event, resulting in catastrophic damage and uninhabitable conditions

Hazard	Scale / Index	Weak	Moderate	Severe	Extreme
Drought	Palmer Drought Severity Index[3]	-1.99 to +1.99	-2.00 to -2.99	-3.00 to -3.99	-4.00 and below
Earthquake	Modified Mercalli Scale[4]	I to IV	V to VII	VII	IX to XII
	Richter Magnitude[5]	2, 3	4, 5	6	7, 8
Hurricane Wind	Saffir-Simpson Hurricane Wind Scale[6]	1	2	3	4, 5
Tornado	Fujita Tornado Damage Scale[7]	F0	F1, F2	F3	F4, F5

Probability of Future Events

- **Unlikely:** Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.
- **Occasional:** 1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.
- **Likely:** 10 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years
- **Highly Likely:** 90 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.

Overall Significance

- **Low:** Two or more criteria fall in lower classifications or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record of occurrences or for hazards with minimal mitigation potential.
- **Medium:** The criteria fall mostly in the middle ranges of classifications and the event's impacts on the planning area are noticeable but not devastating. This rating is sometimes used for hazards with a high extent rating but very low probability rating.
- **High:** The criteria consistently fall in the high classifications and the event is likely/highly likely to occur with severe strength over a significant to extensive portion of the planning area.

3 Cumulative meteorological drought and wet conditions: http://ncdc.noaa.gov/

4 Earthquake intensity and effect on population and structures: http://earthquake.usgs.gov

5 Earthquake magnitude as a logarithmic scale, measured by a seismograph: http://earthquake.usgs.gov

6 Hurricane rating based on sustained wind speed: http://nhc.noaa.gov

7 Tornado rating based on wind speed and associated damage: http://spc.noaa.gov

OFFICE OF EMERGENCY SERVICES
CITY OF PALO ALTO
275 Forest Avenue
Palo Alto, CA 94301
650.617.3197

Local Hazard Mitigation and Adaptation Plan
Stakeholder Meeting #2 Minutes: 5 August 2016

Meeting Date, Location, Time

Adobe Room, Mitchell Park Community Center
3700 Middlefield Road, Palo Alto

5 August, 2016
1:00pm – 3:00pm

Meeting Objectives

- Update on County Multi-Jurisdictional Process
- Develop list of possible future mitigation / adaptation strategies

Pre-Meeting Materials

- Agenda
- Presentation Slideshow
- Additional materials available at LHMAP public link: www.cityofpaloalto.org/LHMAP

At-Meeting Materials

- Agenda
- Presentation Slideshow
- FEMA Mitigation Projects Handout
- Mitigation Actions Cards
- Hazard Analysis Maps

Meeting Participants

- See attached roster

Agenda

1:00 pm	**Welcome – Introductions**	**Nathan Rainey**
1:15 pm	**Planning Update: Santa Clara County Project Roadmap** Nathan provided an overview of the multi-jurisdictional local hazard mitigation planning effort that has been initiated by Santa Clara County OES. The county, using FEMA Mitigation grant funding, has hired Tetra-Tech, Inc to assist in the development of the plan. Each jurisdiction in the county is a part of the multi-jurisdictional planning effort and will have a representative on the Operational Area planning team. Nathan will be the Palo Alto representative on this team. Additionally, the County will establish a LHMP steering group to guide the overall development of the plan consisting of government and non-governmental stakeholders. This planning effort will get underway soon, and we should expect to assist in the compilation of information requirements to facilitate this larger planning effort. Palo Alto LHMAP stakeholders will receive requests for information, along with members of the general community to provide feedback and comment on LHMP planning elements – most of which we have already covered in Palo Alto's efforts thus far. The County plan will be published as two volumes: Volume 1 will include common information that applies to all jurisdictions within the county; and Volume 2 which will include jurisdictional annexes. Palo Alto has submitted a draft plan (not including mitigation goals, strategies, actions) to the Tetra-tech team for their review; further updates will occur as we move along the planning timeline with Tetra-tech. County	**Nathan Rainey**

	OES anticipate having the plans complete by December 2016, but realistically we should anticipate a delay of 30-45 days. Both the State of California OES and FEMA will review the plans for completeness prior to our request of Council adoption in May/June 2017.	
1:30 pm	**Explanation of Mitigation Actions** Nathan led an open discussion on the types of projects to consider to mitigate our highest natural hazards. Nathan then explained the projects listed by the internal planning team members. These projects are listed in the powerpoint slideshow file, slides 7-13. The strategies and actions listed in these slides represent 70% of the projects the internal team developed. The full list will be published	**Nathan Rainey**
1:45 pm	**Activity: Develop Mitigation Actions** Stakeholder group participants provided project ideas in an open discussion format using a 'mitigation actions' card Nathan passed out. All of these cards are included as an enclosure to these minutes.	**All**
2:15 pm	**Wrap up / Conclude Meeting**	**Nathan Rainey**
	Next steps • Palo Alto Internal Team review of suggested projects • Update Mitigation Action List • Participate in County outreach requests • Meet one more time to review draft plan: October 27, 1-3pm	

Office of Emergency Services

LHMAP Stakholder Meeting #2: (Mitigation Strategies/Actions) 5 August 2016

Agenda

- Welcome
- Introductions
- Planning update
- Discuss Mitigation Goals and Strategies

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Planning Update (1 of 2)

- Santa Clara County LHMP Multi-Jurisdictional Planning process is now underway
  - FEMA Mitigation Grant Awarded in March 2016
  - Procurement process completed in June 2016
  - Tetra-Tech, Inc convened first meeting in July 2016
- County Process will start from the beginning will all jurisdictions
  - LHMP published in two volumes
    - Volume 1: County Base Plan (All common information)
    - Volume 2: Jurisdictional Annexes

Planning Update (2 of 2)

- December 2016 – target for completion
  - They will revisit some ground we've covered – OES will feed input based on our work
- Planning Organization
  - **Planning Advisory Group** – multi-sector team [makes big decisions about the plan]
  - **Core planning team** – jurisdictional representatives
  - **Public Involvement** – broad outreach efforts for input and comments

LHMAP Roadmap

Public Workshops:

- May (Risk Exposure): Great Race, May Fete
- August (Strategies): FOPAL Book Sale
- September/October: Special Session (TBD)

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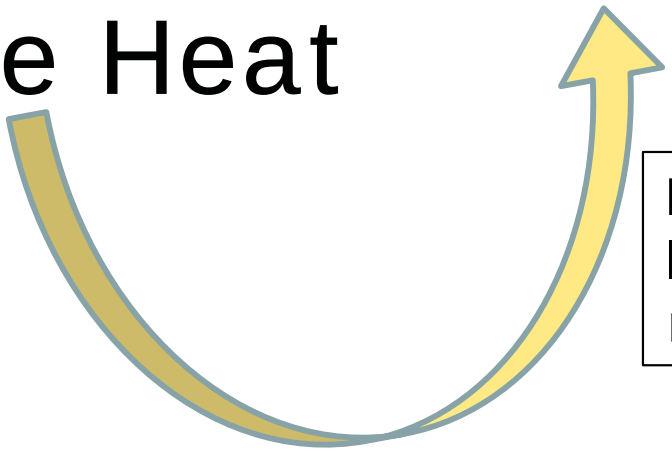
Top 5 Natural Hazards

- Earthquake
- Flood
- Sea-Level Rise
- Wildfire
- Drought
- Extreme Heat

Public Workshop - Develop Mitigation Goals and List of Strategies

Outcome: Public helps develop goals and list of mitigation/adaptation strategies. The workshop should provide actionable feedback.



Hazard Analysis leads to specific mitigation actions

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Mitigation Actions

- FEMA suggests four categories for Mitigation Actions
  - Local Plans and Regulations
  - Structure and Infrastructure Projects
  - Natural Systems Protection
  - Education and Awareness Programs

Mitigation Actions

- Local Plans and Regulations
  - Incorporate a new Safety Element into the Comprehensive Plan
  - Improve Community Rating System Class to provide higher CRS premium discounts
  - Consider a policy for Seismic Retrofitting of earthquake prone structures
  - Develop a Policy for Sea-Level Rise considerations
  - Develop a post-disaster Community Long-term Recovery Plan

Mitigation Actions

- Structure and Infrastructure Projects
  - San Francisquito Creek Lower Reach Flood Reduction and Ecosystem Restoration Project
  - San Francisquito Creek Upper Reach Flood Reduction and Ecosystem Restoration Project
  - Newell Creek Bridge replacement project
  - Pope Chaucer Street Bridge replacement project
  - Matadero Creek Storm Water Pump Station Improvements

Mitigation Actions

- Structure and Infrastructure Projects
  - Storm Drain System Replacement and Rehabilitation
  - Continue to replace gas pipelines
  - Continue to replace wastewater pipelines
  - Convert overhead utility lines to underground transmission
  - Recycled Water Pipeline Expansion Project
  - Construct a second electrical transmission interconnection to PG&E
  - Address hazardous fuels and reduce structural ignitability in the Foothills region in accordance with the Community Wildfire Protection Plan

Mitigation Actions

- Natural Systems Protection
  - Continue Palo Alto Baylands restoration efforts
  - Execute the SAFER Bay Project to protect critical infrastructure and property and restore historic marshlands

Mitigation Actions

- Education and Awareness Programs
  - Become a Firewise Ready Community
  - Maintain Storm Ready Community designation
  - Conduct public education that raises awareness of Palo Alto threats and hazards and improves community resilience

Activity

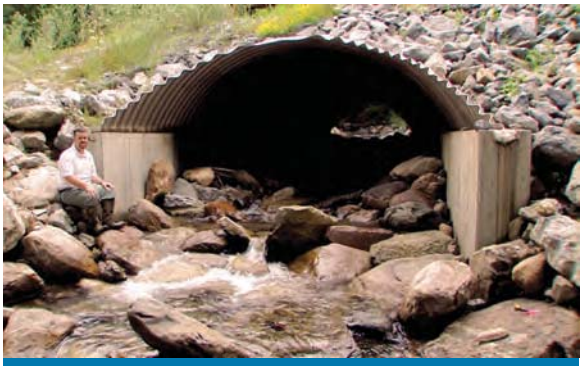
- Review Hazard Maps (posted)
- Review City Draft List of Public Projects
- Brain Storm mitigation actions (now)
- Fill out Comment Card for each mitigation action
- Review suggested projects

Next Steps

- Palo Alto Internal Team review of suggested projects
- Update Mitigation Action List
- Participate in County outreach requests
- Meet one more time to review draft plan
  - October 27, 1-3pm

Mitigation Actions

A mitigation action is a specific action, project, activity, or process taken to reduce or eliminate long-term risk to people and property from hazards and their impacts. Implementing mitigation actions helps achieve the plan's mission and goals. The actions to reduce vulnerability to threats and hazards form the core of the plan and are a key outcome of the planning process.



Infrastructure Project and Natural Systems Protection: This reconstructed culvert in Moosalamoo National Recreation Area in Arlington, Vermont uses rocks and sand to simulate a natural fish passage.

Types of Mitigation Actions

The primary types of mitigation actions to reduce long-term vulnerability include:

- local plans and regulations,
- structure and infrastructure projects,
- natural systems protection, and
- education and awareness programs.

Table 6.1 on the following page provides definitions and examples for these types of mitigation actions.

Preparedness and Response Actions

Mitigation actions reduce or eliminate long-term risk and are different from actions taken to prepare for or respond to hazard events. Mitigation activities lessen or eliminate the need for preparedness or response resources in the future. When analyzing risks and identifying mitigation actions, the planning team may also identify emergency response or operational preparedness actions. Examples include:

- Creating mutual aid agreements with neighboring communities to meet emergency response needs.
- Purchasing radio communications equipment for the Fire Department.
- Developing procedures for notifying citizens of available shelter locations during and following an event.

For some hazards, such as tornados, including preparedness actions in the mitigation plan may be necessary and practical. The mitigation plan may be the best place for your community to capture and justify the need for these actions. However, these will not take the place of or meet the Federal mitigation planning requirements for identifying mitigation actions. It is important that the planning team understands the difference and can distinguish between mitigation and other emergency management activities.

Identifying Mitigation Actions

The mitigation planning regulation requires that each participating jurisdiction identify and analyze a comprehensive range of specific mitigation actions and projects to reduce the *impacts* of the hazards identified in the risk assessment. The emphasis is on the impacts or vulnerabilities identified in the risk assessment, not on the hazards themselves. As described in *Task* 5, these impacts and vulnerabilities may be summarized in problem statements. Some hazards may not have many impacts, or the impacts may already be mitigated. In this case, fewer mitigation actions may be identified than for a hazard causing more frequent or severe impacts.

Element C4

The hazard mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

44 CFR §201.6(c)(3)(ii)

Table 6.1: Types of Mitigation Actions

Mitigation Type	Description	Examples
Local Plans and Regulations	These actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.	• Comprehensive plans • Land use ordinances • Subdivision regulations • Development review • Building codes and enforcement • NFIP Community Rating System • Capital improvement programs • Open space preservation • Stormwater management regulations and master plans
Structure and Infrastructure Projects	These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards. Many of these types of actions are projects eligible for funding through the FEMA Hazard Mitigation Assistance program. *Task 9 – Create a Safe and Resilient Community* provides more information on these programs.	• Acquisitions and elevations of structures in flood prone areas • Utility undergrounding • Structural retrofits. • Floodwalls and retaining walls • Detention and retention structures • Culverts • Safe rooms
Natural Systems Protection	These are actions that minimize damage and losses and also preserve or restore the functions of natural systems.	• Sediment and erosion control • Stream corridor restoration • Forest management • Conservation easements • Wetland restoration and preservation
Education and Awareness Programs	These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady[1] or Firewise[2] Communities. Although this type of mitigation reduces risk less directly than structural projects or regulation, it is an important foundation. A greater understanding and awareness of hazards and risk among local officials, stakeholders, and the public is more likely to lead to direct actions.	• Radio or television spots • Websites with maps and information • Real estate disclosure • Presentations to school groups or neighborhood organizations • Mailings to residents in hazard-prone areas. • StormReady • Firewise Communities

1 For more information on the National Weather Service's StormReady, see http://www.stormready.noaa.gov/.

2 For more information on the Firewise Communities program, see http://www.firewise.org/.

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

Continue to educate public about earthquake prep & Safety.

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your hazard of highest concern, what actions shou the City take to reduce the impacts of this hazard?

make a law that you need to conserve more water.

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

Fine people when the sprinklers go on after rain :)

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

For folks with drought tolerant landscapes - adjust the watering schedule to help meet their needs (every 5 days for example)

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

Earthquake communication + meet/find protocols

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

Bury power lines

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

Make Early Warning System more well known.

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

① Emergency kits - sell kits and deliver with a service online

② Flood & Earthquake Insurance help offset E.I with a tax

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

Palo Alto is supporting the SAFER Bay project by the SFCJPA - important to cont. since this reduces our flood impact.

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

recycle laws

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

No fee seismic retrofit

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

Nathan

Can you copy me on OES your thoughts re what should be in Comp plan re Safety element.

Annette

ALSO it looks like [illegible]

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

Consider County & CPA
Joint project to consider
Alma underpasses re
flooding [illegible]

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

Revise zoning & building ordinances related to basement construction in areas with high groundwater, e.g. where the basement is in groundwater
- Flood zone boundary expected w/ sea level rise
- Reduction in water storage capacity of soils
- blockage of groundwater flow

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

- Natural Systems Protection
  - Protect + wisely use Palo Alto's groundwater

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

Red Cross can:
1. Install smoke detectors in residences
2. Discuss preparedness & distribute information at safety fairs
3. Train city, CERT's etc in shelter operations and mgmt.

Stephanie Chartes

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

Wildlife in drought especially complex

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

Consider shallow groundwater as a resource, not "nuisance" water" and restrict pumping and discharge for basement construction. other construct methods could be used.

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

Consider long term mitigation for drought-related incursion of wild animals into urban/populated areas.

Laurie Friedman
Stanford OEM

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

To protect a key infrastructure asset, decentralize our Wastewater Treatment Plant

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

REMEMBER TO ASK matthew.jung2@va.gov about the frog toxin.

Thanks!

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

Less about mitigation than response to the disaster, particularly after the Big Quake.

① Sources of replacement diesel for emergency generators.

② Sources of pharmaceuticals post. 2 weeks

③ Sources of water post 1 week

⑮ Clearing house for mutual aid agreements.

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

danab@abag.ca.gov

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

Oakland & ABAG completed a local DRF & RSFs to support long-term recovery. We also developed a template recovery ordinance. These may be helpful as you move forward with long-term recovery planning.

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

danab@abag.ca.gov

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

SB 379 goes into effect as of Jan 1, 2017, affecting Safety Elements (must include climate consideration ~~Cal OES~~ OPR should be releasing guidance shortly.

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

danab@abag.ca.gov

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

Be sure to look @ FEMA's Climate Resilient Mitigation Activities for Hazard Mitigation. I think more funding will be funneled into this arena in the next few yrs. Relevant to stormwater management & shoreline/baylands projects.

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

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For your hazard of highest concern, what actions sho the City take to reduce the impacts of this hazard?

Concerning flooding, sea level rise & drought, the water itself is not only sourced hazards. In each of th hazards water movement can result in spreading contaminant even biological hazards. Such cross-contamination needs to be considered in designing mitigations Ken Bencala kenbnc@hotmail.com

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

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For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

Concerning flooding, sea level rise & drought the hazard impact reduction actions need to consider ~~the~~ all the elements (creeks, groundwater, bay) as an integrated system - such an integrated system view also take the ecosystem into account.

Ken Bencala kenbnc@hotmail.com

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

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For your hazard of highest concern, what actions shoul the City take to reduce the impacts of this hazard?

Possible risk resulting from earth quake:

Power outages & water disruptio

Without power, water pumps cannot function. Hospitals, especially, will be negatively affected. Surgeries, sterilization, cooling, x-rays, etc. will cease to function.

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your hazard of highest concern, what actions should the City take to reduce the impacts of this hazard?

FYI: The Santa Clara County Flood Plan: Operational Area Annex has just been signed & approved. There could be helpful/valuable information included for Palo Alto's benefit.

stephanie.friak@phd.sccgov.org

Don't have time right now? Email us your ideas at LHMAP@cityofpaloalto.org

For your h
the City ta

(WHAT
to Resp
where

Don't have
LHMAP@c

PREPARING PA

Local Hazards Mitigation

From nature's wrath to human err
throughout the world and the City
exception. While we cannot preve
occurring, we can be aware and pr
their impacts and protect our love

CITY OF PALO ALTO

For more informa
www.cityofpaloal

City of Palo Alto LHMP
Stakeholders

Initials	Lastname	Firstname	Organization
	Altman	Eileen	First Congregational Church, UCC, Palo Alto
	Anderson	Daren	City of Palo Alto
	Andonian	Amy	Avenidas
	Baeta	Dan	Palintir
	Ball	Donna	Save the Bay
	Ballash	Evon	City of Palo Alto
LB	Barcomb	Linda	Stanford University
	Barry	Robert	Hewlett-Packard Company
	Bartshire	Corinne	UASI
	Baruch	Stephen	Independent Consultant
	Batchelor	Dean	City of Palo Alto
	Beecham	Bern	Palo Alto Emergency Services Volunteers
KEB	Bencala	Kenneth	Resident
	Bobel	Phil	City of Palo Alto
	Bond	Brandon	Stanford Health Care (Hospital)
DAB	Brechwald	Dana	Association of Bay Area Governments

City of Palo Alto LHMP
Stakeholders

Initials	Lastname	Firstname	Organization
PC	Cassel	Phyllis	League of Women Voters of Palo Alto (LWVPA)
	Chakos	Arrietta	Urban Resilience Strategies
	Clark-Ginsberg	Aaron	Stanford CISAC
	Cullen	Charlie	City of Palo Alto
	Dah	Phiip	LifeMoves (InnVision Shelter Network)
	Dueker	Kenneth	City of Palo Alto
	Dunbar	Tammy	Santa Clara County
	Dunnegan	Jim	Varian Medical Systems
	Edwards	Josh	Civil Air Patrol - Palo Alto (Sq10)
	Ellis	Ron	Palo Alto Unified School District (PAUSD)
	Emanuel	David	Vista Center for the Blind & Visually Impaired
	Engeldinger	David	
	Estinos	Joeffrey	SAP
	Flamm	David	County of Santa Clara
	Friedman	Laurie	Stanford University EH&S OEM
	Friend	Gil	City of Palo Alto

City of Palo Alto LHMP
Stakeholders

Initials	Lastname	Firstname	Organization
	Frost	Jasmine	City of Palo Alto
	Glanckopf	Annette	Palo Alto Emergency Services Volunteers
	Glotzer	Jerry	Palo Alto Medical Foundation PAMF
	Gonzales	Candace	Palo Alto Housing Corporation
	Hada	Rajeev	City of Palo Alto
	Halliburton	Jyllian	Avenidas
	Hibbs	Linda	Lytton Gardens (SNF)
	Holgado	Ruben	Wilson Sonsini Goodrich & Rosati
	Howard	Adam	City of Palo Alto
	Hoyt	George	City of Palo Alto
	Hudson	Sharon	Vista Center for the Blind & Visually Impaired
	Ives	Bruce	LifeMoves (InnVision Shelter Network)
	Jacques	Dale	Santa Clara Valley Water District
	Jones	Ron	VA Hospital - Palo Alto
	Jung	Matt	VA Hospital - Palo Alto
	Kalkhorst	Josh	Stanford Shopping Center (Simon Properties)

City of Palo Alto LHMP
Stakeholders

Initials	Lastname	Firstname	Organization
	Kanth	Gayathri	City of Palo Alto
	Kissinger	Carmen	Stanford Ronald McDonald House
JoK	Kleinberg	Judy	Palo Alto Chamber of Commerce
	Kou	Lydia	Palo Alto resident
	Lam	Elizabeth	City of East Palo Alto
	Law	Pamela	Palo Alto Opportunity Center
	Lee	Elena	City of Palo Alto
	Lougee	Lance	SLAC National Acclerator Laboratory
	Lynch	Denis J.	Hewlett-Packard Company
	Macartney	Cody	City of Palo Alto
	Martineau	Catherine	Canopy
	Materman	Len	San Francisquito Creek Joint Powers Authority (SFC JPA)
	Matsumoto	Mel	Channing House (SNF)
	Matzke	Karl	American Red Cross, Silicon Valley Chapter
	Meiss	Bill	Hewlett-Packard Company
	Micetich	Doug	Silicon Valley Independent Living Center

City of Palo Alto LHMP
Stakeholders

Initials	Lastname	Firstname	Organization
	Moro	Craig	Varian Medical Systems
	Nadim	Mark	Fire Safe Council (FSC)
EN	Nigenda	Esther	Palo Alto Emergency Services Volunteers
	Norris	Jeff	San Mateo County Sheriff's Office
	Ohtaki	Peter	California Resiliency Alliance
	Perez	Adolfo	Webster House
	Perry	Tim	Space Systems Loral
	Perry	Keith	Stanford University
	Peterson	Lon	City of Palo Alto
	Quan	Kelvin	MayView Community Health Center
	Rainey	Nathan	City of Palo Alto
	Ramberg	David	City of Palo Alto
	Ray	Darrell	Santa Clara County Office of Emergency Services
	Reed	Dana	Santa Clara County
	Rice	Jayson	Stanford Shopping Center (Simon Properties)
	Rice	Caroll	

City of Palo Alto LHMP
Stakeholders

Initials	Lastname	Firstname	Organization
	Richardson	Eileen	Downtown Streets Team/ Peninsula HealthCare Connections
	Richardson	Chris	Downtown Streets Team/ Peninsula HealthCare Connections
	Roderick	Kim	City of Palo Alto
	Schubek	Alex	Santa Clara County Department of Public Health
	Schultz	Deane	Hewlett-Packard Company
	Sheffield	John	Avenidas
	Shikada	Ed	City of Palo Alto
	Stern	Adam	Acterra
	Stoeffl	Monika	California Resiliency Alliance
	Storm	Kevin	VA Hospital - Palo Alto
	Swanson	Andy	City of Palo Alto
	Talavera	Victor	Xerox Palo Alto Research Center (PARC) (Stanford Industrial Park)
	Turchett	Giselle	Page Mill Pastures
	Van Buskirk	Lisa	Peninsula Human Society
	Weidanz	Charlie	Abilities United
	Williams	Simon	City of Palo Alto

City of Palo Alto LHMP
Stakeholders

Initials	Lastname	Firstname	Organization
	Wilson	Laura	Stanford University
	Wu	Shannon	MayView Community Health Center
	Yarbrough	Shane	City of Palo Alto
	Young	Kate	Palo Alto Housing Corporation
	Zollicoffer	Ryan	Menlo Park Fire Protection District
SP	Parkinson	Sean	VADAMCS
SC	Charles	Stephanie	Ren Cregg
KB	BENNETT	Keith	Save Palo Alto's groundwater
KS	Sharp	Kevin	Santa clara valley water District
KS	SAKO	ICECIA	SCVWD
AP	Perez	Adolfo	Webster House

On 30 April 2016, during the Great Race for Saving Water, the Office of Emergency Services and several of our Emergency Services Volunteers asked members of the public attending the event to list their top three natural hazards of concern given a standard list of hazards to choose from. We used a color coding system to define the hazard of most concern with a red dot, the hazard of second most concern with a yellow dot, and the hazard of third most concern with a green dot.

Figure 1: Public Hazard Assessment

As you can see from the graphic below, the hazard with the most overall votes was **Earthquake** with 40 votes, followed by **Drought** with 34 votes. **Sea Level Rise** was the next closest hazard of concern with 16 total votes, narrowly eclipsing **Extreme Heat** with 15 votes. Our double digit polling is rounded out with **Wildfire**, 13 votes, and **Flooding**, 10 votes.

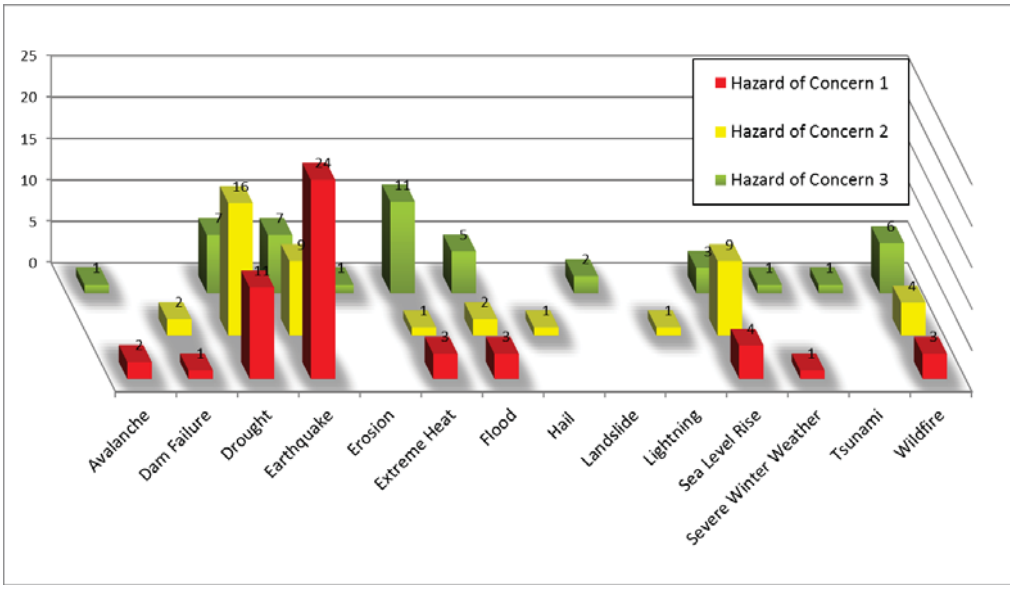

Figure 2: Graphic Results of Public Assessment

How closely do these results match our current hazard assessment? Find out at www.cityofpaloalto.org/lhmap.

Our OES staff will continue to reach out to public at various community events over the summer to seek input on our hazard mitigation and adaptation planning process. Be on the lookout for us.

Our OES Staff, with support from several of our Emergency Services Volunteers, was at it again at the 94th Annual May Fete Parade in Palo Alto on 7 May 2016. This widely attended event presented another great opportunity to involve the public in our Local Hazard Mitigation and Adaptation Process. Once again, we invited the public to assess the natural hazards we face in Palo Alto using a color coded system: Red for the hazard of most concern; yellow for the second most concerning, and green for the third most concerning.

Figure 1: Public Hazard Assessment

In the polling during this event, the hazard with the most overall votes was **Earthquake** with 63 total votes, followed by **Drought** with 47 votes. **Wildfire** was the next closest hazard of concern with 32 total votes, followed by Flood with 28 votes. **Extreme Heat** at 10 votes and **Sea Level Rise** at 9 votes round out our double digit polling. These results are shown in the graphical chart below.

How closely do these results match our current hazard assessment? Find out at www.cityofpaloalto.org/lhmap.

Our OES staff will continue to reach out to public at various community events over the summer to seek input on our hazard mitigation and adaptation planning process. Be on the lookout for us.

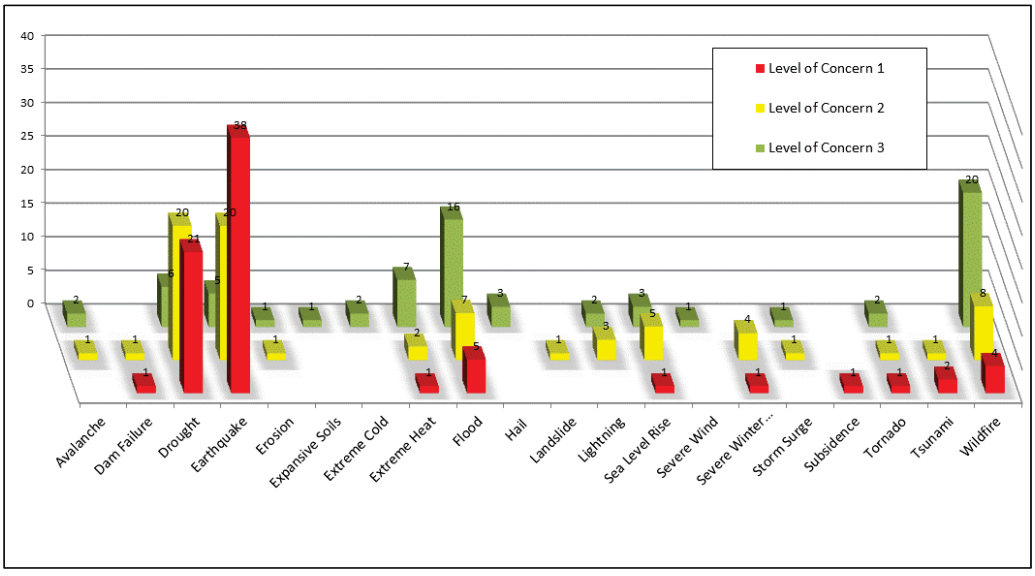

Figure 2: Graphic Results of Public Assessment