City of San Luis Obispo

Local Hazard Mitigation Plan

March 2014

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City of San Luis Obispo

Local Hazard Mitigation Plan

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Section 1 Executive Summary

1.1 Plan Description

This 2014 Local Hazard Mitigation Plan (LHMP) is an update to the City of San Luis Obispo's 2006 LHMP. The plan consists of eight sections, as described below. Additionally, the DMA 2000 planning requirements are identified in their appropriate sections throughout the LHMP.

Community Profile

Section 2 offers a description of the City of San Luis Obispo, including its history, geography, economy, climate, current population trends and demographics, and current development trends and land use.

Planning Process

Section 3 describes the planning process, identifies the Hazard Mitigation Team members and the key stakeholders within the community and surrounding region. In addition, this section documents public outreach activities and the review and incorporation of relevant plans, reports, and other appropriate information.

Risk Assessment

Section 4 describes the process through which the Hazard Mitigation Team identified and prioritized relevant natural hazards. Updated hazard profiles for each identified hazard includes: a definition of the hazard, a history of the hazard's impact on the City, the location of the hazard within the extent of the City, the hazard's extent, and the probability of future hazard events within the City.

Vulnerability Assessment

Section 5 includes a vulnerability assessment, summarizing the identified hazards' impact on critical and essential facilities and infrastructure. An estimate of the potential dollar losses to vulnerable structures is presented.

Capability Assessment

Section 6 provides an overview of the City's plans and policies, as well as personnel, technical, and financial capabilities that are available to support hazard mitigation. City department and external agency capabilities that promote hazard mitigation are also included.

Mitigation Strategy

As Section 7 describes, the Hazard Mitigation Team developed a list of mitigation goals, objectives, and actions based upon the findings of the risk assessment and the capability assessment. Based upon these goals and objectives, the Hazard Mitigation Team reviewed and prioritized a comprehensive range of appropriate mitigation actions to address the risks facing the community.

Plan Maintenance Process

Section 8 describes the Hazard Mitigation Team's formal plan maintenance process to ensure that the LHMP remains an active and applicable document. The process

includes monitoring, evaluating, and updating the LHMP; implementation through existing planning mechanisms; and continued public involvement.

References

The section lists the reference materials used to prepare this LHMP.

Appendices

The appendices include the 2014 Adoption Resolution, public outreach documentation, and hazard mitigation planning team meeting documentation.

1.2 Plan Purpose and Authority

The Disaster Mitigation Act (DMA) of 2000, also commonly known as "The 2000 Stafford Act Amendments" (the Act), constitutes an effort by the Federal government to reduce the rising cost of disasters. The Act stresses the importance of mitigation planning and disaster preparedness prior to an event.

Mitigation Planning Section 322 of the Act requires local governments to develop and submit mitigation plans in order to qualify for Hazard Mitigation Assistance (HMA) grant program funds. The City of San Luis Obispo must have a Local Hazard Mitigation Plan (LHMP) approved pursuant to §201.6 in order to receive FEMA Pre-Disaster Mitigation (PDM) project grants or to receive HMA funding. The LHMP is written to meet the statutory requirements of DMA 2000 (P.L. 106-390), enacted on October 30, 2000, and 44 CFR Part 201 – Mitigation Planning, Interim Final Rule, published on February 26, 2002.

In October 2011, FEMA released a Local Mitigation Plan Review Guide (Guide) in order to help "Federal and State officials assess Local Mitigation Plans in a fair and consistent manner." Local jurisdictions must demonstrate that proposed mitigation actions are based upon a sound planning process that accounts for the inherent risk and capabilities of the individual communities as stated in §201.5 of the Rule. The Guide includes a Plan Review Tool to assist reviewers in assuring all required components are present in submitted LHMPs.

During the 2014 update of this LHMP, the Guide was consulted for the purpose of ensuring thoroughness, diligence, and compliance with the DMA 2000 planning requirements.

1.3 Plan Adoption

This plan was adopted by the City of San Luis Obispo City Council on March 18, 2014. The adoption resolution that constitutes the adoption of this plan can be found in Appendix A.

Section 2 City of San Luis Obispo Community Profile

2.1 History

San Luis Obispo's early settlement began with the founding of Mission San Luis Obispo de Tolosa in 1772 by Father Junipero Serra. By 1870, the community had grown to a population of 1,579, and became a charter city in 1876. Historic influences on the growth and development in San Luis Obispo include its beginnings as a center for agricultural productivity, the extension of the Southern Pacific Railroad in 1894, and the establishment of the polytechnic school, California Polytechnic State University (Cal Poly) in 1901.

Figure 1-1 Location of City of San Luis Obispo

Today, agricultural, transportation, government, and educational activities continue to play a major role in the demographic, economic, land use and development characteristics of the City. These characteristics and proactive protection of the City's natural and scenic resources contribute to the small-town charm and high quality of life that SLO residents enjoy.

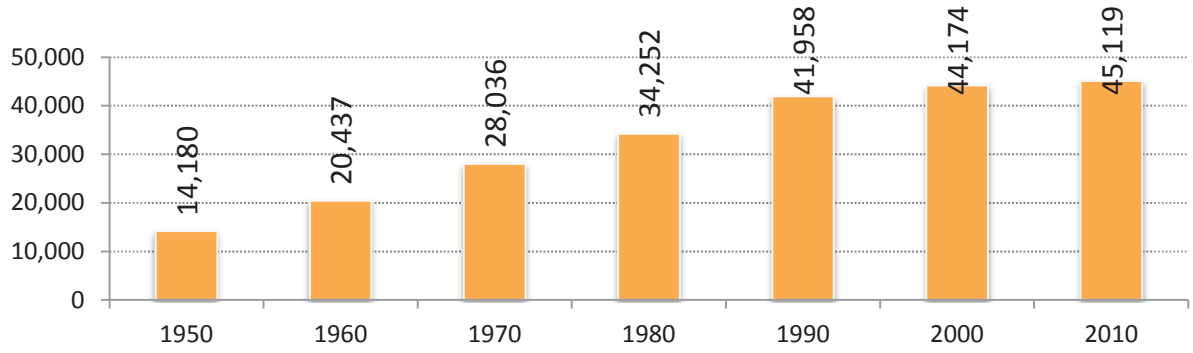
2.2 Geography

Midway between Los Angeles and San Francisco, San Luis Obispo is accessible via Highway 101 and Highway 1. The City is an estimated 10.7 square miles and is surrounded by protected open spaces and productive agricultural lands. The City lies to the west of the Santa Lucia Mountains, and is located eight miles east of the Pacific Ocean. San Luis Obispo has an average elevation of 300 feet above sea level, with the most prominent peaks located just outside of the city limits, Cerro San Luis and Bishop Peak standing at 1,292 and 1,559 feet above sea level, respectively.

2.3 Population and Demographics

Between 1950 and 1990, the City grew from a population of 14,180 to just under 42,000, see Figure 2-2. Since 1990, the City has maintained an average growth rate of less than one percent per year.

Figure 2-2 San Luis Obispo Population



Source: U.S. Census Bureau.

As of the 2010 Census, San Luis Obispo had a population of 45,119 residents and 19,193 households. The presence of nearby Cal Poly and the recognition that much of the student population lives in the City results in a median age of 26.5, nearly nine years younger than California's median age of 35.2. Accordingly, with a younger median age, owner-occupied units account for 39% of all households, while approximately 61% of households are renter-occupied.

2.4 Economy

As the civic, economic, and cultural hub of the Central Coast, the City serves as the County Seat of San Luis Obispo. With major regional employers such as Cal Poly, state agencies, PG&E, Tenet Health Care, and the County of San Luis Obispo, the City has an estimated daytime population of more than 70,000 people. The San Luis Obispo Chamber of Commerce and the Downtown Association are active collaborators and leaders in supporting the retention and expansion of local businesses in San Luis Obispo. The City's leading industries include accommodation and food services, retail, professional services, health care, information and technology, public administration, and educational sectors.

To support the high quality of life and economic vitality of the community, San Luis Obispo is considered a full-service city, providing police, fire, water, sewer, streets, transit, parking, planning, building, engineering, and parks and recreation services to the community.

2.5 Climate

San Luis Obispo is considered to demonstrate characteristics of a Mediterranean climate with an average temperature of 70.2 degrees Fahrenheit. While generally considered a mild climate, weather patterns and events have historically observed both unseasonably warm periods and cold spells. Due to its close proximity to the Pacific Ocean, San Luis Obispo is also subject to coastal weather influences such as dense fog that typically rolls into the City through the Chorro Valley and steady on-shore wind patterns.

2.6 Land Use

The City's diverse economic activities have resulted in a balanced inventory of land uses. In nonresidential uses, the City has nearly 11 million square feet in gross floor area in retail (33%), office (25%), service and manufacturing (32%) and institutional (10%) uses. Approximately 52.5% of all residential units are considered to be single family (9,069 detached, 1,223 attached). The City has more than 7,900 multi-family housing units (40.7 %) and 1,300 mobile homes (6.8%).

2.7 Development Trends

San Luis Obispo has traditionally expanded through the establishment of many diverse neighborhoods that have a mix of residential and commercial uses. With Mission Plaza and downtown at the heart of the City, development trends have transitioned from the historic neighborhoods immediately adjacent to Downtown, to post-World War II growth in areas along the foothills of the Santa Lucia mountains, surrounding Laguna Lake, and in the northern areas of town near the growing Cal Poly. Recent development efforts have focused on incorporating additional housing opportunities in the historic downtown core, through the renovation of historic structures and infill development on underutilized and vacant land.

Land use policies and elements within the City's General Plan help assure orderly development. These policies have also encouraged changes to development in San Luis Obispo's hazard prone/vulnerable areas. As a result, these changes have decreased the City's vulnerability. Specifically, since the 2006 approval of the City's LHMP, the following changes in development have occurred:

- The City approved the State recommended maps identifying Local Very High Fire Severity Zones and incorporated these into their General Plan. The Safety Element has been updated to require full compliance with State Building Code Chapter 7A mandating ignition resistant construction materials and methods in these areas. The City recognized that it is within 1.5 miles of wildland fuel areas and has adopted modified ignition resistant construction methods and materials Citywide for all new construction by ordinance.
- The City approved the Airport Area Specific Plan (AASP) and Orcutt Area Specific Plan (OASP) and subsequent annexations, which should translate into more orderly development, traffic improvements, utility extensions, reduced Fire Department response times, etc. These are expected to be positive changes that will reduce risks and vulnerabilities that formerly existing along the City's urban reserve. The OASP approval and annexation of Orcutt Road (former County Road) into the City for City maintenance included the clearing of several drainage culverts. These culverts had reduced capacity because of siltation and deferred vegetation management. The County completed these improvements as part of the OASP annexation into the City.
- The relinquishment of Highway 227 from Cal Trans into the City allows for better coordination on development projects, traffic control, and project timing to keep this critical corridor open and serviceable.

- The undergrounding of approximately 1.8 miles of overhead primary/secondary power, and telecom wiring along the 227/Broad Street corridor could help to reduce the loss of these resources during storm events or other natural disasters.
- The expansion of fiber communications continues throughout the City. This expansion along with redundancy in these systems should provide for enhanced communication capabilities during emergencies.
- Several water mains have been replaced or upgraded. Fire hydrants have been upgraded from dry barrel to wet barrel. Water valves have been exercised.
- The City continues to repair or replace the storm drain system, silt removal projects, and creek clearing.
- The gas company has completed several tests, repairs, and replacement of their gas mains. They have a current application in and are proposed to commence with their latest hydrostatic pressure test in June 2014.
- Several buildings have been upgraded/retrofitted for fire sprinklers, structural upgrades (URM) and flood proofing upgrades.
- Sacramento Drive has been extended to connect to Orcutt Road.
- Prado Road has been improved and extended within the Margarita Area Specific Plan. Tract 2342 has installed streetlights, fire hydrants, and completed culvert upgrades along Prado Road. The potential for flooding across Prado Road has been reduced. A new connection will be provided from Prado Road to Margarita Avenue with the completion of subdivision improvements.
- Los Osos Valley Road Interchange project was approved, funded, and is ready to commence with construction.
- Other intersection improvements, traffic signal upgrades, signal interconnects, and installed pre-emption devices have been completed.
- Hazardous trees have been identified and continue to be monitored, safety pruned, and removed as warranted.
- A new emergency dispatch center on the campus of Fire Station #1 was constructed.
- The Public Works Department vacated 955 Morro (a reinforced URM building) and moved into new offices at 919 Palm.

Any future development within the City of San Luis Obispo will be informed by the most up to date hazard maps as well as state and local development ordinances that restrict development in hazard prone areas to minimize risk.

Section 3 Planning Process

DMA Requirements §201.6(b) and §201.6(c)(1):

An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:

- An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
- An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development as well as businesses, academia, and other private and nonprofit interests to be involved in the planning process; and
- Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information. [The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

3.1 Overview of Planning Process

The City of San Luis Obispo Hazard Mitigation Team reconvened to prepare this 2014 update to their Local Hazard Mitigation Plan. The Planning Process Section, outlined in Sections 3.2 to 3.4 below, documents the changes to the planning process that have taken place since the 2006 plan was adopted. Significant updates to the plan include:

- New members and additional agencies/departments on the Hazard Mitigation Team
- Inclusion of an online public survey
- Modifications to identified hazards and hazard rankings
- Updated historical hazard information and GIS data included in hazard profiles
- Updated asset inventory and replacement values included in the vulnerability assessment
- Updated capabilities assessment, mitigation strategy, and plan maintenance procedures

3.2 Hazard Mitigation Team

3.2.1 Formation of the Hazard Mitigation Team

The City's Disaster Preparedness Committee began the planning process for the City's 2006 Local Hazard Mitigation Plan in August of 2004. This committee, lead by Fire Chief Wolfgang Knabe and comprised of other City department representatives from Fire, Police, Public Works, Utilities, and Administration, formed the City's Hazard Mitigation Team. While these City departments still reside on the Hazard Mitigation Team, the representatives from these departments have changed for this plan update. Also, representatives from additional City and County departments and other relevant organizations have been added to the Hazard Mitigation Team to include: American Red Cross, California Highway Patrol, California Polytechnic University, Community

Development Department, Finance and IT Department, Natural Resources Department, Parks and Recreation Department, County of San Luis Obispo Airports, County of San Luis Obispo Office of Emergency Services, County of San Luis Obispo Public Health Department, French Hospital Medical Center, San Luis Coastal Unified School District, Sierra Vista Regional Medical Center. The Hazard Mitigation Team members for this 2014 update can be found in the table below.

Table 3-1 2014 Hazard Mitigation Team Members

Name	Title	Agency	Department
Ron Alsop	Emergency Services Manager	County of SLO	Office of Emergency Services
Dani Althaus	Intern, Natural Resources	City of SLO	Natural Resources
Mary Andrews	GIS Specialist	City of SLO	Finance and IT
Cheryl Blair	Administrative Analyst, Utilities	City of SLO	Utilities
James Bremer	Recreation Supervisor	City of SLO	Parks and Recreation
Doug Carscaden	Ranger Services Supervisor	City of SLO	Parks and Recreation
Michael Codron	Assistant City Manager	City of SLO	Administration
David Conn	Professor	Cal Poly	City and Regional Planning
Julie Cox	Project Lead, Administrative Analyst	City of SLO	Fire
Mark D'Arelli	Lieutenant	CA Highway Patrol	
Paul Deis	Manager, Emergency Services	American Red Cross	
Dan Farnum	Director Facilities Management	French Hospital	Plant Maintenance
Rick Ford	Director of Plant Operations	Sierra Vista Regional	Plant Operations
Daryl Grigsby	Director	City of SLO	Public Works
Hal Hannula	Senior Civil Engineer	City of SLO	Community Development
Meg Henry	SHMP Update Research Coordinator	Cal Poly	City and Regional Planning
Richard Howell	Regional Manager, Airport	County of SLO	Airports
Derek Johnson	Director, Community Development	City of SLO	Community Development
Katie Lichtig	City Manager	City of SLO	Administration
Barbara Lynch	Deputy Director	City of SLO	Public Works
Rodger Maggio	Fire Marshal	City of SLO	Fire
David Majors	Engineering Mechanic	French Hospital Medical Center	Plant Maintenance
Carrie Mattingly	Utilities Director	City of SLO	Utilities
Kim Murry	Deputy Director, Community Development	City of SLO	Community Development
Garret Olson	Fire Chief	City of SLO	Fire
Wayne Padilla	Director, Finance and IT	City of SLO	Finance and IT
Ryan Pinkerton	Assistant Superintendent of Business Services	SLCUSD	Business Services
Craig Piper	Assistant General Manager, Airport	County of SLO	Airports

Name	Title	Agency	Department
David Ragsdale	Director of Environmental Health and Safety	Cal Poly	Risk Management and Environmental Health
Michelle Shoresman	Emergency Preparedness Program Manager	County of SLO	Public Health
William Siembieda	Faculty	Cal Poly	City and Regional Planning
Shelly Stanwyck	Director, Parks and Recreation	City of SLO	Parks and Recreation
Keith Storton	Police Captain	City of SLO	Police
Ken Topping	Lecturer	Cal Poly	City and Regional Planning
David Yun	GIS Supervisor	City of SLO	Finance and IT

3.2.2 Hazard Mitigation Team Meetings

3.2.2.1 Kickoff Meeting

The City's Local Hazard Mitigation Plan kickoff meeting occurred on June 19, 2013. The attendees reviewed the City departments that participated in the 2006 hazard mitigation plan preparation and identified representatives from these departments as well as additional City and County departments and relevant agencies from the non-profit and volunteer sector, Cal Poly, Special Districts, private utility companies, and the Chamber of Commerce who could be invited to be members of the Hazard Mitigation Team.

The meeting participants also agreed upon a planning process/public outreach approach and schedule. The public outreach online survey used during the San Luis Obispo County 2014 Hazard Mitigation Plan Update was reviewed and suggestions were made to revise the survey for the City's plan update.

The meeting participants reviewed the hazards identified in the 2006 hazard mitigation plan and at this initial meeting did not make any changes to the identified hazards list. Participants discussed the City's future participation in updating the plan's capability assessment, asset inventory, mitigation strategy, and plan maintenance process and schedule at this meeting.

3.2.2.2 Milestone Meeting #1

The Hazard Mitigation Team Milestone Meeting #1 was held on July 10, 2013. A discussion of the planning and public outreach process was conducted and it was determined that in addition to distributing an online survey, the City would also make paper copies available at City Hall, fire stations, at Farmer's Markets, and during WOW week on the Cal Poly campus.

Based on the hazards identified in the 2006 LHMP, the Hazard Mitigation Team added pandemic and changed windstorm to adverse weather. The Planning Team also completed a hazard prioritization exercise. The asset inventory identified in the 2006 LHMP was reviewed and revisions were made to this list for the 2014 update. It was determined that all activities listed in the 2006 Action Plan Matrix were implemented or are implemented on a regular basis except for Action 3.A.5 (mobile home seismic information). Other mitigation progress to date was discussed.

Flood mitigation and California Highway Patrol capabilities were discussed and it was determined that the capabilities assessment should include input from the following agencies: airports, California Highway Patrol, Cal Trans, hospitals, and Cal Poly. Finally, a discussion was held on the requirements for linking the hazard mitigation plan to the general plan safety element.

3.2.2.3 Milestone Meeting #2

The updated drafts of the capabilities assessment, hazard ranking, hazard profiles, and asset inventory were presented, reviewed, and discussed by the Hazard Mitigation Team. A summary of the online survey results were also reviewed.

The Planning Team decided to update the vulnerability assessment and include an updated asset inventory list. The new inventory list separates critical and essential facilities and infrastructure. Those which are part of critical response activities as identified by the City's Emergency Operations Plan and GIS mapping of critical services were denoted as critical. The remaining assets were identified as essential. This designation prioritizes critical assets over essential assets for risk reduction and resiliency measures, while acknowledging that all of these assets are important to the City of San Luis Obispo. The 2006 LHMP goals, objectives, and actions were also reviewed and updated for the 2014 plan.

Documentation of the Hazard Mitigation Team meetings can be found in Appendix C.

3.3 Public Involvement

3.3.1 Online Public Survey

To better understand the community's understanding and concerns regarding natural hazards and local response, the City solicited input from the community in the form of an online survey to determine:

- How the community prioritizes hazards facing San Luis Obispo.
- Actions the City and community can take to reduce future damage from natural hazards.
- How local government officials can better communicate natural hazard risks to the public.

The survey included 19 questions crafted to identify the respondent's connection with San Luis Obispo, familiarity with previous natural hazard events, preparedness for future natural hazards, and opportunities to create a community more resilient to natural hazards.

3.3.2 Promotions

To ensure the community had ample opportunities to provide input, the City promoted the survey using the following methods:

- **City website** – The City placed a link to the survey in a prominent location on the City's website homepage, ensuring all website visitors were aware of the opportunity.
- **Press Release** – The City distributed press release to media outlets in San Luis Obispo County, resulting in announcements and coverage from KCOY.
- **Utility bill inserts** – During the August - September billing cycle, all City utility customers received an insert in their utility bill (paper and electronic) which promoted the opportunity to participate in the local hazard mitigation survey.
- **Email to all City employees** – An email reminder was sent to all city employees encouraging their participation in the survey and to share the survey with other interested parties.
- **Hard Copy surveys –** The City provided paper (hard) copies of the survey at kiosks and counters of City department offices including City Hall and at Fire Station 1.
- **Farmers Market Booth** – The Utility Department's booth at the Thursday Farmers Market included Paper (hard) copies of the survey.
- **Social Media** – A link to the survey was posted on various City department Facebook pages including the Public Works and Utilities department pages.

Outreach materials used to promote the public survey can be found in Appendix B.

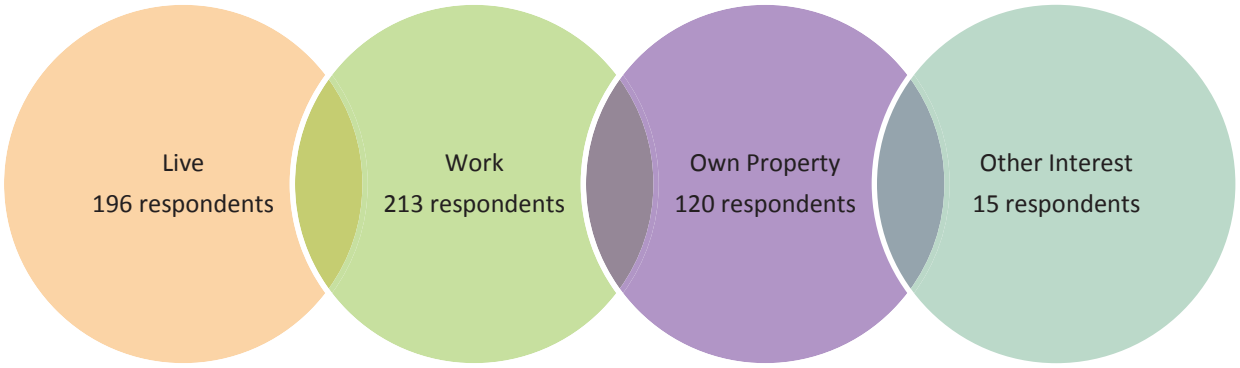
3.3.3 Results

The following summary highlights the key responses and findings of the survey. These survey results help to inform staff of community concerns. The complete survey results are stored with the City of SLO Fire Department.

3.3.3.1 Community Interest

The City received responses to the survey from 325 individuals. To gauge respondent's interest in the City, the survey asked whether the respondent lives, works, owns property, or has other interests (visitor, relatives, etc). In total: 196 respondents indicated that they currently reside in the City, 213 work in the City, 120 own property within the City, and 15 have other interests in the City. Figure 3-1 indicates whether respondents live, work, or own property within the City.

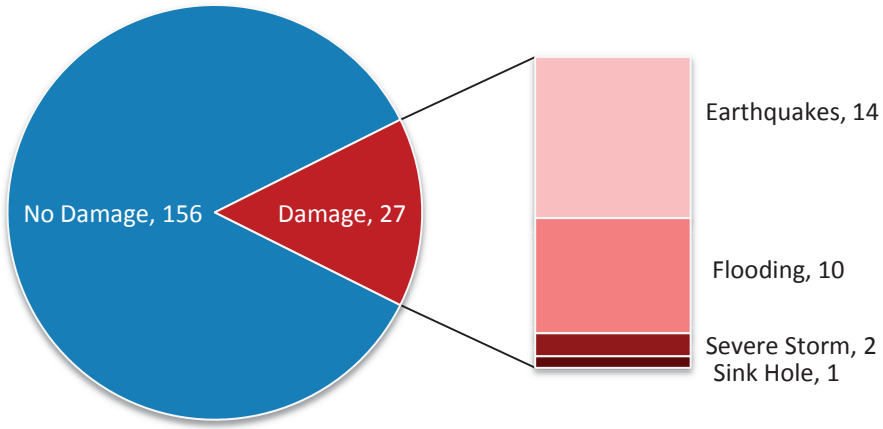
Figure 3-1 Survey Participant Interest in the City



3.3.3.2 Previous Damage

Approximately 15% of survey respondents indicated that they have experienced damage to their home or business due to a natural disaster. Of those respondents living in San Luis Obispo, 27 indicated their property was damaged during a previous natural disaster. Figure 3-2 presents the various natural hazards that have caused damage to property in the city.

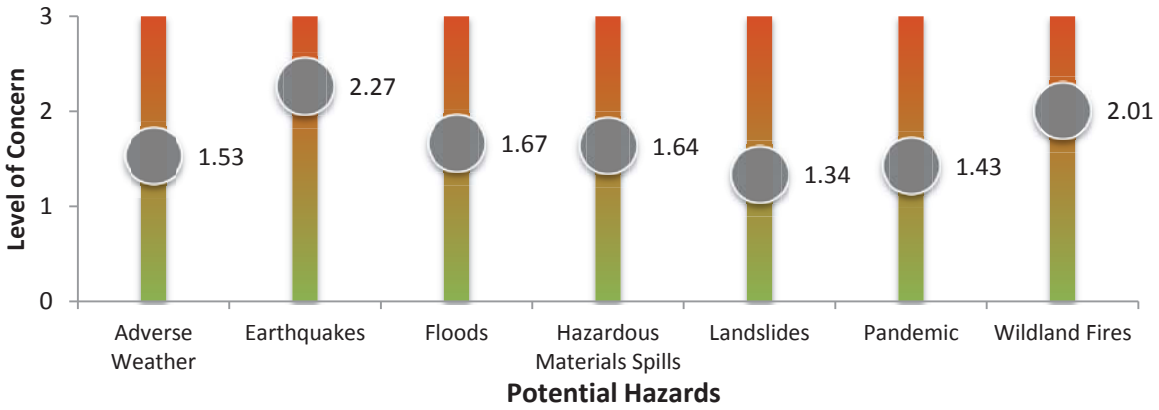
Figure 3-2 Past Natural Hazard Events and Property Damage (Residents Only)



3.3.3.3 Level of Concern

Respondents were asked to review the city's likely natural hazards and rate their level of concern (low, medium, and high) on a scale of one to three, for each natural hazard. While there was not much difference between resident respondents and all respondents, most indicated the highest levels of concern regarding earthquakes (2.27) and wildland fires (2.01). Lowest levels of concern include pandemic (1.43) and landslides (1.34). Figure 3-3 depicts the average level of concern among all respondents by hazard.

Figure 3-3 Average Potential Hazard Level of Concern



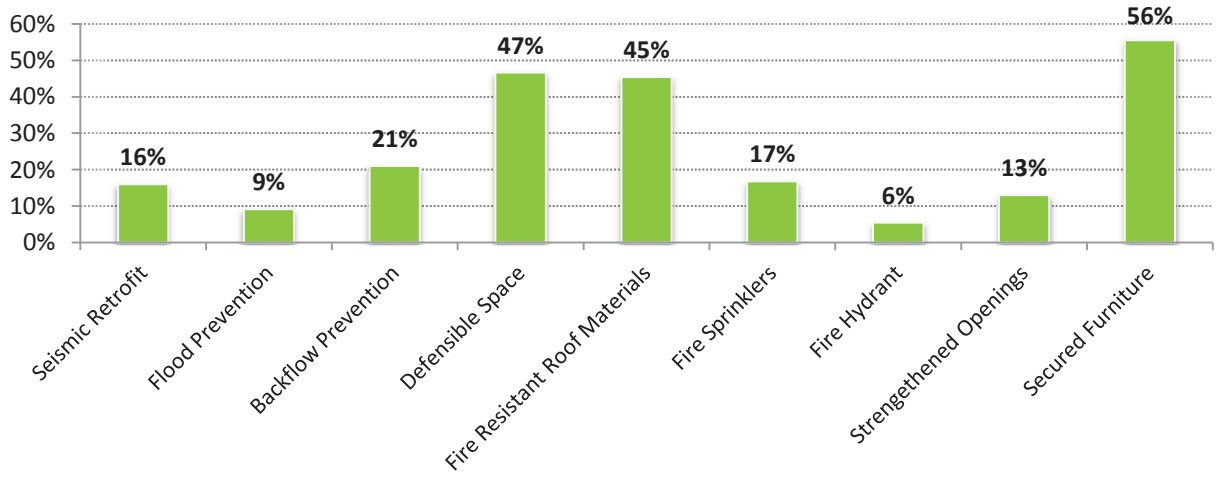
Other potential hazards of concern (though not all natural or likely within the city) identified by residents include:

- Tsunami
- Nuclear waste exposure
- Train derailment
- Pests such as termites, rats, mosquito, or other vector-borne diseases
- Large trees falling (during adverse weather or due to disease)

3.3.3.4 Actions to Prepare

As presented in Figure 3-4, many respondents have taken actions to reduce damage from a natural hazard such as securing furniture (54%), and reducing damage from wildfires by creating defensible space (47%) and using fire resistant roof materials (45%), while a smaller portion of respondents have installed backflow prevention equipment (21%), fire sprinklers (17%), or completed seismic retrofits (16%).

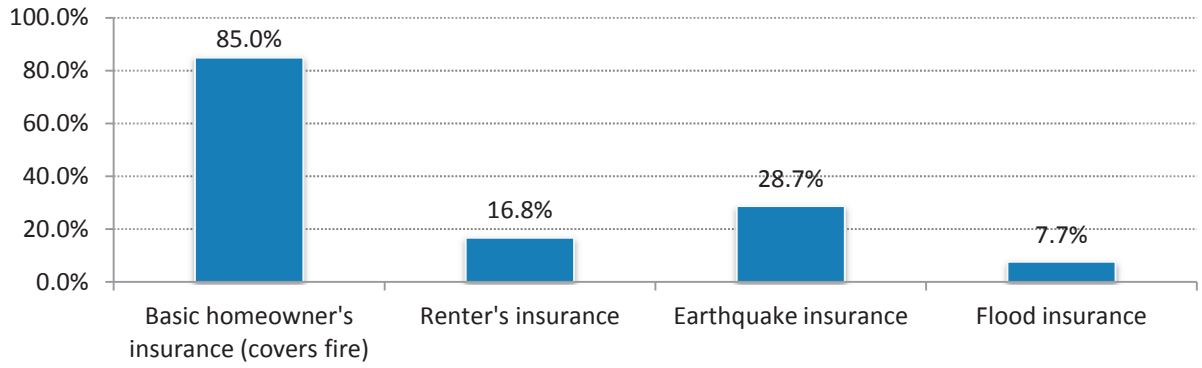
Figure 3-4 Actions Taken to Mitigate Damage



3.3.3.5 Home Insurance Coverage

Whether through homeowner's (85%) or renters insurance (16.8%), most respondents in San Luis Obispo have home insurance coverage. Additional insurance coverage for earthquake damage or flood insurance was reported by a small number of respondents, as shown in Figure 3-5.

Figure 3-5 Home Insurance Coverage

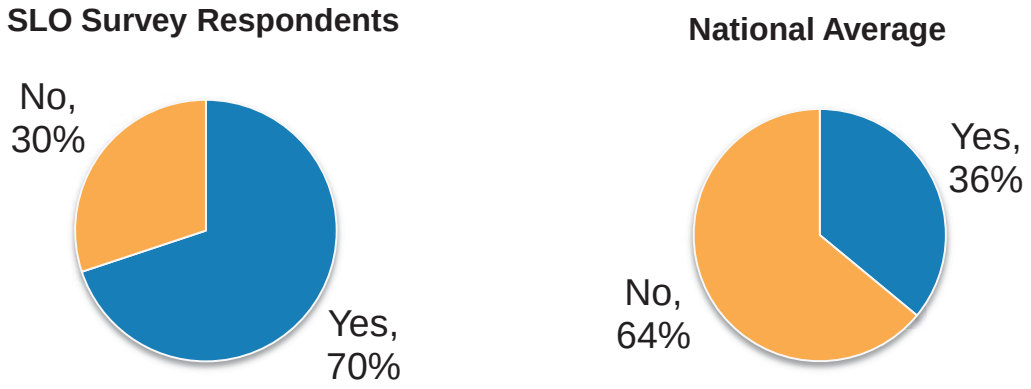


3.3.3.6 Emergency Supplies

Respondents were asked whether or not they have supplies readily available if a severe hazard event occurred today, to supply their household for at least three days. The majority of respondents (70%) identified that they are prepared with supplies in the event of a natural disaster (see Figure 3-6). This is higher than the national average where just 36% of the population has on hand a three-day supply in case of natural disaster events.[1]

[1] YouGov. November 14, 2012. 64% of Americans unprepared for natural disasters. Palo Alto, CA. http://today.yougov.com/news/2012/11/14/64-americans-unprepared-natural-disasters/

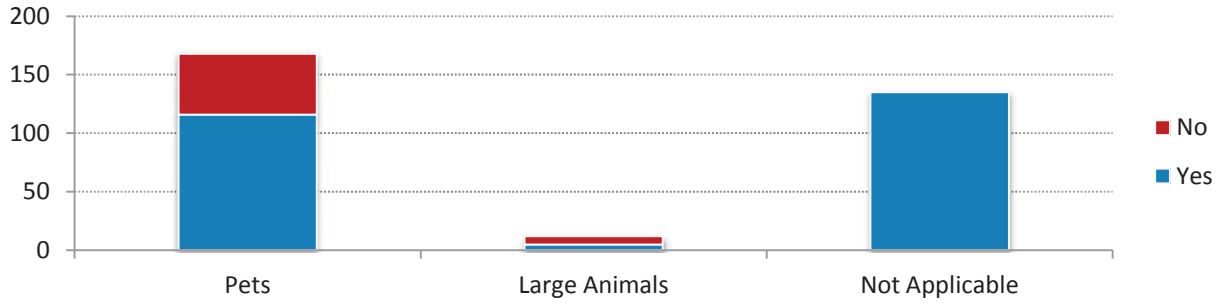
Figure 3-6 Supplies Ready during a Natural Hazard



3.3.3.7 Animal Evacuation Plans

Respondents were asked whether they had an evacuation plan in place for their pets or large animals. Of the 57% that indicated they had pets or large animals, roughly 67% indicated they have a plan in place, though only 42% of those with large animals (12 respondents) indicated they have a plan in place (see Figure 3-7).

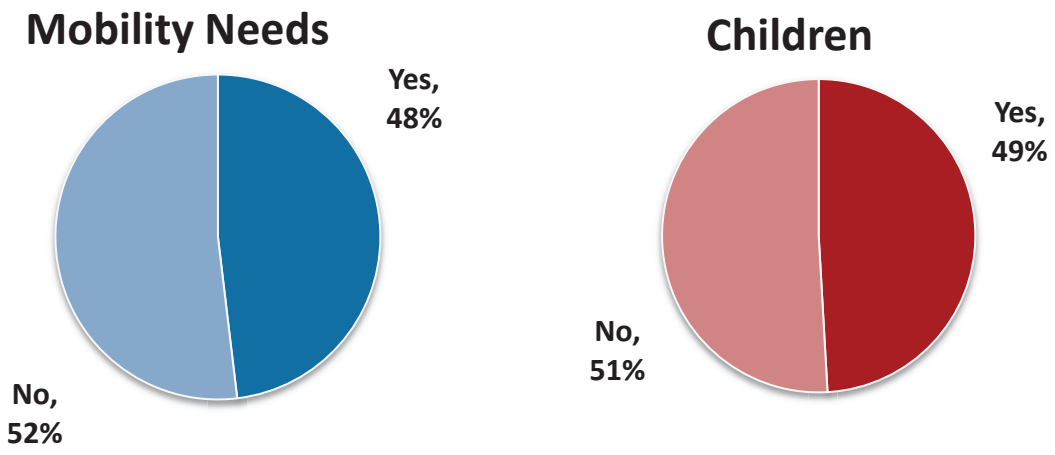
Figure 3-7 Emergency Evacuation Plans for Pets and Large Animals



3.3.3.8 Neighborhood Needs Awareness

Respondents were asked two questions regarding any special needs of their neighbors in the event of an emergency. As shown in Figure 3-8, slightly more than half of respondents are aware of potential needs of their neighbors with children or those with limited mobility, severe medical conditions, memory impairments, or other conditions which may limit their ability to evacuate or respond to a natural hazard.

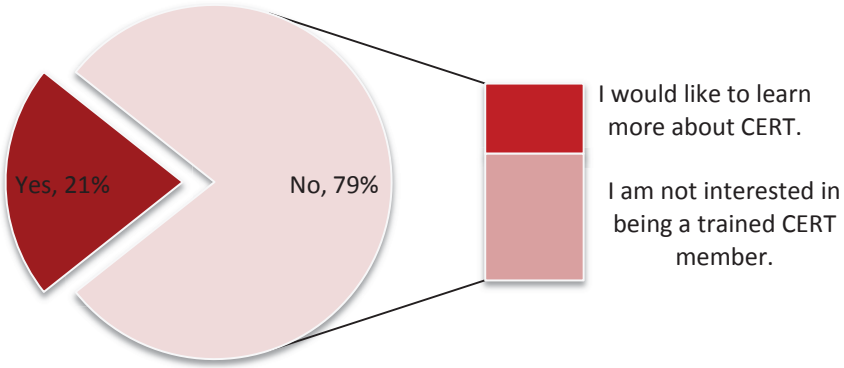
Figure 3-8 Awareness of Potential Neighbor Needs



3.3.3.9 CERT Participants

Respondents were asked if they are a trained member of the Community Emergency Response Team (CERT). While 21% of respondents indicated that they are a trained member (see Figure 3-9), many of those certified indicated that they have taken courses in other communities or that it had been several years since participating. Of the respondents that are not CERT members, 88 respondents were interested in learning more about CERT (or 28% of total respondents).

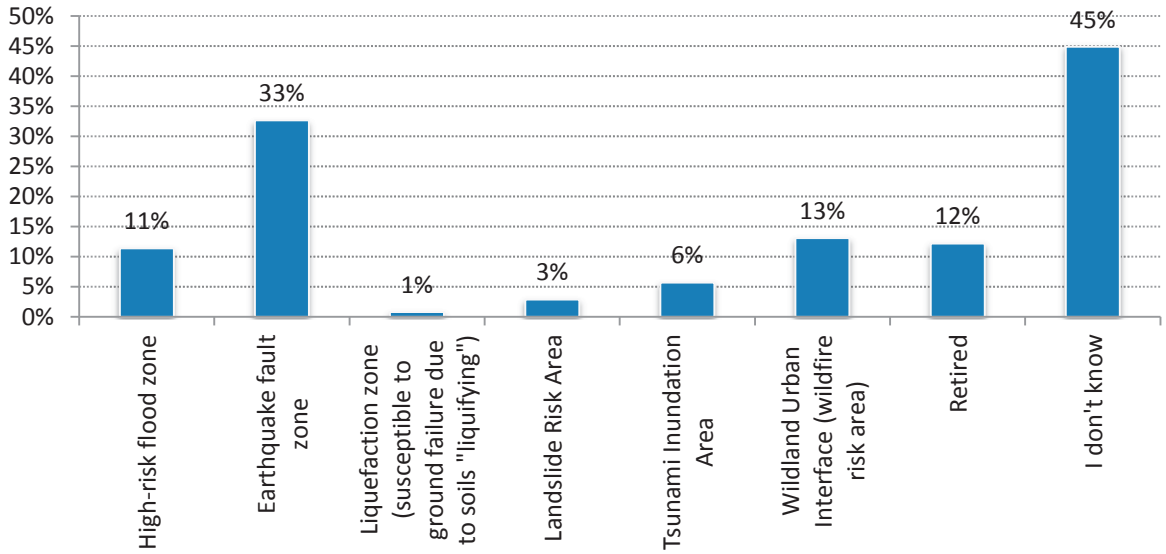
Figure 3-9 CERT Participants and Interest



3.3.3.10 Workplace Natural Hazards

Respondents were asked to identify any natural hazards present or known at their place of work. While this question was not applicable to some respondents, 45% identified that they were unsure of the hazards that may affect their workplace, and 33% identified earthquakes as a potential hazard to their workplace. Other potential hazards to the workplace are identified in Figure 3-10.

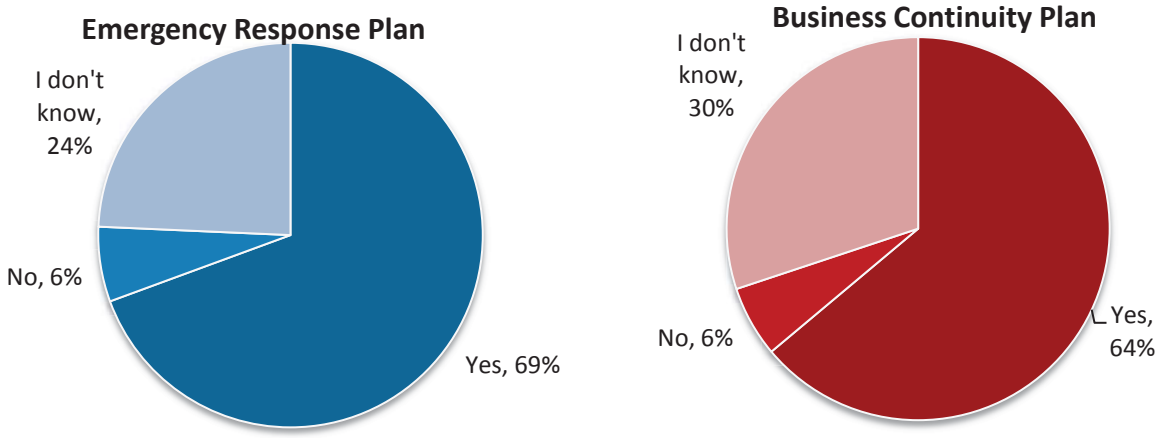
Figure 3-10 Workplace Susceptibility to Natural Hazards



3.3.3.11 Workplace Emergency Communications and Recovery Plans

Two additional questions related to workplace emergency preparedness and recovery efforts were asked. Of those respondents that work in San Luis Obispo, As shown in Figure 3-11, approximately 69% were aware their workplace has a plan in place to communicate with and ensure the safety of their employees immediately following a disaster, and 64% were aware their workplace has a plan in place to return to normal operations following a hazard event (i.e. business continuity plan). Alternatively, many respondents were unsure of whether their workplace has policies in place, with 24% citing they were unsure if there is an emergency response plan, and 30% indicating they were unsure if there is a business continuity plan.

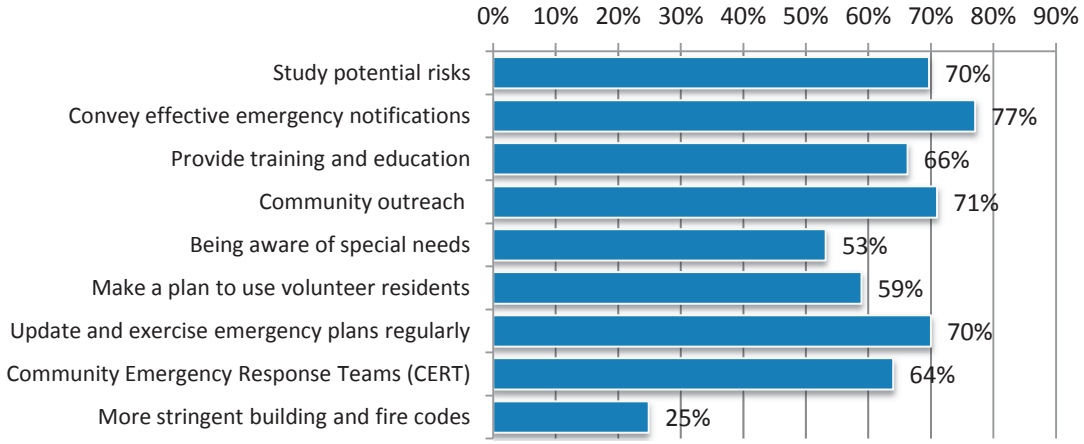
Figure 3-11 Workplace Emergency Preparedness



3.3.3.12 Local Government Efforts to Reduce Hazards

Finally, respondents were asked to provide input as to the most important things the local government can do to help the community be more prepared for a disaster. As noted in Figure 3-12, respondents felt that most opportunities for the local government to help the community be more prepared were important.

Figure 3-12 Important things local government can do to help communities be more prepared for a disaster



Other items that were noted by respondents that the local government can do to help the community be more prepared include:

- Tree maintenance
- Debris clearance from creeks
- Provide (or make the community aware of) emergency shelters
- Evacuation drills

3.3.4 Opportunities

In reviewing the 325 survey responses from the community, several preliminary themes or opportunities have been identified below:

- **Actions to Prepare** – While many members of the community have taken small actions to prevent damage to their home in the event of a natural hazard, only a small portion have completed larger structural items to prevent damage. The City may consider developing and implementing programs to support risk reduction activities by property owners. Using the data available as a result of the risk assessment in this LHMP, the City is able to identify areas and structures with a higher risk or exposure to the identified hazards. Sharing this information with community members and evaluating opportunities to help property owners in funding risk reduction activities will increase the resiliency of San Luis Obispo.
- **Awareness of Neighbor Needs** - Given the high student population and regular turnover of neighbors in some neighborhoods, it can be challenging for community members to be fully aware of neighbors and their needs. Neighborhood events such as the annual community block parties are an opportunity for the City to support

greater community interaction which can increase awareness of neighbors needs in the event of an emergency.

- **CERT Training** – Many respondents that indicated they are CERT members, though it had been several years since they had taken the class, or that they took the class in other communities. This group presents an untapped pool of volunteers and a community benefit. The City should continue the CERT program, offer CERT training regularly, and increase CERT volunteer's skills and confidence by offering refresher courses for those already trained. The City may also consider inviting CERT members to participate in emergency management exercises and trainings.
- **Community or Workplace Awareness** – In many cases, respondents were unaware or unsure of the hazards that may affect the community or their workplace and policies that may be in place to help respond to a natural disaster. The City can help to increase community awareness through wider promotion or participation in workshops or resources available to the community that have already been prepared by the City or volunteer organizations. The City may increase business owners' awareness of risk by providing emergency planning support, continuity of operations planning support, and potentially hosting seminars for the business community to learn about the hazard risks.
- **Understanding the Extent of Damages** – To better understand the extent of damages to homeowners from a natural disaster, the City could coordinate with homeowner insurance providers to track damages beyond those reported through the National Flood Insurance Program (NFIP).

3.3.5 Public Review Period

The draft 2014 Local Hazard Mitigation Plan was released for public review on January 13, 2014. The release of the public draft LHMP was promoted through a variety of means including:

- Press Release to local media from the Fire Department
- Interview with the SLO City Fire Department's Julie Cox that aired on Saturday February 1st on Q104.5, 98.1K-Jug, and Krush 92.5; and on Sunday February 2nd on 93.3 KZOZ
- Announcement in City of San Luis Obispo local newspaper, Tribune – http://www.sanluisobispo.com/2014/01/29/2898636/draft-of-slos-hazard-mitigation.html
- City of SLO Website
- Facebook pages of the Public Works, Utilities, and Neighborhood Services Departments
- County of SLO Public Health Department Facebook and Twitter Pages
- Direct email to the 105 respondents of the public survey who requested to be notified when the Public Draft was available for review.

Outreach materials used to promote the public review draft can be found in Appendix B.

The public review period of the draft LHMP concluded with a public hearing before the City Council on February 4, 2014. The public, City staff, and the City Council provided comments and questions on the draft plan. All comments received at the public hearing and in advance of the meeting via email or phone calls were addressed and incorporated into the final plan as appropriate.

3.4 Incorporation of Existing Plans and Other Relevant Information

Various regulations, plans, and programs developed and implemented by the City were reviewed by the Planning Team and used to inform the hazard mitigation planning process. The relevant plan and policy resources that describe the City's ability to mitigate hazards are documented in Section 6 Capability Assessment.

Section 4 Risk Assessment

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

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

4.1 Hazard Identification and Prioritization

A risk assessment requires the collection and analysis of hazard-related data, allowing local communities to identify and prioritize appropriate mitigation actions that will reduce losses from potential hazards. While California is susceptible to a number of natural hazards, this LHMP profiles the most significant of these hazards pertinent to the City of San Luis Obispo. Historical data, catastrophic potential, relevance to the jurisdiction, and the probability and potential magnitude of future occurrences are the criteria used to select the hazards of highest.

At the first Milestone Meeting on July 10, 2013, the Hazard Mitigation Team reviewed the hazards addressed in the 2006 Local Hazard Mitigation Plan. The Planning Team determined that these hazards were still applicable, and made minor updates including the addition of pandemic and the modification of the windstorm profile to an adverse weather profile. Adverse weather includes drought, freeze, hailstorm, dense fog, tornado, and thunderstorm in addition to heavy wind. Other items discussed at the meeting include utility power failure that can be a secondary effect of a natural hazard event. Similarly, utility failure may cause cascading impacts such as the inability to pump wastewater. The Planning Team also acknowledged that hazards such as adverse weather and wildfire risk are exacerbated by the local effects of climate change.

The Planning Team prioritized the identified hazards by ranking the probability of occurrence and potential impacts. The results of the online survey for rating the level of concern were also included in the prioritization calculation. The results are presented in Table 4-1 Hazard Identification and Prioritization. The accompanying hazard ranking exercise legend (Table 4-2) presents the calculation formulas. Earthquakes, wildland fires, and adverse weather received the highest prioritization scores, but all of the hazards are considered a significant concern to the City. It is noted that the prioritization process focused on significant events which have lesser probabilities of occurrence. For example, an earthquake with severe impacts is expected to occur less frequently than an earthquake causing negligible damage.

Table 4-1 Hazard Identification and Prioritization Worksheet

Hazard Type	Probability	Impact			Survey Rating	Survey Score	Total Score
		Affected Area	Primary Impact	Secondary Impacts			
Earthquakes/Liquefactions	2	4	4	4	2.35	7.83	39.83
Wildland Fires	2	3	3	3	2.08	6.93	30.93
Adverse Weather	2	4	2	2	1.53	5.10	27.50
Hazardous Materials	3	1	2	2	1.67	5.57	24.77
Floods	2	2	2	2	1.63	5.43	21.43
Pandemic	1	4	4	4	1.45	4.83	20.83
Landslides	1	1	2	2	1.34	4.47	10.87

Table 4-2 Hazard Prioritization Exercise Legend

Probability	Importance	2.0
Based on estimated likelihood of occurrence from historical data		Score
Unlikely (Less than 1% probability in next 100 years or has a recurrence interval of greater than every 100 years.)		1
Somewhat Likely (Between 1 and 10% probability in next year or has a recurrence interval of 11 to 100 years.)		2
Likely (Between 10 and 100% probability in next year or has a recurrence interval of 10 years or less.)		3
Highly Likely (Near 100% probability in next year or happens every year.)		4

Secondary Impacts	Importance	0.5
Based on estimated secondary impacts to community at large considering economic impacts, health impacts, and crop losses		Score
Negligible - no loss of function, downtime, and/or evacuations		1
Limited - minimal loss of function, downtime, and/or evacuations		2
Moderate - some loss of function, downtime, and/or evacuations		3
High - major loss of function, downtime, and/or evacuations		4

Affected Area	Importance	0.8
Based on size of geographical area of community affected by hazard		Score
Isolated		1
Small		2
Medium		3
Large		4

Survey Score	Importance	1.0
Survey Score = (Survey Rating / 3) x 10 where:		
Survey Rating is the average rating of concern based on a scale of 1 (low concern) to 3 (high concern) compiled from the survey responses.		

Primary Impact	Importance	0.7
Based on percentage of damage to typical facility in community		Score
Negligible - less than 10% damage		1
Limited - between 10% and 25% damage		2

Total Score = (Probability x Impact) + Survey Score, where:
Probability = (Probability Score x Importance)
Impact = (Affected Area + Primary Impact + Secondary Impacts), where:
Affected Area = Affected Area Score x Importance
Primary Impact = Primary Impact Score x Importance
Secondary Impacts = Secondary Impacts Score x Importance

4.2 Hazard Profiles

4.2.1 Earthquakes and Liquefactions

4.2.1.1 Hazard Definition

An earthquake is a sudden motion or trembling caused by a release of strain accumulated within or along the edge of the earth's tectonic plates. The effects of an earthquake can be felt far beyond the site of its occurrence. Earthquakes usually occur without warning and, after just a few seconds, can cause massive damage and extensive casualties.

Earthquakes are measured in terms of their magnitude and intensity. Magnitude is measured by using the Richter magnitude scale, shown in Table 4-3 below. The magnitude of an earthquake is determined from the logarithm of the amplitude of waves recorded by seismographs. Adjustments are included for the variation in the distance between the various seismographs and the epicenter of the earthquakes. On the Richter scale, magnitude is expressed in whole numbers and decimal fractions. For example, a magnitude 5.3 might be computed for a moderate earthquake, and a strong earthquake might be rated as magnitude 6.3. Because of the logarithmic basis of the scale, each whole number increase in magnitude represents a tenfold increase in measured amplitude; as an estimate of energy, each whole number step in the magnitude scale corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number value.

Table 4-3 Richter Scale

Richter Magnitudes	Earthquake Effects
Less than 3.5	Generally not felt, but recorded.
3.5 - 5.4	Often felt, but rarely causes damage.
5.5 - 6.0	At most slight damage to well-designed buildings. Can cause major damage to poorly constructed buildings over small regions.
6.1 - 6.9	Can be destructive in areas up to about 100 kilometers across where people live.
7.0 – 7.9	Major earthquake. Can cause serious damage over larger areas.
8 or greater	Great earthquake. Can cause serious damage in areas several hundred kilometers across.

The effect of an earthquake on the Earth's surface is called the intensity. The intensity scale consists of a series of certain key responses such as people awakening, movement of furniture, damage to chimneys, and finally, total destruction. Although numerous intensity scales have been developed over the last several hundred years to evaluate the effects of earthquakes, the one currently used in the United States is the Modified Mercalli Intensity (MMI) Scale, shown in Table 4-4 below. This scale, composed of 12 increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, is designated by Roman numerals. It does not have a mathematical basis; instead it is an arbitrary ranking based on observed effects.

The MMI value assigned to a specific site after an earthquake has a more meaningful measure of severity to the nonscientist than the magnitude because intensity refers to

the effects actually experienced at a particular place. The lower numbers of the intensity scale deal with the manner in which people feel the earthquake. The higher numbers of the scale are based on observed structural damage. Structural engineers usually contribute information for assigning intensity values of VIII or above.

Table 4-4 Modified Mercalli Intensity Scale for Earthquakes

Scale	Intensity	Earthquake Effects	Corresponding Richter Scale Magnitude
I	Instrumental	Detected only on seismographs	
II	Feeble	Some people feel it	<4.2
III	Slight	Felt by people resting; like a truck rumbling by	
IV	Moderate	Felt by people walking	
V	Slightly Strong	Sleepers awake; church bells ring	<4.8
VI	Strong	Trees sway; suspended objects swing; objects fall off shelves	<5.4
VII	Very Strong	Mild Alarm; walls crack; plaster falls	<6.1
VIII	Destructive	Moving cars uncontrollable	
IX	Ruinous	Some houses collapse; ground cracks; pipes break open	<6.9
X	Disastrous	Ground cracks profusely; many buildings destroyed; liquefaction and landslides widespread	<7.3
XI	Very Disastrous	Most buildings and bridges collapse; roads, railways, pipes and cables destroyed; general triggering of other hazards	<8.1
XII	Catastrophic	Total destruction; trees fall; ground rises and falls in waves	>8.1

The intensity of an earthquake can also be measured through Peak Ground Acceleration (PGA). PGA is a measure of earthquake acceleration on the ground and is measured by instruments, such as accelerographs. Peak ground acceleration can be expressed in “g”, or the acceleration due to Earth’s gravity. Generally speaking,

- 0.001 g – perceptible by people
- 0.02 g – people lose their balance
- 0.50 g – very high; well-designed buildings can survive if the duration is short.

Ground Motion: The most common effect of earthquakes is ground motion, or the vibration or shaking of the ground during an earthquake. The severity of ground motion generally increases with the amount of energy released and decreases with distance from the fault or epicenter of the earthquake. Ground motion causes waves in the earth’s interior, also known as seismic waves, and along the earth’s surface, known as surface waves. Two kinds of seismic waves exist. P (primary) waves are longitudinal or compressional waves similar in character to sound waves that cause back-and-forth oscillation along the direction of travel (vertical motion). S (secondary) waves, also known as shear waves, are slower than P waves and cause structures to vibrate from side to side (horizontal motion). Also two kinds of surface waves exist: Raleigh waves and Love waves. These waves travel more slowly and typically are significantly less damaging than seismic waves.

Faulting: In addition to ground motion, several secondary hazards can occur from earthquakes, such as surface faulting. Surface faulting is the differential movement of two sides of a fault at the earth's surface. Displacement along faults, both in terms of length and width, varies but can be significant (e.g. up to 20 feet), as can the length of the surface rupture (e.g. up to 200 miles). Surface faulting can cause severe damage to linear structures, including railways, highways, pipelines, and tunnels.

Liquefaction: Earthquake-related ground failure due to liquefaction is another secondary hazard. Liquefaction occurs when seismic waves pass through saturated granular soil, distorting its granular structure, and causing some of the empty spaces between granules to collapse. Porewater pressure may also increase sufficiently to cause the soil to behave like a fluid for a brief period and cause deformations. Liquefaction causes lateral spreads (horizontal movements of commonly 10 to 15 feet, but up to 100 feet), flow failures (massive flows of soil, typically hundreds of feet, but up to 12 miles), and loss of bearing strength (soil deformations causing structures to settle or tip). Liquefaction can cause severe damage to property.

4.2.1.2 History

Historically, most of the earthquakes that have occurred near San Luis Obispo have originated from movement along the San Andreas Fault, which lies approximately 35 miles northeast of the City. However, the most recent major earthquake to affect San Luis Obispo occurred at 11:15:56 am Pacific Standard Time on December 22, 2003. The epicenter of the magnitude 6.5 earthquake was approximately 7 miles northeast of San Simeon at a depth of 4.7 miles (35.706N, 121.102W), 45 miles from San Luis Obispo. The City of San Luis Obispo experienced some minor damage. Two people were killed by falling debris from an unreinforced building in the City of Paso Robles when they ran outside of the building during the event. Countywide, 47 people were reported injured and 290 homes and 190 commercial structures were damaged. Other historical earthquakes near the City of San Luis Obispo include:

1830 San Luis Obispo Earthquake. The 1830 earthquake is noted in the annual report from the Mission, and had an estimated magnitude of 5.0. The location of the event is poorly constrained and cannot be attributed to a specific fault source, but the earthquake reportedly occurred somewhere near San Luis Obispo.

1906 San Francisco Earthquake. This earthquake has been studied in detail and the effects in San Luis Obispo County have been documented. Modified Mercalli intensity ratings ranged from III-IV in the inland and north coast portions of the County, and IV-V in the south coast areas. The higher intensities were felt in areas underlain by alluvial soil, while the lower intensities occurred in areas underlain by bedrock formations.

1916 Avila Beach Earthquake. This magnitude 5.1 event occurred offshore of Avila Beach in San Luis Bay. The earthquake reportedly resulted in tumbling smokestacks of the Union Oil Refinery at Port San Luis, and a landslide that blocked the railroad tracks. The maximum intensity appears to be approximately VI, but the available descriptions of the shaking are somewhat limited.

1952 Arvin-Tehachapi Earthquake. This 7.7 magnitude earthquake occurred on the White Wolf fault, located south and west of Bakersfield. Throughout most of the San

Luis Obispo County, ground shaking intensities of VI were felt. Intensities of IV-V were experienced in the northwest portion of the County, and magnitude VIII intensities were felt in the Cuyama area, in the southeast portion of the County. The higher intensities were likely due to closer proximity to the earthquake epicenter.

1952 Bryson Earthquake. This magnitude 6.2 earthquake likely occurred on the Nacimiento fault, and resulted in intensity ratings of VI throughout most of the western portion of the County. Intensities of IV-V were experienced in the eastern portion of the County. Higher intensities were generally felt in the coastal valley areas that are underlain by alluvial soils.

1934, 1966, 2004, and 2012 Parkfield Earthquakes. These earthquakes had magnitudes of 6.0 and 5.5, respectively, and occurred on the San Andreas fault in or near the northeast corner of the County. Earthquake intensities generally conformed to anticipated characteristics for events of this size, with intense shaking (VII-VIII) being limited to a relatively small area near the epicenters of the quakes. Moderate shaking was experienced in most of the central and western parts of the County. A variation from the expected intensity characteristics was experienced in the La Panza area during the 1934 earthquake. La Panza is approximately 40 miles south of the fault rupture area, but experienced earthquake intensities of VII. The 2012 earthquake was felt as far south as the City of San Luis Obispo.

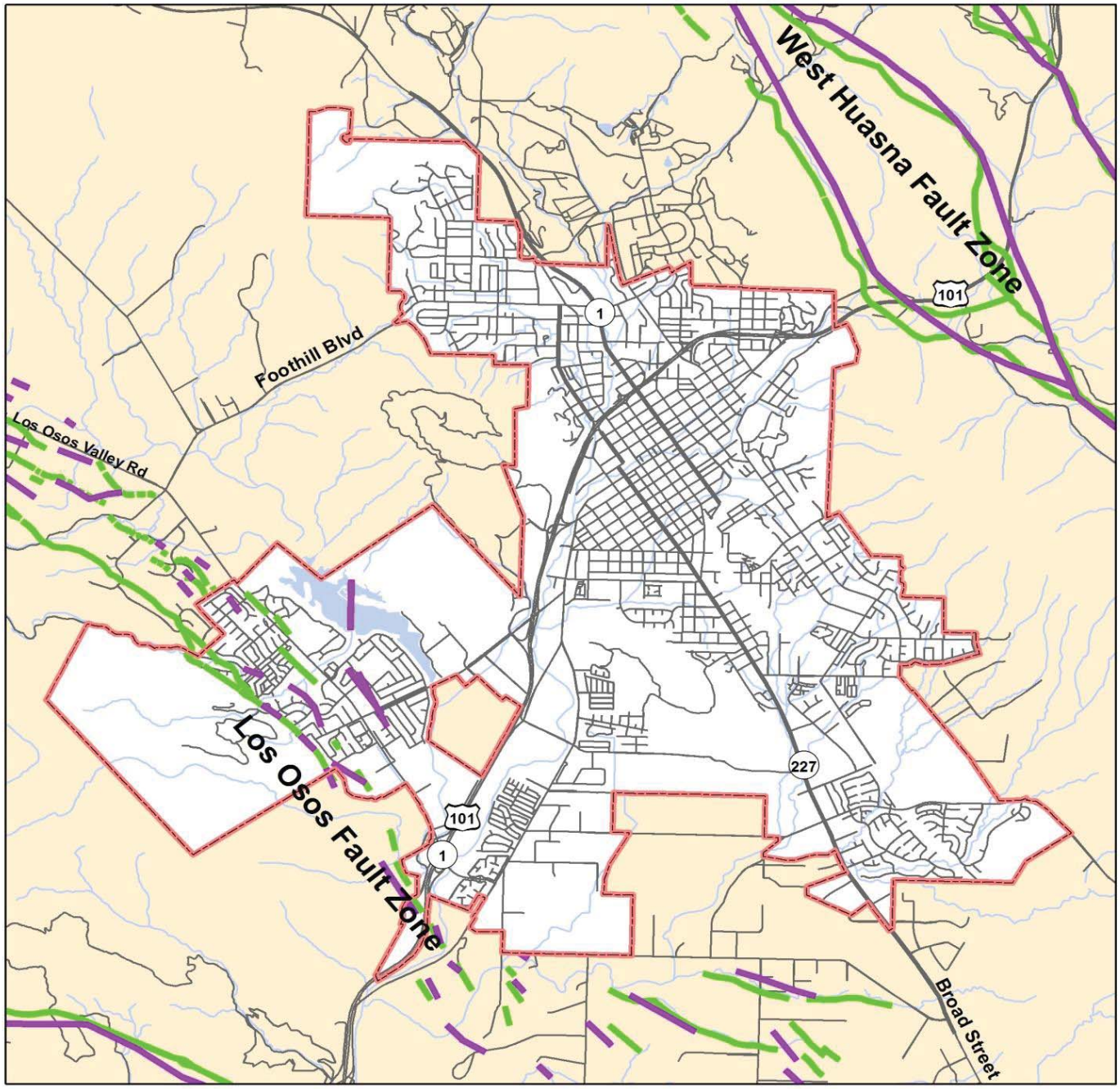
October 21, 2012 King City Earthquake. A magnitude 5.3 earthquake shook Northern San Luis Obispo County. The quake was labeled as “moderate” by the USGS and rocking was felt as far as Nipomo. The epicenter was outside of King City, California. The sheriff departments for Monterey and San Luis Obispo counties both stated no reports of damage.

4.2.1.3 Location

Faulting: The Los Osos fault zone, also known as the Edna fault zone, main strand lies near the intersection of Los Osos Valley Road and Foothill Boulevard. Field evaluations by the California Geological Survey (CGS) for the main strand of the Los Osos fault found evidence of movement in the last 11,000 years. This evidence of recent activity resulted in the establishment of an Earthquake Fault Zone by CGS in 1989 under the Alquist-Priolo Fault Zoning Act. It should not be interpreted that the active portion of the main trace of the Los Osos Fault is limited only to the designated Earthquake Fault Zone. Rather, the limits of the established zone correspond to the limits of the available information provided in site specific studies that show evidence of recent fault activity in that area. The Los Osos fault presents a high to very high fault rupture hazard to developments near and southwest of the Los Osos Valley Road area.

Other fault zones, in the vicinity of San Luis Obispo are the West Huasna, Oceanic, and Rinconada. All of these faults were the sources of magnitude M>6.0 during the Quaternary. These faults are considered potentially active and present a moderate fault rupture hazard to developments near them. Locations of faults in the immediate San Luis Obispo area can be seen in the Figure 4-1 below.

Figure 4-1 City of San Luis Obispo Earthquake Faults



City of San Luis Obispo Local Hazard Mitigation Plan

Earthquake Faults

Legend

- SLO County Fault Lines
- USGS National Quaternary Fault and Fold Database
- City of San Luis Obispo
- San Luis Obispo County
- Lakes and Reservoirs
- Roads
- Creek

Description

This map shows fault lines in the City of San Luis Obispo and the close surrounding County area. Fault lines that affect the City include the Los Osos (also known as Edna), West Huasna, Oceanic (out of map extent), and Riconada (out of map extent) faults. These faults are considered potentially active and present a moderate fault rupture hazard to developments near them.

Data Sources

County Boundary (SLO County GIS);
Lake, Reservoir, and Creeks; Roads; City Boundary (SLO City GIS);
SLO County Fault Lines (SLO County GIS, PLN_GEO_EARTHQUAKE_FAULTS.shp);
USGS Fault Lines (USGS, QuaternaryFaults.shp, 2010)

Projection

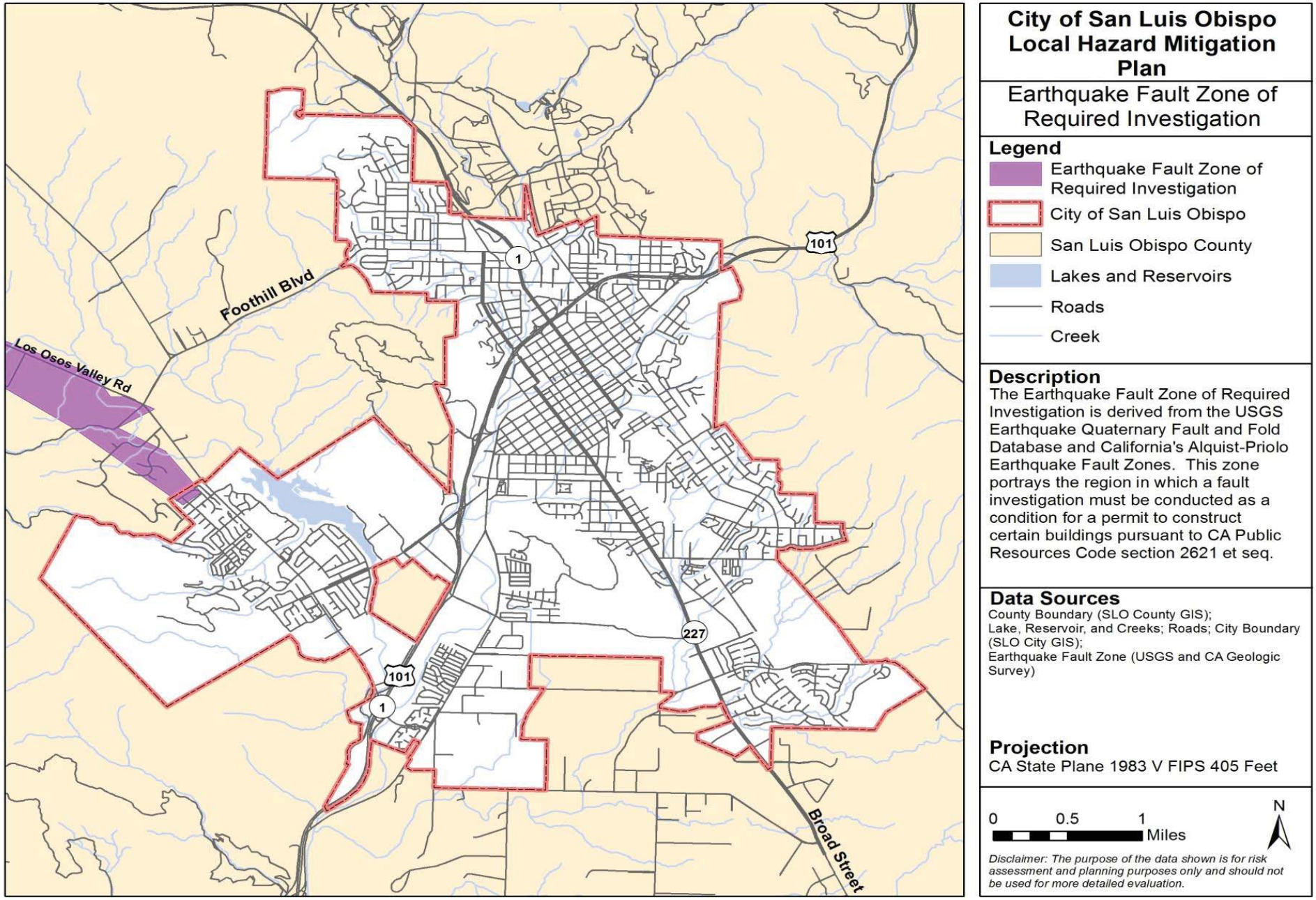
CA State Plane 1983 V FIPS 405 Feet

0 0.5 1 Miles

N

Disclaimer: The purpose of the data shown is for risk assessment and planning purposes only and should not be used for more detailed evaluation.

Figure 4-2 City of San Luis Obispo Earthquake Fault Zone of Required Investigation



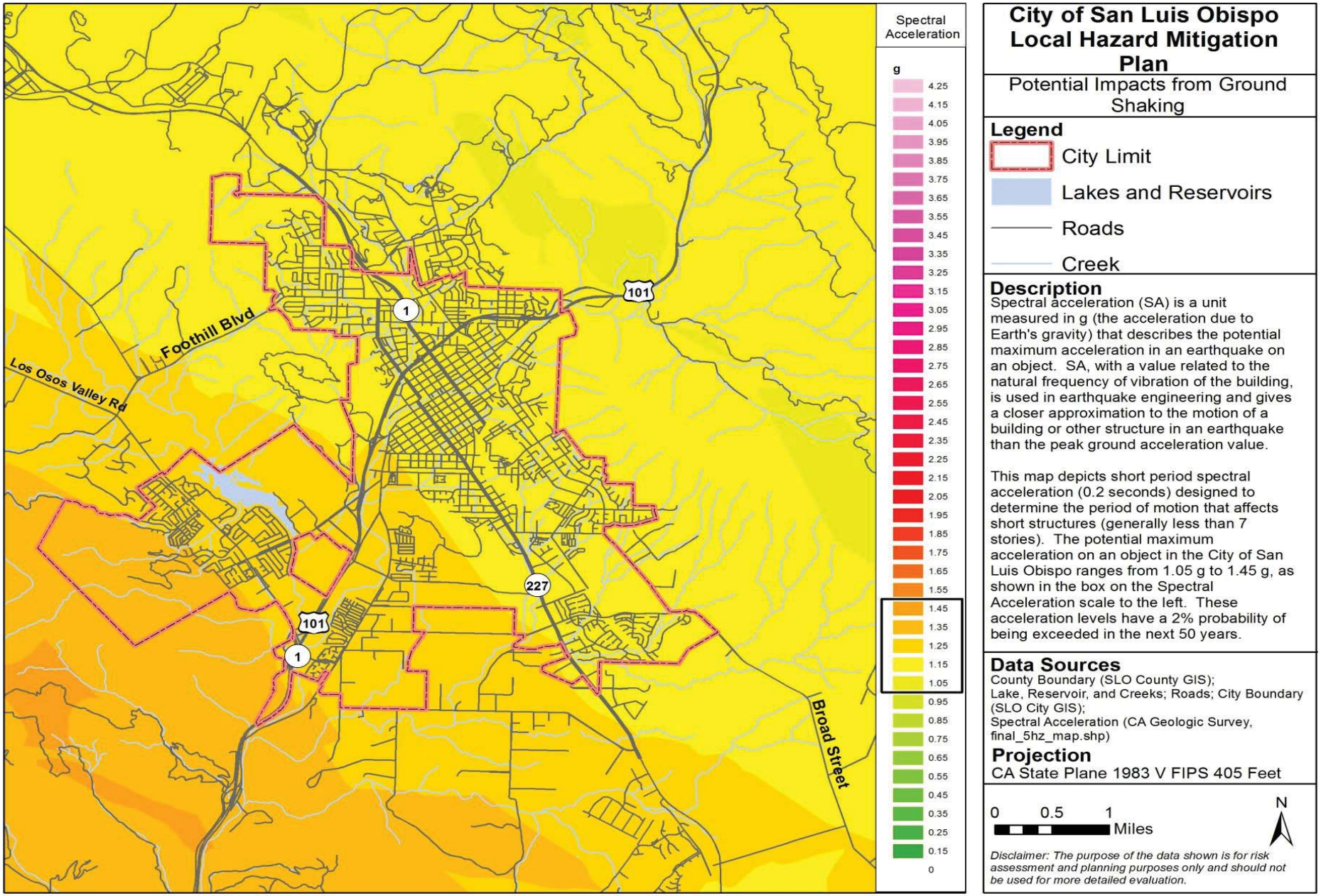
Ground Shaking: The central and northern portion of the City of San Luis Obispo is located within the lower-moderate range of the earthquake shaking potential model, while the western and southern portions of the City fall within the higher-moderate range and, therefore, may experience stronger earthquake shaking.

Studies have estimated the maximum credible ground acceleration that could be generated by active and potentially active faults. Deterministic peak horizontal ground accelerations from these studies range from a low of 0.4 g in the central portion of the County to a high of about 0.7 g along the San Andreas, Rinconada, Oceanic-West Huasna, and coastal fault zones. The western portion of San Luis Obispo County has a high probability of experiencing ground accelerations in the range of 0.3 g to 0.4 g in the next 50 years. The eastern portion of the County adjacent to the San Andreas Fault has a high percent probability of experiencing a peak ground acceleration of 0.5 g to 0.7 g in the next 50 years. The statistical variance in estimated ground acceleration could easily be plus or minus 50 percent of the estimated ground motion.

Spectral acceleration (SA) is a unit measured in g (the acceleration due to Earth's gravity) that describes the potential maximum acceleration in an earthquake on an object, such as a building[2]. SA, with a value related to the natural frequency of vibration of the building, is used in earthquake engineering and gives a closer approximation to the motion of a building or other structure in an earthquake than the peak ground acceleration value. The map in Figure 4-3 depicts short period spectral acceleration (0.2 seconds) designed to determine the period of motion that affects short structures (generally less than seven stories). The acceleration levels shown in the figure below have a 2% probability of being exceeded in the next 50 years.

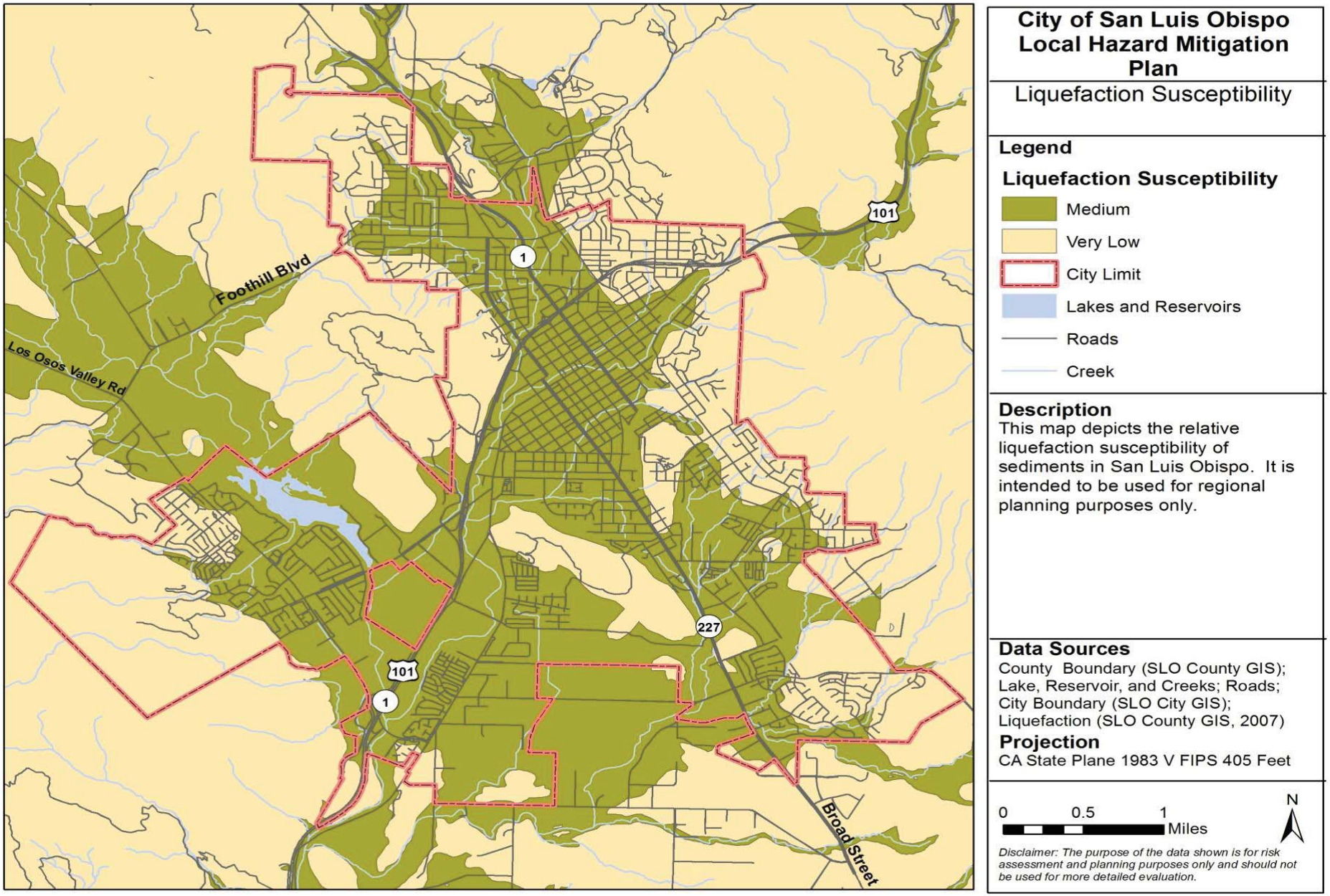
[2] 2013 Hazard Mitigation Plan for the County of San Luis Obispo

Figure 4-3 City of San Luis Obispo Potential Impacts from Ground Shaking



Liquefaction: The areas of the City of San Luis Obispo that have a high potential to be underlain by potentially liquefiable sediments are those areas underlain by younger alluvium. Most of the City of San Luis Obispo is underlain by alluvium. Site specific studies are needed to evaluate if a geologic unit actually contains potentially liquefiable materials, and if they require mitigation for development. Figure 4-4 below depicts the relative liquefaction susceptibility of sediments in the City of San Luis Obispo. Liquefaction susceptibility of sediments within the City are either very low or medium on a scale from very low to very high.

Figure 4-4 City of San Luis Obispo Liquefaction Susceptibility



4.2.1.4 Extent

Ground movement during an earthquake is seldom the direct cause of death or injury. Most earthquake-related injuries result from collapsing walls, flying glass, and falling objects as a result of the ground shaking, or people trying to move more than a few feet during the shaking. Non-structural items and building components can influence the amount of damage that buildings suffer during an earthquake. Unreinforced parapets, chimneys, facades, signs, and building appendages can all be shaken loose, creating a serious risk to life and property. Much of the damage in earthquakes is predictable and preventable.

When liquefaction of the soil does occur, buildings and other objects on the ground surface may tilt or sink, and lightweight buried structures (such as pipelines) may float toward the ground surface. Liquefied soil may be unable to support its own weight or that of structures, which could result in loss of foundation bearing or differential settlement. Liquefaction may also result in the development of cracks in the ground surface followed by the emergence of a sand/water mixture, typically referred to as a sand-boil. In areas underlain by thick deposits of saturated, loose granular sediment (such as alluvial valleys or beaches), subsidence as much as several feet may result.

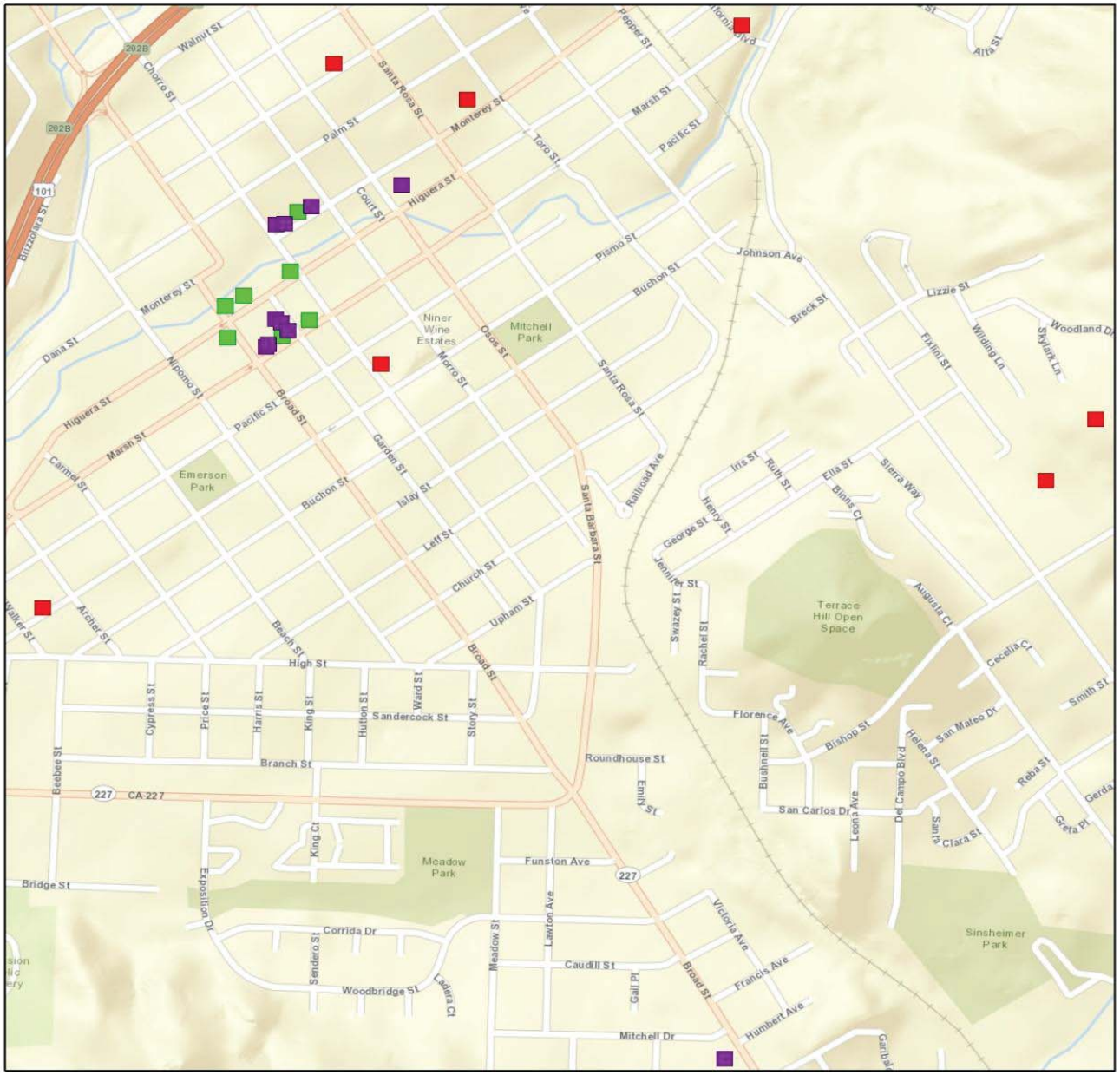
Unreinforced Masonry (URM) Buildings: Unreinforced masonry structures consist of buildings made of unreinforced concrete and brick, hollow concrete blocks, clay tiles, and adobe. Buildings constructed of these materials are heavy and brittle, and typically provide little earthquake resistance. In small earthquakes, unreinforced buildings can crack, and in strong earthquakes, they have a tendency to collapse. These types of structures pose the greatest structural risk to life and safety of all general building types.

Due to the public safety risks that are posed by unreinforced masonry buildings, the California legislature passed Senate Bill 547 (Government Code section 8875 et seq.). This legislation went into effect January 1, 1987, and required all cities and counties located in Seismic Zone 4, which includes San Luis Obispo City, to conduct an inventory of potentially hazardous structures, including unreinforced masonry buildings.

Following the 2003 San Simeon Earthquake and the resulting damage observed in nearby Paso Robles, the City adopted Ordinance No. 1453 in August 2004, amending requirements and accelerating deadlines for strengthening the City's unreinforced masonry buildings. In 2004, there were 126 URM buildings, most of which were located in the downtown area.

By the end of 2012, only 11 of the original 126 URM buildings remain on the Unreinforced Masonry Hazard Inventory. Of these, eight have deadlines of July 1, 2015 and the other three are making progress through the entitlement process with strengthening to follow. Five buildings are in the process of being strengthened. Those buildings classified as exempt will not undergo strengthening. Figure 4-5 below shows where the exempt, unreinforced, and partially reinforced structures are located within the City.

Figure 4-5 City of San Luis Obispo URM Building Status



City of San Luis Obispo Local Hazard Mitigation Plan

Unreinforced Masonry (URM) Buildings

Legend

Unreinforced Masonry

Status

- Exempt
- Unreinforced
- Partially Reinforced

Description

At the end of 2012, only 11 of the original 126 URM buildings remain on the Unreinforced Masonry Hazard Inventory. Of these, eight have a deadline of July 1, 2015 and the other three are making progress through the entitlement process with strengthening to follow. Five buildings are in the process of being strengthened. Those buildings classified as exempt will not undergo strengthening.

Data Sources

Basemap (ArcGIS 10.0 Basemap); URM Buildings (SLO City GIS)

Projection

CA State Plane 1983 V FIPS 405 Feet

0 0.1 0.2 Miles

N

Disclaimer: The purpose of the data shown is for risk assessment and planning purposes only and should not be used for more detailed evaluation.

HAZUS Analysis: The San Luis Obispo County 2013 Hazard Mitigation Plan contains summarized HAZUS Analysis results for three earthquake scenarios on three faults that fall within the County: San Andreas, Los Osos, and Hosgri. Since the Los Osos Fault is closest in proximity to the City of San Luis Obispo, the results of this scenario are summarized below. Additional information on the HAZUS scenarios can be found in the County plan.

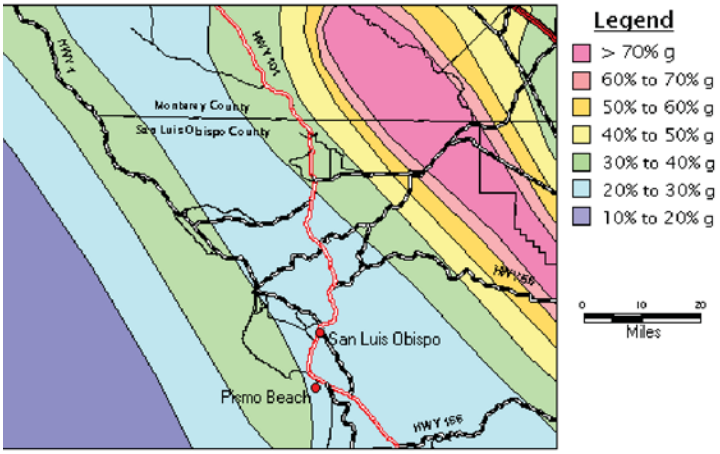
The Los Osos Fault scenario contains a magnitude 6.8 earthquake on the Los Osos Fault with an epicenter approximately five miles west of US Highway 101. The results of this scenario include:

- Direct Economic Loss Estimates - $1,102,661,000
- Total Casualties for Daytime Event – 537 requiring medical aid, 135 requiring hospital treatment, 21 experiencing life-threatening severity, and 38 deaths.

4.2.1.5 Probability of Future Events

The segment of the San Andreas Fault Zone closest to San Luis Obispo was given an earthquake recurrence interval of 206 years with an 18% probability of rupturing between 1994 and 2024 (Southern California Earthquake Center, 1995). The Los Osos Fault was given an earthquake recurrence interval of 1,925 years (USGS, 1996).

Figure 4-6 Probabilistic Seismic Hazard Map



The below probabilistic seismic hazard map (Figure 4-6) produced by the CGS shows the hazard from earthquakes that geologists and seismologists agree could occur. It is probabilistic in the sense that the analysis takes into consideration the uncertainties in the size and location of earthquakes and the resulting ground motions that can affect a particular site. The maps are expressed in terms of probability of exceeding a certain ground motion. Acceleration is measured in "g", where 1 g corresponds to the vertical acceleration force due to gravity (9.8 m/s^2). The acceleration of an earthquake can be expressed in "g", or as a percentage of the force of gravity (9.8 m/s^2), which is known as "percent g". This map shows that there is a 10% chance that the City of San Luis Obispo will exceed peak ground accelerations of 20%-30% g in the next 50 years.

4.2.2 Wildland Fire

4.2.2.1 Hazard Definition

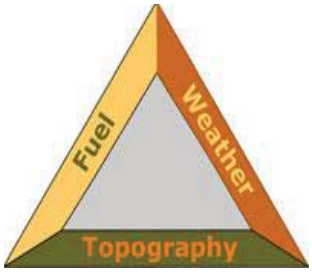
A wildland fire is a type of fire that spreads through all types of vegetation. It often begins unnoticed, spreads quickly, and is usually signaled by dense smoke that may be visible from miles around. Wildland fires can be caused by human activities (such as

arson or campfires) or by natural events such as lightning. Wildland fires often occur in forests or other areas with ample vegetation. In addition to wildland fires, wildfires can be classified as urban fires, interface or intermix fires, and prescribed burns.

The following three factors contribute significantly to wildland fire behavior and can be used to identify wildland fire hazard areas[3]:

- **Topography**: As slope increases, the rate of wildland fire spread typically increases. South-facing slopes are also subject to more solar radiation, making them drier and thereby intensifying wildland fire behavior. However, ridge tops may mark the end of wildland fire spread, since fire spreads more slowly or may be unable to spread downhill.
- **Fuel**: The type and condition of vegetation plays a significant role in the occurrence and spread of wildland fires. Certain types of plants are more susceptible to burning or will burn with greater intensity. Dense or overgrown vegetation increases the amount of combustible material available to fuel the fire (referred to as the "fuel load"). The ratio of living to dead plant matter is also important. The risk of fire is increased significantly during periods of prolonged drought as the moisture content of both living and dead plant matter decreases. The fuel's continuity, both horizontally and vertically, is also an important factor.
- **Weather**: The most variable factor affecting wildland fire behavior is weather. Temperature, humidity, wind, and lightning can affect chances for ignition and spread of fire. Extreme weather, such as high temperatures and low humidity, can lead to extreme wildland fire activity. By contrast, cooling and higher humidity often signals reduced wildland fire occurrence and easier containment.

Figure 4-7 Necessary Conditions for Wildland Fire



With regard to mitigation practices, it should be noted that weather and topography are generally beyond human control. We can work to reduce and modify the fuel levels by managing vegetation to avoid flammable landscaping around properties at risk to wildfire.

4.2.2.2 History

Wildland fires are common occurrences in San Luis Obispo County. The most significant wildland fires within the county have been located in the northern division of the Los Padres National Forest. The 1994 Highway 41 Fire involved over 51,000 acres and threatened the City on its northern boundary. The fire was stopped prior to damaging City property. The 1996 Highway 58 Fire involved 115,000 acres and caused minor damage to City properties. Fortunately, no lives were lost in either incident. Other fires of note include:

- 1985 Las Pilitas Fire – Affected the eastern edge of San Luis Obispo destroying several structures and forcing the evacuation of numerous residents when erratic

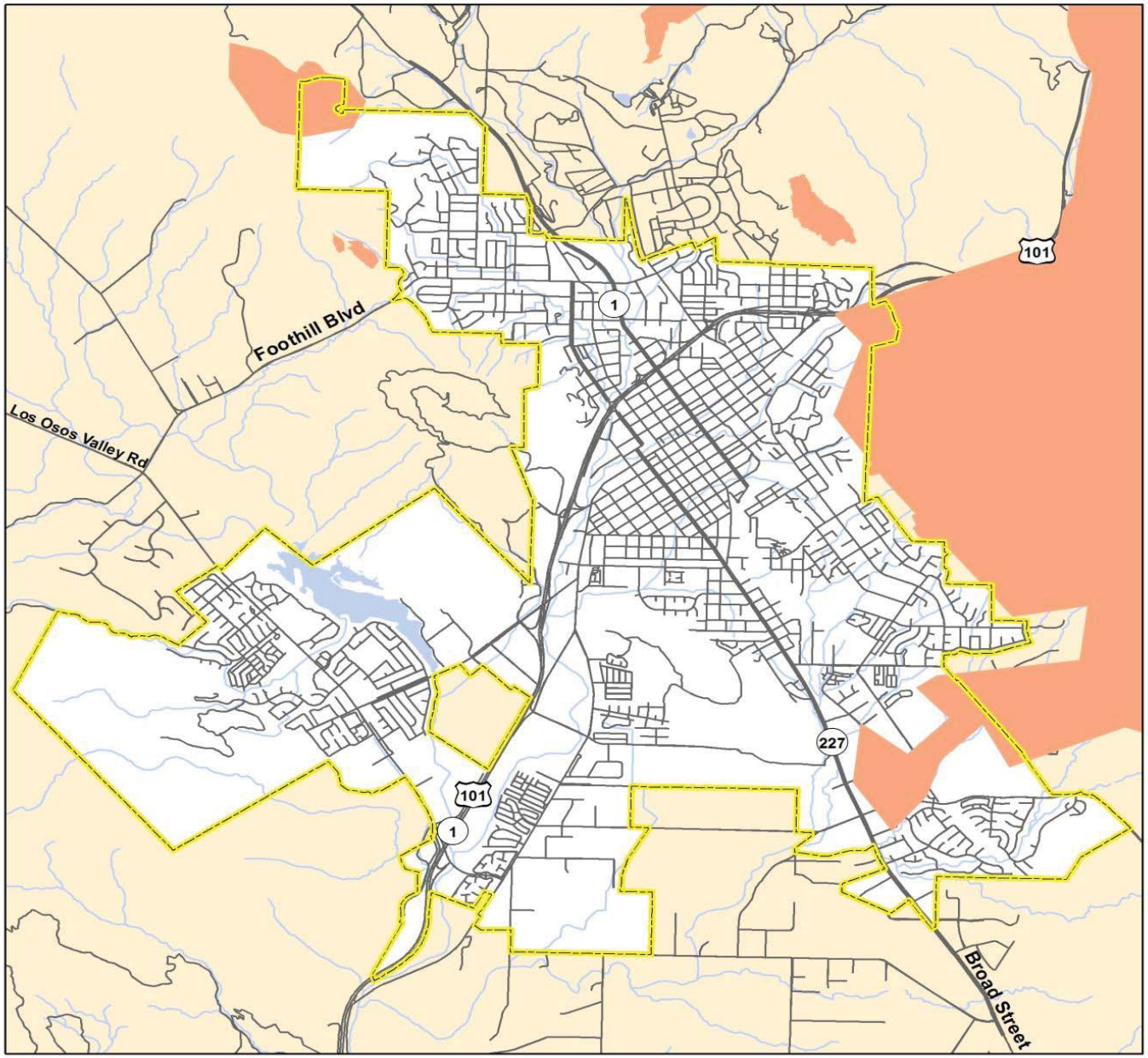
[3] Source for Figure 4-7: http://thewmpa.org/resources/forest-fire-info

winds abruptly pushed the fire down out of the foothills. The County airport on the south side of the City was closed, as was California State Polytechnic University.

- 2008 El Cerrito Fire – Located two miles north of the SLO airport, just outside the City limits.
- June 28, 2013 Highway 101 Fire – Small grass fire on Highway 101.
- July 9, 2013 California Men's Colony Fire
- July 16, 2013 Cerro San Luis Fire – One acre brush fire near the base of Cerro San Luis.
- August 27, 2013 Bowden Ranch Fire – Small brush fire in San Luis Obispo.

The map in Figure 4-8 shows locations of past fires in relation to the City boundary.

Figure 4-8 City of San Luis Obispo Past Fires



City of San Luis Obispo Local Hazard Mitigation Plan

Areas of Past Fires 1913 - 2010

Legend

- Areas of Past Fires 1913-2010
- Lakes and Reservoirs
- City Limit
- San Luis Obispo County
- Roads
- Creek

Description

This map shows areas of past fires in the vicinity of the City of San Luis Obispo. The 1995 Highway 41 Fire involved over 51,000 acres and threatened the City on its northern boundary. The fire was stopped prior to damaging City property. The 1996 Highway 58 Fire involved 115,000 acres and caused minor damage to City properties. No lives were lost in either incident.

Data Sources

County Boundary (SLO County GIS); Lake, Reservoir, and Creeks; Roads; City Boundary; Areas of Past Fires (SLO City GIS)

Projection

CA State Plane 1983 V FIPS 405 Feet

0 0.5 1 Miles

N

Disclaimer: The purpose of the data shown is for risk assessment and planning purposes only and should not be used for more detailed evaluation.

4.2.2.3 Location

The risk of wildland fires is greatest near the City limits where development meets rural areas of combustible vegetation. Most of the community is within one mile of a High or Very High Fire Hazard Severity Zone (Figure 4-9) which indicates significant risk to wildland fire. The City of San Luis Obispo is confronted with one of the more hazardous wildfire risks in the County because of its location near the foothills of the Santa Lucia Mountains and the Irish Hills, with increased wildfire risk in these foothills as well as on Chumash Peak, Bishop Peak, Cerro San Luis, and Islay Hill.

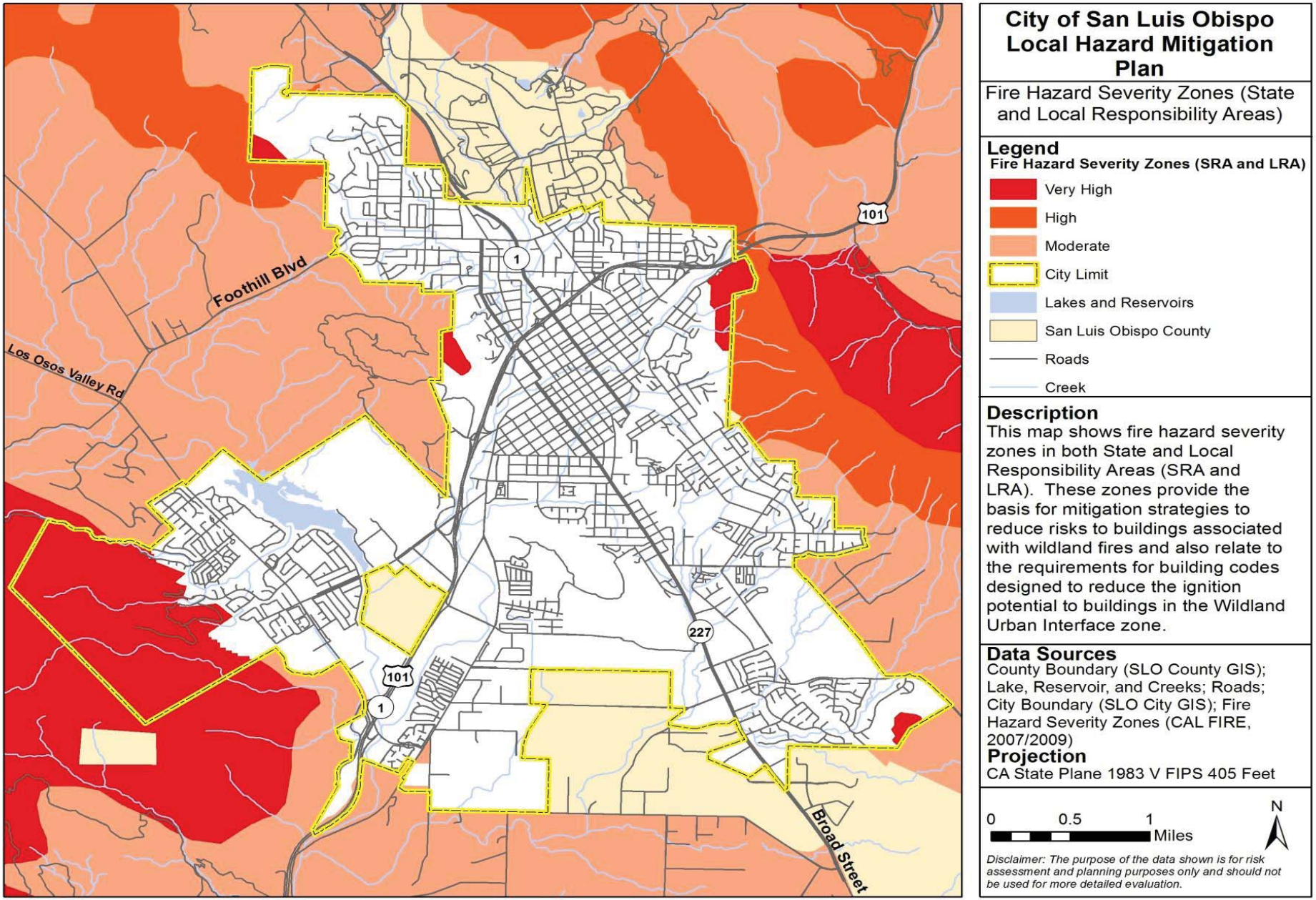
The City has addressed fire risk with a specific policy (3.1) in the General Plan Safety Element which acknowledges the Very High Fire Hazard Severity Zones as prescribed by Cal FIRE pursuant to Government Code Section 51179. This policy also prohibits new subdivisions in these zones. A development plan is required for existing parcels in order to manage fuels, maintain a buffer zone, and provide adequate fire protection to the approval of the Chief Building Official. The development plan must be consistent with the policies required by the City's Conservation and Open Space Element of the General Plan. In addition, consistent with part three of the Safety Element policy 3.1, the municipal code implements a commercial fire zone with specific construction requirements to reduce fire risk in the downtown area.

The City's municipal code requires that new buildings constructed within the City of San Luis Obispo, other than those located within the Very High Fire Hazard Severity Zone discussed above, comply with section 705A (Roofing) and 706A (Vents) of the California Building Code. The map in Figure 4-9 shows the established Fire Hazard Severity Zones within the City of San Luis Obispo.

Although the Las Pilitas and Highway 41 fires that occurred in 1985 and 1994 did not result in property losses within the City limits, structures in the City were threatened by these fires. The City of San Luis Obispo is considered a "Community at Risk" due to the threat of wildfire impacting the urban community. The Fire Prevention Code that has been adopted by the City considers all areas within the jurisdictional limits of the City to be subject to regulations pertaining to hazardous fire areas, such as requiring the installation of fire resistant roofing materials. However, some structures in the City have wood shake roofs. This type of roof is most susceptible to airborne cinders caused by wildfires. Shake roofs are vulnerable to flying embers because of their low ignition points. According to a study that looked at approximately 2,000 California homes burned in wildfires, homes with untreated wood roofs are between 2-21 times more likely to be destroyed in a wildfire[4]. In addition, shake roofs can exacerbate the spread of wildfires because burning wood shakes peel off and become airborne cinders.

[4] http://www.sbcounty.gov/rutherford/report/issues/2012_march/shakeroof.html

Figure 4-9 City of San Luis Obispo Fire Hazard Severity Zones



4.2.2.4 Extent

The frequency and severity of wildland fire is dependent upon other factors, such as weather, lightning, drought, and infestations (such as damage to Southern California alpine forests by the pine bark beetle). If not promptly controlled, wildland fires may grow into an emergency or disaster. Even small fires can threaten lives and resources and destroy improved properties. In addition to affecting people, wildland fires may severely affect livestock and pets. Such events may require emergency watering/feeding, evacuation, and shelter.

The indirect effects of wildland fires can be catastrophic. In addition to stripping the land of vegetation and destroying forest resources, large, intense fires can harm the soil, waterways, and the land itself. Soil exposed to intense heat may lose its capability to absorb moisture and support life. Exposed soils erode quickly and enhance siltation of rivers and streams, thereby enhancing flood potential, harming aquatic life, and degrading water quality. Lands stripped of vegetation are also subject to increased debris flow hazards, as described above.

4.2.2.5 Probability of Future Events

Generally, fire susceptibility throughout California dramatically increases in the late summer and early autumn as vegetation dries out, decreasing plant moisture content and increasing the ratio of dead fuel to living fuel. Based on previous occurrences, the likelihood of a significant wildland fire (10,000 acres or greater) to occur in the neighboring unincorporated county is once every four years. It is not expected that a significant wildfire will occur within the incorporated City limits. However, other various factors, including humidity, wind speed and direction, fuel load and fuel type, and topography, can contribute to the intensity and spread of wildland fires. Common causes of wildland fires in California include human induced fires such as arson and negligence.[5]

4.2.3 Adverse Weather

In the City's prior hazard mitigation plan, windstorms were profiled as an individual hazard. With this plan update the Hazard Mitigation Team modified that profile to be more inclusive of the diverse types of adverse weather which may impact the City. This is consistent with the County's Local Hazard Mitigation Plan.

4.2.3.1 Hazard Definition

Adverse weather events include windstorms, drought, freeze, hail storms, dense fog, tornadoes, and thunderstorms.

Windstorms: Winds are horizontal flows of air that blow from areas of high pressure to areas of low pressure. Wind strength depends on the difference between the high- and low-pressure systems and the distance between them. Therefore, a steep pressure gradient results from a large pressure difference or short distance between places and

[5] City of San Luis Obispo 2006 Local Hazard Mitigation Plan

causes strong winds. Windstorms associated with cyclonic systems, and their cold fronts, can damage trees and temporarily disrupt power and communication facilities, but usually cause only minor damage to structures.

Drought: A drought, or an extreme dry period, is an extended timeframe where water availability falls below the statistical requirements for a region. Droughts are not a purely physical phenomenon, but rather interplay between the natural water availability and human demands for water supply.

The precise definition of drought is made complex owing to political considerations, but there are generally three types of conditions that are referred to as drought:

- **Meteorological drought** is brought about when there is a prolonged period with less than average precipitation.
- **Agricultural drought** occurs when there is insufficient moisture for average crop or range production. This condition can arise, even in times of average precipitation, owing to soil conditions or agricultural techniques.
- **Hydrologic drought** is brought about when the water reserves available in sources such as aquifers, lakes, and reservoirs falls below the statistical average. This condition can arise, even in times of average (or above average) precipitation, when increased usage of water diminishes the reserves.

When the word "drought" is used by the general public, the most often intended definition is meteorological drought. However, when the word is used by urban planners, it is more frequently in the sense of hydrologic drought.

Freeze**:** In this mild Mediterranean climate area, a freeze refers to a particularly cold spell of weather where the temperature drops below 32 degrees, most typically in the early morning hours. Usually these cold spells will last only two or three days when the ocean influence will overcome the cold front and the early morning temperatures will return to the normal 45 to 55 degree range.

Hail Storms**:** Hail is precipitation in the form of balls or irregular lumps, always produced by convective clouds, nearly always cumulonimbus. They can vary from pea size all the way up to that of a grapefruit in rare circumstances. Hailstones generally form in thunderstorms between currents of rising air called the updrafts and the current of air descending toward the ground, called the downdraft. Large hailstones indicate strong updrafts in the thunderstorm. The larger the hail, the stronger the updraft needed to hold it aloft in the storm.

Dense Fog**:** Dense fog in San Luis Obispo County reduces visibility making driving more dangerous. A fog advisory issued for San Luis Obispo County in October 2011 warned visibility could be as low as a quarter mile and reduce suddenly with denser patches. In March 2012 another fog advisory anticipated less than ¼ of normal visibility. The National Weather Service issues dense fog advisories when appropriate and suggests slowing down on the road, using headlights at all times, and leaving plenty of distance from other vehicles.

Tornado**:** A tornado, often referred to as a twister, is a violent, dangerous, rotating column of air that is in contact with both the surface of the earth and a cumulonimbus cloud. Tornadoes come in many shapes and sizes, but are typically in the form of a

visible condensation funnel, whose narrow end touches the earth and is often encircled by a cloud of debris and dust. Most tornadoes have wind speeds less than 110 miles per hour, are approximately 250 feet across, and travel a few miles before dissipating. The most extreme can attain wind speeds of more than 300 mph, stretch more than two miles across, and stay on the ground for dozens of miles.

Thunderstorm: A thunderstorm, also known as an electrical storm, a lightning storm, thundershower or simply a storm, is a form of weather characterized by the presence of lightning and its acoustic effect on the Earth's atmosphere known as thunder. Thunderstorms are usually accompanied by strong winds, heavy rain and sometimes snow, sleet, hail, or no precipitation at all. Those which cause hail to fall are known as hailstorms (described above).

4.2.3.2 History

Adverse weather has impacted the City of San Luis Obispo. The first recorded tornado occurred on April 7, 1926. A Pacific storm came in from the west and produced lightning. The lightning struck large oil tanks along Tank Farm Road. Altogether, more than five million gallons of oil burned over five days. It was reported that burning oil made it all the way to Avila Beach by way of the San Luis Obispo Creek. Intense heat from these fires produced hundreds of fire whirls, many of them showing characteristics of tornadoes. One of the tornadoes traveled 1,000 yards, picked up a house and carried it 150 feet, killing the two occupants inside[6].

The National Climatic Data Center has documented the significant various adverse weather events from 1998-2013. Of note, in February 1998, three windstorm events affected the Central Coast, including the City of San Luis Obispo, within a six day period. Only three months later, in May, a small tornado developed over the City, knocking power out and damaging four houses. Additionally, windstorms caused severe damage to the large aging ficus trees in the City's Downtown area. A sample of the variety of adverse weather events that have occurred more recently in and around the City of San Luis Obispo are found in the Table 4-5 below.

4-5 Historical Accounts of Adverse Weather

Date of Event	Damage Reported	Incident Description
02/02/1998 – 02/07/1998		A series of three storms affected Central and Southern California with powerful winds.
05/05/1998	4 homes damaged	Tornado - A small tornado developed over the City of San Luis Obispo. The tornado knocked out power to several hundred homes. Four homes were damaged, including a home struck by a falling cypress tree.
12/21/1998 - 12/24/1998	$5.4 million in crop damage	Freeze - An unseasonable cold air mass produced a three-night period of sub-freezing temperatures across Central and Southern California. Agricultural interests suffered heavy crop losses.
12/17/2000 - 12/18/2000		High Wind - Gusty offshore winds buffeted the Coastal section of San Luis Obispo County. In the City of San Luis Obispo, the winds blew

[6] http://www.sanluisobispo.com/2013/07/27/2603365/tornadoes-are-a-rare-occurance.html

Date of Event	Damage Reported	Incident Description
		out the windows in an unoccupied mobile home and destroyed part of a car port. In Nipomo, a weather spotter reported sustained winds of 35 mph with gusts to 55 mph. The strong winds produced widespread power outages.
03/04/2001 - 03/06/2001		High Wind - A powerful and slow-moving storm brought heavy rain, strong winds and snow to Central and Southern California. Across San Luis Obispo County, rainfall totals ranged from 2 to 6 inches over coastal and valley areas and ranged from 6 to 13 inches in the mountains. In San Luis Obispo County, the heavy rain produced extensive flooding.
01/13/2007 – 01/14/2007	$25 million in crop damage	Freeze - Between January 13th and 15th, a very cold arctic storm brought widespread freezing temperatures and some gusty offshore winds to the area. Total crop damages in San Luis Obispo County were estimated to be around $25 million.
01/04/2008		Strongest winds were reported across San Luis Obispo and Santa Barbara counties. The winds knocked down trees and power lines, producing numerous power outages.
02/23/2008		Wind gusts as high as 75-86 mph were reported in some areas. Numerous trees and power lines were knocked down.

4.2.3.3 Location

The entire City of San Luis Obispo is subject to the variety of adverse weather described in this profile. NOAA's Storm Prediction Center, which prepares GIS data for hazard events, did not produce any mapping of tornado, high winds, or hail within the City limits. Similarly, the City's GIS department did not have any available GIS data of past adverse weather events. Should data become available in the future, mapping of past events may aid in the visualization of the adverse weather risk.

4.2.3.4 Extent

Drought: Periods of drought can have significant environmental, agricultural, health, economic and social consequences. Damage to buildings and site improvements have been attributed to drought related subsidence in the City in the past. Drought can also reduce water quality, because lower water flows reduce dilution of pollutants and increase contamination of remaining water sources. Wildfires are typically larger and more severe in periods of drought due to the lower fuel moisture content.

The National Drought Mitigation Center (NDMC) releases current drought monitor maps for the United States. The NDMC classifies drought in five categories of increasing severity:

- D0: abnormally dry
- D1: moderate drought
- D2: severe drought
- D3: extreme drought
- D4: exceptional drought.

During August 2013, the drought classification for San Luis Obispo County changed from D2, severe drought, to D3, extreme drought. From January-June 2013, the City of San Luis Obispo experienced its third driest period on record at Cal Poly since 1870, when weather observations started. Since January 2013, Cal Poly has recorded only 3.5 inches of rain. Normally, it should have received 15 inches.[7]

Due to the City's investment in a multi-source water supply (Nacimiento, Whale Rock, and Santa Margarita reservoirs, groundwater, and recycled water for landscape irrigation), water demand modeling estimates a 7.5 year water supply, assuming an extended worst case historical drought and given January 2014 reservoir levels.

Freeze: Freeze is rarely a threat to human life in San Luis Obispo. The major impact will be to agricultural operations where crop damage to high value products such as strawberries, citrus, grapes and row crops such as lettuce and celery can be extensive. The following table from the University of California Agriculture and Natural Resources Cooperative Extension shows the lowest recorded temperature in the City of San Luis Obispo as well as average dates for the first and last frost:

4-6 San Luis Obispo Lowest Recorded Temperature[8]

Average Dates				28 degree F Growing Season	Lowest Record Temp	Chill Hours	Grape Degree Days
First Frost	Last Frost	First Hard Frost	Last Hard Frost				
12/31	2/15	-	-	350	20	227	2,632

Hail Storms: Significant amounts of damage to property notably to automobiles, skylights, and glass-roofed structures can occur from hail storms. The damage to crops can also be severe.

Wind Storms, Thunderstorms, and Tornados: The City is subject to strong southeasterly winds associated with powerful cold fronts. These winds, which are usually part of a strong Pacific storm, generally occur during the winter months, from November through February. In addition, northwesterly winds frequent the climate of the central coast of California, including San Luis Obispo, during the spring and summer. These wind events are usually associated with a relatively strong, zonal upper-level jet over the State and a passage of frontal storm systems into the US from the Pacific. Both high northwest and southeast wind events associated with cold fronts and zonal upper-level jet systems can reach sustained winds of 35-45 mph with wind gusts of 65-75 mph within San Luis Obispo. Wind related events can be quite destructive, especially in urban areas where falling trees and branches can result in considerable property damage.

The tornado that occurred in May of 1998 was a low-level tornado, ranked as an F0 on the Fujita Scale (shown in Table 4-7 below).

[7] http://www.sanluisobispo.com/2013/08/24/2649527/map-shows-san-luis-obispo-county.html

[8] http://ucanr.org/blogs/slomggarden/blogfiles/3250.pdf

4-7 Fujita Scale

Scale	Wind Speed	Possible Damage
F0	40-72 mph	Light damage: branches broken off trees, minor roof damage
F1	73-112 mph	Moderate damage: trees snapped, mobile home pushed off foundations, roofs damaged
F2	133-157 mph	Considerable damage: mobile homes demolished, trees uprooted, strong built homes unroofed
F3	158-206 mph	Severe damage: trains overturned, cars lifted off the ground, strong built homes have outside walls blown away
F4	207-260 mph	Devastating damage: houses leveled leaving piles of debris, cars thrown 300 yards or more in the air
F5	261-318 mph	Incredible damage: strongly built homes complete blown away, automobile-sized missiles generated

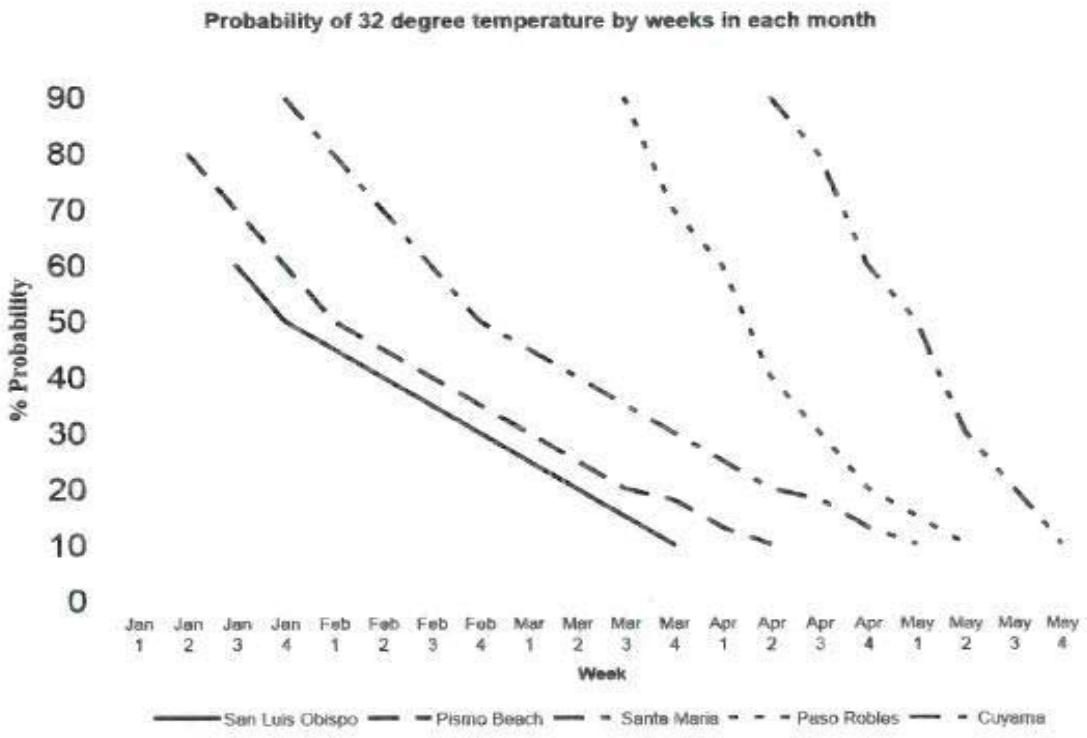
Dense Fog: Reduced visibility and slick road conditions caused by dense fog increase the likelihood for traffic accidents.

4.2.3.5 Probability of Future Events

Ten adverse weather events were documented in the City of San Luis Obispo between 1998 and 2013. This suggests that there is a 50% chance that an adverse weather event will occur in the City in any given year. However, it should be noted that while the chance for an adverse weather event in one year is high, all of these adverse weather events are unpredictable and assessing the probability of their occurrence is difficult. It may be that some adverse weather events occur more often than others.

While, accurate data is not available to make detailed probability estimations for all of the adverse weather events, the University of California Agriculture and Natural Resources Cooperative Extension in San Luis Obispo County has attempted to determine frost probability for the City. Frost date probability graphs give the probability of reaching either 32 degrees or 28 degrees on a particular day. Based on the graph in Figure 4-10, the greatest chance (60%) of a 32 degree temperature is during the third week in January.

Figure 4-10 Probability of 32 degree temperature by weeks in each month



4.2.4 Hazardous Materials Events

4.2.4.1 Hazard Definition

Hazardous materials include hundreds of substances that pose a significant risk to humans. These substances may be highly toxic, reactive, corrosive, flammable, radioactive, or infectious. Numerous Federal, State, and local agencies including the U.S. Environmental Protection Agency (EPA), U.S. Department of Transportation, National Fire Protection Association, FEMA, U.S. Army, and International Maritime Organization regulate hazardous materials. Hazardous material releases may occur from any of the following:

- Fixed site facilities (such as refineries, power generation plants, chemical plants, storage facilities, manufacturing, warehouses, wastewater treatment plants, swimming pools, dry cleaners, automotive sales/repair, gas stations, etc.)
- Highway and rail transportation (such as tanker trucks, chemical trucks, railroad tankers)
- Air transportation (such as cargo packages)
- Pipeline transportation (liquid petroleum, natural gas, and other chemicals)

Unless exempted, facilities that use, manufacture, or store hazardous materials in the United States fall under the regulatory requirements of the Emergency Planning and Community Right to Know Act (EPCRA) of 1986, enacted as Title III of the Federal Superfund Amendments and Reauthorization Act (42 United States Code 11001–11050; 1988). Under EPCRA regulations, hazardous materials that pose the greatest

risk for causing catastrophic emergencies are identified as Extremely Hazardous Substances (EHSs). These chemicals are identified by the EPA in the *List of Lists – Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-to-Know Act (EPCRA) and Section 112 of the Clean Air Act*. Releases of EHSs can occur during transport and from fixed facilities. Transportation-related releases are generally more troublesome because they may occur anywhere, including nearby to human populations, critical facilities, or sensitive environmental areas. Transportation-related EHS releases are also more difficult to mitigate due to the variability of locations and distance from response resources.

In addition to accidental human-caused hazardous material events, natural hazards may cause the release of hazardous materials and complicate response activities. The impact of earthquakes on fixed facilities may be particularly serious due to the impairment or failure of the physical integrity of containment facilities. The threat of any hazardous material event may be magnified due to restricted access, reduced fire suppression and spill containment, and even complete cut-off of response personnel and equipment.

Terrorism involving hazardous materials is also considered a major threat due to the location of hazardous material facilities and transport routes throughout communities and the frequently limited antiterrorism security at these facilities.

4.2.4.2 History

The National Response Center's system of non-privacy act data was queried to generate a list of hazardous materials release incidents from August 2003 to August 2013. The City's Planning Team reviewed these incidents and determined which incidents were most pertinent to the City.

Twelve hazardous materials release incidents occurred near the City of San Luis Obispo within the past 10 years. Four of these spills occurred at fixed locations, while eight occurred through mobile transportation. These incidents are summarized in Table 4-8 City of San Luis Obispo Hazardous Materials Release Incidents August 2003 – August 2013. It should be noted that this data is derived at a national level and exact locations may not be accurate.

Table 4-8 City of SLO Hazardous Materials Release Incidents August 2003 - August 2013

Type of Incident	Incident Cause	Date/Time	Location	Medium Affected	Material Name
Railroad	Equipment Failure	02/16/04 19:25	2034 Santa Barbara St	Land	Hydrated Alumina
Fixed	Dumping	01/01/04 12:00	4130 Horizon Lane	Water	Hydraulic Oil
Railroad Non-Release	Other	03/19/07 0:04	Milepost: 251.6	Rail Report (N/A)	
Railroad Non-Release	Derailment	03/19/07 4:53	Milepost: 248.4	Rail Report (N/A)	
Railroad Non-Release	Transport Accident	02/29/08 14:15	Union Pacific Railroad	Rail Report (N/A)	
Fixed	Equipment Failure	03/27/10 18:15	212 Madonna Rd.	Soil	Oil, Misc: Mineral
Fixed	Other	06/05/10 15:32	Private Residence 1459 Descanso St	Air	Natural Gas
Railroad Non-Release	Trespasser	07/15/10 17:48	On A Single Main Line	Rail Report (N/A)	
Railroad Non-Release	Unknown	12/29/10 6:00	Milepost: 250.15	Non-Release (N/A)	
Fixed	Other	12/07/11 7:30	UPS Package On The Conveyor Belt At Truck Loading Area, 3601 Sacramento Dr.	Other	Hydrochloric Acid
Mobile	Equipment Failure	08/23/12 10:10	276 Tank Farm Road	Soil	Hydraulic Oil
Mobile	Unknown	05/13/13 15:00	UPS San Luis Obispo Facility At Front Of Building	Land	Oil: Diesel

4.2.4.3 Location

The EPA's regulated facilities within City limits include four facilities that are permitted to discharge water and 140 facilities that are hazardous waste handlers. Generally, the small, fixed facilities (drycleaners, auto body shops, etc.) have varying uses of hazardous chemicals, but in general do not pose a significant risk to the City. Areas at risk of hazardous material spills include any area within a one mile radius of Highway 101, State Route 1, the Union Pacific Railroad tracks, and EHS fixed facilities within the city limits. Additionally, hazardous materials are transported via railroad tracks,

roadways, and pipelines. Thus an accident along these infrastructure may result in a hazardous material spill.

The City falls within Protective Action Zones 4 and 8 of the Diablo Canyon Nuclear Power Plant, which is located 12 miles southwest of the City. The lead agency for emergency management and coordination during nuclear power plant emergencies is the County of San Luis Obispo. Response procedures are detailed in the County's Emergency Operations Plan Nuclear Power Plant Emergency Response Plan, which is incorporated into the City's Emergency Operations Plan as Annex B.

A map of facilities that store hazardous materials as well as hazardous substance facilities is maintained by the City, but not included in this plan for security reasons.

4.2.4.4 Extent

The extent of a hazardous material spill may vary from significant impacts causing injuries and evacuation to minor impacts requiring minimal cleanup.

Hazardous materials releases can be harmful in the following ways:

- Chemical, biological, and radiological agents can cause significant health risks to those exposed to them; biological agents can be additionally dangerous if they are infectious. Flammable and explosive materials also present life safety concerns if they are exposed to heat.
- Oil spills can present an immediate fire hazard and can contaminate drinking water supplies.
- Any release of hazardous material requires a thorough and careful clean-up of the site and decontamination of those exposed. Clean-up and recovery is time and cost consuming.
- Delays caused by hazardous materials releases and the ensuing evacuation and cleanup processes could lead to significant economic losses due to traffic delays (mobile releases) or operational shut-down (fixed facilities).
- Overall, hazardous materials can cause death, serious injury, long-lasting health effects, and damage to buildings, the environment, homes, and other property.

4.2.4.5 Probability of Future Events

Based on previous occurrences, the likelihood of a small oil or chemical spill occurring is about once per year. Since the majority of events have occurred through transportation, a hazardous material event would have the highest potential to occur along Highway 101, State Route 1, and Union Pacific Railroad. The trains and trucks that use these transportation arteries commonly carry a variety of hazardous materials, including gasoline, other crude oil derivatives, and other chemicals known to cause human health problems.

4.2.5 Floods

4.2.5.1 Hazard Definition

Flooding is the accumulation of water where usually none occurs or excess water from a stream, river, lake, reservoir, or coastal body of water overflows onto adjacent floodplains. Floodplains are lowlands adjacent to water bodies that are subject to recurring floods. Floods are natural events that are considered hazards only when people and property are affected.

Riverine Flooding: In San Luis Obispo, the most common type of flooding event is riverine flooding, also known as overbank flooding. Riverine floodplains range from narrow, confined channels in the steep valleys of mountainous and hilly regions, to wide, flat areas in plains and coastal regions. The amount of water in the floodplain is a function of the size and topography of the contributing watershed, the regional and local climate, and land use characteristics. Flooding in steep, mountainous areas is usually confined, strikes with less warning time, and has a short duration. Larger rivers typically have longer, more predictable flooding sequences and broad floodplains.

Flash Flooding: In addition to riverine flooding, San Luis Obispo is susceptible to flash flooding. Flash flood is a term widely used by experts and the general population, but no single definition or clear means of distinguishing flash floods from other riverine floods exists. Flash floods are generally understood to involve a rapid rise in water level, high velocity, and large amounts of debris, which can lead to significant damage that includes the tearing out of trees, undermining of buildings and bridges, and scouring of new channels. The intensity of flash flooding is a function of the intensity and duration of rainfall, steepness of the watershed, stream gradients, watershed vegetation, natural and artificial flood storage areas, and configuration of the streambed and floodplain. Urban areas are increasingly subject to flash flooding due to the removal of vegetation, installation of impermeable surfaces over ground cover, and construction of drainage systems. Wildfires that strip hillsides of vegetation and alter soil characteristics may also create conditions that lead to flash floods and debris flows. Debris flows are particularly dangerous due to the fact that they generally strike without warning and are accompanied by extreme velocity and momentum.

Dam Inundation: Dam failure may also lead to flash flooding; however, the County's dam inundation as well as the California Office of Emergency Services dam inundation data confirms that there are no dam inundation zones located within the City limits.

Localized Flooding: Localized flooding may occur outside of recognized drainage channels or delineated floodplains due to a combination of locally heavy precipitation, increased surface runoff, and drainage and stormwater conveyance system capacity limitations. Such events frequently occur in flat areas and in urbanized areas with large impermeable surfaces. Local drainage may result in "nuisance flooding," in which streets or parking lots are temporarily closed; and minor property damage occurs. While several areas in the downtown of San Luis Obispo may be subject to localized flooding from infrastructure failure (i.e. drainage issues), the effects are not widespread and damage is typically minimal, and thus, localized flooding is not studied in detail as part of this LHMP.

4.2.5.2 History

The most serious flood events on record resulting in property damage or loss of life in San Luis Obispo occurred in 1868, 1884, 1897, 1911, 1948, 1952, 1962, 1969, 1973, 1993, 1995, 1998 and 2001.

Figure 4-11 Flooding at LOVR and Highway 101 in 1973

Recent damaging floods occurred during January and March of 1995, with a lesser flooding problem in 1998. Flow during these events overtopped streambanks near the intersection of Marsh and Higuera Streets and remained out of the channel for nearly three miles downstream, with damage estimated at nearly $2.3 million. The City and Zone 9 spent approximately $1 million to repair bank erosion caused during the winter of 1995. Damage occurred near the town of Avila during both the January and March 1995 events, where high flow and debris blockages caused extensive damage to several bridges across the creek.[9]

Figure 4-12 Impacts of 1969 Flooding: Car sinks in Johnson Avenue "puddle"[1]

Flooding during 1969 was significantly damaging. Two floods occurred, one at the end of January and the second at the end of February. During this two month period, a local rain gage recorded an accumulated precipitation total of 39.79 inches.

Historically, the 1969 and 1973 events were more damaging than the 1995 floods in present day dollars. The 1969 flood caused approximately $6.92 million in damage within the SLO Creek watershed. The 1973 storm caused $13.6 million along Stenner Creek, Brizziolari Creek, Prefumo Creek, and See Canyon Creek.

4.2.5.3 Location

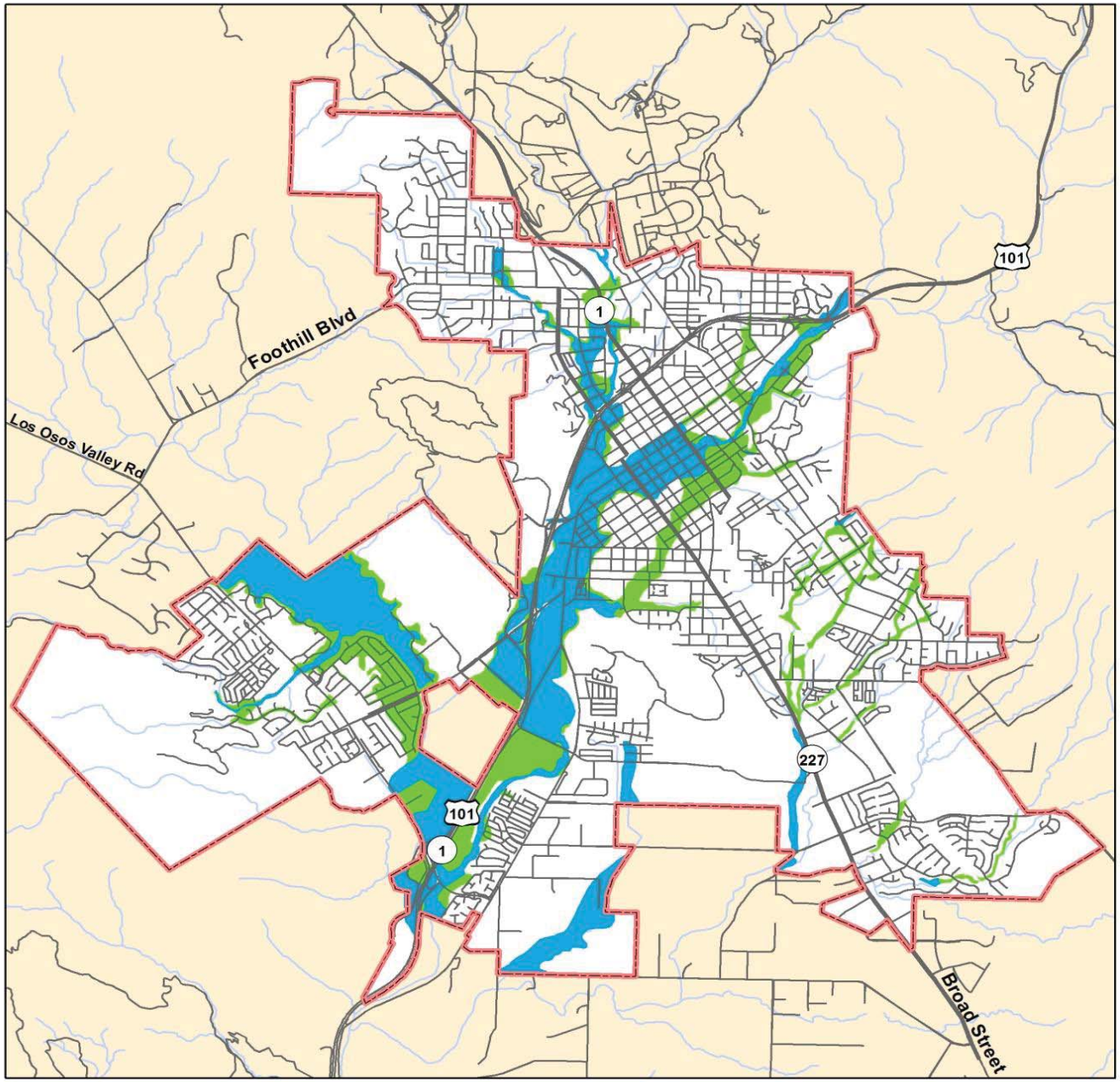
The FEMA Flood Insurance Rate Map (FIRM) for the City of San Luis Obispo shows identified Special Flood Hazard Areas (SFHA) for the following flooding sources: San Luis Obispo Creek, Stenner Creek, Brizziolari Creek, Old Garden Creek, Prefumo Creek, Laguna Lake, and several tributaries.

[9] http://www.coastalrcd.org/zone9/history/history.html

Figure 4-14 below shows the extent of the 100- and 500-year floodplains within San Luis Obispo. The 100-year floodplains for these creeks encompass extensive areas of the City on the east and west sides of U.S. 101, including the downtown area. The City is most prone to shallow flooding (one to three feet) along the San Luis Obispo Creek and Laguna Lake. Local waterways typically reach and then decline from flood stage in a matter of hours. However, flooding problems can be aggravated by natural and human-made obstructions in the channels. Flooding in these areas generally occurs during the rainy season from October - April.

Figure 4-13 1973 Flooding at Broad and Lincoln in the City of San Luis Obispo

Figure 4-14 City of San Luis Obispo Special Flood Hazard Areas



City of San Luis Obispo Local Hazard Mitigation Plan

FEMA Special Flood Hazard Area

Legend

FEMA Special Flood Hazard Area

- 1 PCT Annual Chance Flood Hazard
- 0.2 PCT Annual Chance Flood Hazard
- City Limit
- San Luis Obispo County
- Roads
- Creek

Description

This map shows FEMA designated flood zones within the City of San Luis Obispo. Areas with a 1% annual chance of flooding have a 26% chance of flooding over the life of a 30-year mortgage. This area is also referred to as the base flood or 100-year flood. The 0.2% annual chance of flooding area is also referred to as the 500-year flood zone.

Data Sources

County Boundary (SLO County GIS); Lake, Reservoir, and Creeks; Roads; City Boundary (SLO City GIS); FEMA SFHA (FEMA)

Projection

CA State Plane 1983 V FIPS 405 Feet

0 0.5 1 Miles

N

Disclaimer: The purpose of the data shown is for risk assessment and planning purposes only and should not be used for more detailed evaluation.

4.2.5.4 Extent

Flood events vary from insignificant to severe. In San Luis Obispo, flooding may occur throughout the watershed in lesser than 100-year flood events, due to flow constrictions at bridges and other areas of limited channel conveyance. For example, during a 1973 event, flooding in the Stenner Creek watershed was exacerbated by constriction at the Highway 101 Bridge. This bridge, along with the Santa Rosa Street Bridge, has since been replaced to alleviate this constriction.[10] In addition, denuded banks and erosion can add plant debris and sediment that is later re-deposited downstream. Undermined trees may topple into the channel in some areas during a large flood event. Streambank vegetation can collect debris, reducing channel capacity and deflecting flows against banks.

Depending on the depth of the floodwaters, flood events have the potential to cause significant damage which may include:

- Inundation of structures, causing water damage to structural elements and contents.
- During historic flooding events, flood depths as high as three feet were recorded and critical areas, such as the downtown business district of San Luis Obispo, experienced inundation from floodwaters.
- Erosion or scouring of stream banks, roadway embankments, foundations, footings for bridge piers, and other features.
- SLO Creek bank conditions range from stable and well vegetated to near vertical eroding banks. Accelerated bank erosion results from land uses that affect the stream corridor including overgrazing, agriculture, and development, including roads and utility construction.
- Impact damage to structures, roads, bridges, culverts, and other features from high-velocity flow and from debris carried by floodwaters. Such debris may also accumulate on bridge piers and in culverts, increasing loads on these features or causing overtopping or backwater effects.
- Destruction of crops, erosion of topsoil, and deposition of debris and sediment on croplands.
- Release of wastewater if the treatment plant is inundated.

In addition, while the City's wastewater treatment plant is not expected to be inundated by the 100-year flood, flood flows have spilled into areas near the plant, including the City's Corp Yard. Prior flood incidents have resulted in people being unable to exit buildings at the Corp Yard. To mitigate these concerns, the main Corporate Yard building was designed to remain out of the floodplain and storage sheds are elevated to reduce flood damage. Floods have the potential to result in economic losses because of building damage, closure of businesses and government facilities, disruption of communications, disruption of the provision of utilities such as water and sewer service, result in expenditures for emergency response, and generally disrupt the normal function of a community.

[10] Waterway Management Plan, http://www.slocity.org/publicworks/download/wmp/wmp.pdf

As part of the San Luis Obispo Waterway Management Plan (2003), computer models of the rainfall/runoff hydrology of the SLO watershed and the channel hydraulics of the major streams and floodplains of the watershed were developed. Analysis using these models found that since urban development of the watershed the amount of flow in SLO Creek during the 100-year flood event has only increased a few percent since the early 1960's, but the 2-year channel shaping flow has increased by as much as 10-12%. Increased flows at lower storm return intervals (e.g. increased 2-year channel forming flow) can cause channel incision and toe scour, which in turn can cause widespread bank failure. The Waterway Management Plan notes that discharge from urban areas and grazing lands have increased, resulting in higher velocities that are capable of eroding the channel bed and banks.

4.2.5.5 Probability of Future Events

The Hazard Mitigation Team relies on the FIRMs for evaluating the likelihood of future flood events. The studies resulting in the FIRMs establish Special Flood Hazard Areas that depict the locations likely to be inundated in two different frequency flood events:

- The 1% annual chance flood (commonly referred to as the 100-year flood or base flood)
- The 0.2 % annual chance flood (commonly referred to as the 500-year flood)

The Special Flood Hazard Areas within the City of San Luis Obispo are shown in Figure 4-14.

4.2.6 Pandemic

The Hazard Mitigation Team added pandemic for consideration within this plan update. It is a recognized potential threat to San Luis Obispo and could pose severe challenges for the City to provide services if a significant number of staff are affected by a pandemic. The City is largely reliant on the County's public health resources through the County's Emergency Preparedness Program within the County Public Health Department under the direction of the County Health Officer. This program supports the Public Health Department in the management and coordination of public health emergencies including natural disasters, technological disasters, bioterrorism incidents, and pandemic flu. It should be noted that the County's Local Hazard Mitigation Plan includes a risk assessment on naturally occurring biological agents including pandemic. This hazard profile is intended to be consistent with the County identified risks while maintaining focus on pandemic over the other naturally occurring biological agents.

4.2.6.1 Hazard Definition

Pandemic is defined as "occurring over a wide geographic area and affecting an exceptionally high proportion of the population." Historically around the world, influenza (or flu) viruses have caused more pandemics than any other agent. However other causes of pandemic are also important to acknowledge. These include novel infections and food or waterborne illnesses.

Pandemic Flu (Influenza): For centuries, influenza viruses have threatened the health of humans and animals worldwide by causing contagious respiratory illnesses, from mild to severe. Annual influenza epidemics create a significant public health burden with the

highest risk of complications occurring in the elderly, children under the age of two, and individuals with other medical conditions (especially those impacting the immune system). The diversity in influenza viruses and their propensity for mutation has prevented the development of both a universal vaccine and highly effective antiviral drugs. Ongoing concern exists over the potential emergence of a new strain of influenza with the ability to infect and be passed between humans. Because humans do not have immunity to a novel virus, a worldwide epidemic (pandemic) could result, as recently occurred in 2009 (H1N1).

Novel Infections (SARS et al): Novel infections, particularly those of viral origin, pose a tremendous risk to public health because the general public has no immunity from prior infections or vaccination, and because a vaccine is not readily available. One novel virus that took the world by surprise was Severe Acute Respiratory Syndrome (SARS), first appearing in China in 2002.

Food and Waterborne Illness: The following have been historical threats to the food and water supply in the United States:

- Staphylococcus aureus
- Salmonella species
- E. coli 0157: H7
- Campylobacter species
- Amebiasis
- Hepatitis A
- Shigella species

Intrinsic problems in food or water production, processing, storage, distribution, or preparation all result in contamination of the food supply. Because food production and distribution practices are constantly changing, new, unforeseen problems will continue to emerge. The need for ongoing monitoring of food safety practices and control of water supplies is essential.

4.2.6.2 History

Pandemic Flu (Influenza): Three human influenza pandemics occurred in the 20th century, each resulting in illness in approximately 30 percent of the world population and death in up to two percent of those infected. The 1918 Spanish Influenza (H1N1) pandemic occurred towards the end of World War I. More people died during the flu pandemic than were killed during the entire war. The influenza death toll was an estimated 50–100 million worldwide. In the United States, about 675,000 died. The 1957 Asian Influenza (H2N2) pandemic killed one to two million worldwide and caused approximately 70,000 deaths in the United States. The third pandemic, the Hong Kong Influenza (H3N2), occurred in 1968-1969 and killed one million people worldwide.

More recently, a novel influenza virus emerged, the 2009 H1N1, which spread worldwide and caused the first flu pandemic in over four decades. In the U.S., the CDC believed H1N1 may have been responsible for up to 17,000 deaths as of May 2010. In San Luis Obispo County between April 23, 2009 and August 28, 2010, there were five severe cases, four ICU cases, and three deaths associated with the 2009 H1N1.[11] The 2009 H1N1 strain continues to circulate each flu season since its initial emergence in

[11] http://www.cdph.ca.gov/data/statistics/Documents/H1N1DataTable082810.pdf

the US and has been included in the annual flu vaccine since the 2009 flu season. During the 2013-14 flu season, the U.S. has seen its second "spike" in H1N1 cases. Through February 5, 2014, one death has been attributed to flu in San Luis Obispo County and 13 Intensive Care Unit (ICU) cases. Statewide, there have been 147 confirmed influenza-associated deaths to date during the 2013-14 flu season. The total number of deaths reported statewide during the entire 2012-13 influenza season was 106.

Novel Infections (SARS et al): The SARS virus infected China at the end of 2002. Within months, this coronavirus spread internationally, with the help of air travel, resulting in 8,098 cases in 26 countries with 774 death occurring.

Food and Waterborne Illness: Threats to the food and water supply in the U.S. occur regularly due to a variety of causes.

4.2.6.3 Location

The potential exists within the City of San Luis Obispo and in all of the U.S. for an outbreak of an infectious disease to occur that would dramatically affect the health and safety of the general public and the economy of the affected area, state, and possibly nation. The San Luis Obispo County Public Health Department, which responds to health emergencies in the City, has been proactive in its infection control, surveillance efforts and in its emergency planning activities to limit and control outbreaks of infectious disease.

4.2.6.4 Extent

Pandemic Flu (Influenza): The Center for Disease Control and Prevention (CDC) estimates that, in the U.S. alone, a "minor" influenza pandemic could infect up to 200 million people and cause between 100,000-200,000 deaths. The San Luis Obispo County Public Health Department estimates that an influenza pandemic could result in as many as 5,000 illnesses (approximately 2% of county population) and up to 1,000 deaths.[12] The potential financial impact on the U.S. of this type of pandemic is estimated at $166 billion. Pandemics can continue for up to 24 months and cause major disruptions in supply chains for essential goods and services.

Novel Infections (SARS et al): It can take many years to develop new vaccines for novel viruses and even longer for those vaccines to begin protecting individuals.

Food and Waterborne Illness: Food and waterborne illnesses are major global health problems resulting in over 2 million deaths per year. In the U.S. alone, an estimated 76 million cases of food-borne illness occur annually resulting in 325,000 hospitalizations and 5,000 deaths. Food-borne outbreaks are identified by the presence of illness shortly following a meal. Illness can occur within a few hours and up to several weeks. Symptoms range from mild to severe.

[12] http://www.slocounty.ca.gov/health/publichealth/commdisease/pandemicflu.htm

4.2.6.5 Probability of Future Events

The greatest ongoing concern national health agencies have is the potential emergence of a novel influenza virus similar to that which emerged in 2009 (H1N1). Federal, state and local governments have been actively engaged in pandemic influenza preparedness planning efforts. The SLO Public Health Department has an up-to-date Pandemic Influenza Plan and Strategic National Stockpile Plan. While influenza is an unpredictable virus, these preparedness measures will facilitate prevention, early detection, and treatment when the next pandemic does strike.

Another area of particular concern in San Luis Obispo is the limited surveillance for vector borne diseases such as West Nile Virus (WNV). Surveillance efforts throughout California have been extensive, including human and horse case detection, and WNV testing of mosquitoes, sentinel chicken flocks, and dead birds. Because San Luis Obispo County is one of the few remaining counties in California without a Vector Control District, the risk of vector borne diseases is higher than those communities with Districts.

4.2.7 Landslides

4.2.7.1 Hazard Definition

Landslide is a general term for the dislodgment and fall of a mass of soil or rocks along a sloped surface or for the dislodged mass itself. The term is used for varying phenomena, including mudflows, mudslides, debris flows, rock falls, rock slides, debris avalanches, debris slides, and slump-earth flows. Landslides may result from a wide range of combinations of natural rock, soil, or artificial fill. The susceptibility of hillside and mountainous areas to landslides depends on variations in geology, topography, vegetation, and weather. Landslides may also occur due to indiscriminate development of sloping ground or the creation of cut-and-fill slopes in areas of unstable or inadequately stable geologic conditions.

Additionally, landslides often occur together with other natural hazards, thereby exacerbating conditions, as described below.

- Shaking due to earthquakes can trigger events ranging from rock falls and topples to massive slides.
- Intense or prolonged precipitation that causes flooding can also saturate slopes and cause failures leading to landslides.
- Landslides into a reservoir can indirectly compromise dam safety, and a landslide can even affect the dam itself.
- Wildfires can remove vegetation from hillsides, significantly increasing runoff and landslide potential.

4.2.7.2 History

Landslide events are common occurrences outside of the City limits, along the steep slopes and the coastal mountain areas of the county. Numerous landslides within the Franciscan complex have been observable along the Highway 1 corridor from San Luis

Obispo to San Simeon. The largest landslide events within the county have been associated with severe winter storms and strong El Nino events (1982-1983, 1994-1995, 1997-1998, and 2004-2005). Only small landslides along unstable slopes saturated during prolonged and/or intense rain events have occurred within the City.

4.2.7.3 Location

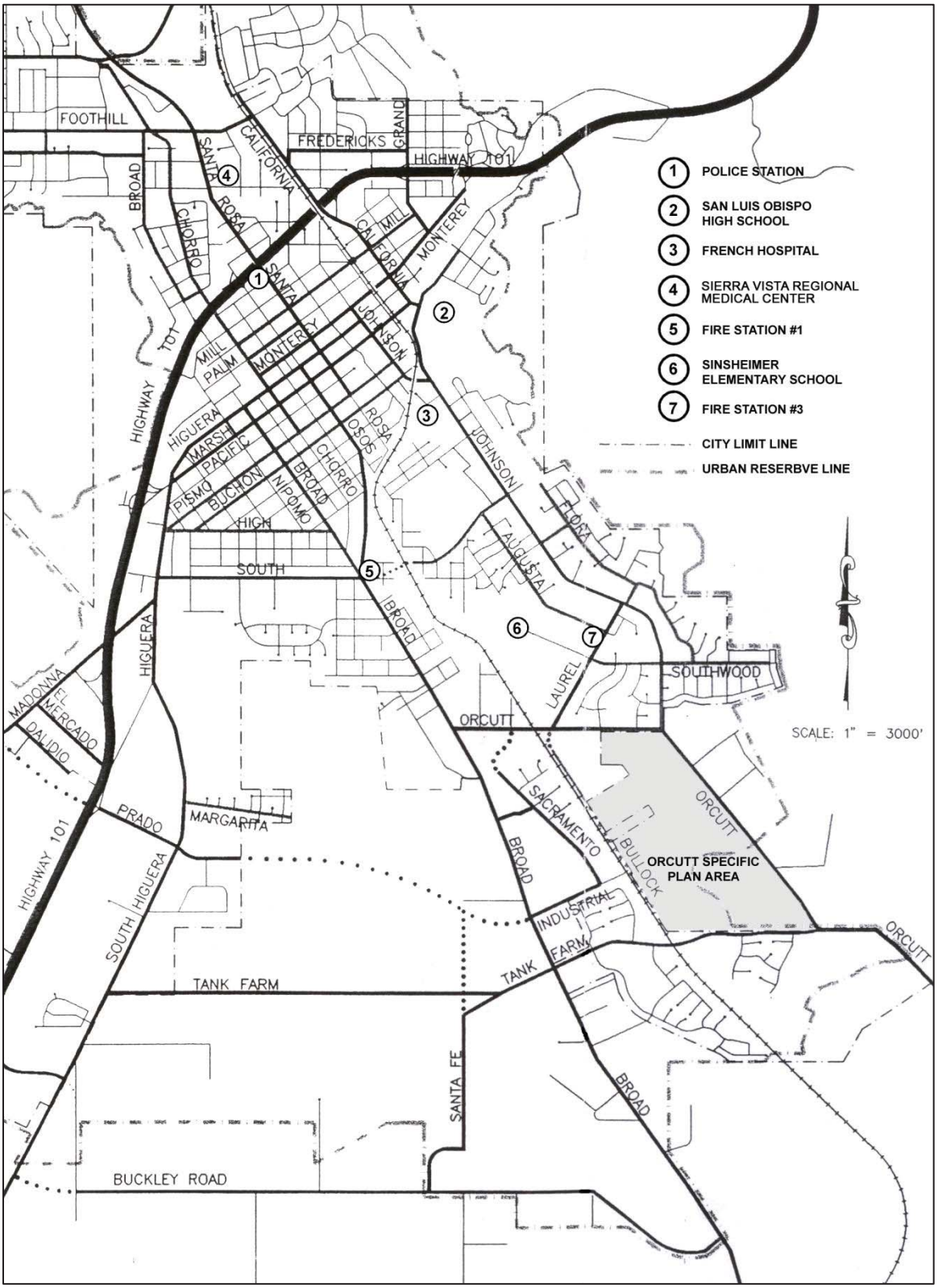
The City of San Luis Obispo is considered to have a moderate risk to landslides. The majority of the development in the City is in the valley area with a low to very low potential for slope instability. Slope instability in the City generally increases with steepness and distance from the San Luis Obispo Creek, with areas of steep terrain that consist of fractured soil or thin layers of clay that are susceptible to erosion and landslide. Only the most northern and most western portions of the City are considered to be at high risk to landslides. In addition, the hillside areas to the east, north, and west of the City, as well as along the flanks of the Morros, are underlain by the Franciscan mélange, which is a source of significant slope instability. Areas of the City with steep topography and geologic formations prone to slope stability problems are depicted in Figure 4-16 City of San Luis Obispo Landslide Potential.

Landslide potential is exacerbated by the occurrence of other natural hazards such as wildfire and flooding, thus areas prone to these hazards should also be evaluated for landslide concern.

Orcutt Area Specific Plan

The Environmental Impact Report for the Orcutt Area Specific Plan (2011) indicates that while a majority of the project area does not appear steep enough to pose a landslide hazard, the southern part of the site that includes Righetti Hill is steep and rocky enough to have stability concerns. Thus, the development plan designates the steepest portions of Righetti Hill to be kept as open space and not developed for residential uses. The western flank of the hill, however, is to be developed for residential housing and, therefore, there is a risk of landslide within the project boundary. In addition, the City of San Luis Obispo General Plan depicts portions of the project site as having a moderate landslide potential. To mitigate risk from this landslide potential, a geotechnical study to identify unstable slopes within the project area is required. Development on these slopes will be avoided, or the slopes will be engineered so that they are no longer unstable. Proposed development within the Orcutt Area Specific Plan avoids hillside areas and slopes greater than 30%.

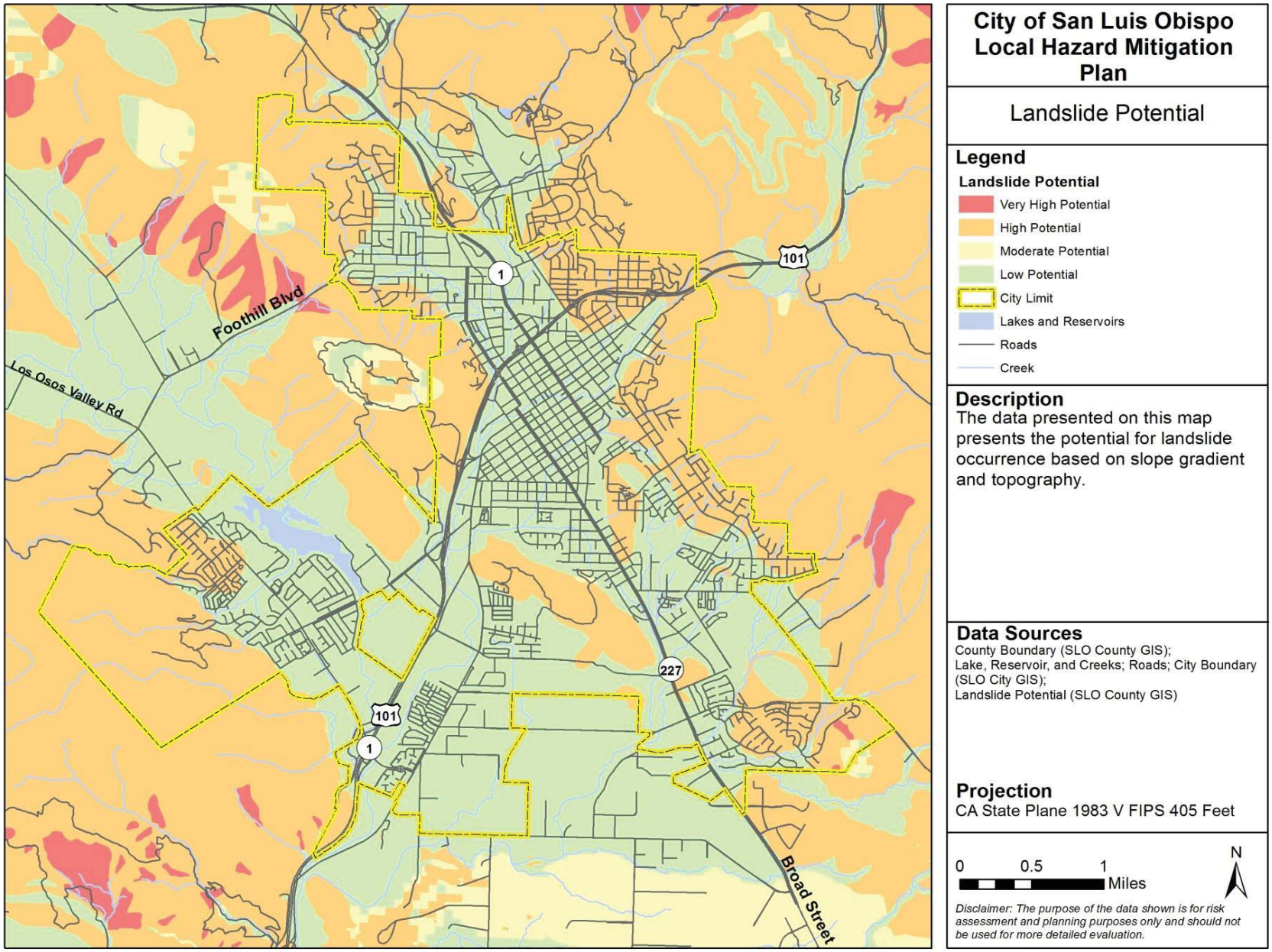
Figure 4-15 Location of Orcutt Area Specific Plan



Margarita Area Specific Plan:

The Margarita Area is located adjacent to San Luis Obispo and encompasses the County Airport. It is bordered by South Higuera Street to the west and Broad Street to the east and is crossed by Tank Farm Road. According to the Environmental Impact Report (EIR) for the Airport Area and Margarita Specific Plans and Related Facilities Master Plans (2003), the Margarita Area includes the southern slopes of the South Street Hills, which form the northern boundary of the project area and are susceptible to landslides. The EIR indicates that no building sites in this area will be located above the elevation designated in the hillside planning section of the City's General Plan Open Space Element.

Figure 4-16 City of San Luis Obispo Landslide Potential



4.2.7.4 Extent

Landslides are usually a cascading effect of severe weather and range in size from less than an acre to several that extend over a mile of hillside. Landslides can have the following impacts on people and property:

Effects on people and housing: People and housing are at risk from landslides and rockslides. For the most part, past incidents in the City have not resulted in significant injuries or loss of life. Property loss is rare, but is usually significant when it occurs.

Effects on commercial and industrial structures: Landslides can result in damage to property and cause buildings to become unsafe either due to distress or collapse during sudden or gradual slope movement. Structures constructed in steep terrain, possibly on stable ground, may also experience landslide hazards if they are situated in the path of potential mud flows or rockslide hazards.

Effects on infrastructure: Landslides and rockslides can result in the destruction of infrastructure such as water and sewer lines, electrical and telecommunications utilities and drainage. Disrupted transportation routes occur occasionally, usually during heavy rain storms, and cause considerable inconvenience.

4.2.7.5 Probability of Future Events

The likelihood of sliding increases during or after a period of heavy rain, when saturated soil fractures or weak spots give way. Therefore, while slides generally occur during the rainy season, after very wet winters, deep-seated landslides can continue to become active for many months, extending well into the summer. Geologists consider San Luis Obispo to be prone to deep-seated, slow-moving landslides. However, even where slides are recognized, it is often hard to accurately predict the frequency or magnitude of potential future movement.

Section 5 Vulnerability Assessment

DMA Requirement §201.6(c)(2)(ii):
[The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.

DMA Requirement§201.6(c)(2)(ii)(A):
The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas … .

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

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

5.1 Overview

The vulnerability assessment is a summary of each hazard's impact on the City's key assets. This section includes: 1) a description of the City's critical and essential facilities and infrastructure, 2) an analysis of the extent of each hazard's effect on these vulnerable structures, and 3) an estimate of the potential dollar losses to vulnerable structures.

5.2 Key Assets – Critical and Essential Facilities and Infrastructure

The Planning Team reviewed the list of Critical Facilities and Infrastructure in the 2006 plan and identified several key assets to add to the list such as private schools, California Polytechnic State University (Cal Poly) (which sits directly adjacent to the City boundary and receives primary fire and emergency medical services response from the City Fire Department), the airport and train station, Cal Trans headquarters, water system infrastructure, sewer system infrastructure, etc. The replacement values of the identified key assets were reviewed, confirmed or updated through consultation with the City's Risk Manager or through Hazard Mitigation Team contacts at their respective agencies. The replacement value is the insured amount of the asset, including the contents value. These represent the total potential loss value for each facility. Based on the available replacement values for the listed facilities and infrastructure (including roads and bridges), the total potential loss for the City is approximately $1.3 billion. Table 5-1 is the updated list of Key Assets developed for the 2014 hazard mitigation plan. This list of assets and replacement values will be reviewed and updated as necessary during the next plan update.

Some assets are relied upon as part of critical response activities, while others are considered essential to the operations and viability of the City. Those which are part of critical response activities as identified by the City's Emergency Operations Plan and GIS mapping of critical services are denoted as critical in the following table. The remaining assets are identified as essential. This designation prioritizes critical assets over essential assets for risk reduction and resiliency measures, while acknowledging that all of these assets are important to the City of San Luis Obispo. The asset ID numbers in Table 5-1 correspond to the maps presented in Section 5.2.1 Mapping.

Table 5-1 City of San Luis Obispo Key Assets

Category	Asset Name	Asset IDs	Address	Replacement Value	Priority
Community and Recreational Facilities	City Hall	68	990 Palm St	$8,281,217	Critical
	Library	451	995 Palm St	$1,389,319	Essential
	Ludwick Community Center	452	864 Santa Rosa St	$2,216,438	Critical
	Meadow Park Recreational Center	453	2333 Meadow St	$1,252,339	Essential
	Mitchell Park Senior Center	456	1445 Santa Rosa St	$924,546	Essential
	Sinsheimer Pool and Park	97-110	900 Southwood Dr	$2,260,151	Essential
Hospitals	French Hospital Medical Center	81-85	1911 Johnson Ave	$160,000,000	Critical
	Sierra Vista Regional Medical Center	79-80	1010 Murray Ave	$400,000,000	Critical
Infrastructure	Amtrak Train Station	540		N/A	Essential
	Critical Bridges	10, 11, 19, 20, 23, 25, 27, 34, 35, 40, 41, 42, 44, 51, 56	Varies by bridge	Varies by bridge	Critical
	Essential Bridges	8, 9, 12-18, 21, 22, 24, 26, 28-33, 36-39, 43, 45-50, 52-55, 58, 59-62	Varies by bridge	Varies by bridge	Essential
	Higuera Box Culvert	57	Higuera St	$4,500,000	Critical
	Cal Trans Headquarters	397-424	50 Higuera St	N/A	Essential
	Cal Trans Yard	397-424	66 Madonna Rd	N/A	Essential
	CHP SLO Dispatch Center	425	675 California Blvd	$3,200,000	Essential
	Evacuation Route Roads		50 miles	$1 million/mile = $50,000,000	Critical
	Other Essential City-Owned Roads		120 miles	$1 million/mile = $120,000,000	Essential
	Communication Towers	614,616,617		N/A	Essential
	Data Center - Building 14 - CalPoly	237		N/A	Essential
	Digital West	618	3620 Sacramento Dr	N/A	Essential
	Federal Highway 101		included in Evac Routes	N/A	Critical

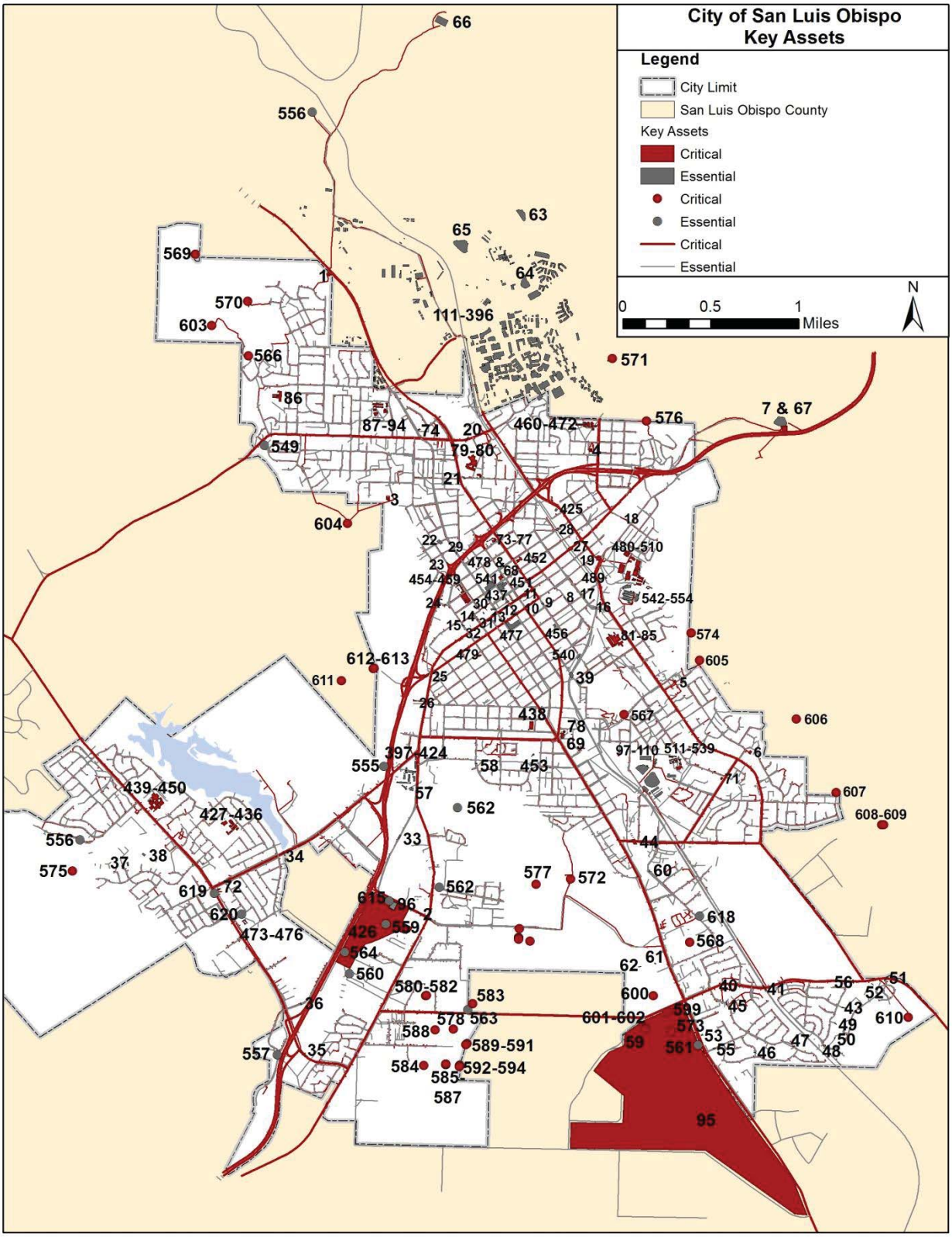
Category	Asset Name	Asset IDs	Address	Replacement Value	Priority
	Fiber Optic Network			N/A	Essential
	Railroad		4.19 miles	$5,813,789	Essential
	SLO Airport	95		N/A	Critical
	State Route 1		included in Evac Routes		Critical
Other City-Owned Facilities	City Corporation Yard	426	25 Prado Rd	$4,089,200	Critical
	Community Development and Public Works Administration	437	919 Palm St	$20,073,356	Essential
	Parking Garage	477	Marsh and Chorro St	$19,931,781	Essential
	Parking Garage	478	842 Palm St	$7,597,529	Essential
	Parks and Recreation Building	479	1341 Nipomo St	$1,120,748	Essential
	Prado Day Center	96	45 Prado Rd	$604,287	Essential
	Utilities Administration	541	879 Morro St	$928,696	Essential
Police and Fire Stations	Dispatch Center	78	1135 Roundhouse	$5,586,920	Critical
	Fire Station #1	69	2160 Santa Barbara	$4,752,133	Critical
	Fire Station #2	70	136 N Chorro St	$446,979	Critical
	Fire Station #3	71	1280 Laurel Ln	$518,011	Critical
	Fire Station #4	72	1395 Madonna Rd	$442,840	Critical
	Police Main Building, Garage, Annex	73-77	1042 and 1016 Walnut St	$3,775,017	Critical
Potable Water and Wastewater Facilities	Fire Station #4 Well	619	1395 Madonna Rd	N/A	Essential
	Pacific Beach Well	620	11950 LOVR	N/A	Essential
	Reservoirs	63-67		N/A	Essential
	Sewer Lift Stations	555-564		N/A	Essential
	Sewer System Infrastructure (pipes)			N/A	Essential
	Storm Drain System			N/A	Essential
	Waste Water Treatment Plant (includes Water/Wastewater Laboratory)	615	35 Prado Rd	$66,629,793	Essential
	Water Pump Stations	1-7		N/A	Critical
	Water System Infrastructure (pipes)			N/A	Critical
	Water Tanks	566-613		N/A	Critical
	Water Treatment Plant and Stenner Hydro Plant	565	Stenner Creek Rd	$44,721,338	Essential
Schools	Cal Poly	111-372	1 Grand Ave	N/A	Essential
	Mission College Preparatory School	454-455	682 Palm St	N/A	Critical
	Old Mission School	457-459	761 Broad St	$1,000,000	Critical
	Bishop Peak Elementary School	86	451 Jaycee Dr	$8,028,340	Critical

Category	Asset Name	Asset IDs	Address	Replacement Value	Priority
	CL Smith Elementary	427-436	1375 Balboa St	$13,574,783	Critical
	Hawthorne Elementary	438	2125 Story St	$8,599,931	Critical
	Laguna Middle School	439-450	11050 LOVR	$32,137,705	Critical
	Old Pacheco Elementary	460-472	165 Grand Ave	$9,356,774	Critical
	Jesperson Elementary	87-94	251 Grand Ave	$519,864	Critical
	Pacific Beach High School	473-476	11950 LOVR	$2,166,244	Critical
	SLCUSD Administrative Offices	542-554	1500 Lizzie St	$19,942,280	Essential
	San Luis Obispo High School	480-510	1499 San Luis Dr	$51,700,521	Critical
	Sinsheimer Elementary	511-539	2755 Augusta St	$11,239,081	Critical

5.2.1 Mapping

Figures 5-1 presents the locations of the key assets throughout the City. This map shows building footprints where available. Points denote assets that were not available as a footprint in the City's current GIS database. Infrastructure such as roads and pipelines are shown as line features.

Figure 5-1 City of San Luis Obispo Key Assets



Two assets require a brief discussion to explain their inclusion in the vulnerability assessment: Cal Poly and the City Corp Yard.

5.2.1.1 Cal Poly

Cal Poly maintains its own Local Hazard Mitigation Plan based on the University's assessment of its risks and capabilities. The University is a large component of the community, but this plan does not focus on the operations or specific risks to the Cal Poly campus. For the purposes of the City of San Luis Obispo Hazard Mitigation Plan, the University is looked at, in its entirety, as an essential asset. However, there is one building on the Cal Poly campus that the Planning Team identified as having a specific role for the City of San Luis Obispo, and therefore is a critical asset. The University Data Center, Building 14, is identified as critical asset #241 in the GIS analysis for this plan. Building 14, also known as the Frank E. Pilling Computer Science Building, houses multiple data servers which retain data for both the Cal Poly Campus and City of SLO.

5.2.1.2 City Corp Yard

The entire parcel which hosts the City Corp Yard is included in the vulnerability assessment rather than just the building footprints. The City Corp Yard houses the following: fleet services and fueling station, public works equipment storage, and the Wastewater Collections and Water Distribution maintenance staff, tools, and equipment. Prado Day Center, which sits on this parcel, is listed as a separate asset as it may be needed to serve as an emergency shelter. Additionally, the waste water treatment plant (listed as a separate asset) is located on this parcel. Given the amount of equipment stored and services provided on this parcel, the entire parcel area is acknowledged as a critical key asset in addition to the Prado Day Center and the waste water treatment plant. As denoted in Section 4.2.5.4 of the Flood Profile, prior flooding incidents on the City's Corp Yard have prohibited people from leaving buildings on this parcel. To mitigate flooding concerns, the main Corporate Yard building was designed to remain out of the floodplain and storage sheds have been elevated to reduce flood damage.

5.3 Vulnerability Assessment Methodology

The City's key assets (Table 5-1) were overlaid with the known hazard areas using GIS to determine which assets are located within each hazard area. All GIS data used to compile and map the City's key assets were collected from the City's Geographic Information Services group within the City's Finance and Information Technology Department. This department also provided hazard area data for wildfire and flood. The County of San Luis Obispo provided liquefaction and landslide hazard data. Alquist-Priolo fault zones and ground shaking data was retrieved from the California Geological Survey. Hazard area and key asset overlays were conducted for earthquake, liquefaction, wildfire, flood, and landslide. The available replacement values for the key assets that fall within a hazard area are tallied in each vulnerability table presented in Section 5.4 Risk to Applicable Hazards and Potential Loss Estimates to provide the total estimated potential losses to each hazard. Please note that the actual losses will depend on the type and extent of the hazard event.

Hazard and key asset overlays were not conducted for adverse weather, hazardous materials incidents, and pandemic. Adverse weather has the potential to affect the entire city. Drought, freeze, and fog do not inflict physical damage on the City's key assets; however, windstorms, hail, tornadoes, and thunderstorms can pose a threat, and, therefore, all facilities listed in Table 5-1 City of San Luis Obispo Key Assets could potentially be susceptible to damage from these hazard events. The City maintains a map of facilities that store hazardous materials as well as hazardous substance facilities and is able to use GIS to evaluate the key assets located in close proximity to these facilities to determine their vulnerability. For security, the map and specific facilities at risk to hazardous material spills are not presented in this plan. Pandemics do not inflict physical damage on the City's key assets. However, all people within the City of San Luis Obispo are at risk from pandemics.

5.4 Risk to Applicable Hazards and Potential Loss Estimates

5.4.1 Earthquake

As shown in Figure 4-2, a small portion of the City of San Luis Obispo lies in an Alquist Priolo Zone of Required Investigation. This zone portrays the region in which a fault investigation must be conducted as a condition for a permit to construct certain buildings, pursuant to CA Public Resources Code Section 2621 et seq. While no critical or essential facilities fall within this zone, some key infrastructure does fall within this area. Table 5-2 identifies the length in feet of infrastructure located within the Alquist Priolo Zone of Required Investigation.

Table 5-2 Total Linear Feet of Key Infrastructure in Alquist Priolo Fault Zone of Required Investigation

Key Infrastructure	Linear Feet in Fault Zone of Required Investigation	Replacement Value
Other Essential City-owned Roads	6,140	$1,000,000/mile = $1,160,000
Water System Infrastructure	2,782	
Sewer System Infrastructure	2,215	
Critical Roads	1,312	$1,000,000/mile = $250,000
Stormwater	865	
Total Linear Feet of Key Infrastructure	13,314	$1,410,000

Spectral Acceleration (SA) data, as collected from the California Geological Survey (Figure 4-3), shows ground shaking potential throughout the City. Using GIS, the key assets were overlaid with the SA data to identify which assets are within areas of higher potential ground shaking.

The SA data covers the entire City and thus all key assets are associated with an acceleration value in Table 5-3. While the scale of acceleration is measured from 0g (lowest potential ground shaking) to 4.25g (highest potential ground shaking), the

ground shaking potential ranges between 1.05g to 1.35g within the San Luis Obispo City limits.

Three facilities fall within the highest ground shaking potential area within the City, 1.35g. These include two essential bridges and one water tank. The two bridges are both located on Prefumo Creek, one at the end of Fairway Drive and the other at the end of Prefumo Canyon Road. The water tank is located at the end of Royal Way in the southwest section of the City. City staff can view the complete GIS data to further evaluate and understand the potential ground shaking identified for each of the key assets.

Table 5-3 Key Asset Ground Shake Potential

Asset IDs	Key Asset	Number of structures with indicated ground shake potential				Replacement Value
		1.35g	1.25g	1.15g	1.05g	
68	City Hall			1		$8,281,217
451	Library			1		$1,389,319
452	Ludwick Community Center			1		$2,216,438
453	Meadow Park Recreational Center			1		$1,252,339
456	Mitchell Park Senior Center			1		$924,546
97-110	Sinsheimer Pool and Park			14		$2,260,151
81-85	French Hospital Medical Center			5		$160,000,000
79-80	Sierra Vista Regional Medical Center			2		$400,000,000
95	SLO Airport		1			N/A
10, 11, 19, 20, 23, 25, 27, 34, 35, 40, 41, 42, 44, 51, 56	Critical Bridges		3	12		$76,460,800
8, 9, 12-18, 21, 22, 24, 26, 28-33, 36-39, 43, 45-50, 52-55, 58, 59-62	Other Essential Bridges	2	6	31		$99,661,000
57	Higuera Box Culvert		1			$4,500,000
397-424	Cal Trans Headquarters		28			N/A
397-424	Cal Trans Yard		28			N/A
425	CHP San Luis Obispo Dispatch Center			1		$3,200,000
614,616,617	Communication Towers		1		2	N/A
237	Data Center - Building 14 - CalPoly			1		N/A
618	Digital West			1		N/A
78	Dispatch Center			1		$5,586,920
63-67	Reservoirs			4	1	N/A
555-564	Sewer Lift Stations		8	2		N/A
540	Amtrak Train Station			1		N/A
1-7	Water Pump Stations			7		N/A
566-613	Water Tanks	1	27	20		N/A

Asset IDs	Key Asset	Number of structures with indicated ground shake potential				Replacement Value
		1.35g	1.25g	1.15g	1.05g	
426	City Corporation Yard		1			$4,089,200
437	Community Development and Public Works Administration			1		$20,073,356
477	Parking Garage (Marsh and Chorro)			1		$19,931,781
478	Parking Garage (Palm Street)			1		$7,597,529
479	Parks & Recreation Department Building			1		$1,120,748
96	Prado Day Center		1			$604,287
541	Utilities Administration			1		$928,696
69	Fire Station #1			1		$4,752,133
70	Fire Station #2			1		$446,979
71	Fire Station #3			1		$518,011
72	Fire Station #4		1			$442,840
73-77	Police Main Building, Garage, Annex			5		$3,775,017
615	Waste Water Treatment Plant		1			$66,629,793
565	Water Treatment and Stenner Hydro Plant			1		$44,721,338
111-372	California Polytechnic State University			286		N/A
454-455	Mission College Preparatory School			2		N/A
457-459	Old Mission School			3		$1,000,000
86	Bishop Peak Elementary School			1		$8,028,340
427-436	CL Smith Elementary		10			$13,574,783
438	Hawthorne Elementary			1		$8,599,931
439-450	Laguna Middle School		12			$32,137,705
460-472	Old Pacheco Elementary			13		$9,356,774
87-94	Jesperson Elementary			8		$519,864
473-476	Pacific Beach High School		4			$2,166,244
619	Fire Station #4 Well		1			N/A
620	Pacific Beach Well		1			N/A
542-554	San Luis Coastal Unified School District			13		$19,942,280
480-510	San Luis Obispo High School			31		$51,700,521
511-539	Sinsheimer Elementary			29		$11,239,081
Total number of structures with indicated ground shake potential		3	108	508	3	$1,099,629,961

Table 5-4 Key Infrastructure Ground Shake Potential presents the total amount of linear feet of key infrastructure within the indicated ground shake potential areas. Over 43,800

linear feet of key infrastructure are within the highest (1.35g) ground shake potential zone within the City.

Table 5-4 Key Infrastructure Ground Shake Potential

Key Infrastructure	Linear feet of key infrastructure with indicated ground shake potential				Replacement Value
	1.35g	1.25g	1.15g	1.05g	
Fiber Optic Network	0	42,629	110,786	0	
Critical Roads	10,637	99,487	154,521	0	$50,000,000
Other Essential Public Roads	4,866	174,109	455,256	0	$120,000,000
Railroad	0	7,159	90,735	0	
Sewer System Infrastructure	9,034	192,085	527,587	0	
Water System Infrastructure	10,692	219,920	692,794	1,268	
Stormwater	8,606	103,678	229,822	0	
Total Linear Feet of Key Infrastructure	44,105	839,067	2,261,501	1,268	$170,000,000

5.4.2 Liquefaction

While liquefaction susceptibility ranges from Very Low to Very High, the City of San Luis Obispo only has areas denoted with Very Low and Medium liquefaction potential. Since it is unlikely an event would impact facilities and infrastructure in a Very Low liquefaction susceptibility area, the Planning Team focused on those facilities that fall within the areas designated with Medium liquefaction potential.

Table 5-5 presents a listing of the key assets at risk to Medium liquefaction potential. For key assets that are comprised of more than one building structure, the table denotes how many of these structures fall within the zone in relation to the total number of structures that make up the key asset. The City is able to utilize GIS to view exactly which structures are within the Medium liquefaction potential areas. Given the available replacement values of the key assets within the Medium liquefaction potential areas, at least $843,750,229 of property is at risk to liquefaction.

Table 5-5 Key Assets with Medium Liquefaction Potential

Asset IDs	Key Asset	Number of structures	Replacement Value
68	City Hall	1 (all)	$8,281,217
451	Library	1 (all)	$1,389,319
452	Ludwick Community Center	1 (all)	$2,216,438
453	Meadow Park Recreational Center	1 (all)	$1,252,339
456	Mitchell Park Senior Center	1 (all)	$924,546
97-110	Sinsheimer Pool and Park	14 (all)	$2,260,151
79-80	Sierra Vista Regional Medical Center	2 (all)	$400,000,000
95	SLO Airport	1 (all)	N/A
10, 11, 19, 20, 23, 25, 27, 34, 35, 40, 42, 44, 51	Critical Bridges	13 of 15	$71,221,800

Asset IDs	Key Asset	Number of structures	Replacement Value
8, 9, 12-15, 17, 18, 21, 22, 24, 26, 28-33, 36-39, 45-48, 50, 53, 55, 58-62	Other Essential Bridges	34 of 39	$94,269,000
57	Higuera Box Culvert	1 (all)	$4,500,000
397-424	Cal Trans Headquarters	28 (all)	N/A
397-424	Cal Trans Yard	28 (all)	N/A
618	Digital West	1 (all)	N/A
65,67	Reservoirs	2 of 5	N/A
555-564	Sewer Lift Stations	10 (all)	N/A
540	Amtrak Train Station	1 (all)	N/A
1,3, 7	Water Pump Stations	3 of 7	N/A
574, 579-603	Water Tanks	26 of 48	N/A
426	City Corporation Yard	1 (all)	$4,089,200
437	Community Development and Public Works Administration	1 (all)	$20,073,356
477	Parking Garage (Marsh and Chorro)	1 (all)	$19,931,781
478	Parking Garage (Palm)	1 (all)	$7,597,529
479	Parks and Recreation Department Building	1 (all)	$1,120,748
96	Prado Day Center	1 (all)	$604,287
541	Utilities Administration	1 (all)	$928,696
78	Dispatch Center	1 (all)	$5,586,920
69	Fire Station #1	1 (all)	$4,752,133
70	Fire Station #2	1 (all)	$446,979
71	Fire Station #3	1 (all)	$518,011
72	Fire Station #4	1 (all)	$442,840
73-77	Police Main Building, Garage, Annex	5 (all)	$3,775,017
615	Waste Water Treatment Plant	1 (all)	$66,629,793
111-372	California Polytechnic State University	79 of 286	N/A
454-455	Mission College Preparatory School	2 (all)	N/A
457-459	Old Mission School	3 (all)	$1,000,000
427-436	CL Smith Elementary	10 (all)	$13,574,783
438	Hawthorne Elementary	1 (all)	$8,599,931
439-450	Laguna Middle School	12 (all)	$32,137,705
87-94	Jesperson Elementary	8 (all)	$519,864
473-476	Pacific Beach High School	4 (all)	$2,166,244
619	Fire Station #4 Well	1 (all)	N/A
620	Pacific Beach Well	1 (all)	N/A
480-510	San Luis Obispo High School	2 of 31	$51,700,521

Asset IDs	Key Asset	Number of structures	Replacement Value
511-539	Sinsheimer Elementary	12 of 29	$11,239,081
Total number of structures in Medium liquefaction potential area		294	$843,750,229
*all other key assets are within the area of very low potential to liquefaction			

Table 5-6 presents the total amount of linear feet of key infrastructure within the Medium and Very Low liquefaction potential areas in the City. Approximately 2,352,626 linear feet of key infrastructure fall within the Medium liquefaction potential area.

Table 5-6 Key Infrastructure Liquefaction Potential

Key Infrastructure	Linear feet of key infrastructure with indicated liquefaction potential		Replacement Value
	Medium Potential	Very Low Potential	
Fiber Optic Network	127,181	26,234	
Critical Roads	234,318	30,326	$50,000,000
Other Essential Public Roads	458,918	175,313	$120,000,000
Sewer System Infrastructure	556,482	172,224	
Water System Infrastructure	673,085	251,588	
Railroad	45,150	52,743	
Stormwater	257,492	84,614	
Total Linear Feet of Key Infrastructure	2,352,626	793,042	$170,000,000

5.4.3 Wildland Fire

Figure 4-9 City of San Luis Obispo Fire Hazard Severity Zones portrays fire hazard severity zones, ranging from Moderate Severity to Very High Severity, in both State and Local Responsibility Areas within the City Limits and in areas directly surrounding the City. Several of the City's facilities are within Moderate or Very High zones. It is also noted that the majority of the community is within one mile of fire hazard severity zones. This presents a significant risk to being impacted by a fire event. Table 5-7 Key Assets Fire Hazard Severity Potential shows the facilities that are either completely within or partially within a Moderate or Very High Fire Hazard Severity Zone. For key assets that are comprised of more than one building structure, the table denotes how many of these structures (if not all) fall within the zone in relation to the total number of structures that make up the facility. The City is able to utilize GIS to view exactly which structures are more at risk than others. Notably, the water tank located at end of Royal Way in the southwest section of the City is within a Very High Severity Zone as well as the highest ground shake potential (1.35g).

Table 5-7 Key Assets Fire Hazard Severity Potential

Asset IDs	Key Asset	Number of structures with indicated Fire Hazard Severity Potential		Replacement Value
		Very High (LRA)	Moderate (SRA)	
95	SLO Airport		1 (all)	N/A
51	Critical Bridges		1 of 15	$3,822,000
54	Other Essential Bridges		1 of 39	$2,171,000
63,66, 67	Reservoirs		3 of 5	N/A
7	Water Pump Stations		1 of 7	N/A
570, 572, 576, 605, 607-610, 612-614	Water Tanks	1 of 48	10 of 48	N/A
565	Water Treatment Plant and Stenner Hydro Plant		1 (all)	$44,721,338
111-372	California Polytechnic State University		42 of 286	N/A
Total number of structures with indicated Fire Hazard Severity Potential		1	60	$50,714,338

Table 5-8 Key Infrastructure Fire Hazard Severity Potential presents the total linear feet of key infrastructure within the indicated Fire Hazard Severity Zones. Approximately 195,041 feet of key infrastructure is within the Moderate Fire Hazard Severity Zone, 7,365 within the High Fire Hazard Zone, and 1,125 within the Very High Fire Hazard Zone.

Table 5-8 Key Infrastructure Fire Hazard Severity Potential

Key Infrastructure	Linear feet of key infrastructure with indicated Fire Hazard Severity Potential			Replacement Value
	Very High (LRA)	High (SRA)	Moderate (SRA)	
Fiber Optic Network	0	0	620	
Critical Roads	0	0	67,146	$12,700,000
Other Essential Public Roads	0	742	48,017	$9,200,000
Sewer System Infrastructure	725	0	13,105	
Water System Infrastructure	390	4,419	29,810	
Railroad	0	1,874	28,494	
Stormwater	110	330	7,849	
Total Linear Feet of Key Infrastructure	1,225	7,365	195,041	$21,900,000

5.4.4 Adverse Weather

The potential for windstorms, hail, tornadoes, and thunderstorms exists across the entire City. Therefore, all of the key assets are equally at risk to these hazards. The available replacement values for the key assets are presented in Table 5-1 City of San

Luis Obispo Key Assets. In total at least $1.3 billion in key assets including key infrastructure is susceptible to adverse weather.

Drought, freeze, and fog do not inflict physical damage on the City's key assets. However, drought and freeze may negatively affect the City's agricultural industry and economy, as well as cause damage to the City's urban forest (street trees). Drought can also cause a lack of water availability for the City's population. Dense fog can cause vehicle accidents, making people within San Luis Obispo City most vulnerable to this hazard.

5.4.5 Hazardous Materials Events

People and structures that are most vulnerable to hazardous material spills include those within a one mile radius of Highway 101, State Route 1, the Union Pacific Railroad tracks, and extremely hazardous substance (EHS) fixed facilities within the city limits. The City maintains a map of facilities that store hazardous materials and is able to use GIS to evaluate the key assets located in close proximity to these facilities to determine their vulnerability. For security, the map and specific facilities at risk to hazardous material spills are not presented in this plan.

5.4.6 Flood

FEMA's Flood Insurance Rate Map (Figure 4-14) depicts the City's Special Flood Hazard Areas, which include areas with a 1% annual chance of flooding (100-year flood zone) and a 0.2% annual chance of flooding (500-year flood zone). Using GIS, the key assets were overlaid with the Special Flood Hazard Areas to identify which assets are susceptible to flood risk. Table 5-9 Key Assets Flood Hazard Potential presents a listing of facilities at risk to the 100-year flood and the 500-year flood. For key assets that are comprised of more than one building structure, the table denotes how many of these structures (if not all) fall within the zone in relation to the total number of structures that make up the facility. The City is able to utilize GIS to determine which structures are more at risk than others. Given the available replacement values of the facilities located within each flood zone, the total value at risk to a 100-year flood is at least $500 million and the total value at risk to a 500-year flood is at least $200 million.

Table 5-9 Key Assets Flood Hazard Potential

Asset IDs	Key Asset	Number of structures with indicated Flood Hazard Potential		Replacement Value
		1% Annual Chance	0.2% Annual Chance	
427-436	CL Smith Elementary		6 of 10	$13,574,783
456	Mitchell Park Senior Center	1 (all)		$924,546
97-110	Sinsheimer Pool and Park		4 of 14	$2,260,151
81-85	French Hospital Medical Center		1 of 5	$160,000,000
79-80	Sierra Vista Regional Medical Center	1 of 2		$400,000,000
95	SLO Airport	1 (all)		N/A
10, 11, 19, 20, 23, 25, 27, 34, 35, 40, 42, 44, 56	Critical Bridges	5 of 15	8 of 15	$68,751,800
8, 9, 12-18, 21, 22, 24, 26, 29-33, 36-38, 43, 45, 47-49, 58-62	Other Essential Bridges	21 of 39	9 of 39	$76,357,900
57	Higuera Box Culvert	1 (all)		$4,500,000
397-424	Cal Trans Headquarters	28 (all)		N/A
397-424	Cal Trans Yard	28 (all)		N/A
556, 558, 560, 565	Sewer Lift Stations	2 of 10	2 of 10	N/A
6	Water Pump Stations		1 of 7	N/A
586-588, 590-595	Water Tanks	9		N/A
96	Prado Day Center		1 (all)	$604,287
615	Waste Water Treatment Plant		1 (all)	$66,629,793
454-455	Mission College Preparatory School		2 (all)	N/A
457-459	Old Mission School	1 of 3	2 of 3	$1,000,000
Total number of structures with indicated Flood Hazard Potential		70	37	$794,603,260

Table 5-10 Key Infrastructure Flood Hazard Potential presents the total amount of linear feet of key infrastructure within the 1% and 0.2% annual chance flood hazard areas. Approximately 332,786 linear feet of key infrastructure fall within the 1% annual chance flood hazard area, while 600,648 feet falls within the 0.2% annual chance flood hazard area.

Table 5-10 Key Infrastructure Flood Hazard Potential

Key Infrastructure	Linear feet of key infrastructure with indicated Flood Hazard Potential		Replacement Value
	1% Annual Chance	0.2% Annual Chance	
Fiber Optic Network	27,263	33,735	
Critical Roads	24,577	82,344	$20,250,000
Other Essential Public Roads	51,431	113,796	$31,290,000
Sewer System Infrastructure	85,533	137,968	
Water System Infrastructure	88,991	149,281	
Railroad	0	21,817	
Stormwater	54,991	61,707	
Total Linear Feet of Key Infrastructure	332,786	600,648	$51,540,000

5.4.7 Pandemic

Pandemics do not inflict physical damage on the City's key assets. However, all people within the City of San Luis Obispo are at risk from pandemics. This may include but is not limited to residents, employees and business owners, students, and tourists. In particular, children, the elderly, and those with weaker immune systems are likely to be more susceptible to experiencing symptoms caused by a pandemic outbreak. In a pandemic, key assets may be impacted as locations to treat people and isolate the sick become scarce. Also, with potentially 30-40% of the work force ill in a major pandemic, staff to manage facilities considered key assets may become scarce.

5.4.8 Landslide

According to the landslide potential data presented in Figure 4-15, key assets in the City of San Luis Obispo are susceptible to Low and High landslide potential. Since it is unlikely an event would impact facilities and infrastructure in a Low landslide susceptibility area, the Planning Team focused on those facilities that fall within the High landslide susceptibility area.

Table 5-11 Key Assets with High Landslide Potential presents a listing of facilities at risk to High landslide potential. For key assets that are comprised of more than one building structure, the table denotes how many of these structures (if not all) fall within the zone in relation to the total number of structures that make up the facility. The City is able to utilize GIS to determine which structures are more at risk than others. Given the available replacement values of the facilities within the High landslide potential zone, the total value at risk is at least $321 million.

Table 5-11 Key Assets with High Landslide Potential

Asset IDs	Key Asset	Number of structures in High Potential Landslide Area	Replacement Value
81-85	French Hospital Medical Center	5 (all)	$160,000,000
41, 51	Critical Bridges	2 of 15	$7,709,000
16, 43, 49, 52, 54	Other Essential Bridges	5 of 39	$5,392,000
425	CHP San Luis Obispo Dispatch Center	1 (all)	$3,200,000
614, 616, 617	Communication Towers	3 (all)	N/A
237	Data Center - Building 14 - CalPoly	1 (all)	N/A
63, 64, 66, 67	Reservoirs	4 of 5	N/A
2-7	Water Pump Stations	6 of 7	N/A
567, 569-573, 575-578, 603-613	Water Tanks	21 of 48	N/A
565	Water Treatment Plant and Stenner Hydro Plant	1 (all)	$44,721,338
111-372	California Polytechnic State University	211 of 286	N/A
86	Bishop Peak Elementary School	1 (all)	$8,028,340
460-472	Old Pacheco Elementary	13 (all)	$9,356,774
480-510	San Luis Obispo High School	29 of 31	$51,700,521
542-554	San Luis Coastal Unified School District	13 (all)	$19,942,280
511-539	Sinsheimer Elementary	17 of 29	$11,239,081
Total number of structures in High Potential Landslide Area		338	$321,289,334
* all other key assets are within the area of low potential to landslide			

Key infrastructure in the City of San Luis Obispo is susceptible to Low, Moderate, and High landslide potential. Approximately 909,269 feet is located within the High potential landslide area, 5,632 feet is located within the Moderate potential landslide area, and 6,604,913 feet is located in the low potential landslide area.

Table 5-12 Key Infrastructure Landslide Potential

Key Infrastructure	Linear feet of key infrastructure with indicated landslide potential			Replacement Value
	High	Moderate	Low	
Fiber Optic Network	18,538	0	134,877	
Critical Roads	72,253	535	142,354	$40,750,000
Other Essential Public Roads	180,732	3,252	454,343	$120,900,000
Sewer System Infrastructure	227,794	485	4,914,006	
Water System Infrastructure	306,394	1,005	623,525	
Railroad	28,481	0	69,412	
Stormwater	75,077	355	266,396	
Total Linear Feet of Key Infrastructure	909,269	5,632	6,604,913	$161,650,000

5.5 Summary of Vulnerability

Table 5-13: Risk Assessment Summary Table shows a summary of key assets that have structures which fall within the known hazard areas. Those facilities that have structures that fall within a hazard area are indicated with a "Y" and a red shaded cell. Key assets that do not have structures that fall within the hazard area are designated by an "N" and a green shaded cell.

Table 5-13 Risk Assessment Summary Table

Asset IDs	Asset Name	Priority	Ground Shake Potential				Liquefaction		Wildland Fire		Flood		Landslide	
			1.35g	1.25g	1.15 g	1.05 g	Medium	Very Low	Very High (LRA)	Moderate (SRA)	100-Year	500-Year	High	Low
68	City Hall	Critical	N	N	Y	N	Y	N	N	N	N	N	N	Y
451	Library	Essential	N	N	Y	N	Y	N	N	N	N	N	N	Y
452	Ludwick Community Center	Critical	N	N	Y	N	Y	N	N	N	N	N	N	Y
453	Meadow Park Recreational Center	Essential	N	N	Y	N	Y	N	N	N	N	N	N	Y
456	Mitchell Park Senior Center	Essential	N	N	Y	N	Y	N	N	N	Y	N	N	Y
97-110	Sinsheimer Pool and Park*	Essential	N	N	Y	N	Y	N	N	N	N	Y	N	Y
81-85	French Hospital Medical Center*	Critical	N	N	Y	N	N	Y	N	N	N	Y	Y	N
79-80	Sierra Vista Regional Medical Center*	Critical	N	N	Y	N	Y	N	N	N	Y	N	N	Y
540	Amtrak Train Station	Essential	N	N	Y	N	Y	N	N	N	N	N	N	Y
10, 11, 19, 20, 23, 25, 27, 34, 35, 40, 41, 42, 44, 51, 56	Critical Bridges*	Critical	N	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y
8, 9, 12-18, 21, 22, 24, 26, 28-33, 36-39, 43, 45-50, 52-55, 58, 59-62	Essential Bridges*	Essential	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y
57	Higuera Box Culvert	Critical	N	Y	N	N	Y	N	N	N	Y	N	N	Y
397-424	Cal Trans Headquarters*	Essential	N	Y	N	N	Y	N	N	N	Y	N	N	Y
397-424	Cal Trans Yard*	Essential	N	Y	N	N	Y	N	N	N	Y	N	N	Y
425	CHP SLO Dispatch Center	Essential	N	N	Y	N	N	Y	N	N	N	N	Y	N

Asset IDs	Asset Name	Priority	Ground Shake Potential				Liquefaction		Wildland Fire		Flood		Landslide	
			1.35g	1.25g	1.15 g	1.05 g	Medium	Very Low	Very High (LRA)	Moderate (SRA)	100-Year	500-Year	High	Low
614, 616, 617	Communication Towers*	Essential	N	Y	N	Y	N	Y	N	N	N	N	Y	N
237	Data Center - Building 14 - CalPoly	Essential	N	N	Y	N	N	Y	N	N	N	N	Y	N
618	Digital West	Essential	N	N	Y	N	Y	N	N	N	N	N	N	Y
95	SLO Airport	Critical	N	Y	N	N	Y	N	N	Y	Y	N	N	Y
426	City Corporation Yard	Critical	N	Y	N	N	Y	N	N	N	N	N	N	Y
437	Community Development and Public Works Administration	Essential	N	N	Y	N	Y	N	N	N	N	N	N	Y
477	Parking Garage	Essential	N	N	Y	N	Y	N	N	N	N	N	N	Y
478	Parking Garage	Essential	N	N	Y	N	Y	N	N	N	N	N	N	Y
479	Parks and Recreation Department Building	Essential	N	N	Y	N	Y	N	N	N	N	N	N	Y
96	Prado Day Center	Essential	N	Y	N	N	Y	N	N	N	N	Y	N	Y
541	Utilities Administration	Essential	N	N	Y	N	Y	N	N	N	N	N	N	Y
78	Dispatch Center	Critical	N	N	N	N	Y	N	N	N	N	N	N	Y
69	Fire Station #1	Critical	N	N	Y	N	Y	N	N	N	N	N	N	Y
70	Fire Station #2	Critical	N	N	Y	N	Y	N	N	N	N	N	N	Y
71	Fire Station #3	Critical	N	N	Y	N	Y	N	N	N	N	N	N	Y
72	Fire Station #4	Critical	N	Y	N	N	Y	N	N	N	N	N	N	Y
73-77	Police Main Building, Garage, Annex*	Critical	N	N	Y	N	Y	N	N	N	N	N	N	Y
619	Fire Station #4 Well	Essential	N	Y	N	N	Y	N	N	N	N	N	N	Y
620	Pacific Beach Well	Essential	N	Y	N	N	Y	N	N	N	N	N	N	Y
63-67	Reservoirs*	Essential	N	N	Y	Y	Y	Y	N	Y	N	N	Y	Y
555-564	Sewer Lift Stations*	Essential	N	Y	Y	N	Y	N	N	N	Y	Y	N	Y

Asset IDs	Asset Name	Priority	Ground Shake Potential				Liquefaction		Wildland Fire		Flood		Landslide	
			1.35g	1.25g	1.15 g	1.05 g	Medium	Very Low	Very High (LRA)	Moderate (SRA)	100-Year	500-Year	High	Low
615	Waste Water Treatment Plant (includes the Water/Wastewater Laboratory)	Essential	N	Y	N	N	Y	N	N	N	N	Y	N	Y
1-7	Water Pump Stations*	Critical	N	N	Y	N	Y	Y	N	Y	N	Y	Y	Y
566-613	Water Tanks*	Critical	Y	Y	Y	N	Y	Y	Y	Y	Y	N	Y	Y
565	Water Treatment Plant and Stenner Hydro Plant	Essential	N	N	Y	N	N	N	N	Y	N	N	Y	N
111-372	California Polytechnic State University	Essential	N	N	Y	N	Y	Y	N	Y	N	N	Y	Y
454-455	Mission College Preparatory School*	Critical	N	N	Y	N	Y	N	N	N	N	Y	N	Y
457-459	Old Mission School*	Critical	N	N	Y	N	Y	N	N	N	Y	Y	N	Y
86	Bishop Peak Elementary School	Critical	N	N	Y	N	N	Y	N	N	N	N	Y	N
427-436	CL Smith Elementary*	Critical	N	Y	N	N	Y	N	N	N	N	Y	N	Y
438	Hawthorne Elementary	Critical	N	N	Y	N	Y	N	N	N	N	N	N	Y
439-450	Laguna Middle School*	Critical	N	Y	N	N	Y	N	N	N	N	N	N	Y
460-472	Old Pacheco Elementary*	Critical	N	N	Y	N	N	Y	N	N	N	N	Y	N
87-94	Jesperson Elementary*	Critical	N	N	Y	N	Y	N	N	N	N	N	N	Y
473-476	Pacific Beach High School*	Critical	N	Y	N	N	Y	N	N	N	N	N	N	Y
542-554	San Luis Coastal Unified School District Administrative Offices*	Essential	N	N	Y	N	N	Y	N	N	N	N	Y	N
480-510	San Luis Obispo High School*	Critical	N	N	Y	N	Y	Y	N	N	N	N	Y	Y
511-539	Sinsheimer Elementary*	Critical	N	N	Y	N	Y	Y	N	N	N	N	Y	Y
Total Key Assets with structures in the risk areas			2	17	38	2	44	15	1	8	10	11	16	44

*These key assets have structures which fall within more than one denoted risk area for the same hazard.

5.5.1 Significant Hazards

The vulnerability assessment conducted for each hazard is used to understand the varying levels of risk to the City of San Luis Obispo. Based on these assessments, the Planning Team concluded the hazards of greatest concern to the City of San Luis Obispo are earthquake and liquefaction. This is reflected in Table 5-13 Risk Assessment Summary, which shows that out of the 52 key assets listed in the table, 44 have structures that fall within the Medium liquefaction potential zone. Thirty-eight have structures that fall within the 1.15g ground shake potential zone, which, according to the United States Geological Survey, can pose heavy potential damage during an earthquake event.[13]

Landslides also pose a threat to the City. Sixteen out of 52 key assets listed in Table 5-13 have structures that fall within the High landslide potential zone. Also, flood presents a threat to the City, with 21 facilities subject to varying degrees of future flood inundation; ten facilities having structures that are within the 100-year floodplain and 11 having structures that are within the 500-year floodplain. It is important to note that all facilities in Table 5-13 Risk Assessment Summary Table are in close proximity to Moderate, High, and Very High Fire Hazard Severity Zones and, while they do not fall within these zones, they could be impacted by an event occurring nearby.

5.5.2 Facilities at Most Risk

The key assets identified as being at most at risk to potential hazard events in the City are summarized in Table 5-14: City of San Luis Obispo Facilities at Most Risk. These assets are located within multiple hazard zones increasing the likelihood of potential damage from future events.

Table 5-14 City of San Luis Obispo Facilities at Most Risk

Asset IDs	Asset Name	Type	Ground Shake Potential (g)	Annual Chance Flood Hazard	Liquefaction Potential	Landslide Potential	Fire Hazard Severity Zone
37	P-03 (Bridge)	Essential	1.35	0.2%	Medium	Low	
575	Water Tank	Critical	1.35		Very Low	High	Very High
54	Prefumo Creek at Prefumo Canyon Road 49C-223 (Bridge)	Essential	1.35		Very Low	High	Moderate
95	SLO Airport	Critical	1.25	1%	Medium	Low	Moderate
26	Bianchi Lane at SLO Creek 49C-381 (Bridge)	Essential	1.25	1%	Medium	Low	
33	Elks Lane at SLO Creek 49C-81 (Bridge)	Essential	1.25	1%	Medium	Low	
35	LOVR at SLO Creek 49C-401 (Bridge)	Critical	1.25	1%	Medium	Low	

[13] http://earthquake.usgs.gov/research/shakemap/

Asset IDs	Asset Name	Type	Ground Shake Potential (g)	Annual Chance Flood Hazard	Liquefaction Potential	Landslide Potential	Fire Hazard Severity Zone
36	Calle Joaquin at Prefumo Crk 49C-395 (Bridge)	Essential	1.25	1%	Medium	Low	
38	P-02 (Bridge)	Essential	1.25	1%	Medium	Low	
57	Higuera Box Culvert	Critical	1.25	1%	Medium	Low	
59	Santa Fe 49C-380 (Bridge)	Essential	1.25	1%	Medium	Low	
397-424	Cal Trans Headquarters and Yard	Essential	1.25	1%	Medium	Low	
555	Madonna Lift Station	Essential	1.25	1%	Medium	Low	
557	Calle Joaquin Lift Station	Essential	1.25	1%	Medium	Low	
585	Water Tank	Critical	1.25	1%	Medium	Low	
586	Water Tank	Critical	1.25	1%	Medium	Low	
587	Water Tank	Critical	1.25	1%	Medium	Low	
589	Water Tank	Critical	1.25	1%	Medium	Low	
590	Water Tank	Critical	1.25	1%	Medium	Low	
591	Water Tank	Critical	1.25	1%	Medium	Low	
592	Water Tank	Critical	1.25	1%	Medium	Low	
593	Water Tank	Critical	1.25	1%	Medium	Low	
594	Water Tank	Critical	1.25	1%	Medium	Low	

5.5.3 Potential Losses

Table 5-15: Most Costly City of San Luis Obispo Key Assets identifies the City's assets with the greatest replacement values. Should these assets be completely destroyed by a hazard event, their replacement value will be the most costly compared to other identified key assets.

Table 5-15 Most Costly City of San Luis Obispo Key Assets

Asset IDs	Asset Name	Type	Replacement Value
79-80	Sierra Vista Regional Medical Center	Critical	$400,000,000
81-85	French Hospital Medical Center	Critical	$160,000,000
	Other Essential City-Owned Roads	Essential	$120,000,000
615	Wastewater Treatment Plant (includes Water/Wastewater Laboratory)	Essential	$66,629,793
480-510	San Luis Obispo High School	Critical	$51,700,521
	Evacuation Route Roads	Critical	$50,000,000
565	Water Treatment Plant and Stenner Hydro Plant	Essential	$44,721,338
439-450	Laguna Middle School	Critical	$32,137,705
437	Community Development and Public Works Administration	Essential	$20,073,356
542-554	SLCUSD Administration	Essential	$19,942,280
477	Parking Garage (Marsh and Chorro Streets)	Essential	$19,931,781
47	49C-03 Poinsettia at Goldenrod (Bridge)	Essential	$19,698,000

5.5.4 Climate Change Exacerbations

The intensity and frequency associated with the hazards profiled in this plan are largely based on historic events. The Planning Team recognizes that climate change has the potential to alter the nature and frequency of hazard events in the future. Based on the climate change impact modeling results provided in CalEMA's Cal Adapt, hazards that may increase in frequency and severity include longer and hotter/dryer seasons, reduced water supply, increase in wildfire events and area burned, changes in rainfall and severe storm patterns and intensities, and increased stress to flood and water infrastructure. Public health impacts may also be expected since extreme periods of heat and cold, storms, and smoke from fire can have impacts on climate-sensitive diseases and respiratory illnesses.

While climate modeling provides a range of likely scenarios, these models cannot yet predict exactly how climate change impacts may affect San Luis Obispo. The City has taken early action to both mitigate greenhouse gas (GHG) emissions, potentially reducing the severity of climate change impacts, and to adapt to a changing climate. To address GHG mitigation and adaptation, the City of San Luis Obispo adopted a Climate Action Plan (CAP) in August 2012. The CAP includes a GHG emissions reduction target and a plan to achieve that target. Within the CAP, community strategies for climate change adaptation and reduction of GHG emissions are divided into six chapters: Buildings, Renewable Energy, Transportation and Land Use, Water, Solid Waste, and Parks and Open Space. In addition, strategies to help reduce GHG emissions associated with City Government Operations are included in their own chapter. A GHG emission forecast included in the CAP shows that implementation of all strategies in the plan can achieve a 15% reduction from baseline GHG levels by 2020, which would meet required AB 32 State reduction goals.[14]

[14] City of San Luis Obispo Climate Action Plan, 2012, http://www.slocity.org/communitydevelopment/CAP/CAP%20Final%20Web.pdf

Section 6 Capability Assessment

An important component of a hazard mitigation plan is a review of the City's resources to identify, evaluate, and enhance the capacity of those resources to mitigate the effects of hazards. This section evaluates and assesses the City's capabilities to implement current and future hazard mitigation actions in four areas—(1) plan and policy, (2) technical, (3) personnel, and (4) financial.

6.1 Plan and Policy Resources

The City currently supports hazard mitigation through its regulations, plans, and programs. Documentation of the City's existing and future hazard mitigation activities can be found throughout the regulations, plans, and programs developed and implemented by the City. The relevant plan and policy resources that describe the City's ability to mitigate hazards include:

- **San Luis Obispo Municipal Code** - outlines hazard mitigation-related ordinances in seven of its 12 titles, including Health and Safety, Air Quality, Public Services, Community Preservation, Buildings and Construction, Subdivisions, and Zoning.
- **General Plan** - includes a safety element with policies and programs to protect the community from risks associated with seismic, geologic, flood, and fire hazards.
- **Specific Plans –** includes a detailed description of specific geographic areas of the City, including their natural resources and hazards, and identifies policies or guidelines for development within those areas to minimize impacts to those resources or hazards. Policies specific to mitigating natural hazards are included in the Margarita Area, Orcutt Area, and Airport Area specific plans.
- **Open Space Conservation Plans –** inventories the physical features of each open space and provides a set of goals and policies for the maintenance of open spaces, including grazing/fuel reduction policies, wildfire preparedness policies. Conservation plans have been prepared for each open space property or natural reserve managed by the City.
- **Climate Action Plan** – establishes goals and policies to reduce greenhouse gas emissions and identifies strategies to minimize potential impacts to the City's physical assets and population.
- **Emergency Operations Plan** - establishes official City policy and procedures for response to a variety of potential emergencies in hazard-prone areas.
- **Urban Water Management and Water Shortage Contingency Plans –** identifies historic and projected water needs and establishes actions to be taken in the event of a water shortage due to drought or other natural hazard.
- **Waterway Management Plan** – identifies relevant waterway problems such as flooding, bank erosion, vegetation management, and channel constrictions, and establishes a framework to manage each of the identified waterway issues.
- **Water System Vulnerability Assessment** – identifies the potential needs, constraints, and opportunities of the City's water system.
- **Utilities Department Emergency Plan** – establishes official Utility Department policies and procedures to respond to water-related emergencies.

In addition to the plan and policy resources available to the City to mitigate hazards, the City has developed or participates in several hazard mitigation programs including:

- **Unreinforced Masonry Hazard Mitigation Program**
- **Community Emergency Response Team (C.E.R.T.)**
- **Disaster Preparedness Program**
- **Floodplain Management Educational Program**
- **SLO Chamber of Commerce Business Continuity Planning**
- **County Public Health Emergency Preparedness Advisory Committee**
- **National Flood Insurance Program (NFIP)** – The goals of the NFIP are to reduce future flood damage through floodplain management and to provide people in participating communities with flood insurance. Community participation is voluntary. The City of San Luis Obispo has participated in the NFIP since 1973. The City is also part of the Community Rating System (CRS), Class 7. The goals of the CRS are to reduce flood damages to insurable property, strengthen and support the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management. The City of San Luis Obispo maintains full compliance with the NFIP through Sections 17.84.010-17.84.170 within Chapter 17.84, Flood Damage Prevention Regulations of the San Luis Obispo Municipal Code, which sets forth means to reduce losses from floods. These standards focus on areas located within or near the 100-year floodplain. Section 8.12.010-8.12.010 of the Municipal Code provides a mechanism for the City to require the removal of dangerous obstructions in streambeds that have the potential to obstruct water flow.
- **Repetitive Loss Properties** – FEMA insures properties against flooding losses through the NFIP. As part of the process to reduce or eliminate repetitive flooding to structures across the United States, FEMA has developed an official Repetitive Loss Strategy. The purpose behind the national strategy is to identify, catalog, and propose mitigation measures to reduce flood losses to the relatively few number of structures that absorb the majority of the premium dollars from the National Flood Insurance Fund. A repetitive loss property is defined by FEMA as a "property for which two or more NFIP losses of at least $1,000 each have been paid within any 10-year period since 1978." The City of San Luis Obispo has 2 repetitive loss properties. As a CRS requirement, the City Public Works Department sends community outreach notifications and letters to property owners in repetitive loss areas, including the City's Mid Higuera Area, to inform residents of flooding and to offer ways in which property owners can prepare for and reduce the damage from repetitive flooding. In addition, the Public Works Department conducted storm drain improvements as part of a Capital Improvements Project that helped with flood control in the Mid Higuera Area, an area of repetitive flooding.

6.2 Personnel Resources

The City government consists of approximately 375 full or part-time employees and 10 departments: Police, Fire, Public Works, Public Utilities, Community Development, Parks and Recreation, Human Resources, Finance and Information Technology, City Administration, and City Attorney's Office. There are several key departments and staff within the City organization that serve a specific role in developing and implementing hazard mitigation activities including: Fire, Police, Community Development, Public Works, and Utilities.

To further support implementation of hazard mitigation activities the City, its neighboring jurisdictions, San Luis Obispo County, and multiple state organizations such as the California Highway Patrol, Cal Poly, CalFire, and Caltrans have established strong partnerships to collectively address local hazards. These partnerships have been formalized through the following:

- Mutual Aid Agreements
- Voluntary Organizations Active in Disaster
- San Luis Obispo County Community Fire Safe Council
- Department Operations Centers (DOC)

6.3 Technical Resources

With a clear set of policies in place and a diverse range of staff available to mitigate identified hazards within the City, the City has many staff with specific training on the use of specialized equipment or particular areas of expertise that are essential in implementing mitigation actions. Technical resources are considered to be physical infrastructure or equipment available to the City to aid in implementing hazard mitigation or disaster response activities. Highlights of the City's technical resources available to support hazard mitigation activities include:

- Geographic Information Systems (GIS) Software
- Emergency Communications Center
- Public Alert and Notification Systems

6.4 Financial Resources

There are multiple financial and funding opportunities for the City to mitigate or respond to natural hazards. These capabilities include local revenues from the general fund, or the receipt of grant funds from state or federal agencies.

The City's financial planning process includes a two-year goal setting and budget development based on community and council priorities. The City's five-year fiscal forecast identifies the City's forecast of revenues, expenditures, and changes in fund balance. The general fund receives revenues from a variety of sources including taxes (sales, property, transient occupancy, business, utility users), subventions and grants (vehicle license fees, gas tax, and other subventions), service charges (development review fees, recreation fees), and other revenues (fines, interest earnings, and rents). The City has and will continue to utilize the two-year goal setting and budget process to prioritize expenditures needed to mitigate future hazards. In the event of a natural disaster and a need for immediate City response, the City has the financial capacity to utilize reserve funds, when authorized by the City Council.

The City has previously utilized the following financial resources to implement hazard mitigation activities. The added revenues to the General Fund from Measure "Y" have allowed the City to financially support major improvements in the areas of public safety, flood protection, and open space preservation.

Financial resources to mitigate hazards:

- Building Permit Inspection and Plan Review Fees[15]
- Development Impact Fees
- Added General Fund revenues from Measure "Y" funding
- Hazard Mitigation and Other Grants

6.5 Department Capabilities

The variety of resources noted in the above sections are organized and implemented through the City's departments. In order to facilitate collaboration and ongoing progress toward hazard mitigation activities, it is pertinent to understand which departments maintain certain resources and capabilities. Table 6-1 organizes the plan and policy, personnel, technical, and financial resources available to mitigate hazards and risks by the department responsible for leading or coordinating with other agencies.

[15] Fees collected by the City, must directly correlate to the services provided by that fee. While building permit inspection and plan review fees cannot be freely used by the City to support all hazard mitigation activities, the collection of these fees enables the City to retain building and safety personnel to review projects and ensure they are designed and built in a manner that minimizes risks from natural hazards.

Table 6-1 Capabilities and Resources by Department

Type of Resource	Resource Name	Ability to Support Mitigation
Administration		
Financial	General Fund (including Measure Y Funding)	In 2006, city voters approved measure Y to preserve and enhance essential city services by establishing a 1/2 –cent City sales tax. In the 2011/12 fiscal year, measure Y generated approximately $6.2 million in revenue. This funding has been used in recent years for public safety, infrastructure maintenance, traffic congestion relief, neighborhood code enforcement and open space acquisition project. Many of the projects funded through measure Y revenues are considered to help mitigate hazard throughout the community. Measure Y will sunset on March 31, 2015 unless a new measure is passed to continue the collection of additional sales tax.
Financial	Reserve Funds	The City's budget and fiscal policies includes a requirement to maintain adequate fund reserves for both general and enterprise funds. The minimum reserve level is 20% of annual operating expenditures.
Policy	Municipal Code	Establishes rules and regulations by which the City will be governed and outlines hazard mitigation-related ordinances in 7 of its 12 titles, including Health and Safety, Air Quality, Public Services, Community Preservation, Buildings and Construction, Subdivisions, and Zoning.
Personnel	Mutual Aid Agreements	Establishes agreements among local jurisdictions to assist in emergency response efforts in neighboring jurisdictions during times of need. San Luis Obispo currently participates in the following mutual aid agreements: 1. California Master Mutual Aid Agreement, 2. SLO County Fire and Rescue Mutual Aid Agreement, 3. California Fire Assistance Agreement, 4. Region 1A Law Enforcement Mutual Aid Agreement, 5. Public Works Mutual Aid Agreement, 6. California Emergency Managers Mutual Aid Agreement, 7. Regional Disaster Medical/Health Coordination.
Community Development		
Financial	Building Permit Inspection and Plan Review Fees	Fees are collected by the planning and building divisions of the community development department to inspect and review construction documents on proposed projects within the city. The collection of these fees ensures buildings are designed and constructed in a manner consistent with applicable components of the municipal code and helps the department to recover staff costs associated with review and inspection.
Personnel	Code Enforcement and Neighborhood Services	Staff with training and expertise in identifying hazards to health, safety, and welfare, and assisting property owners with achieving code and policy compliance.
Personnel	Building Inspectors	Professionals trained in construction practices associated with buildings and infrastructure and in storm water compliance during construction and operation of buildings and infrastructure projects.
Personnel	Planners and Engineers	Staff with knowledge of land development practices and local land development patterns.

Type of Resource	Resource Name	Ability to Support Mitigation
Plan	General Plan - Safety Element	Establishes goals, policies, programs and objectives to protect the community from risks associated with seismic, geologic, flood, and fire hazards.
Plan	Climate Action Plan	Establishes goals and policies to reduce greenhouse gas emissions and identifies strategies to minimize potential impacts to the City's physical assets and population. Identifies potential local effects climate change may have on the increased severity of hazards (fire, drought, flooding), and identifies strategies to help residents respond to or adapt to the increased severity of hazards.
Plan	Zoning Code	Chapter 17.84 - Floodplain management regulations
Policy	Building and Fire Code	Establishes standards for new development to improve building design and construction in a manner that protects public health, safety, and welfare from risks associated with seismic, geologic, flood, and fire hazards.
Financial	Development Impact Fees	New development projects proposed in the City affect the City's ability to provide adequate essential services (e.g. transportation, water and wastewater, and open space). To ensure these essential services can adequately serve the City's existing and future community needs, a series of development impact fees are levied on new development projects.
Economic Development		
Policy	Unreinforced Masonry Hazard Mitigation Program	Rules and regulations to improve the safety of the City's unreinforced masonry buildings to better withstand seismic events.
Policy	SLO Chamber Business Continuity Plan	Identifies best practices and resources for businesses to utilize in preparing for and recover from natural hazards while minimizing impacts to a business' bottom line.
Fire		
Personnel	Fire Marshal	Measure Y funded position, manages and directs the activities of the Fire Prevention Bureau. Oversees fire safety inspections for all facilities in the City. Ensures that development in the City meets fire safety standards. Obtains funding and implements wildland fuel reduction projects. Directs and oversees fire investigations.
Personnel	Fire Inspectors	Professionals trained in fire prevention techniques and construction practices associated with buildings and infrastructure. Inspect all multi-family residential buildings and public assembly buildings. Review building plans and inspect construction projects for fire and life safety and proper installation of fire protection systems. Investigate fire for cause and origin.
Personnel	Hazardous Materials Coordinator	Staff designated to inspect facilities and containers storing hazardous materials. There are approximately 244 facilities located within the City that are permitted for the use of hazardous materials.

Type of Resource	Resource Name	Ability to Support Mitigation
Personnel	Voluntary Organizations Active in Disaster	Provides disaster preparedness courses to residents and community members and provides care and shelter to those threatened or impacted by natural hazards. Volunteer and private agencies are essential to the area's mutual aid system by providing for the care and shelter needs of disaster victims. Organizations active in San Luis Obispo include the American Red Cross and Salvation Army.
Plan	Emergency Operations Plan	Identifies hazards and threats, describes current mitigation activities and establishes response procedures in the event of a natural or man-made hazard or emergency.
Plan	Fire Department Development Guide	Provides developers and building designers with best practices in the design and construction of new buildings to mitigate fire hazards.
Policy	C.E.R.T.	Program designed to provide residents with basic preparedness skills in the event of many types of disasters. Additionally, participants are trained to understand team concepts in disaster response situations, so that they can assist emergency personnel in disaster response efforts. As of 2013, the City has 813 CERT graduates.
Policy	Fire Sprinkler Retrofit Program	Program designed to retrofit existing buildings with a fire sprinkler suppression system to minimize building loss from a fire due to natural or other causes.
Policy	Disaster Preparedness Program	Through the City's website, local, state, and federal resources are available to help residents and business owners prepare in the event of a natural disaster.
Policy	SLO County Community Fire Safe Council	Provides a forum to foster fire prevention and fire safety within the County by bringing representatives together to discuss and strategize fire prevention best practices.
Technical	Emergency Communications Center	The emergency communications center provides primary communications among city departments and dispatch personnel during a disaster. Primary communications are conducted through the City radio systems, dedicated telephone lines, and (ARES/RACES) radios and computer systems.
Finance & Information Technology		
Personnel	GIS Specialists	Provide accurate and comprehensive Geographic Information System for managing resources, make informed decisions, and expedite work processes.
Personnel	Network Administrators	Provide technical support for wired/wireless network and radios.
Parks & Recreation		
Personnel	Park Rangers	Staff familiar with brush clearance requirements and conditions of City-owned open space.
Police		
Personnel	Police Officers	Emergency response to provide protection of life, property and address community safety/security needs. Work cooperatively with other first responders for an organized response to disaster mitigation plans.

Type of Resource	Resource Name	Ability to Support Mitigation
Personnel	Dispatchers	Provide communication links to responding personnel to transfer emergency information and direct resources as needed.
Policy	Mutual Aid Agreements	Coordinate with other law enforcement jurisdictions to respond to Hazard mitigation needs
Public Works		
Personnel	Construction Inspection	Ensures storm water compliance during construction of City projects, and private grading and encroachment projects.
Personnel	Public Works - Department Operations Centers (DOC)	The Public Works DOC coordinates responses to road flooding and related problems during a storm with road crews, the County, Caltrans, and the California Highway Patrol. They also support other emergency response operations coordinated through the City's EOC.
Policy	Floodplain Management	Provides information to the public regarding flood zones and flood insurance requirements, and mitigates flood hazards, helping to reduce flood insurance premiums for property owners.
Public Utilities		
Personnel	Storm water Compliance	Staff responsibility assigned to ensure storm water compliance during construction and operation of buildings and infrastructure projects.
Financial	Water and Sewer Fees	The City's utilities department provides water and wastewater services to the residents and businesses of San Luis Obispo. Water and sewer revenues are collected to support operations and capital improvements, with rates reviewed on an annual basis and approved by the City Council. These revenues from customer water and sewer use are utilized by the utilities department to maintain, improve, expand and replace components of the City's water and wastewater infrastructure system, including improvements made to protect from natural hazards.
Personnel	Operations	Field staff provide assistance to Public Works DOC for flood response, and City EOC for general emergency response.
Plan	Water Shortage Contingency Plan	Establishes policies and procedures to reduce the threat of drought through water conservation and allocation measures.
Plan	Water System Vulnerability Assessment	Identifies the potential needs, constraints, and opportunities of the City's water system.
Plan	Utilities Department Emergency Plan	Establishes official Utility Department policies and procedures to respond to water-related emergencies.

6.6 External Agency Capabilities

As noted above, the City of San Luis Obispo coordinates with many external (local, state, federal, and private sector) agencies which have capabilities to support hazard mitigation activities. Many of these agencies participated in the hazard mitigation planning process to update this plan. Their available resources are summarized in Table 6-2.

Table 6-2 Capabilities and Resources by External Agency

Type of Resource	Resource Name	Ability to Support Mitigation
County of San Luis Obispo - Airports		
Policy	SLO County Regional Airport Master Plan	Identifies current, near, and long-term airport operations and needs, including the design of facilities to accommodate likely aircraft operations.
Policy	SLO County Airport Rules and Regulations	Establishes safety, security, and environmental protection procedures at the airport to ensure appropriate response to emergency conditions.
County of San Luis Obispo – Office of Emergency Services		
Personnel	Emergency Services Manager	Coordinates disaster preparedness, response, and recovery activities between agencies and organizations in SLO County and local, state, and federal officials.
Policy	Emergency Operations Plan	Addresses the planned response to effectively and efficiently organize the County's response to emergency situations associated with natural disasters in or affecting San Luis Obispo County.
Policy	Earthquake Response Plan	Assesses earthquake hazards and fault lines in unincorporated SLO County, likely effects of a damaging earthquake, and response procedures. This plan is reviewed on an annual basis and following each emergency incident in which the plan was used to ensure changes are made based on lessons learned.
Policy	Dam and Levee Failure Plan	Assesses dam or levee failure hazards in unincorporated SLO County, likely effects of a dam or levee failure, and response procedures. This plan is reviewed on an annual basis and following each emergency incident in which the plan was used to ensure changes are made based on lessons learned.
Policy	Hazardous Materials Emergency Response Plan	Assesses hazardous material risks in unincorporated SLO County, likely effects of a hazardous material spill or leak, and response procedures. This plan is reviewed on an annual basis and following each emergency incident in which the plan was used to ensure changes are made based on lessons learned.
Policy	Local Hazard Mitigation Plan	Identifies the hazards and vulnerabilities in SLO County to natural disasters and identifies the County's capabilities and mitigation strategies to address the identified hazards and vulnerabilities.
Policy	Nuclear Power Plant Emergencies Policy: Nuclear Power Plant Emergency Plan	Detailed preparedness measures and procedures addressing the response to a nuclear power plant emergency.
Technical	Web EOC	A web-based information management system that provides real-time information sharing to help public safety and emergency managers.
Technical	Notification and Alert Systems	The City utilizes the Reverse 911 Notification and Early Warning siren systems operated by the County to notify the community of potential hazards and response procedures through telecommunications and 131 sirens located throughout the County’s emergency planning zones.

Type of Resource	Resource Name	Ability to Support Mitigation
County of San Luis Obispo – Public Health Department		
Policy	Public Health Emergency Preparedness Program	Assures the County's first responders and health care systems are prepared to respond to public health emergencies such as natural disasters, technological disasters, and pandemic flu in an effective and coordinated manner.
Policy	Pandemic Influenza Plan	Includes printable guides for individuals, businesses, schools, and community groups to prepare for and respond to pandemic flu.
Personnel	Medical Reserve Corps (SLOMRC)	The SLOMRC is a group of trained volunteers, made up of healthcare professionals such as physicians, nurses, paramedics, and mental health professionals among others, designated and trained to assist public health officials during times of special need or disaster.
Policy	Strategic National Stockpile Plan	This plan outlines the process for local distribution of a shipment of medical supplies and equipment from the Federal Resource: the Strategic National Stockpile. It outlines roles of the county and jurisdictions within the county during a response to a biological or chemical-related incident. This plan also references procedures for mass vaccination or prophylaxis of the public and first responders.
Cal Poly – City & Regional Planning Department		
Personnel	Hazard Mitigation Planners	Cal Poly's City and Regional Planning faculty includes staff with a high level of expertise in the areas of hazard mitigation and disaster recovery planning, including several staff assisting with the preparation of the State Hazard Mitigation Plan.
Cal Poly – Administration and Finance		
Technical	PolyAlert Campus Notification System	A text messaging service that will distribute brief messages in the event of imminent physical threats to the campus community. To receive messages, campus users must register their cell phone number with Cal Poly.
Technical	Material Safety Data Sheets database	An online database used to comply with Cal OSHA requirements regarding the use and storage of hazardous materials on campus.
Policy	Hazardous Waste and Materials program	Cal Poly's hazardous waste and materials website identifies policies and procedures for the proper use and storage of hazardous materials and electronic waste. The website includes a spill prevention control and countermeasures online training, hazardous waste pickup request forms, and a campus hazard communication program.
Policy	Campus Emergency Management Plan	Cal Poly's administration and finance department maintains an emergency management plan with policies and procedures for campus activities. The EMP is similar to a local jurisdiction's EMP and includes response procedures for emergencies likely to occur in a campus setting.
Personnel	University Police	Cal Poly's university police department includes 44 full-time staff trained to serve the campus community and assist SLO PD when needed.

Type of Resource	Resource Name	Ability to Support Mitigation
Personnel	Building Coordinators	A building coordinator has been identified for each campus building designated to be responsible for assisting in building evacuations, and situational reporting between building occupants and facility services.
French Hospital Medical Center		
Personnel	Emergency Medicine Specialists	French Hospital's staff includes 21 physicians trained specifically for treating patients in need of immediate medical attention.
Personnel	Emergency Response Trained Personnel	Staff from French Hospital participates in two disaster drills per year of which one is a Statewide Exercise. Additional drills are held periodically with PG&E's Diablo Canyon Power Plant on the treatment of radiological accidents. French Hospital also participates in SLO County planning activities and tabletop exercises.
American Red Cross		
Personnel	Voluntary Organization Active in Disaster	Provides disaster preparedness courses to residents and community members and provides care and shelter to those threatened or impacted by natural hazards. Volunteer and private agencies are essential to the area's mutual aid system by providing for the care and shelter needs of disaster victims.
Sierra Vista Regional Medical Center		
Personnel	Trained Emergency Medicine Specialists	Sierra Vista regional medical center is SLO County's only Level III trauma center. This distinction allows emergency medical professionals in the field to determine whether the patient should go to the closest hospital or Sierra Vista and ensures trauma patients receive immediate evaluation and care from trauma specialists, as may be the case in emergency response situations.
Personnel	Emergency Response Trained Officials	In the past, staff from Sierra Vista have received training and participated in drills to better understand the emergency response and incident command roles of the hospital as a member of the County and State emergency response systems.
San Luis Coastal Unified School District		
Policy	SLCUSD Board Policy	The SLCUSD Board sets and adopts guiding policies for the operations of the school district, which includes several specific policies to minimize student and staff risks to natural hazards. Sections applicable to hazard mitigation activities include: 3514 - Environmental Safety, 3514.1 - Hazardous Substances, 3516 - Emergencies and Disaster Preparedness Plan, 3516.5 - Emergency Schedules, and 3530 - Risk Management/Insurance.
Technical	Campus Properties	The SLCUSD has multiple properties distributed throughout the city of SLO, which may be used as incident command centers or shelters depending on the location and extent of a natural disaster. Currently, the American Red Cross has shelter agreements in place with SLCUSD to utilize Laguna Middle School in the event of a natural disaster or emergency.

Type of Resource	Resource Name	Ability to Support Mitigation
California Highway Patrol		
Personnel	Hazardous Materials Coordinator	The California Highway Patrol maintains incident command authority over hazardous materials being carried on state highways and roads that traverse the City.
PG&E		
Personnel	Gas, Electric, Transmission, and Distribution Emergency Preparedness departments	PG&E's team of trained professionals includes staff assigned to maintain and repair PG&E infrastructure when needed prior to and following a natural disaster. These staff are important to mitigating the potential cascading effects that a power outage may have such as a loss of potable water supply, or blocked access to geographic areas due to downed power lines.
Policy	Gas & Electric Emergency Preparedness Plan	PG&E has developed an integrated emergency preparedness plan to establish policies for each of its critical services: gas, electric, transmission, and distribution. These plans are shared with local police and fire departments throughout their service territory to coordinate appropriate notification and response in the event of a natural hazard.
Personnel	Public Safety Program Specialists	PG&E recently hired eight specialists dedicated to enhancing public safety planning and coordination of training for public safety officials on the policies and procedures for emergency response associated with the utilities infrastructure.
Technical	Mobile Command Vehicles	PG&E recently purchase six mobile command vehicles equipped with computers, satellite phones and necessary equipment to be deployed during emergencies throughout their service territory.
Gas Company		
Policy	Natural Gas System Operator Safety Plan	Identifies the safety performance expectations of So Cal Gas employees and emergency response procedures in the event of a natural hazard.

Section 7 Mitigation Strategy

7.1 Mitigation Goals and Objectives

The requirements for the local hazard mitigation goals, as stipulated in DMA 2000 and its implementing regulations, are described below.

> DMA 2000 Requirements: Mitigation Strategy – Local Hazard Mitigation Goals
>
> Local Hazard Mitigation Goals
> Requirement §201.6(c)(3)(i): [The hazard mitigation strategy **shall** include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.
>
> Element
> Does the plan include a description of mitigation **goals** to reduce or avoid long-term vulnerabilities to the identified hazards? (**GOALS** are long-term; represent what the community wants to achieve, such as "eliminate flood damage"; and are based on the risk assessment findings.)

During the second milestone meeting of the Hazard Mitigation Team, after review of the preliminary vulnerability assessment results, the Team reviewed the 2006 mitigation strategy. The HMT discussed the extent to which previous goals, objectives, and actions have been implemented and whether the mitigation strategies should be revised or continued in the 2014 LHMP. The HMT agreed to consolidate the 2006 goals from eight goals (including hazard specific goals) to two comprehensive goals.

Mitigation goals are guidelines that explain what a community wants to achieve in terms of hazard and loss prevention. Goal statements are typically long-range, policy-oriented statements representing community-wide visions. Objectives are statements that detail how to achieve a community's goals. Typically, objectives define strategies, or implementation steps, to attain identified goals. Below are the goals and objectives established for the 2014 LHMP.

Goal 1. Cultivate a disaster-resistant community through implementation of risk reduction measures and increased public awareness to prepare for, respond to, and recover from natural and human-caused hazard events.

- Objective 1.A Ensure that local plans, policies, and programs are consistent with the hazard information identified in the LHMP.
- Objective 1.B. Increase City employee capacity through SIMS and NIMS compliant training and EOC drills to identify hazards, and assist in emergency preparedness, response, and recovery.
- Objective 1.C Pursue available grant funding to implement hazard mitigation efforts.
- Objective 1.D Maintain critical and essential key assets to increase resiliency and minimize future damage from hazard events.
- Objective 1.E Increase public awareness of hazards, emergency response, and recovery.
- Objective 1.F Promote public/private partnerships to increase community resiliency.

Goal 2. Reduce the severity of damage and losses due to natural and human-caused hazards.

- Objective 2.A Protect and enhance, as practical, existing assets, as well as any future development, from the effects of natural and human-caused hazards.

7.2 Mitigation Progress

Since 2006, the City of San Luis Obispo has made considerable progress in implementing risk reduction measures. The following were identified during the Hazard Mitigation Team's review of the actions outlined in the 2006 LHMP. Additional progress is attributed through the existing policies noted in Section 6 Capability Assessment.

- The City's General Plan Safety Element has been updated several times to ensure it remains current and useful.
- Every City employee was trained in the National Incident Management System (NIMS) and Safety and Environmental Management System (SEMS) in 2003.
- CERT training was offered to City employees.
- The Chamber of Commerce provides resources on their website as to how to reduce damage and losses due to earthquakes.
- The City requires businesses that use, store, or transport hazardous materials to ensure that adequate measures are taken to protect public health and safety.
- The City's website provides information regarding the safe handling and disposal of household chemicals.
- The City has a dedicated professional focused on hazardous materials safety.
- The City participates in the county-wide hazardous materials team.
- Several fuel modification projects are scheduled for reducing the risk of wildland fires:
    - Cerro San Luis- Shaded Fuel Break/understory management in eucalyptus grove.
    - Bowden Ranch Open Space- Shaded Fuel Break/understory management along Bowden Creek.
    - Irish Hills Open Space- Thinning and brush removal project on emergency access/egress road off Isabella Street.
- The City conducts ongoing urban forest maintenance (tree trimming) to reduce potential for damage from high winds and/or fire.
- The City uses the California building codes for placing utilities underground to reduce damage from high winds.
- The City participates in county-wide exercises focusing on identified hazards such as pandemic.
- The City offers free flu vaccines to staff.
- City employees practice emergency management training and the use of its emergency operations center.

As of January 1, 2014 all new structures in the City of San Luis Obispo will be required to meet CBC Chapter 7A construction requirements in the Wildland Urban Interface for: ignition resistant siding, Class A roofs, protected eaves, ember intrusion resistant attic and subfloor vents, and at least one sprinkler head in the attic. For new structures in the area mapped as Local Very High Fire Severity Zones, all requirements of Chapter 7A are applied.

7.3 Mitigation Actions

The requirements for the identification and analysis of mitigation actions, as stipulated in DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements: Mitigation Strategy - Identification and Analysis of Mitigation Actions

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

DMA 2000 Requirements: Mitigation Strategy - Identification and Analysis of Mitigation Actions Element

- Does the plan identify and analyze a **comprehensive range** of specific mitigation actions and projects for each hazard?
- Do the identified actions and projects address reducing the effects of hazards on **new** buildings and infrastructure?
- Do the identified actions and projects address reducing the effects of hazards on **existing** buildings and infrastructure?

The Hazard Mitigation Team reviewed the list of mitigation actions from the 2006 plan and opted to consolidate several, remove a few that have become irrelevant, and identified several new actions. The following reflects the current list of mitigation actions for monitoring and potential implementation over the next five years. The actions are numbered to coordinate with the above stated goals and objectives. Additionally, the actions have been categorized as either supporting hazard mitigation efforts or disaster preparedness efforts. While both are important to public safety in preparing for and responding to natural disasters, the primary focus of this plan is to identify actions that will minimize threats to public health, safety, and welfare.

Table 7-1 2014 Mitigation Actions

Action #	Action Description	Status	Hazard Mitigation or Disaster Preparedness
1.A.1	Regularly review and continue to maintain consistency between the Safety Element, Municipal Code, zoning regulations, hazard area maps, and LHMP implementation strategies.	Valid from 2006 LHMP	Hazard Mitigation
1.B.1	Train all city employees including fire fighters, police officers, building inspectors, and public works and utilities staff to levels appropriate for their hazard mitigation tasks and responsibilities.	Modified from 2006 LHMP	Disaster Preparedness
1.B.2	Provide training for City staff who apply its building regulations and planning standards, emphasizing the lessons learned in locations that have experienced disasters.	Valid from 2006 LHMP	Disaster Preparedness

Action #	Action Description	Status	Hazard Mitigation or Disaster Preparedness
1.B.3	Conduct disaster-preparedness exercises for the types of hazards discussed in this LHMP.	Valid from 2006 LHMP	Disaster Preparedness
1.B.4	Establish ongoing Disaster Service Worker training program to include training for City staff to deal with emergencies as well as contribute to risk reduction measures.	Modified from 2006 LHMP	Disaster Preparedness
1.B.5	Conduct EOC training for CERT members	NEW	Disaster Preparedness
1.B.6	Incorporate pandemic into CERT training program	NEW	Disaster Preparedness
1.C.1	Review funding opportunities and establish centralized internal procedures to coordinate efforts for securing funds that support risk reduction measures.	Modified from 2006 LHMP	Hazard Mitigation
1.C.2	Identify hazard mitigation projects eligible for grants as part of the Capital Improvement Program planning process.	NEW	Hazard Mitigation
1.D.1	Assess structural capacity of key assets (including bridges) and pursue infrastructure improvements as necessary.	NEW	Hazard Mitigation
1.D.2	Continue offering free flu vaccines to City employees.	NEW	Hazard Mitigation
1.D.3	Establish policies to maintain health of City employees such as discouraging employees from coming to work when sick and encouraging employees to develop a plan for taking care of ill family members.	NEW	Hazard Mitigation
1.E.1	Establish a funded program or mechanism to distribute public information regarding risk reduction activities and projects at City-sponsored events. • Identify materials available for use at public education workshops • Coordinate messaging with external agencies such as the American Red Cross and Volunteer Organizations Active in Disasters.	Modified from 2006 LHMP	Hazard Mitigation
1.E.2	Support the efforts and education of people with access and functional needs to prepare for disasters.	Modified from 2006 LHMP	Disaster Preparedness
1.E.3	Educate the community on individual preparedness and response to deal with emergencies at times when professional responders would be overwhelmed.	Modified from 2006 LHMP	Disaster Preparedness
1.F.1	Offer CERT training to local / small businesses	NEW	Disaster Preparedness
1.F.2	Offer seminars and/or resources to assist local / small businesses in planning for continuity of operations and emergency preparedness.	NEW	Disaster Preparedness
2.A.1	Continue to enforce local codes, ordinances, and standards pertaining to safe development and resiliency to natural and human-caused hazards.	Modified from 2006 LHMP	Hazard Mitigation

Action #	Action Description	Status	Hazard Mitigation or Disaster Preparedness
2.A.2	Continue to implement the Unreinforced Masonry Hazard Mitigation Plan and strengthen buildings identified in Levels A and B.	Valid from 2006 LHMP (almost complete)	Hazard Mitigation
2.A.3	Develop and provide managers of mobile home parks with information on how to improve the seismic performance of mobile homes and awareness of flood risk.	Modified from 2006 LHMP	Hazard Mitigation
2.A.4	Develop and carry out environmentally sensitive flood reduction programs.	Valid from 2006 LHMP	Hazard Mitigation
2.A.5	Continue requiring businesses that use, store, or transport hazardous materials to ensure that adequate measures are taken to protect public health and safety.	Modified from 2006 LHMP	Hazard Mitigation
2.A.6	Coordinate with allied agencies to prepare for hazardous materials incidents. • Reference City EOP and Training and Exercise Plan • Maintain participation in County hazardous materials team	Modified from 2006 LHMP	Hazard Mitigation
2.A.7	Maintain City's web site and other outlets with information regarding the safe handling and disposal of household chemicals.	Modified from 2006 LHMP	Hazard Mitigation
2.A.8	Continue to conduct current fuel management programs and investigate and apply new and emerging fuel management techniques.	Valid from 2006 LHMP	Hazard Mitigation
2.A.9	Require an enhanced fire protection plan in Local Very High Fire Severity Zones.	Valid from 2006 LHMP	Hazard Mitigation
2.A.10	Enhance partnerships with CalFire and the local Fire Safe Council for fuel reduction efforts.	NEW	Hazard Mitigation
2.A.11	Support ongoing urban forest maintenance and tree trimming programs.	NEW	Hazard Mitigation
2.A.12	Add gas pipeline mapping to the City's GIS resources.	NEW	Disaster Preparedness

7.4 Action Plan

As listed above, the Hazard Mitigation Team identified 29 potential mitigation actions that will assist the City in mitigating the impact of natural and human-caused hazards. The DMA 2000 requires the evaluation, selection, and prioritization of the potential mitigation actions, as described below.

DMA 2000 Requirements: Mitigation Strategy - Implementation of Mitigation Actions Element

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

- Does the mitigation strategy include how the actions are **prioritized**? (For example, is there a discussion of the process and criteria used?)
- Does the mitigation strategy address how the actions will be **implemented and administered**? (For example, does it identify the responsible department, existing and potential resources, and timeframe?)
- Does the prioritization process include an emphasis on the use of a **cost-benefit review** (see page 3-36 of *Multi- Hazard Mitigation Planning Guidance*) to maximize benefits?

The Hazard Mitigation Team reviewed the following STAPLE/E criteria to help prioritize which actions may be most feasible for implementation.

STAPLE/E Review and Selection Criteria
Social
Is the proposed action socially acceptable to the jurisdiction and surrounding community? Are there equity issues involved that would mean that one segment of the jurisdiction and/or community is treated unfairly? Will the action cause social disruption?
Technical
Will the proposed action work? Will it create more problems than it solves? Does it solve a problem or only a symptom? Is it the most useful action in light of other jurisdiction goals?
Administrative
Can the jurisdiction implement the action? Is there someone to coordinate and lead the effort? Is there sufficient funding, staff, and technical support available? Are there ongoing administrative requirements that need to be met?
Political
Is the action politically acceptable? Is there public support both to implement and to maintain the project?
Legal
Is the jurisdiction authorized to implement the proposed action? Are there legal side effects? Could the activity be construed as a taking? Will the jurisdiction be liable for action or lack of action? Will the activity be challenged?
Economic
What are the costs and benefits of this action? Do the benefits exceed the costs? Are initial, maintenance, and administrative costs taken into account? Has funding been secured for the proposed action? If not, what are the potential funding sources (public, non-profit, and private)? How will this action affect the fiscal capability of the jurisdiction? What burden will this action place on the tax base or local economy? What are the budget and revenue effects of this activity? Does the action contribute to other jurisdiction goals? What benefits will the action provide?
Environmental
How will the action affect the environment? Will the action need environmental regulatory approvals? Will it meet local and state regulatory requirements? Are endangered or threatened species likely to be affected?

Through this process, the Hazard Mitigation Team identified four priority mitigation actions. Priority actions are denoted with a Priority Level “A”. These are presented in Table 7-2 Action Plan Matrix with additional details to assist with implementation.

Table 7-2 Action Plan Matrix

Action Item		Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
Action 2.A.1	Continue to enforce local codes, ordinances, and standards pertaining to safe development and resiliency	Community Development	General Funds/HMGP or PDM grants	Annually	Well-trained City staff will reduce loss of life, property damage, and ensure continuity of operations in all future large-scale disasters.	A
Action 2.A.5	Continue requiring businesses that use, store, or transport hazardous materials to ensure that adequate measures are taken to protect public health and safety	Fire	Certified Unified Program Agency (CUPA)	Annually	Reduce the potential for hazardous materials spills by insuring proper storage, containment, and identification of hazardous materials.	A
Action 2.A.8	Continue to conduct current fuel management programs and investigate and apply new and emerging fuel management techniques	Fire/Natural Resources Director/Parks and Recreation	FEMA and Fire Safe Council grants	Annually	Reduce the potential for wildland fires by improving and expanding the current fuel management program.	A
Action 1.C.1	Review funding opportunities and establish centralized internal procedures to coordinate efforts for securing funds that support risk reduction measures	Administration	General Funds/ FEMA grant	Annually	Grant funds supplement the City's budget for implementing hazard mitigation in all aspects of risk.	A

Section 8 Plan Maintenance

8.1 Plan Monitoring, Evaluating, and Updating

The City of San Luis Obispo has developed a method to ensure that regular review and update of its LHMP occurs. FEMA regulations require an update every five years. The City Hazard Mitigation Team will convene annually to review and discuss mitigation progress and any new concerns that may benefit from mitigation activities.

At the annual meetings, the Hazard Mitigation Team will review each goal and objective to evaluate its:

- Relevance to the evolving situation in the City of San Luis Obispo
- Consistency with changes in State and Federal policy
- Relevance to current and expected conditions

The Hazard Mitigation Team will review the Risk Assessment portion of the plan to determine if the information should be updated or modified. The parties responsible for various implementation actions will report on:

- Status of their projects
- Implementation processes that have worked well
- Any difficulties encountered
- How coordination efforts are proceeding
- Which strategies should be revised

The City of San Luis Obispo is committed to involving the public in the continual reshaping and updating of the LHMP. The Hazard Mitigation Team will present the LHMP at a City council meeting annually with the opportunity for public comment at the meeting. Any public comments received at the meeting will be documented and stored with the plan for use in the five-year update.

8.2 Continued Public Involvement

The Hazard Mitigation Team members are responsible for the review and update of the plan. Although they represent the public to some extent, the public are welcome to directly comment on and provide feedback about the plan at anytime to the project lead at the City's Fire Department.

Copies of the plan will be made available for review on the City website and at the City Fire Department, Fire Station 1.

8.3 Implementation through Existing Plans and Programs

This LHMP is being incorporated into the General Plan Safety Element by reference for compliance with California State Assembly Bill 2140. This enables the City of San Luis Obispo to qualify for additional funding through the California Disaster Assistance Act should the State determine there to be a need and/or additional funding available to provide.

California State Assembly Bill 162 requires the General Plan Land Use Element to identify existing and proposed uses and flood mitigation strategies within the 100-year floodplain. The LHMP should be referenced and used to inform the Land Use Element in order to meet this requirement.

California State Senate Bill 1241 requires the Safety Element to incorporate wildfire hazard considerations for State Responsibility Areas (SRAs) and lands within very high fire severity zones. These areas are already depicted within the Safety Element and the LHMP. They will be reviewed and updated as appropriate during the future updates to both of these documents.

Whenever there are substantive changes to this LHMP, those involved in other relevant planning mechanisms in the City will be included in the review process.

Section 9 References

2006 City of San Luis Obispo Local Hazard Mitigation Plan

2012 City of San Luis Obispo Climate Action Plan, http://www.slocity.org/communitydevelopment/CAP/CAP%20Final%20Web.pdf

2013 Hazard Mitigation Plan for the County of San Luis Obispo

California Department of Public Health, http://www.cdph.ca.gov/data/statistics/Documents/H1N1DataTable082810.pdf

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San Luis Obispo County, http://www.slocounty.ca.gov/health/publichealth/commdisease/pandemicflu.htm

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USGS, http://earthquake.usgs.gov/research/shakemap/

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YouGov. 2012 14 November. *64% of Americans unprepared for natural disasters*. Palo Alto, CA, http://today.yougov.com/news/2012/11/14/64-americans-unprepared-natural-disasters/

Appendix A Adoption Resolution

RESOLUTION NO. 10506 (2014 Series)

A RESOLUTION OF THE COUNCIL OF THE CITY OF SAN LUIS OBISPO APPROVING THE DISASTER MITIGATION ACT (DMA 2000) CITY OF SAN LUIS OBISPO LOCAL HAZARD MITIGATION PLAN UPDATE

WHEREAS the City of San Luis Obispo has the potential to experience disasters that can damage commercial, residential, and public properties, displace citizens and businesses, close streets and bridges, and present public health and safety concerns; and

WHEREAS the City of San Luis Obispo has prepared this updated and revised Local Hazard Mitigation Plan to advance mitigation planning and projects and provide guidance on how to reduce risk from natural hazards; and

WHEREAS City departments, community partner organizations and the public has contributed to the development of the Local Hazard Mitigation Plan to meet the requirements of the Federal Disaster Mitigation Act of 2000; and

WHEREAS the City of San Luis Obispo is committed to implementing the actions contained within this plan; and

WHEREAS the Local Hazard Mitigation Plan will be reviewed annually and revised as necessary to meet changing conditions.

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of San Luis Obispo that the plan entitled "City of San Luis Obispo Local Hazard Mitigation Plan" is hereby adopted, a copy of which will be kept on file by the City Clerk.

Upon motion of Vice Mayor Christianson, seconded by Council Member Ashbaugh, and on the following roll call vote:

AYES:	Council Members Ashbaugh, Carpenter and Smith, Vice Mayor Christianson and Mayor Marx
NOES:	None
ABSENT:	None

The foregoing resolution was adopted this 18th day of March 2014.

Mayor Jan Marx

ATTEST:

Anthony J. Mejia, CMC
City Clerk

APPROVED AS TO FORM:

J. Christine Dietrick
City Attorney

Appendix B Outreach Materials

CONTACT PERSON **Julie Cox, Admin Analyst**

DATE - **8/5/13**

PHONE--E-MAIL **781-7382,** jcox@slocity.org

Charlie Hines, Fire Chief

FOR IMMEDIATE RELEASE

Your Input Requested to Help City of San Luis Obispo Reduce Loss due to Natural Hazards

SAN LUIS OBISPO, CA, AUGUST 5, 2013 – Is your home or office building susceptible to damage from earthquakes, wildfires, floods, or other natural hazards? Do you want to increase the chances that you can recover from disasters and prevent future damage from these kinds of hazards? Your input is requested by the City of San Luis Obispo to update the Local Hazard Mitigation Plan.

The purpose of the Local Hazard Mitigation Plan is to assess local risk to natural hazards, implement actions through mitigation measures to reduce future losses, and maintain eligibility for federal mitigation funds in accordance with the Disaster Mitigation Act of 2000. Studies have shown that for every dollar spent on mitigation efforts, four dollars in response and recovery costs are saved. The Local Hazard Mitigation Plan update is being developed by a Hazard Mitigation Planning Team comprised of representatives from various city departments, medical facilities, state agencies, and Cal Poly. The City is currently seeking public input via an online survey to ensure a comprehensive planning process.

The online survey is designed to collect input on the following kinds of questions:

1. How would you prioritize the hazards facing San Luis Obispo?
2. What actions can we take to reduce future damage?
3. How can local government officials better communicate risk to the public?

Input from anyone who spends time in the City of San Luis Obispo is welcome via the online survey by September 30th, 2013.

Survey Link: http://www.surveymonkey.com/s/SLOCityHMP

Public comments will be reviewed by the City's Hazard Mitigation Planning Team and incorporated into the final plan as appropriate. Individuals or organizations interested in being contacted regarding the completed review draft may submit this request via the survey. A review draft of the complete plan update will be made available for public review in early 2014.

The most recent Local Hazard Mitigation Plan approved in 2006 may be downloaded from http://www.slocity.org/fire/download/2006%20lhmp.pdf or obtained by contacting San Luis Obispo City Fire Department. Paper copies of the survey are available at the Fire Station 1, 2160 Santa Barbara Ave.

###

Announcement of public survey on main City website (08/22/2013)

Announcement of public survey on City Public Works Facebook Page (08/5/2013)

Newman, Janna

From: Cox, Julie [jcox@slocity.org]
Sent: Monday, August 05, 2013 4:31 PM
To: Bartshire, Corinne
Subject: City of SLO survey

Corinne,

FYI
City of SLO online LHMP survey posted:

https://www.facebook.com/SLOPublicWorks

Julie Cox
Administrative Analyst
City of San Luis Obispo Fire Department
Phone (805) 781-7382
jcox@slocity.org

City of San Luis Obispo Public Works
August 20

Do you recognize where this photo was taken? (2004 flood) Is your home or property or workplace at risk of damage from earthquakes, wildfires, floods or other natural hazards? The City of San Luis Obispo is requesting your input to help reduce loss due to natural hazards. Share your concerns by responding to this survey by September 30, 2013.

Like · Comment · Share 1

1

Newman, Janna

From: Cox, Julie [jcox@slocity.org]
Sent: Monday, August 05, 2013 3:31 PM
To: 'aaron@slochamber.org'; 'Associated Press'; 'Associated Press'; 'Associated Press'; 'Associated Press'; 'Atascadero News'; 'Cal Coast News Friedman'; 'Cal Coast News Karen Velie'; 'Cal Poly News'; 'Canelon, Raiza'; 'Char Rosales'; 'clowe@ksby.com'; 'Coast News Theresa Marie Wilson'; Codron, Michael; 'County Blade'; 'Cuestonian'; 'Cuestonian Y. Merejeel'; 'Downtown Assn Brent Vanderhoof'; 'Downtown Assn Deborah Cash'; 'EdHat'; 'George Hughes'; 'Gran, Jerret'; 'J Hickey'; 'Jamie Soriano '; 'Karen Valine'; 'KCET News Desk'; 'KCOY News 12'; 'Kelly Hoover'; 'KEYT Assignment Desk'; 'KGUR'; 'King Harris'; 'KJUG Linda'; 'KKAL'; 'KKJL'; 'KPRL'; 'KSBY News'; 'KSLY/KSTT/KURQ Jennifer Grant'; 'KTAS'; 'KUHL Ben Heighes'; 'KVEC'; 'KVEC Dave Congalton'; 'LA Times Scott Gold'; 'Leah Masuda'; Lichtig, Katie; 'Linda Frey'; 'Lindsey Miller'; 'Linn, Sarah'; 'Mike Mesmer'; 'Mustang Daily'; 'New Times Matt Fountain'; 'New Times Ryan Miller'; 'Patrick Klemz'; 'Santa Barbara City News - M Cole'; 'Santa Barbara Sheriff '; 'Santa Maria News Radio Mike'; 'Santa Maria Times Brian Bullock'; 'Santa Maria Times Janene Scully'; 'Santa Maria Times Samantha Yale'; 'Shannon Hill'; 'SLO City News'; 'SLO City News Neil Ferrall'; 'SLO Co Sheriff'; 'SLO Journal'; SLOPD, Press; 'Times Press Recorder April Charlton'; 'Times Press Recorder Emily Slater'; 'Times Press Recorder M. Hodgson'; 'Tolosa Press'; 'Tribune News'; 'Tribune News Room'; 'United Reporting'; 'United Reporting - James Damschroder'; Wilwand, Lynn
Subject: Media Release: Your Input Request
Attachments: LHMP-press-release 8-5-13.doc

Please see attached SLO City Fire media release regarding: Your Input Requested to Help City of San Luis Obispo

Can you post the following on your Facebook page?

The City of San Luis Obispo is requesting your input to help reduce loss due to natural hazards.

Is your workplace, home or property at risk of damage from earthquakes, wildfires, floods or other natural hazards? Share your concerns by responding to this survey by September 30, 2013.
http://www.surveymonkey.com/s/SLOCityHMP

Julie Cox
Administrative Analyst
City of San Luis Obispo Fire Department
Phone (805) 781-7382
jcox@slocity.org

Newman, Janna

From: Cox, Julie [jcox@slocity.org]
Sent: Wednesday, August 07, 2013 12:59 PM
To: Bartshire, Corinne
Subject: FW: QUICK SURVEY

For your records: Chief Hines sent this email out to all SLO City employees yesterday.

From: Hines, Charlie
Sent: Tuesday, August 06, 2013 2:33 PM
To: All City Employees
Subject: QUICK SURVEY

SLOFD is updating the City's *Local Hazard Mitigation Plan*. As a fellow employee, we would appreciate if you could take the attached 5-minute survey by September 30th. Your opinion will assist us in focusing in on what's important.

THANKS!

Charlie Hines

Fire Chief
San Luis Obispo Fire Department
YOU are our MISSION

http://www.surveymonkey.com/s/SLOCityHMP

1

Newman, Janna

From: Blair, Cheryl [cblair@slocity.org]
Sent: Friday, August 09, 2013 5:31 PM
To: Bartshire, Corinne
Subject: survey outreach

Here is what I have done to get the survey to the public...

- Put paper copies on our front counter with cover letter
- Gave to person in charge of the Utilities Dept Farmer's Market booth
- Had it put out on the Utilities Dept Facebook page.
- Put on the Utilities Department website

Cheryl Blair
Administrative Analyst
City of San Luis Obispo
(805)781-7208
cblair@slocity.org

Find us on Facebook

From: Bartshire, Corinne [mailto:cbartshire@dewberry.com]
Sent: Thursday, August 01, 2013 4:49 PM
To: Cox, Julie; Yun, David; Andrews, Mary; Johnson, Derek; Maggio, Rodger; rhowell@co.slo.ca.us; Grigsby, Daryl; Blair, Cheryl; Padilla, Wayne; Lynch, Barbara; Hannula, Hal; Codron, Michael; mdarelli@cho.ca.gov; Murry, Kim; Storton, Keith; Bremer, James; Lichtig, Katie; Hines, Charlie; Olson, Garret; Bartshire, Corinne; lsingleton@PMCWorld.com; dconn@calpoly.edu; dragsdal@calpoly.edu; paul.deis@redcross.org; Stanwyck, Shelly; Carscaden, Doug; Mattingly, Carrie; Rick.Ford@Tenethealth.com; wsiembie@calpoly.edu; kentopping@aol.com
Cc: Newman, Janna
Subject: SLO City LHMP Meeting Record for 07102013, Revised Survey, and Outreach Guidance

Hazard Mitigation Planning Team,
Thank you for your timely responses in follow up to our July 10th meeting. I have incorporated your comments for validation in the attached meeting notes. Please send me any comments/additions/corrections you have to these notes. If you were unable to join us on July 10th, we would still appreciate your input. Please feel free to call me to discuss the mitigation planning effort further.

Your assistance is requested!
We are now ready to begin soliciting public input via the online survey. The Fire Department has prepared mailers to be included in the utility bills throughout the month of August. They will also be issuing a press release on Monday August 5th. The following survey link is active: http://www.surveymonkey.com/s/SLOCityHMP. This survey is attached as a printable PDF if you choose to make hard copies available (at the Farmer's Market, on the planning counter, etc).

PLEASE help us disseminate the survey by notifying the community members that you regularly engage with. Here are some simple steps for your consideration:

1) Post an announcement with the survey link to your department or agency's website
2) Post an announcement and survey link to your department or agency's Facebook page

1

Announcement of public survey using Utility Bill Insert Mailer (August-September billing cycle)

CITY OF SAN LUIS OBISPO FIRE DEPARTMENT
OFFICIAL NOTIFICATION
LOCAL HAZARD MITIGATION PLAN UPDATE

PUBLIC INPUT REQUESTED TO INCREASE THE CITY'S RESILIENCY TO NATURAL HAZARDS

The City is currently updating our Local Hazard Mitigation Plan (LHMP) which identifies local risk to natural hazards, implements actions through mitigation measures to reduce future losses, and maintains eligibility for federal mitigation funds. We are currently seeking public input via an online survey to ensure a comprehensive planning process. Input from all community members is welcome via the online survey by September 30, 2013.

http://www.surveymonkey.com/s/SLOCityHMP

For a paper copy of the survey and/or questions concerning the survey or the hazard mitigation planning process, please contact Julie Cox, Administrative Analyst at jcox@slocity.org, (805) 781-7382 or the City's contractor, Corinne Bartshire at cbartshire@dewberry.com, (916) 380-3776.

Newman, Janna

From: Cox, Julie [jcox@slocity.org]
Sent: Friday, September 27, 2013 7:44 PM
To: All City Employees
Subject: Survey Deadline September 30, 2013

Importance: High

Monday, September 30, 2013 last day to participate in Local Hazard Mitigation Survey….
For those who have already completed the survey, THANK YOU! ☺

Give Input To Help Reduce Loss Due To Natural Hazards
Is your home or property or workplace at risk of damage from earthquakes, wildfires, floods or other natural hazards? Share your concerns by responding to this survey by September 30, 2013.

Julie Cox
Administrative Analyst
City of San Luis Obispo Fire Department
Phone (805) 781-7382
jcox@slocity.org

1

2013 SLO City HMP Survey

1. City of San Luis Obispo - Hazard Mitigation Survey

Dear Community Member,

Is your home or office building susceptible to damage from earthquakes, wildfires, or floods? Do you want to recover more quickly from disasters and prevent future damage from these and other natural hazards? Your participation can make our community more resilient. We know you are busy and respectfully request a few moments of your time to respond to the brief survey below.

The City is currently updating our Local Hazard Mitigation Plan (LHMP) which identifies local risk to natural hazards, implements actions through mitigation measures to reduce future losses, and maintains eligibility for federal mitigation funds. Natural hazards are defined as those resulting from acts of nature such as earthquakes, floods, and disease outbreaks. The LHMP does not consider technological (i.e. infrastructure failure) or human-caused hazards (i.e. terrorism) with the exception of hazardous materials spills. Risks from the Diablo Canyon Power Plant are addressed by the City through separate efforts.

A key objective of the LHMP is to maintain eligibility for grant funding to reduce risk and increase resiliency to natural hazards. Your responses to this survey will inform the plan update.

The current hazard mitigation plan (2006) is available online at http://www.slocity.org/fire/download/2006%20lhmp.pdf

The following two websites available through the State of California may assist you in evaluating your risk to natural hazards:
http://myhazards.calema.ca.gov/
http://myplan.calema.ca.gov/

Thank you for participating in the Local Hazard Mitigation Plan. We appreciate your time and cooperation.

2. Hazard Awareness

1. Please check all that apply.

- [ ] I live in the City of San Luis Obispo
- [ ] I work in the City of San Luis Obispo
- [ ] I own property in the City of San Luis Obispo
- [ ] My interest in the City of San Luis Obispo stems from other reasons.

If you selected the final option, please describe your reasons here

2013 SLO City HMP Survey

2. Has your home or property suffered damage from past natural hazard events (flood, earthquake, wildfire, etc)?

◯ Yes

◯ No

If yes, please describe the hazard event and extent of damage caused.

3. Please rate your level of concern for each of these hazards using a scale of 1 (low concern) to 3 (high concern). (Note: The focus of this plan is on natural hazards. Hazardous materials spills have been included due to common accidental occurence.)

	Low Concern		High Concern	N/A
Adverse Weather (extreme heat, high winds, hail, etc.)	◯	◯	◯	◯
Earthquakes	◯	◯	◯	◯
Floods	◯	◯	◯	◯
Hazardous Materials Spills	◯	◯	◯	◯
Landslides	◯	◯	◯	◯
Pandemic	◯	◯	◯	◯
Wildland Fires	◯	◯	◯	◯

Please list any additional natural hazards that present a threat to your neighborhood or home.

2013 SLO City HMP Survey

4. What have you done or are you doing on your property or within your home to reduce future damage from the identified hazards? (choose all that apply)

- [ ] Seismic retrofit of the structure and / or foundation
- [ ] House elevation or first floor modification to prevent flood damage
- [ ] Installed backflow prevention device(s)
- [ ] Defensible space landscaping (clear vegetation around house to reduce wildfire risk)
- [ ] Roof installation or retrofit using fire resistant material
- [ ] Installation of fire sprinklers
- [ ] Installation of fire hydrant or above ground water storage tank
- [ ] Strengthened openings (Doors, windows, and/or garage door to reduce high-hazard wind risk)
- [ ] Secured furniture (bookshelves, cupboards, etc.) to prevent toppling over in an earthquake

Other (please specify)

5. Which of the following insurance do you maintain for your home? (select all that apply)

- [ ] Basic homeowner's insurance (covers fire)
- [ ] Renter's insurance
- [ ] Earthquake insurance
- [ ] Flood insurance

Describe any additional insurance you have purchased to recover from future damage.

6. If a severe hazard event occurred today (large earthquake or dam failure) such that all services were cut off from your home (power, gas, water, sewer) and you were unable to leave or access a store for 3 days, do you have a kit or enough supplies available at your home to feed and care for your family?

- ◯ Yes
- ◯ No

For more information on preparing an emergency kit, please visit: http://www.ready.gov/america/getakit/index.html

2013 SLO City HMP Survey

7. Do you have a plan for evacuating large animals and pets? (please select all that apply)

- ◯ Yes, I have a plan for evacuating my pets (cats, dogs, etc).
- ◯ Yes, I have a plan for evacuating my large animals (horses, cows, etc).
- ◯ No, I have pets but have not planned for their evacuation.
- ◯ No, I have large animals but have not planned for their evacuation.
- ◯ Not Applicable, I have no large animals or pets

8. Are you familiar with the special needs of your neighbors in the event of a disaster situation (special needs may include limited mobility, severe medical conditions, memory impairments, etc)?

- ◯ Yes
- ◯ No

9. Are you aware of the children living in your neighborhood and their potential needs in the event of a disaster situation?

- ◯ Yes
- ◯ No

10. Are you a trained member of your Community Emergency Response Team (CERT)? (Note: your community may use a different name than CERT)

- ◯ Yes
- ◯ No, I would like to learn more about CERT.
- ◯ No, I am not interested in being a trained CERT member.

For more information about CERT, please visit: www.citizencorps.gov/cert. Please share with us why you are a trained CERT member or why you are not yet part of CERT.

3. Local Government and Business Activities

2013 SLO City HMP Survey

11. What are the most important things local government can do to help communities be more prepared for a disaster? (choose all that apply)

- [ ] Study potential risks of hazards - identify vulnerable populations and facilities
- [ ] Convey effective emergency notifications and communication
- [ ] Provide training and education to residents and business owners on how they can reduce future damage
- [ ] Community outreach regarding emergency preparedness
- [ ] Being aware of special needs and vulnerable populations
- [ ] Make a plan to use volunteer residents to help in a disaster
- [ ] Update and exercise emergency plans regularly
- [ ] Support and facilitate Community Emergency Response Teams (CERT)
- [ ] Implement more stringent building and fire codes

Other (please specify)

12. Is your place of work in an area identified (or mapped) as susceptible to natural hazards? (select all that apply)

- [ ] High-risk flood zone
- [ ] Earthquake fault zone
- [ ] Liquefaction zone (susceptible to ground failure due to soils "liquifying")
- [ ] Landslide Risk Area
- [ ] Tsunami Inundation Area
- [ ] Wildland Urban Interface (wildfire risk area)
- [ ] Retired
- [ ] I don't know

Other (please specify)

13. Does your employer have a plan for communicating with employees following a disaster to establish everyone's safety and availability for continuing to work?

- ◯ Yes
- ◯ No
- ◯ I don't know

2013 SLO City HMP Survey

14. Does your employer have a plan in place to return to normal operations as quickly as possible following a hazard event (i.e. business continuity plan)?

- ◯ Yes
- ◯ No
- ◯ I don't know

4. Recommendations and Future Participation

15. Please list any studies you are aware of conducted within your community regarding the risk of future hazard events (i.e. unreinforced masonry or soft story building inventories, dam inundation analyses, etc.)

16. The City of San Luis Obispo has formed a planning team consisting of representatives from the various City departments, and external agencies such as California Highway Patrol, Cal Poly, Sierra Vista Regional Medical Center, French Hospical Medical Center, and the American Red Cross. Please recommend any additional companies, organizations, agencies, or local associations that should be involved in the City of San Luis Obispo hazard mitigation planning process.

#1 Company/Association Name:	
Contact Name:	
Contact Email:	
Contact Phone Number:	
#2 Company/Association Name:	
Contact Name:	
Contact Email:	
Contact Phone Number:	

Additional suggestions may be included in question #18 below.

17. Would you like to review and comment on the updated draft of the San Luis Obispo City Local Hazard Mitigation Plan later this year?

- ◯ Yes, Please notify me using my contact information in the next question.
- ◯ No

2013 SLO City HMP Survey

18. Please provide your name and email address in order to be notified of future opportunities to participate in hazard mitigation and resiliency planning. If you do not have an email address, please provide your mailing address.

Full Name:

E-Mail Address:

Street Address:

City, State, Zip:

19. Please provide us with any additional comments/suggestions/questions that you have regarding risk reduction activities in the City of San Luis Obispo.

Thank you for taking the time to complete this survey. If you have any questions regarding this survey you may contact Corinne Bartshire at cbartshire@dewberry.com or 916.380.3776.

For City Website Splash Page

Announcing the Release of the City San Luis Obispo Local Hazard Mitigation Plan Review Draft

The City of San Luis Obispo Fire Department has released a draft of the Local Hazard Mitigation Plan (LHMP) and requests your comments by February 4, 2014. A City Council Public Hearing to collect comments on the review draft will also be held on February 4, 2014 at 6:00pm. The LHMP provides guidance on how to reduce risk from natural hazards throughout the City of San Luis Obispo community.

Comments on the draft LHMP will be received until February 4, 2014. Please submit comments to the City Clerk (Anthony Mejia at amejia@slocity.org) or City Clerk's Office, 919 Palm, San Luis Obispo, California 93401. All comments will be reviewed by the City Council. If you have questions, contact Julie Cox, Fire Department jcox@slocity.org or 805-781-7382.

Newman, Janna

From:	Olson, Garret [golson@slocity.org]
Sent:	Wednesday, January 15, 2014 5:27 PM
To:	'ralsop@co.slo.ca.us'; Andrews, Mary; Blair, Cheryl; Bremer, James; Carscaden, Doug; Codron, Michael; 'dconn@calpoly.edu'; Cox, Julie; 'mdarelli@chp.ca.gov'; 'paul.deis@redcross.org'; 'Daniel.farnum@dignityhealth.org'; 'Rick.Ford@Tenethealth.com'; Grigsby, Daryl; Hannula, Hal; Johnson, Derek; Lichtig, Katie; Lynch, Barbara; Maggio, Rodger; 'david.majors@dignityhealth.org'; Mattingly, Carrie; Murry, Kim; Olson, Garret; Padilla, Wayne; 'rpinkerton@slcusd.org'; 'cpiper@co.slo.ca.us'; 'dragsdal@calpoly.edu'; 'mshoresman@co.slo.ca.us'; 'wsiembie@calpoly.edu'; 'lsingleton@PMCWorld.com'; Stanwyck, Shelly; Storton, Keith; 'kentopping@aol.com'; Yun, David; 'danielle.althaus@gmail.com'; 'mmhenry@calpoly.edu'
Cc:	Newman, Janna; Coffman, Susan
Subject:	Local Hazard Mitigation Plan Public Review Draft
Attachments:	Public Outreach for Draft Local Hazard Mitigation Plan social media and letter to stakeholders.docx

Hazard Mitigation Planning Team,

The DRAFT Local Hazard Mitigation Plan (LHMP) is available on the City website for public review and in preparation for the City Council Public Hearing on February 4, 2014. Comments will be received until February 4, 2014. Please use this opportunity to reach out to your stakeholders and make them aware of the open Public Review Period. I have attached draft language you may use for:

1) Posting an announcement on your agency's website
2) Distributing an email to stakeholders that your agency communicates with regularly.

If you have any questions please contact Julie Cox, jcox@slocity.org or 805-781-7382. Please notify Julie of any actions you take to promote the public review period so we may document it in the final plan.

Sincerely,
Garret Olson, Fire Chief
San Luis Obispo City Fire

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Announcement of public review draft on City Public Works Facebook Page (01/15/2014)

Announcement of public review draft on San Luis Obispo County Public Health Department Facebook, Twitter, and emailed notice to PHEPAC members (01/15/2014)

Announcement of public review draft on San Luis Obispo Utilities Department Facebook Page (01/29/2014)

City of San Luis Obispo Utilities Department
Yesterday

Announcing the Release of the City San Luis Obispo Local Hazard Mitigation Plan Review Draft:
The City of San Luis Obispo Fire Department has released a DRAFT of the Local Hazard Mitigation Plan (LHMP) available on the City website and requests your comments by February 4, 2014. The LHMP provides guidance on how to reduce risk from natural hazards throughout the City of San Luis Obispo community. A City Council Public Hearing to collect comments on the review draft will be held on February 4, 2014 at 6:00 pm. Comments on the draft LHMP will be received until February 4, 2014. Please submit comments to the City Clerk (Anthony Mejia at amejia@slocity.org) or City Clerk's Office, 919 Palm, San Luis Obispo, California 93401. All comments will be reviewed by the City Council. If you have questions, contact Julie Cox, Fire Department jcox@slocity.org or 805-781-7382.

Like · Share

Announcement of public review draft on San Luis Obispo Police Department Office of Neighborhood Services Facebook Page (02/03/2014)

City of San Luis Obispo Office of Neighborhood Services
shared City of San Luis Obispo Public Works's photo.
February 3

SLO Fire recently released the draft of the Local Hazard Mitigation Plan. Check it out through the link below and contact the Fire Department with questions or feedback.

> The City of San Luis Obispo Fire Department has released a draft of the Local Hazard Mitigation Plan (LHMP) which provides guidance on how to reduce risk from natural hazards throughout the City of San Luis Obispo Community. Hazards like the flood of 1982 pictured below. To view the plan visit: http://www.slocity.org/

Like · Comment · Share

CONTACT PERSON **Julie Cox**

DATE **1/21/14**

PHONE--E-MAIL **805-781-7382,** jcox@slocity.org

Garret Olson, Fire Chief

FOR IMMEDIATE RELEASE

Announcing the Release of the City of San Luis Obispo Local Hazard Mitigation Plan Review Draft

SAN LUIS OBISPO, CA, January 21, 2014 – Your review and comment is being solicited for the Review Draft of the City of San Luis Obispo Local Hazard Mitigation Plan (LHMP). It is available for download on the City's website at www.slocity.org. On February 4, 2014, the City of San Luis Obispo will hold a Public Hearing at the City Council meeting to collect comments on the review draft. Comments on the draft LHMP will be received until February 4, 2014. Please submit comments to the City Clerk (Anthony Mejia at amejia@slocity.org) or City Clerk's Office, 919 Palm, San Luis Obispo, California 93401. All comments will be reviewed by the City Council. If you have questions, contact Julie Cox, Fire Department jcox@slocity.org or 805-781-7382.

The LHMP provides guidance on how to reduce risk from natural hazards throughout the City of San Luis Obispo community. It has been prepared by the City of San Luis Obispo Fire Department with a city-wide planning team and will be adopted by the City Council following revisions made as a result of the comments received during the current review period.

###

From: Seth Blackburn [mailto:sblackburn@americangeneralmedia.com]

Sent: Wednesday, January 22, 2014 9:46 AM
To: Cox, Julie

Subject: Re: Press release : City of San Luis Obispo Local Hazard Mitigation Plan Public Hearing

Hi Julie,

I record a public affairs program on 4 SLO radio stations; would you, or someone involved with this, be interested in a brief phone interview this week regarding the plan & public hearing? It's 10-15 minutes, recorded, not live; please let me know asap; thanks.....

Seth Blackburn

Production/Public Affairs Director

American General Media Radio (KIQO/KKAL/KKJG/KZOZ)

3620 Sacramento Dr. Ste. 204

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From: Seth Blackburn [mailto:sblackburn@americangeneralmedia.com]
Sent: Friday, January 24, 2014 2:09 PM
To: Cox, Julie
Subject: Re: Press release : City of San Luis Obispo Local Hazard Mitigation Plan Public Hearing

Hi Julie,

our interview will air Saturday, 2/1/14 at 6 AM on Q104.5 (streaming at q1045fm.com), 98.1 K-Jug (streaming at jugcountry.com), and Krush 92.5 (streaming at krush925.com); on Sunday, 2/2/14, at 6AM, it'll air on 93.3 KZOZ (streaming at kzoz.com). Let me know if you need anything else, and thanks again!.....Seth

Seth Blackburn

Production/Public Affairs Director

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www.sanluisobispo.com/2014/01/29/2898636/draft-of-slos-hazard-mitigation.html

Draft of SLO's hazard mitigation plan is available

BY ANNMARIE CORNEJO

acornejo@thetribunenews.com January 29, 2014

A draft of San Luis Obispo's Local Hazard Mitigation Plan is available for review and comment.

The 125-page report, which serves as the city's guide to reducing risk from natural hazards, can be downloaded from http://www.slocity.org. The City Council will discuss the plan at its Tuesday meeting. Comments on the plan, which will be accepted until Tuesday, can be made via email to City Clerk Anthony Mejia at amejia@slocity.org or the clerk's office. For details, call Julie Cox at 781-7382.

Appendix C Meeting Documentation

CITY OF SAN LUIS OBISPO 2014 LHMP UPDATE - MEETING NOTES

Date: June 19, 2013

Time: 2:30pm – 3:30pm

Location: Fire Station conference room / phone

Purpose: Kick-off the LHMP update process

Attendees:
Corinne Bartshire, Dewberry, Julie Cox, Fire Department, Charlie Hines - Fire Chief, Garret Olson - Deputy Fire Chief, Rodger Maggio - Fire Marshal, Barbara Lynch Public Works; Keith Storton Police Department, Doug Carscaden Parks and Recreation

Meeting Notes

1. **Overview of Scope of Work and Schedule**
   Corinne presented an overview of the scope of work and schedule. No significant questions or concerns were raised. One attendee pointed out that a summer time public survey might not get much input from the Cal Poly student population. The planning team may choose to do a separate targeted outreach to Cal Poly students in the fall, potentially through the WOW program.

2. **Confirm Hazard Mitigation Planning Team**
   Julie will confirm representatives from the following departments to participate on the Hazard Mitigation Planning Team. These are based on the planning team from the 2006 LHMP.

   City Administrative Office
   Police
   Fire
   Finance
   Public Works
   Community Development
   Parks and Recreation
   Utilities

   The following representatives participated on the 2006 LHMP team, and will be invited to review draft documents and provide input as appropriate: Human Resource Director, City Attorney

   The participants discussed inviting the following to participate on the Hazard Mitigation Planning Team:

   non-profit and volunteer organizations (i.e. the American Red Cross)
   Cal Poly (administration or emergency management or facilities)
   Special Districts (i.e. flood control, water/wastewater, schools, etc.)
   Utilities (i.e. PG&E, cable companies, etc.)
   Chamber of Commerce or major employers from the private sector

   *Corinne will provide Julie with draft a letter for use in inviting folks to be part of the Hazard Mitigation Planning Team (completed)

   San Luis Obispo County Office of Emergency Services will maintain open communication with Julie and Corinne to share information and support the City's LHMP update as needed.

3. Planning process / Public Outreach

The participants agreed upon the following planning process / public outreach approach:

(1) Milestone Meeting #1 with Hazard Mitigation Team (July 10, 2013)
(2) Issue online survey for public input (disseminate via utility mailers, at farmer's market, etc) (thru September 30, 2013)
(3) Milestone Meeting #2 with Hazard Mitigation Team (October 2013)
(4) City Council Study Session (November 2013) (involve Planning Commission?)
(5) Public Review Draft and Comment Period (thru February 2014)
(6) City Council Adoption (March 2014)
(7) Submittal to Cal EMA / FEMA

The participants suggested the following revisions to the online survey used for San Luis Obispo County:

- Make sure the survey directs the respondent to a City web page with emergency tools/resources after they complete the survey.
- Simplify the insurance questions to ask respondent to check all that apply
- Change #4 to a simpler question asking if they have built a kit, rather than identify specific items
- Add a question regarding "Has your property suffered damage? If so from Flood, Fire, EQ, etc. (Was it your property in SLO that suffered the damage?"

*Corinne will incorporate these comments and prepare a draft SLO City survey for the Mitigation Planning Team to review prior to the July 10th meeting. (completed)

4. Capability Assessment

Corinne discussed that the planning team members will be asked to provide necessary information for updating Section 4 of 2006 LHMP.
Dewberry will review planning documents and reports based on the resource list in the RFP.
NFIP participation / Repetitive loss properties is required to be addressed in the plan. The appropriate planning team members will be asked to provide information.
*Julie will send Corinne the FEMA approval letter from 2006 and completed crosswalk. (completed)

5. Hazard Updates

The participants did not identify any recent events (since 2006) or additional hazards of concern. Participants decided to keep this plan focused on natural hazards (with the addition of hazardous materials as a common accidental hazard). One recommendation as a result of this plan update process may be for the City to conduct an all hazards risk analysis and capabilities assessment similar to that presented in the Department of Homeland Security Comprehensive Preparedness Guide 201.

Hazards in the 2006 LHMP:

Earthquakes
Floods
Hazardous Materials
Landslides
Wildland Fires (note: severe hazard area maps have changed since 2006)
Windstorms

*Julie will provide point of contact information for the City's GIS staff to Corinne. (completed)

6. **Asset Inventory**
   Corinne discussed that she will be working with the planning team to validate and update the Critical Facilities and Infrastructure inventory used within the vulnerability assessment.

7. **Mitigation Strategy**
   Corinne discussed that the planning team will be asked to provide information regarding any progress made on the mitigation actions identified in the 2006 LHMP.

8. **Plan Maintenance**
   Corinne discussed that she will be asking the planning team if they have used, referenced, or discussed the LHMP since 2006. She will guide the planning team in a discussion to determine a monitoring and update process for the mitigation plan moving forward.

CITY OF SAN LUIS OBISPO 2014 LHMP UPDATE - MEETING NOTES

Date: July 10, 2013

Time: 2:00pm – 4:30pm

Location: Fire Station 1 / Training Room

Purpose: Hazard Mitigation Team Milestone Meeting #1

Attendees: see attached sign in sheet with the addition of Charlie Hines, Fire Chief; Corinne Bartshire, Dewberry; and Leeanne Singleton, PMC.

Discussion Summary

1. **Overview of Hazard Mitigation Planning**
   Corinne presented an overview of the Disaster Mitigation Act of 2000 and benefits of completing a hazard mitigation plan including eligibility to participate in the federal hazard mitigation assistance programs. Corinne also explained Assembly Bill 2140 and the requirements for linking the hazard mitigation plan to the general plan safety element to be eligible for additional California Disaster Assistance Act funding.

2. **Planning process / Public Outreach**
   The planning team approved the attached schedule and below Public Outreach / Engagement Process:
   a. Issue online survey for public input (disseminate via utility mailers, at farmer's market, etc) (thru September 30, 2013)
   b. October 2013 - Release select portions of plan (DRAFT HIRA update and Mitigation Strategy Progress) for public review and comment
   c. November 2013 - City Council Study Session (involve Planning Commission?)
   d. January 2014 - Release complete Public Review Draft
   e. March 2014 - City Council Adoption
   f. April 2014 - Submittal to Cal EMA / FEMA

- In addition to the distribution of the online survey, the City will also make an effort to make paper copies available at City Hall, fire stations, and maybe public counter at the public works/community development department.
- The utilities department has offered to provide surveys or outreach during the Farmer's Markets (which they hold 2x a month). – Suggest providing them at least once in August and then during WOW week to get students that are back in town (would be Thursday Sept 19th).
- Regarding the City Council study session in November, staff suggested inviting the planning commission to that study session rather than having a separate session. Another suggestion is to have an open house the hour prior to the study session for interested folks that may not want to speak at the hearing to participate and ask questions of staff.
- Staff would like to have the safety element of the general plan with the AB 2140 compliant revisions adopted at the same time (March 2014)

- Staff have made a note that some council members are sensitive about the distinction between residents and property owners. Suggested survey revision: Add a first question that asks participants to determine whether they reside, work, own property, or visit the City of San Luis Obispo.

Additional comments to revise the survey were collected following the meeting. These have been incorporated into the attached revised survey for distribution. The online survey link is: **http://www.surveymonkey.com/s/SLOCityHMP**

3. Hazard Identification

Based on the hazards identified in the 2006 LHMP, the Planning Team added pandemic and changed windstorm to adverse weather. Other items discussed included utility power failure that can have secondary or cascading effects (i.e. power outage means wastewater can't be pumped), and the increased probability of adverse weather and wildfire risks will be exacerbated by the local effects of climate change. Drought will be addressed as a sideline hazard exacerbating the potential for wildfire.

2006 LHMP Hazards

Earthquakes
Floods
Hazardous Materials
Landslides
Wildland Fires
Windstorms

The Planning Team completed a prioritization exercise facilitated by Dewberry. The results are in the attached Hazard Ranking Worksheet.

4. Asset Inventory

The Planning Team provided the following comments for revisions to the Critical Facilities and Infrastructure inventory:

Police and Fire Stations: ADD New Dispatch Center located at 2160 Santa Barbara St.

Schools: ADD Private Schools located in the City - Old Mission School – 761 Broad St, Mission College Preparatory School – 682 Palm St, Cal Poly (located outside of the City) – 1 grand avenue

Other infrastructure: ADD Reservoirs, sewer lift stations, water tanks, water pump stations, communication towers (especially South Hill – used for linking emergency related radios and network data)

Add airport and train station

Add Building 14 at Cal Poly – data center
Add Digital West, 3620 Sacramento Dr. Suite 102 – back up data connections

Add Whale Rock Reservoir

Add CHP SAN LUIS OBISPO DISPATCH CENTER, 675 California Blvd. – value of $3,200,000

Add Cal Trans Headquarters, 50 Higuera or Madonna St. Cal Trans Yard

Add fiber optic network? Or Cal Poly internet hub?

Add storm drain system

Add city-owned roadways

Remove Hwy 227 – it is no longer within the City limits

5. Mitigation Strategy

All activities listed in the 2006 Action Plan Matrix have been implemented or are implemented on a regular basis except for Action 3.A.5 (mobile home seismic information)

Mitigation Progress: The City now has an ongoing storm drain cleaning program which it did not in 2006. Lines and inlets receive regular cleaning to remove debris and increase capacity.

The City pursues bridge repair and replacement on an ongoing basis.

In reference to Action 7.A.2. Below are the list of programs and projects that have been implemented to address wildland fuel management and wildfire risk:

- City Council adoption of State recommended Local Very High Fire Severity Zone maps.
- Adoption of General Plan safety element recognizing the City of San Luis Obispo as a community at risk from wildfire and recommending ignition resistant siding, roofs, eaves and ember intrusion resistant attic ventilation in all new construction throughout the community.
- We will be adopting chapter 7A of the Building Code for all construction in the local VHFSZ and the construction standards recommended in the General Plan will be codified in the local adoption of the Building and Fire Codes.
- Annual weed abatement program is ongoing. The Fire Department enforces weed abatement on private property, the Parks and Rec Department provides weed clearance in the City Open space behind established neighborhoods, while the Public Works Department clears weeds along public rights of way.
- The City Council has adopted a 2-year budget that funds $5000 annually for vegetation management in the Open Space.
- The Fire Marshal and Natural Resources Manager have identified areas in the Open Space that require on- going fuel management and will be implementing the first two projects in August 2013.
- Five areas in the Open Space have already undergone understory fuel reduction treatment in the last five years through matching grants from the Fire Safe Council.
- The City will seek additional matching grants from the Fire Safe Council in the coming year.

6. Capabilities Assessment

The Planning Team suggested the assessment include input from the following agencies: Airports, CHP, Cal Trans, Hospitals, Cal Poly

Flood Mitigation Capabilities: City of San Luis Obispo is a CRS Community with a rating of 7. We will probably be able to improve to a rating of 6 in the future as we expand our Open Space and Natural Benefits documentation. We just recently (with our last cycle visit) initiated CRS Activity 610 for a Flood Warning Program. This program is in its infancy and we were really just documenting what we already had in place. We are working on a more clearly defined flood depth marking system for use by emergency personnel but also something that would make sense to the residents who live in neighborhoods adjoining our creek corridors. We have talked about using Nixle push media as specifically related to flood warnings for property owner's/tenants that have "dry" floodproofed buildings in our Downtown.

CHP Capabilities: The CHP has a comprehensive Emergency Action Plan in the event of a disaster for its facility and employees. The CHP has an Emergency Operations Plan to identify potential risks within San Luis Obispo County. The CHP actively participates in the County Emergency Operations Center training exercises each year, some of which are evaluated by FEMA. The CHP actively participates in and has a major role the San Luis Obispo County Nuclear Power Plant Emergency Response Plan.

7. Questions and Answers

Does the power plant come into the list of natural hazards? FEMA only requires natural hazards to be identified and addressed in the LHMP. It would be the decision of this Planning Team as to whether or not to include it.

Can the City provide a link between the LHMP and the Safety Element? – Through AB 2140, the City may be eligible for additional disaster recovery funding money if the two components are linked or referenced.

What changes is the city required to make to the LHMP? – There were no gaps identified in the previous LHMP, though the update process is required to make sure it is current/shows the work.

At what point will the project team be bringing best practices to the City to know what other jurisdictions are doing? – We'll be bringing these best practices throughout the process.

How are we addressing climate change? – While we aren't identifying it as a separate risk, the plan will identify how climate change may exacerbate certain hazards.

Is the City required to include a post disaster recovery plan in the LHMP? – No, the focus is on reducing risk and increasing resiliency, rather than responding to or recovering from a disaster.

8. Attachments

Sign In Sheet
Hazard Ranking Worksheet
Revised Survey

July 10, 2013

	Name	Agency	Email	Phone #
1	Julie Cox	City of SLO PD	jcox@slocity.org	781-7382
2	Mary Andrews	City of SLO, FIT	mandrews@slocity.org	781-7160
3	[illegible] Johnson	City of SLO	djohnson@slocity.org	781-7187
4	Rodger Maggio	City of SLO	rmaggio@slocity.org	781-7386
5	Richard Howell	Co of SLO/Airports	rhowell@co.slo.ca.us	781-5205 / 781-7207
6	Daryll Grigsby	City of SLO	dgrigsby@slocity.org	
7	Cheryl Blair	City of SLO	cblair@slocity.org	781-7208
8	[illegible] Padilla	✓	wpadilla@slocity.org	781-7125
9	Barbara Lynch	City of SLO	blynch@slocity.org	781-7191
10	[illegible]	✓	[illegible]@slocity.org	781-7221
11	Michael Codron	City of SLO	mcodron@slocity.org	781-7112
12	MARK D'ARELLI	CHP-SLO	mdarelli@chp.ca.gov	593-3335
13	KIM MURRY	CITY OF SLO	kmurry@slocity.org	781-7279
14	KEITH STORTON	CITY OF SLO PD	kstorton@slocity.org	781-7118
15	JAMES BREMER	City of SLO	JBREMER@SLOCITY.ORG	781-7295
16	KATIE LICHTIG	CITY OF SLO	KLICHTIG@SLOCITY.ORG	781-7114
17				

CITY OF SAN LUIS OBISPO 2014 LHMP UPDATE - MEETING NOTES

Date: October 9, 2013
Time: 9:00am – 12:00pm

Location: Fire Station 1 / Training Room

Purpose: Hazard Mitigation Team Milestone Meeting #2

Attendees: see attached sign in sheet

Meeting Facilitators: Corinne Bartshire, Dewberry and Leeanne Singleton, PMC

Discussion Summary

1. **Introductions**
   Chief Olson welcomed the hazard mitigation team and asked participants to briefly introduce themselves and the organization or department they represent.

2. **Review of Updated Materials**
   Corinne and Leeanne walked the team through the following draft materials/components of the Local Hazard Mitigation Plan:
   - *Revised capability assessment* – Staff from the Utilities Department and County Public Health Department will identify additional relevant plans and policies that can help support the City's hazard mitigation capabilities.
   - *Summary of online survey results* – The HMT asked if there is a way to view or analyze overall insurance claims for properties in the City to gauge a more complete understanding of past damages. The HMT discussed some of the preliminary findings or opportunities identified as part of the survey.
   - *Hazard profiles and final ranking* – The HMT reviewed the final hazard identification and prioritization table incorporating the survey results. The HMT requested that the hazards be ranked, without identifying them as moderate or limited. These categories can be misleading given the variability of hazard severity (high probability and low impact vs low probability and high impact). As part of the hazard profiles, there will be some minor changes to some of the maps to improve clarity or presentation of the data. Additionally, some changes will be made to the supporting text to convey the most relevant/appropriate amount of information about each hazard.
   - *Revised critical facilities* – The HMT walked through the list of facilities and discussed the differences between those facilities that are an important asset to the community, and those that are needed to support continued City operations during a natural disaster or emergency. The HMT will be creating a working definition of the differences between essential and critical facilities. The master list of facilities will be referred to as Key Assets.

3. **Vulnerability Assessment**
   Dewberry will revise the vulnerability analysis following revisions to the Key Assets list to present the vulnerabilities by facility and clarify critical vs essential facility vulnerabilities.

4. Mitigation Strategy

The HMT reviewed the Mitigation Strategy section of the 2006 Local Hazard Mitigation Plan and discussed the extent to which previous goals, objectives, and actions have been implemented and whether the mitigation strategies should be revised or continued in the 2014 LHMP. The HMT agreed to consolidate the 2006 goals from 8 goals (including hazard specific goals) to two comprehensive goals.

5. Next Steps

Corinne, Julie and Leeanne went over the LHMP plan development schedule, let the HMT know they should receive revised components of the plan for review in the coming weeks, and thanked everyone for their continued participation and valuable feedback.

6. Attachments

Sign In Sheet
Updated Schedule

Hazard Mitigation Team Milestone Meeting #2

Sign In Sheet

October 9, 2013

Initials	First	Last	Title	Agency	Department	Email	Phone
	Ron	Alsop	Emergency Services Manager	County of San Luis Obispo	OES	ralsop@co.slo.ca.us	805.781.5454
	Mary	Andrews	GIS Specialist	City of San Luis Obispo	FIT	mandrews@slocity.org	805.781.7160
	Corinne	Bartshire	Consultant	Dewberry	Emergency Management	cbartshire@dewberry.com	916.380.3776
	Cheryl	Blair	Admin. Analyst	City of San Luis Obispo	Utilities	cblair@slocity.org	805.781.7208
	James	Bremer	Rec. Sup.	City of San Luis Obispo	Parks & Recreation	jbremer@slocity.org	805.781.7295
	Doug	Carscaden	Ranger Services Supervisor	City of San Luis Obispo	Parks & Recreation	dcarscad@slocity.org	805.781.7302
	Michael	Codron	Asst City Mgr	City of San Luis Obispo	Administration	mcodron@slocity.org	805.781.7112
	David	Conn	Professor	Cal Poly	City and Regional Planning	dconn@calpoly.edu	805.756.5474
	Julie	Cox	Project Lead	City of San Luis Obispo	Fire	jcox@slocity.org	805.781.7382
	Mark	D'Arelli	Lieutenant	CA Highway Patrol - SLO		mdarelli@chp.ca.gov	805.593.3335
	Paul	Deis	Mgr, Emergency Svcs.	American Red Cross		paul.deis@redcross.org	805.543.0696
	Dan	Farnum	Facilities Dir.	French Hospital Med. Ctr.		Daniel.farnum@dignityhealth.	805.542.6455
	Rick	Ford		Sierra Vista Regional Medical Center		Rick.Ford@Tenethealth.com	
	Daryl	Grigsby	PW Director	City of San Luis Obispo	Public Works	dgrigsby@slocity.org	805.781.7207
	Hal	Hannula	Sen. Civil Eng.	City of San Luis Obispo	CDD	hhannula@slocity.org	805.781.7201
	Richard	Howell	Regional Mgr	County of San Luis Obispo	Airports		
	Derek	Johnson	CDD Director	City of San Luis Obispo	CDD	djohnson@slocity.org	805.781.7187
	Katie	Lichtig	City Manager	City of San Luis Obispo	Administration	klichtig@slocity.org	805.781.7114
	Barbara	Lynch	Dep. Dir, PW	City of San Luis Obispo	Public Works	blynch@slocity.org	805.781.7191
	Rodger	Maggio	Fire Marshal	City of San Luis Obispo	Fire Dept	rmaggio@slocity.org	805.781.7386
	David	Majors		French Hospital Med. Ctr.		david.majors@dignityhealth.org	
	Carrie	Mattingly	Utilities Dir.	City of San Lis obispo	Utilities	cmatting@slocity.org	805.781.7205
	Kim	Murry	Dep. Dir, CDD	City of San Luis Obispo	CDD	kmurry@slocity.org	805.781.7274

Hazard Mitigation Team Milestone Meeting #2

Sign In Sheet

October 9, 2013

Initials	First	Last	Title	Agency	Department	Email	Phone
	Garret	Olson	~~Interim~~ Fire Chief	City of San Luis obispo	Fire	golson@slocity.org	805.781.7377
	Wayne	Padilla	FIT Director	City of San Luis Obispo	FIT	wpadilla@slocity.org	805.781.7125
	Ryan	Pinkerton		San Luis Coastal Unified School District	Assistant Superintendent of Business Services	rpinkerton@slcusd.org	805.720.5108
	Craig	Piper	Asst General Mgr	County of San Luis Obispo	Airports	cpiper@co.slo.ca.us	805.781.4376
	David	Ragsdale	Director	Cal Poly	Risk Management & Environmental Health &	dragsdal@calpoly.edu	805.756.6662
	Michelle	Shoresman	EP Manager	County of San Luis Obispo	Public Health Department	mshoresman@co.slo.ca.us	805.788.2067
	William	Siembieda		Cal Poly	City and Regional Planning	wsiembie@calpoly.edu	
X	Leeanne	Singleton	Consultant	PMC		lsingleton@PMCWorld.com	805.250.7972
	Shelly	Stanwyck	P & R Director	City of San Luis obispo	Parks & Recreation	sstanwyc@slocity.org	805.781.7294
	Keith	Storton	Captain	City of San Luis Obispo	Police	kstorton@slocity.org	805.781.7118
	Ken	Topping		Cal Poly	City and Regional Planning	kentopping@aol.com	
	David	Yun	GIS Supervisor	City of San Luis obispo	FIT	dyun@slocity.org	805.781.7189
	David	Majors	Plant Operations	French Hospital Med. Ctr	Plant Operations	david.majors@dignity health.org	805-501-0872
	DANI	ALTHAUS	INTERN	CITY OF SLO	NATURAL RESOURCES	DANIELLE.ALTHAUS@gmail.com	6314519 98
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