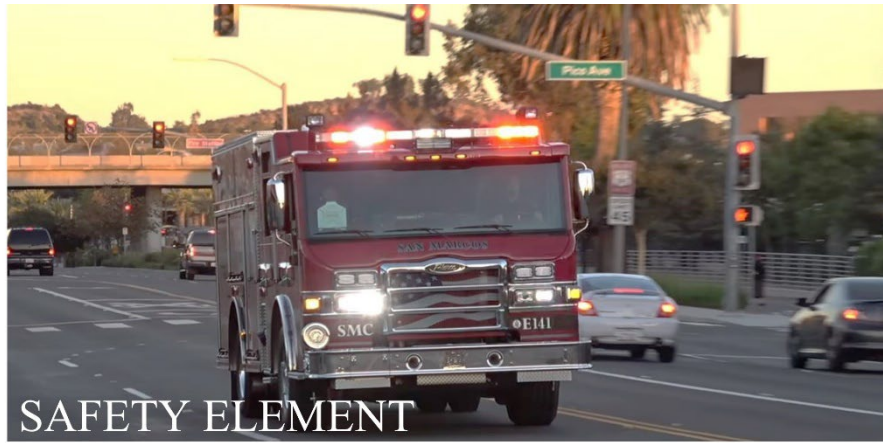




SAFETY ELEMENT

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SAFETY ELEMENT

6.1 Introduction

The quality and livability of San Marcos relies, in part, on the safety and welfare of City residents and property. The City serves a broad range of people with housing, business, and recreational activities that contribute to the highly valued quality of life.

Natural and human-caused events have the ability to impact productivity by causing substantial damage to life, property, and economic prosperity. The Safety Element addresses these potential issues with goals, policies, and actions to continue to serve and protect San Marcos and its residents.

Purpose of the Safety Element

A fundamental responsibility of the City is the protection of the public health, safety, and welfare of residents and their property. The Safety Element, a state-mandated element of the General Plan, addresses this responsibility by identifying and planning for anticipated natural and human-caused safety issues affecting the City and its residents. Geologic and seismic hazards play an important role in the planning process with regard to the selection of development locations, the definition of processes necessary to develop safe projects, and the studies necessary to design a project to avoid or withstand these natural hazards. Other natural hazards, such as flood and fire, are also important considerations, as these have the potential to cause death, injuries, property damage, and/or substantial economic and social dislocation.

Scope and Content

This Safety Element documents safety conditions in the planning area and identifies preliminary geologic, seismic, flood (including dam failure or breach), fire, and airport hazards present within the planning area. In addition, this section discusses hazardous materials and emergency preparedness. Information in this section provides a context for evaluating potential hazards and creates a foundation that will help to proactively address planning and development of the City.

The City maintains critical facilities for health, safety, and emergency response. These facilities do not occur in hazard areas and are identified in the Public Services, Infrastructure, and Utilities section of Chapter 2, Land Use and Community Design Element. Section highlights and key facts relevant to safety in San Marcos are highlighted in Table 6-1.

Table 6-1
Safety Element Highlights and Key Facts

Seismicity and Faulting Hazards

No active or potentially active faults traverse the City of San Marcos; however, three surface faults and one possible blind thrust fault are documented or believed to directly underlie the planning area.

No Alquist-Priolo Earthquake Fault Zone is present within the planning area.

Earthquake ground shaking potential from surface faults in the region, including the planning area, is relatively low.

Dam failure inundation flooding is an issue for relatively small, but populous, portions of the City and Sphere of Influence area.

Geologic Hazards

Most of the planning area is in either the low soil-slip (debris flow/landslide) category (bedrock/hillside areas) or the zero category (alluvial deposit/valley areas). Scattered moderate susceptibility areas are found in the bedrock areas mainly in the Questhaven / La Costa Meadows, Lake San Marcos, Barham / Discovery Community, eastern College Area, and southwestern Twin Oaks Valley neighborhoods.

Potential liquefaction-induced lateral spread landslides are more of a concern in the areas adjacent to San Marcos Creek and affiliated Twin Oaks Valley channels.

The most likely locations for collapsible soils are the current and pre-development washes and drainage channels, particularly San Marcos Creek and Twin Oaks Valley Neighborhood drainage corridors.

Flood Hazards

Federal Emergency Management Agency-designated 100-year floodplains and floodways are identified around San Marcos Creek and the Twin Oaks Valley drainage, plus Lake San Marcos and smaller drainage areas west of Palomar Community College, extending south beyond State Route 78.

Fire Hazards

The San Marcos Fire Department manages urban and wildland fire hazards through the General Plan Safety Element, Land Use and Community Design Element, Conservation and Open Space Element, and Mobility Element, as well as the Community Wildfire Protection Plan, Vegetation Management Program, and Fire Protection Plans.

The City has mapped and identified Fire Hazard Severity Zones consistent with CalFire's adopted maps and recommendations. Special guidance is provided for areas within Very High Fire Hazard Severity Zones.

Hazardous Materials

The County of San Diego Department of Environmental Health (DEH) Hazardous Materials Division (HMD) is certified by the California Environmental Agency as the local Certified Unified Program Agency. Thus, DEH HMD is responsible for implementing federal and state laws and regulations for the City.

Airport Hazards

There are no public or private airports located within City boundaries; however, the McClellan-Palomar Airport is located approximately 2.5 miles west of the City within the city of Carlsbad. The majority of the planning area is located within Airport Influence Area Review Area 2.

Emergency Preparedness

The City is included in the County of San Diego's Multi-Jurisdictional Hazard Mitigation Plan.

The San Marcos Fire Department administers a Community Emergency Response Team program to assist and supplement professional emergency responders during emergencies or unusual events. The City prepared an analysis consistent with Senate Bill 99 and verified that all residential developments in hazard areas have two or more evacuation routes.

Climate Adaptation

Forecasted effects to San Marcos from climate change include increased temperatures, precipitation extremes (more severe periods of drought and flooding), and rising sea levels (resulting in flooding of low-lying areas). The Safety Element includes policies to protect the community from these risks posed by climate change. San Marcos' Climate Action Plan (CAP) also provides measures to mitigate global climate change and comply with state and federal legislation.

6.2 Background and Structure

Earthquakes and Other Geologic Hazards

Geologic hazards are those that may be activated with or without an earthquake due to some combination of geologic conditions, groundwater, and the weather. In the City, soil and geologic unit instability, and liquefaction carry the most risks to property and population.

Geologic Hazards

Geologic and seismic conditions in San Marcos are similar to conditions in other local municipalities that lie inland from the coast and west of the mountains of Cleveland National Forest, and that generally border Interstate 15 (e.g., Vista, Rancho Santa Fe, Escondido, Rancho Bernardo, and Poway). This geographic area is characterized by several million years of regional uplift and consequent erosion of basement rock formations.

Additionally, the young alluvium and minor older alluvium fill characteristic of the area is evident in Twin Oaks Valley, San Marcos Creek, and secondary tributaries.

Landslides, Mudflows, and General Slope Instability

Slope instability under non-earthquake (static) conditions is considered to be a potentially significant hazard in the hillside and mountain areas of San Marcos. As shown in Figure 6-1, most of the City is in either the low soil-slip category (bedrock/hillside areas) or the zero soil-slip category (alluvial deposit/valley areas). Scattered moderate susceptibility areas are found in the bedrock areas, mainly in the Questhaven/La Costa, Lake San Marcos, Barham/Discovery, eastern College, and southwestern Twin Oaks Valley neighborhoods. Figure 6-1 is based on regional information; it is not a substitute for geologic and geotechnical studies for specific projects. The delineated soil-slip and bedrock areas are not necessarily unstable, but Figure 6-1 provides an opportunity to consider these areas when planning for new development or redevelopment.

Unstable Soils

Unstable soils include expansive, compressible, erodible, corrosive, or collapsible soils. Collapsible and expansive soil issues are recognized in standard geotechnical investigations mandated by the City and other regulatory bodies. Expansive soils are associated with soils, alluvium, and bedrock formations that contain clay minerals susceptible to expansion under wetting conditions and contraction under drying conditions. The nature of the local alluvium should make expansive clays less likely; available geotechnical reports indicate that expansive clays do occur in these formations and in the Santiago Formation in the hillside areas and the upper reaches of canyons where colluvium is present (Wilson Geosciences 2009).

Collapsible soils have the potential to be impacted by the weight of overlying structures, which can cause damage to foundations and walls. The most likely locations for collapsible soils are the current and pre-development washes and drainage channels, particularly the San Marcos Creek Valley and Twin Oaks Valley drainages.

Shallow Groundwater

No existing database is known to delineate current or historic shallow groundwater within the City. However, based on data from a few geotechnical bore holes in the vicinity of San Marcos Creek, there are areas within the alluvial channels and creeks where unconfined groundwater appears to exist at depths ranging from 3 to 20 feet. In such areas, shallow water levels should be considered on a project-by-project basis to determine how to best implement construction or exploration programs.

Surface (open cuts and pits) or underground (tunnels, vertical large-diameter borings) excavations can encounter varying degrees of shallow groundwater inflows, which may be perched and local, or widespread in extent. This may affect excavation stability, and, therefore, short- and long-term safety for workers and post-construction stability of structures. The degree of hazard for the City is generally low, but should be determined on a case-by-case basis if projects requiring deep excavations are proposed in the alluvial areas, particularly immediately adjacent to San Marcos Creek and the La Costa Meadows area.

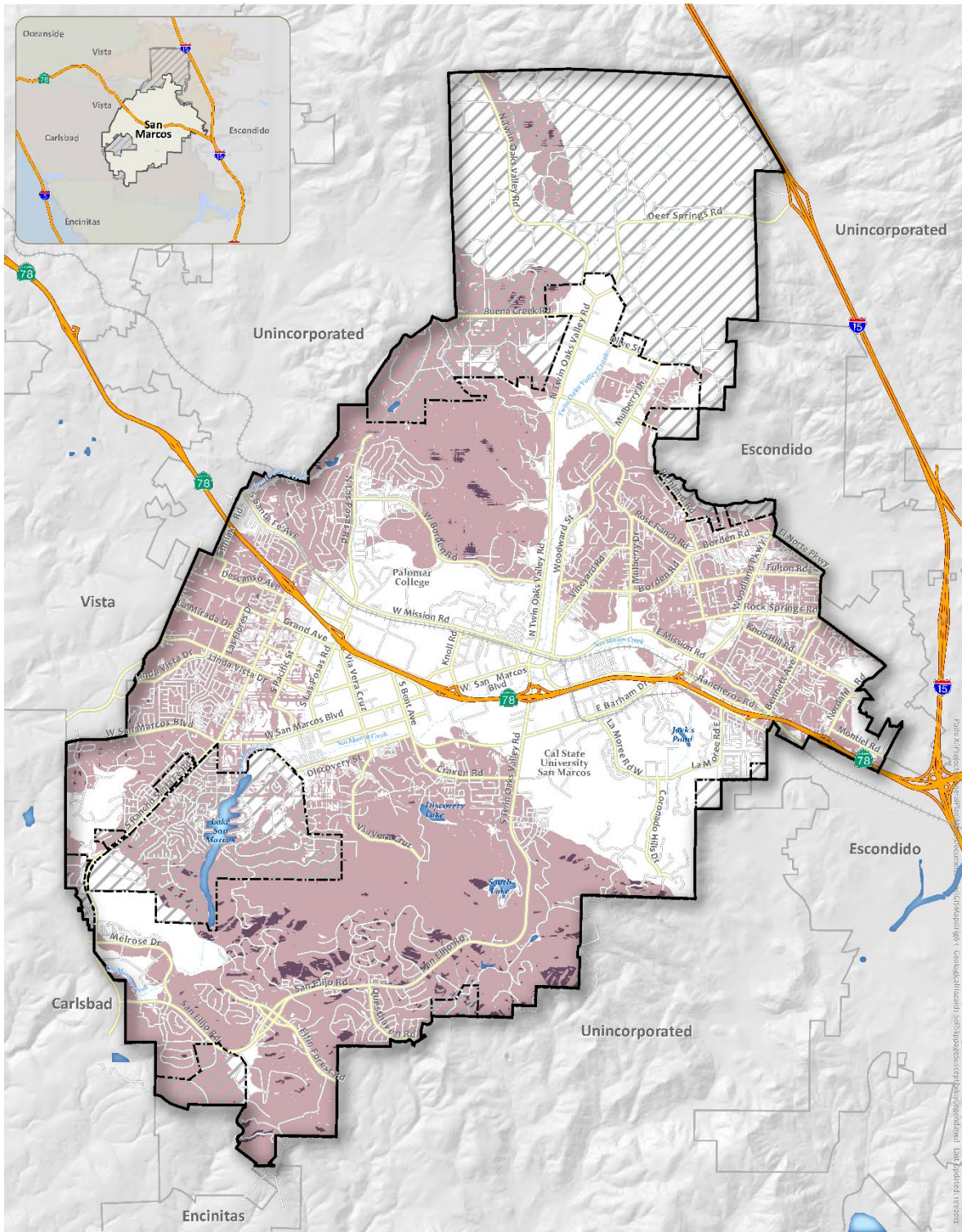
Seismic Hazards

Seismic hazards are those associated with an earthquake, with significant effects generally triggered at a magnitude (M) 5.0 or greater, although lesser magnitude earthquakes have activated hazards and caused damage. Like all of Southern California, San Marcos is subject to potential ground shaking in the event of an earthquake.

No active or potentially active faults traverse the City; however, nonactive faults may be present, and potential surface and blind thrust faults may impact the City. Earthquake ground-shaking potential from surface faults in the region is relatively low.

Non-ground-shaking impacts of an earthquake include potential liquefaction in the abundant young alluvium areas and/or potential dam failure inundation flooding, which is an issue for relatively small but populous portions of the City.

San Marcos has experienced mild to moderate earthquake shaking in the historic past; however, the City generally has a lower potential for strong ground shaking than other areas of Southern California. Instrumentally recorded events centered some



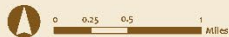
6 SAFETY ELEMENT

FIGURE 6-1

City of San Marcos

**Geologic Hazards -
Soil Slippage Susceptibility
(Landslides/Liquefaction)**

- San Marcos City Limits
- Sphere of Influence
- Planning Area
- Major Hydrologic Features
- Creeks
- Railroad
- Freeway
- Highway
- Major Road
- Minor Road
- Uncolored Areas have Zero Susceptibility
- Low Susceptibility
- Moderate Susceptibility



SOURCES OF DATA:
City of San Marcos 1/10 and USGS. 0/03. Preliminary Soil-Slip Susceptibility Maps, Southwestern CA. Available URL: "http://geopubs.wr.usgs.gov/open-file/03-17"

Every effort has been made to ensure the accuracy of the maps and data provided; however, some information may not be accurate or current. The City of San Marcos assumes no responsibility arising from use of this information and incorporates by reference its disclaimer regarding the lack of any warranties, whether expressed or implied, concerning the use of the same. For additional information, see the Disclaimer of the City's website.

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Southern California is susceptible to earthquakes and groundshaking; engineering and building precautions are required.

Photo credit: City of San Marcos

distance from the City (e.g., 1992 Landers and Big Bear, and 1994 Northridge earthquakes) caused only minor local disruptions; historic events occurring closer to San Marcos (e.g., 1800 and 1918 events) may have caused moderate to substantial damage to structures (Wilson Geosciences 2009). Substantial disruption from these earthquakes occurred nearer the epicenters.

Historic Earthquakes and Ground Shaking

Earthquakes generally occur on faults; Figure 6-2 identifies fault locations and earthquake activity surrounding San Marcos. Numerous regional and local faults are capable of producing severe earthquakes of magnitude (M) 6.0 or greater. Several recent historic earthquakes in Southern California have been of a sufficiently high magnitude to be felt in San Marcos. The six highest estimated intensity events were for earthquakes within 84 miles of City Hall, ranging in magnitude from 5.0 to 7.6. The 1800 “San Diego area” earthquake (VIII) had the highest estimated intensity at M6.5. This earthquake occurred on the Rose Canyon Fault offshore from Oceanside, and may have been located within approximately 12.7 miles of the City (Wilson Geosciences 2009).

No instrumentally recorded earthquake of greater than M6.0 has occurred within 50 miles of the planning area. The 1933 Long Beach earthquake on the Newport–Inglewood Fault near Newport Beach was the closest, at approximately 57 miles away. It is estimated that this earthquake caused moderate shaking and very light damage in San Marcos. The M7.6 Landers event in 1992, approximately 84 miles away, produced a slightly higher intensity, causing strong shaking and light damage in San Marcos.

General background seismicity is considered very low in this portion of San Diego County, with earthquake activity concentrated on faults to the east (Elsinore and San Jacinto), north (Newport–Inglewood and Elsinore Hills), and offshore to the west (Thirtymile Bank). However, the Rose Canyon Fault, identified in Figure 6-2, is considered to be active and the greatest potential threat to the San Diego region. Measuring approximately 43 miles in length, the Rose Canyon Fault is part of the Newport–Inglewood Fault zone to the north and the Vallecitos and San Miguel Fault system to the south; it may also connect to the Descanso and Aqua Blanca Faults. The Rose Canyon Fault extends inland from La Jolla Cove, south through Rose Canyon, along the east side of Mission Bay, and out into San Diego Bay. “New” Rose Canyon fault lines occur off the coast of Southern California from the Camp Pendleton area south to approximately Encinitas. Regional studies indicate that a maximum probable event of M7.2 is estimated for the Rose Canyon Fault, which

would potentially cause intensity VIII (Modified Mercalli Intensity Scale) effects in San Marcos (Wilson Geosciences 2009).

As documented in several relevant studies, the 1986 Oceanside earthquake event of M5.3 on the Thirtymile Bank Blind Thrust Fault suggests that a larger event is possible on the Oceanside Blind Thrust (OBT) Fault, possibly closer to the City than the 1800 earthquake (Wilson Geosciences 2009). Research scenarios suggest ground motions, intensity, and damaging effects could be much more severe than the 1986 event.

Fault Rupture

Two types of fault impacts are important to consider for the City. Fault-generated earthquake ground shaking has the greatest potential for critical impact due to its generally widespread effects and the severe damage it could cause, resulting in economic losses and injury to or death of people. The other important potential impact relates to ground movement such as co-seismic uplift, ground lurching, ground cracking, and liquefaction. While these other ground movement effects are more limited in extent than strong ground shaking, the impacts on structures and the public can be severe depending on the size and proximity of the causative earthquake. In cases where earthquakes are large or hypocenters are shallow, ground rupture can occur along the source fault plane where it intersects the Earth's surface.

Currently no Alquist-Priolo Earthquake Fault Zone (APEFZ) exists within the City (California Geological Survey 2011a). Surface faults and a blind thrust fault are documented outside of the boundaries of San Marcos, each having different potential impacts and levels of available information regarding their degree of activity and damage-generating potential. Three short, nearly northeast/southwest- and northwest/southeast-trending “non-active” surface fault segments have been identified within the planning area (Figure 6-2) at the far southeastern edge. The 2010 State Fault Map indicates that these faults are pre-Quaternary in age (older than 1.6 million years), suggesting that they are non-active and not an earthquake or ground rupture threat (California Geological Survey 2011b). These surface faults are not associated with a system of surface faults with demonstrated or known potential activity. These faults have been designated “non-active,” which is not considered a permanent classification, since detailed studies have not been conducted. The potential for surface fault rupture on these faults is considered to be very low. If fault movement were to occur on any of these faults, which is unlikely, it could be in conjunction with a large earthquake on the OBT Fault.

The OBT Fault is a buried low-angle fault below or adjacent to the offshore Newport–Inglewood Fault zone. The location and characteristics of the OBT Fault are much less well known than for surface faults. The OBT Fault may have an onshore projection that underlies the City and surrounding communities. If

movement were to occur on a buried fault, the most likely result would be regional uplift. Several studies suggest that the OBT Fault may be capable of generating large earthquakes (Wilson Geosciences 2009).

Liquefaction

Liquefaction is the sudden loss of the soil's supporting strength due to groundwater filling and lubricating the spaces between soil particles as a result of groundshaking. The results of ground failures associated with liquefaction can include an array of effects ranging from simple ground cracking to complex lateral spreading landslides. The three key factors that indicate whether an area is potentially susceptible to liquefaction are (1) severe ground shaking, (2) shallow groundwater (within 40 feet of the ground surface), and (3) low-density granular deposits (mainly sand). Other quantitative estimates of liquefaction potential require specific data from geotechnical borings and laboratory testing. Previous studies of San Marcos indicate that where alluvium is sufficiently loose and groundwater is sufficiently shallow, strong earthquake shaking could cause sediments to lose bearing capacity, resulting in severe settlement of surface facilities and, in some cases, uplift of buried structures such as large pipelines (Wilson Geosciences 2009).

The County of San Diego (2004) delineated limited suspected liquefaction-prone areas within the City based on modeling on a regional scale. This delineation identified areas (northern Twin Oaks Valley, southern San Marcos Creek, and the drainage area south of Palomar Community College) for potential liquefaction. It is likely that the liquefaction-prone area boundaries lie somewhere in between, being less extensive than what the City mapped in the 1980s and more extensive than what regional modeling suggests. Without better knowledge of groundwater location and depth, these liquefaction-prone areas cannot be further identified at this time. All other factors being equal (same earthquake, same geologic formation), liquefaction susceptibility levels may be higher where groundwater is shallower.

Liquefaction areas have potential land use constraints, and liquefaction assessments must be made for projects that are substantial in scope or involve grading or underground parking. The depth and intensity of study will vary depending on the location and type of the project. Due to the lack of specific geologic and engineering properties and groundwater depth data for San Marcos, areas of liquefaction potential can be assumed to correspond to the extent of the geologic formations of alluvial flood plain deposits (Qa) and young alluvial flood plain deposits (Qya); however, this should be considered approximate. These guidelines should be used as general, not absolute, planning guidelines to indicate where assessments are needed for planned

structures or possibly for upgrades to existing critical, essential, and high-occupancy facilities. Potential liquefaction-induced lateral spread landslides are more of a concern in the areas adjacent to the active San Marcos Creek and Twin Oaks Valley channels.

Earthquake-Induced Landslides

Areas with known landslides and bedrock formations more susceptible to landslides and surficial (soil-slip) failures are the most susceptible to earthquake-induced landslides. Figure 6-1 shows the areas designated by the U.S. Geological Survey (USGS) as having susceptibility to soil-slips or surficial landslides or debris flows in combination with groundwater and hydrological units that may lead to soil failure (Wilson Geosciences 2009).

Flooding and Inundation Hazards

Human-made water reservoirs and lakes located within the City or Sphere of Influence have the potential to fail and release floodwaters to local areas in cases where water is impounded behind them. Twin Oaks Valley and San Marcos Creek tributaries form the San Marcos area groundwater basin under the City; historically shallow groundwater is reported within the areas of young alluvium. Where groundwater is shallow and sediments are sufficiently loose, large earthquakes may cause liquefaction of the alluvium and settlement of overlying built structures.

FEMA Floodway and Floodplains

Some areas of San Marcos are determined to be within a Federal Emergency Management Agency (FEMA)-designated 100-year floodplain, 100-year floodway, and/or 500-year floodplain, as shown in Figure 6-3. The City participates in the Federal Flood Insurance Study to determine the mandatory insurance necessary for identified properties. Federal Insurance Rate Maps (FIRMs) designate flood areas that have a 1 percent annual chance of flooding; these are in the “100-year floodplain.”

FEMA-designated 100-year floodplains and floodways are associated with San Marcos Creek and its tributaries such as the north branch in Twin Oaks Valley, the east branch east of City Hall and south of Mission Road, and Lake San Marcos and a smaller drainage west of Palomar Community College, which extends south beyond State Route 78 (Figure 6-3). Additional zones in the periphery of these flood areas may pose a flood risk, but, since they are outside of the designated 1 percent annual chance flood area, they are not mapped and do not require additional flood insurance. Floodplains and areas of flood susceptibility are subject to change as development occurs. Existing planning efforts will be supported by pending and future development permits to facilitate flood management channelization improvements such as in the San Marcos Creek District Specific Plan.



Discovery Lake is one surface water body in the City.

Photo credit: City of San Marcos

The City maintains an extensive storm drain system that usually diverts any excessive rainfall into appropriate channels. However, a significant rain event could cause flooding in the zones identified above, or minor localized flooding elsewhere in the City. The City communicates with the San Diego County Flood Control District to maintain necessary flood controls and for storm water management.

Dam Inundation and Flooding

San Marcos lies generally downstream of dams, reservoirs, and debris basins that ultimately flow toward the City. Inundation hazards can range from high to low with increasing distance away from these water containment structures.

Flooding and inundation could result in the City due to heavy rain or structural failures, earthquake damage, or materials failure; Figure 6-3 delineates the extent of estimated flooding. South Lake is located up gradient from Discovery Lake, and a failure of the upper dam is shown to overwhelm the lower dam. In such an event, flooding would encompass much of the southwest portion of San Marcos Creek Valley upstream of Lake San Marcos. A failure of Lake San Marcos Dam would flood San Marcos Creek downstream of the dam at Lake San Marcos. Lake San Marcos Dam is under the jurisdiction of the State of California Department of Water Resources Division, Safety of Dams. City studies suggest that dam inundation flooding from South Lake/Discovery Lake could involve approximately 73.3 million gallons (about 225 acre-feet) of water (Wilson Geosciences 2009).

Four dams and ten reservoirs lie within the planning area (identified in Table 6-2 and Figure 6-3). The reservoirs are above ground water storage tanks maintained and used by the Vallecitos Water District; two reservoirs are Carlsbad Municipal water tanks within the San Marcos City limits (VWD 2010).

Table 6-2 Planning Area Dams and Reservoirs

California Jurisdictional Dams	VWD Reservoirs
South Lake	Palomar
Discovery Lake	Richland #1
Lake San Marcos	Meadowlark #1
Jack's Pond	Meadowlark #2
	School House
	Sage Canyon
	Via Vera Cruz
	Double Peak
	Palomar Estates (Carlsbad Municipal)
	Simmons Park (Carlsbad Municipal)

Source: VWD 2010.

These dams/reservoirs and water tanks store water for various purposes, including ensuring adequate water supply reserves, providing recreational opportunities, and providing non-potable water for irrigation. No dam or reservoir structures outside of the planning area was identified that could pose a dam inundation flooding threat to the City. In the event that leakage would occur from the water storage structures discussed here, water release would be incremental and not flood-like.

Fires

The San Marcos Fire Department (SMFD) is the agency responsible for providing emergency services in the event of a fire emergency. SMFD is a full-service department that protects life, property, and the environment by delivering the highest level of emergency and fire-rescue services, hazard prevention, and safety education through their four fire stations and one regional training facility. The Fire Department provides service to the City of San Marcos and the San Marcos Fire Protection District, which covers an area of 33 square miles and a population of approximately 97,000 residents. The department protects an extremely diverse community consisting of large areas of residential development, commercial/retail centers, office buildings, industrial parks, and educational centers such as California State University San Marcos (CSUSM) and Palomar Community College. The department provides a variety of services to the community, including fire suppression; rescue; emergency medical services, including Advanced Life Support (ALS) 911 response and transportation services; fire prevention; vegetation management; public education; emergency preparedness; and trauma support.

SMFD coordinates with other local city and fire district departments, the San Diego County Fire Authority, CAL FIRE, and the federal fire departments from local military installations to provide structural and vegetation fire suppression, confined space rescue, cliff rescue, and high angle rescue: response to hazardous material, mass casualty incidents, and terrorism and weapons of mass destruction; fire and hazard mitigation and disaster preparedness training; and fire prevention and safety education.

Fire Hazard Severity Zones

The State has charged CalFire with the identification of Fire Hazard Severity Zones (FHSZ) within State Responsibility Areas. In addition, CalFire must recommend draft Very High Fire Hazard Severity Zones (VHFHSZ) identified within any Local Responsibility Areas. The FHSZ maps are used by the State Fire Marshall as a basis for the adoption of applicable building code standards. The Planning Area includes both Local Responsibility Areas and State Responsibility Areas (within the Sphere of Influence), with portions of both Local and State Responsibility Areas being designated as Very High Fire Hazard Severity Zones. Figure 6-4 shows Fire Hazard Severity Zones in San Marcos.

Local Responsibility Areas

Local Responsibility Areas (LRA) lie within the city boundaries and CalFire has made recommendations that fall under two categories – Very High Fire Hazard Severity Zone (VHFHSZ) and Non-VHFHSZ. The hillside areas north of SR-78 in the Santa Fe Hills and Twin Oaks Valley Neighborhood, and the hillside areas south of SR-78 in the Barham/Discovery Community and Questhaven/La Costa Meadows Neighborhood, are designated as VHFHSZ that are LRAs. Areas within the Lake San Marcos Neighborhood, which is within the Sphere of Influence (SOI), are also designated as VHFHSZ that are LRAs.

State Responsibility Areas

The State Responsibility Areas (SRA) within the Planning Area are in the SOI in the north part of the City in the Twin Oaks Valley Neighborhood and also in the south east off of country club drive. These areas range in severity from moderate to very high.

Federal Responsibility Areas

There are no Federal Responsibility Areas within the vicinity of San Marcos.

Service & Infrastructure

A list of SMFD's apparatus is included in the Land Use and Community Design Element of the General Plan as well as a map of current and future fire stations (Figure 2-11). Building new or expanded fire and rescue facilities requires significant planning and coordination to address facility location and funding and the timing of development. Typically, a three-mile distance between fire stations is sufficient to achieve response time objectives. The topography and terrain throughout the City presents considerable demands on fire-rescue services under various conditions and can also affect response times. Future infill development will place an increasing demand on the capabilities of fire-rescue resources to deliver an acceptable level of emergency service.

Service delivery depends on the availability of adequate equipment, sufficient numbers of qualified personnel, effective alarm/monitoring systems, and proper siting of fire stations. As fire-rescue facilities and equipment continue to age, new investments must be made to support growth patterns and maintain levels of service to ensure public safety. Evaluation of the need for additional new or expanded fire stations will occur through community plan updates and amendments as needed.

Fire Hazard Planning

Fire hazard and mitigation are an important component to fire safety and enhances the effectiveness of fire protection. The City's General Plan address wildland fire risk reduction and prevention, how to minimize fire hazards resulting from structural fires, and hazard mitigation efforts through policies within the Safety Element as well as the Land Use and Community Design Element, Conservation and Open Space Element, and Mobility Element.

Climate, Vegetation, and Topography

Due to climate, vegetation, and topography, the City is subject to both wildland and urban fires. The region's climate and increasingly severe dry periods results in large areas of dry vegetation that provides fuel for wildland fires. Late summer and fall are the most critical seasons for wildland fires when Santa Ana winds bring hot, dry desert air from the east into the region. When the high air temperature, low humidity, and powerful winds combine with dry vegetation, the result can be large-scale fire events. Since these winds push wildland fires westward toward denser development, Santa Ana wind-driven fires have the potential to result in a greater risk of property damage. SMFD protects and manages several thousand acres of wildland and urban wildland interface areas. See the Conservation and Open Space Element for further discussion on the San Marcos Fire Department urban wildland fire management planning.

Wildland Fires

Wildland urban interface (WUI) areas have steep slopes, limited precipitation, and plenty of available fuel/combustible plant material. In an effort to reduce the threat posed by wildland fire events, the SMFD completed a comprehensive assessment of WUI fire hazards and prepared a Community Wildfire Protection Plan (CWPP) and Hazard Risk Assessment (HRA) for the San Marcos community and unincorporated areas in the San Marcos Fire Protection District. This assessment and the CWPP/HRA identify areas as WUI study areas to prioritize hazardous fuel removal and reduce overall community fire risks (SMFD 2007).

The SMFD has mapped WUI areas denoting community hazard levels as part of the HRA; see Figure 6-4. Brush management is required to be undertaken in these areas where urban development interfaces with open space so that fire fuel loads and potential fire hazards can be reduced. The CWPP/HRA also identifies actions to protect one or more WUI study area neighborhoods, and identifies training, public education, and local resource needs (SMFD 2007). The CWPP meets the requirements of the federal Healthy Forests Restoration Act (HFRA) of 2003 for community fire planning (SMFD 2007).

In accordance with the CWPP and the Zoning Ordinance, all new development in identified community hazard areas requires a Fuel Management Plan. This includes clearing and maintaining defensible space of 100 to 150 feet around structures, depending on the structure and vegetation type. Safety development and fuel reduction zones will continue to be addressed by developers and SMFD as outlined by the CWPP or applicable City ordinances. Additional SMFD community fire planning efforts include the vegetation management program to reduce the possibility of major wildland fires. Vegetation management programs are administered by program area, assessing a special tax on specific City-owned and private communities to help maintain open space area vegetation within these developments (SMFD 2007).

Urban Fires

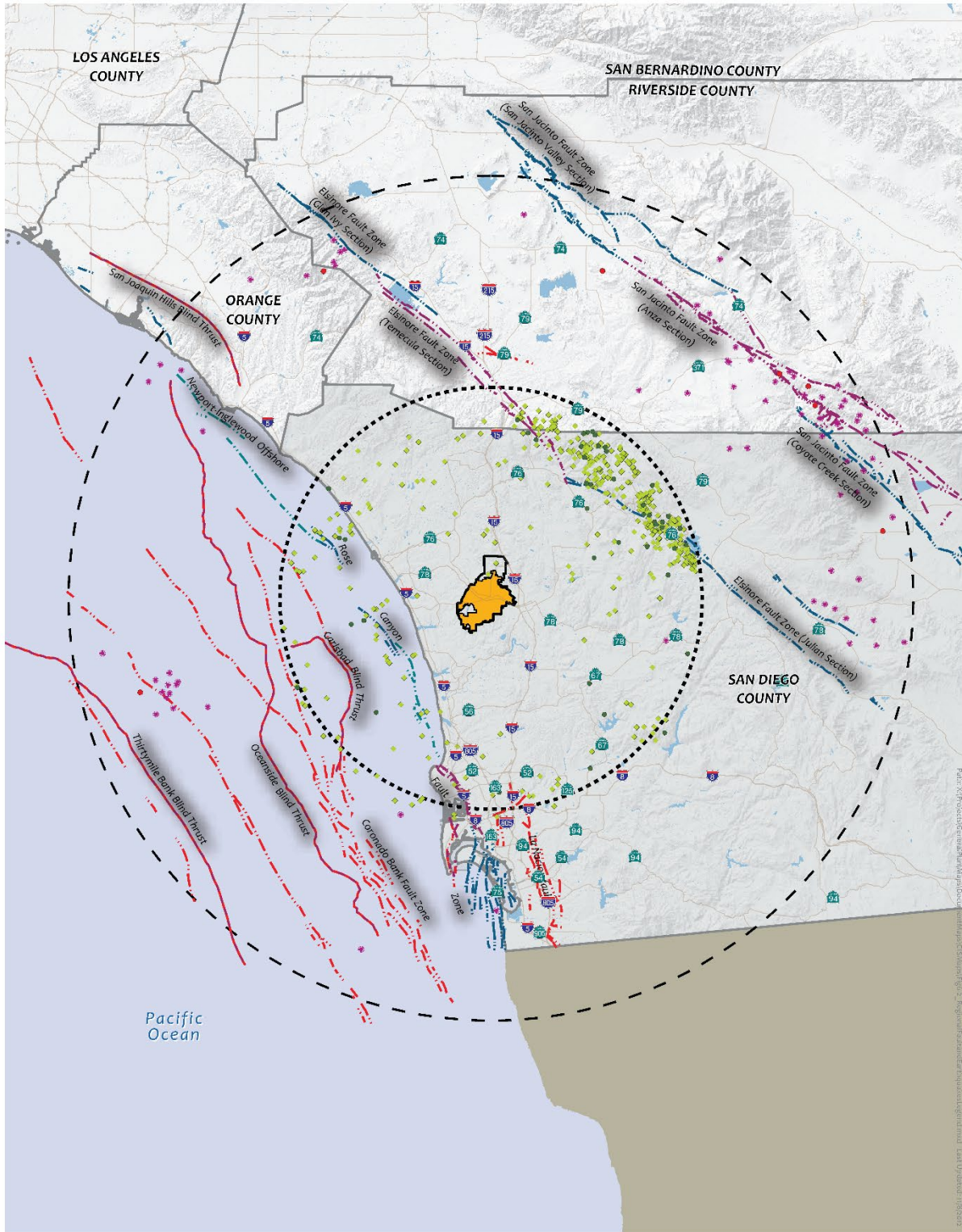
Urban fires in the community have the potential to cause significant loss of life and property; however, improvements in architecture, building design, construction materials, and emergency response reduce the likelihood of catastrophic occurrences. For additional information regarding service levels and facilities for fire and emergency services within the City, see Chapter 2, Land Use and Community Design Element, of this document.

Plans, Programs, and Regulations

- **General Plan.** The General Plan provides policies for protecting communities from unreasonable risk of wildfire. The following policies provide the foundation and support for implementing fire-wise and fire-safe development regulations:
 - Land Use and Community Design Element Policy LU-5.5: Encourage development of public spaces and plazas within commercial, mixed-use, and residential projects that include fire and water features that can accommodate civic events and function as community gathering areas.
 - Land Use and Community Design Element Policy LU-10.1: Provide demand-based fire-fighting and emergency medical services infrastructure, equipment, and personnel to provide a high level of fire, emergency medical, and law enforcement service in San Marcos to meet existing and future demands.
 - Land Use and Community Design Element Policy LU-10.3: Continue to conduct Public Outreach and education regarding fire safety and crime prevention within San Marcos.
- **Fire Hazard Severity Zone Maps.** Figure 6-4 identifies the extreme and very high fire hazard severity zones for the City area of responsibility. Inclusion within these zones is based on vegetation density, slope, and other relevant factors that contribute to fire severity. The adopted Community Zones Hazard Map designating Fire Hazard Severity Zones is codified in Municipal Code §17.64.020.
- **Vegetation Management Program.** The City of San Marcos has ordinance 2019-1479 (codified in Municipal Code §17.64.240) that requires the maintenance of an effective fuel modification zone by removing, clearing or modifying away combustible vegetation and other flammable materials from areas within 150 feet from buildings or structures. To assist our citizens in complying with this ordinance, the San Marcos Fire Department has an annual vegetation management program in which properties are inspected to reduce overgrowth of such hazards. The Fire Department responds to all citizen inquiries that deal with fire and life safety issues. City maintained lots are assessed annually and are cut/abated on an as needed basis. This helps reduce potential hazards while increasing the livability of the community that we live in.

- **Fire Protection Plans (FPPs).** SMFD requires FPPs for all medium and large projects within both the City and SMFD Fire District. The City has adopted Sec. 4903.1 of the County Consolidated Fire Code to regulate FPPs within the SMFD Fire District: “When required. Planning and Development Services or the FAHJ may require an applicant for a parcel map, subdivision map, specific plan or major use permit for any property located in a wildland-urban interface fire area to submit a Fire Protection Plan (FPP) as part of the approval process.”
- **Fire Access Road Width.** The width of fire access roads for new and existing buildings is codified in Municipal Code §17.64.120.
- **Emergency Preparedness Education.** SMFD provides a comprehensive public fire education program that includes educational presentations, informational demonstration booths, an annual Fire Prevention Open House, health fairs, school events, station tours, smoke alarm installation, social media education and apparatus and equipment displays.

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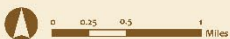
6 SAFETY ELEMENT

FIGURE 6-2

City of San Marcos

Regional Faults and Earthquakes

- San Marcos City Limits
 - Planning Area
 - Major Water Features
 - Major Roads
 - 75-mile Radius from San Marcos City Hall
 - 50-mile Radius from San Marcos City Hall
- | Earthquakes (1932-2009) Fault Zones | |
|-------------------------------------|-----------------------------|
| Magnitude | Age |
| 2.00 - 2.99 | <1,600,000 - Quaternary |
| 3.00 - 3.99 | <130,000 - Late Quaternary |
| 4.00 - 4.99 | <15,000 - Latest Quaternary |
| 5.00 - 5.99 | <150 |
| | Not Classified |
| | Blind Thrust Faults |

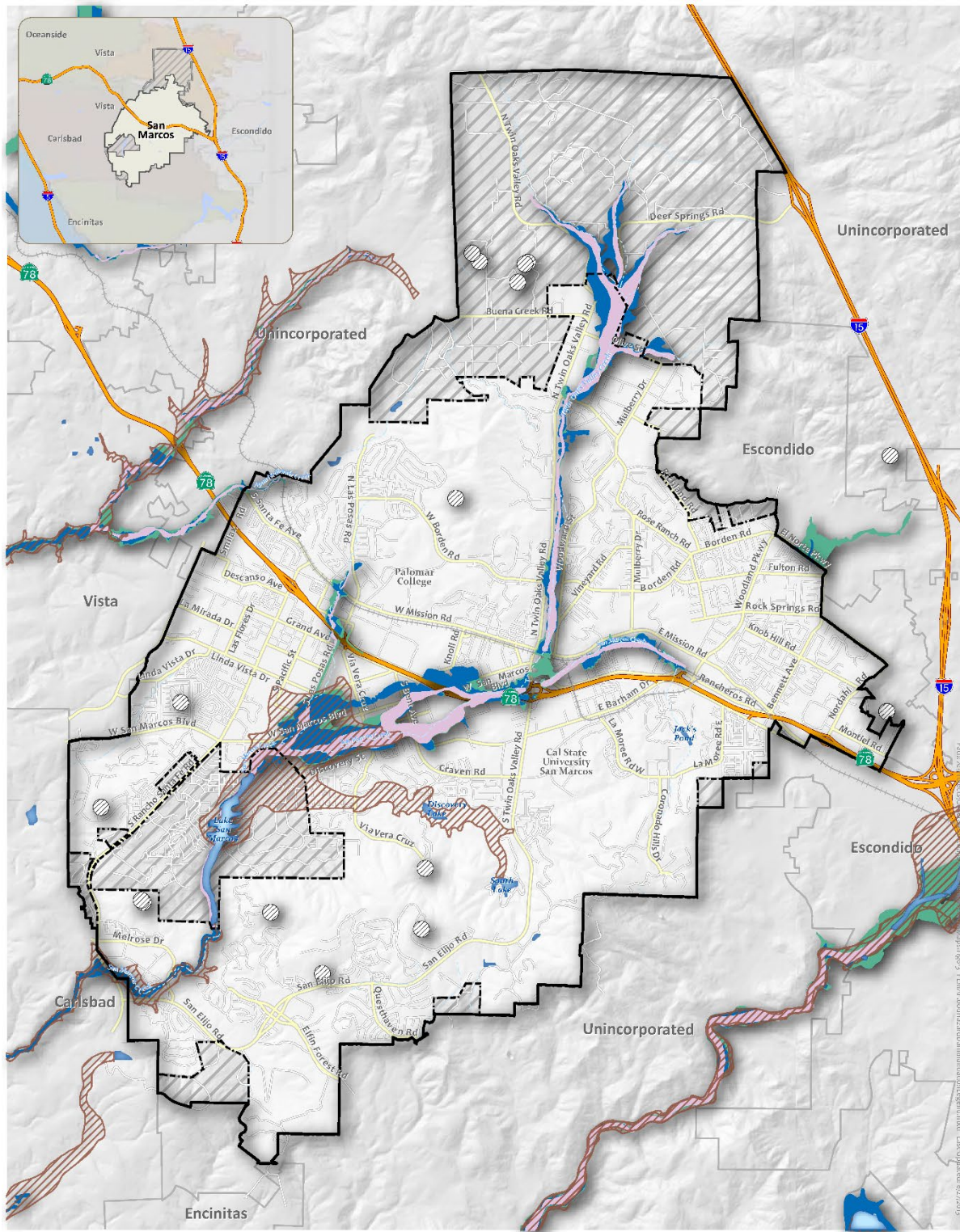


SOURCES OF DATA:
 City of San Marcos, 1012 and Bryant, W.A. (compiler), 2005, Digital Database of Quaternary and Younger Faults from the Fault Activity Map of California, version 2.0; California Geological Survey Web Page, http://www.cgsnr.ca.gov/CSS/information/publications/QuaternaryFaults_ver2.htm (downloaded 11/18/13).

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6
SAFETY ELEMENT

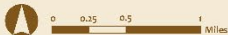
FIGURE 6-3

City of San Marcos

FEMA Flood Hazards and Reservoir/Dam Inundation Zones

- San Marcos City Limits
- Sphere of Influence
- Planning Area
- Major Hydrologic Features
- Creeks
- Railroad
- Freeway
- Highway
- Major Road
- Minor Road
- Water Tank
- Dam Inundation Zone
- Floodway areas in Zone AE
- Special Flood Hazard Areas Subject to Inundation by the 1% Annual Chance Flood
- Other Flood Areas

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AG, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

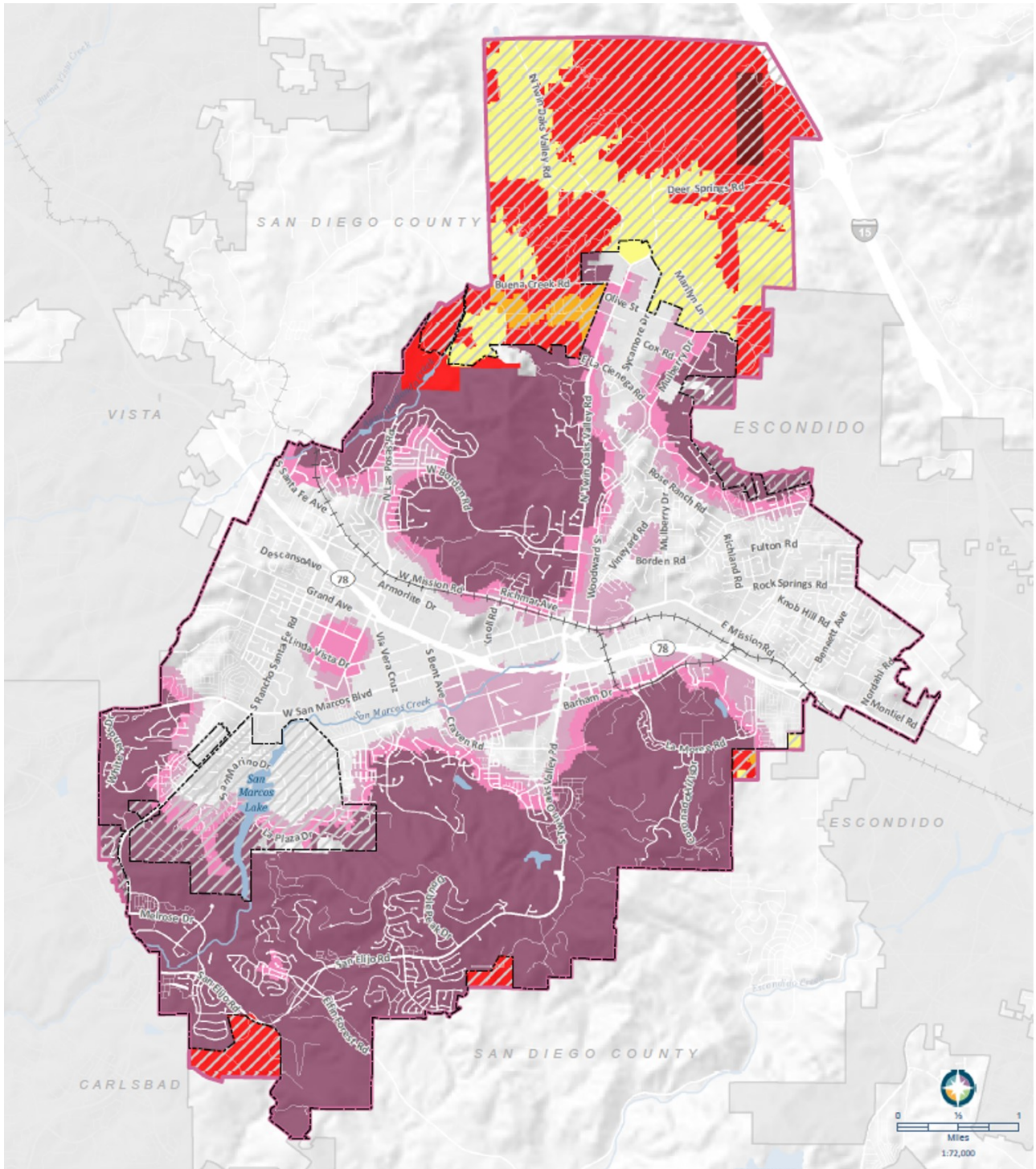


SOURCES OF DATA: City of San Marcos (City Limits, Sphere of Influence, Planning Area, Major Hydrologic Features, Creeks, Railroad, Freeway, Highway, Major Road, Minor Road); Federal Emergency Management Agency (FEMA), 5/12, and SanGIS/SANAG Data Warehouse, 9/12/2012; Dam_Inundation; San Diego Geographic Information System; JPA/San Diego Association of Governments (SANDAG), Available URL: https://www.sandag.org/Download_GIS_Data.htm

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6 SAFETY ELEMENT

FIGURE 6-4

City of San Marcos

Fire Hazard Severity Zones

Responsibility Area: Fire Hazard Severity*

- Federal: Very High
- State: Very High
- State: High
- State: Moderate
- Local: Very High
- Local: High
- Local: Moderate

Planning Areas/Jurisdictions

- City of San Marcos
- Sphere of Influence
- Areas within the Sphere of Influence
- Neighboring City

SOURCES OF DATA:
FRAP; SANGIS; CalAtlas. 3/20

*This dataset does not define the final adopted Very High zones in local responsibility areas. A final adopted version has not yet been published.

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San Marcos Fire Department is responsible for fire safety and emergency services in the City.

Photo credit: City of San Marcos

Hazardous Materials and Waste

A hazardous material is defined as any injurious substance, including pesticides, herbicides, toxic metals and chemicals, explosives, and nuclear fuels and materials. The use of these hazardous materials is commonplace in commercial, industrial, and manufacturing activities. Because these materials are increasingly used in urban settings, there are activities within the City that expose residents to certain risks associated with hazardous materials. The use of combustibles and the use, transport, and disposal of hazardous and toxic waste pose certain risks to the general population. Hazardous materials require special methods of disposal, storage, and treatment. The release of hazardous materials requires an immediate response to protect human health and safety and/or the environment.

The City regulates the “Disclosure of Hazardous Materials” via a program administered by the County of San Diego Department of Environmental Health (DEH) Hazardous Materials Department (HMD). The DEH HMD has been certified by Cal-EPA as the local Certified Unified Program Agency (CUPA), responsible for implementing CUPA federal and State laws and regulations at the local level. This program is intended to identify potential users and handlers of hazardous materials, and provide basic information on the location, type, quantity, and health risks of hazardous materials used, stored, and disposed of in the City. All business license applicants are required to complete a Hazardous Materials Questionnaire that lists the maximum amount of each hazardous substance used over the course of 1 year, and to provide proof that required permits have been obtained and emergency response information has been provided. DEH may require additional information on a case-by-case basis (County of San Diego 2010b). The DEH HMD has staff for two functions: Hazardous Materials Compliance staff and Site Assessment Management (SAM) staff. Compliance staff regulates businesses using Prop 65 materials, issues Notices of Violation and compliance notes, and monitors hazards and removal of waste. SAM staff implements a voluntary assistance program, provides management assistance for remediation actions, and issues a Closure Letter when necessary.

In addition, City ordinances are consistent with the San Diego County Operational Area Hazardous Materials Area Plan, which identifies general areas and siting criteria for hazardous waste facilities. The City is also served by the DEH’s Health Hazardous

Incident Response Team (DEH-HIRT). The team was founded in 1981 and serves all unincorporated San Diego County areas, 18 municipalities (including San Marcos), two military bases, and five Indian Reservations. DEH-HIRT is responsible for assessing the risk to public health and safety and the environment, taking the necessary steps to mitigate these hazards, ensuring adequate cleanup of the area, and conducting necessary enforcement activities. DEH-HIRT provides advice and technical support to the first responder, but does not assume scene management responsibilities. The first responder or appropriate agency maintains full control and authority over the incident, and retains responsibility for release of public information concerning the incident. DEH- HIRT responds jointly with the SMFD to investigate and mitigate chemically related emergencies and complaints (County of San Diego 2007).

The City maintains a list of environmental consultants who can prepare reports, respond to waste spills, remove waste through remediation, and transport hazardous waste to the appropriate waste disposal facilities.

Future redevelopment of existing or potential contaminated sites could be impaired unless adequate remediation of such sites occurs. Redevelopment proposals will continue to be reviewed by the City to determine the presence and extent of contamination affecting project sites. Remediation of contaminated sites will continue to be required of developers, as necessary, to protect public health and safety in accordance with the recommendations of appropriate environmental assessments and consistent with all applicable regulations and standards. Public facilities such as schools, hospitals, and fire stations are not located in or near hazardous material remediation sites. Siting new facilities is governed by local and state agencies to ensure that public facilities are developed in safe and appropriate locations.

Emergency Preparedness & Hazard Mitigation

Goals

- A city and region that, through diligent planning, organizing, and training is able to prevent, respond to, and recover from man-made and natural disasters.
- Reduced disruptions in the delivery of vital public and private services during and following a disaster.
- Prompt and efficient restoration of normal City functions and activities following a disaster.
- A resilient and sustainable community achieved through equity, environment, economy, and governance.

Discussion

Many natural and man-made events and processes carry the risk of hazard to life and property. Natural hazards arise from a community's many physical relationships to the natural environment. Hazard risk also results from human-caused intentional acts and disruption or failure of technology. A resilient community has the capacity to maintain critical functions during hazard events as well as adapt to and reduce future hazard risks.

Hazard mitigation is any sustained action taken to reduce or eliminate the long-term risk to life and property from hazard events. An effective response to natural and human-caused disasters requires planning, education, coordination and training by multiple government agencies and the public.

San Marcos' location within a seismically active coastal region with a semi-arid climate creates potential sources of natural environmental hazards. Significant hazard risks occur due to earthquakes, landslides, wildland fires, and flooding. Climate variability, such as periodic droughts and high volume rain events, increase hazard risks. The San Diego region, as like the state of California, relies on relatively vast infrastructure and higher technological inputs to sustain daily life and the region's economy. Failure of this infrastructure can therefore cause significant disruption and disconnection of necessary public and private services.

All urban areas are faced with the possibility of major disasters that threaten life, safety, and property. The City uses a Standard Emergency Management System (SEMS) for coordinating all local emergencies. The basic framework of SEMS incorporates the use of the Incident Command System, multi-agency or inter-agency coordination, the state's master mutual aid agreement and mutual aid system, the operational area concept, and the Operational Area Satellite Information System. In conformance with the SEMS, the City maintains an extensive emergency operations plan, the San Marcos Emergency Operations Plan (EOP), which governs the operations of the City during a disaster. If necessary, the City can open and staff the San Marcos Emergency Operations Center. In the event of a major emergency, the Emergency Operations Center coordinates resources, assists in mitigating the emergency, and allocates emergency resources and relief aid.

The San Diego County Sheriff's Captain assigned to the San Marcos Station serves as the City's chief of police and is responsible for deploying the law enforcement resources available via the City's contract. Deployment plans are made in consultation with the City manager, City Council, and other City departments, and are designed to protect the public from harm. In addition to personnel assigned to the San Diego County Sheriff's San Marcos Station, the City has immediately available the entire scope of services offered by the San Diego County Sheriff's Department for specialized investigations, tactical operations, and emergency situations. The San Diego County Sheriff's Department participates in regional, Statewide, and national mutual aid systems and, through such systems, is able to manage public safety issues.

In 2009, the City secured and equipped the Mobile Emergency Command Vehicle. This highly technical facility enables the SMFD and surrounding agencies to secure an immediate command post at the scene of any incident. Technology and systems on board the Mobile Emergency Command Vehicle provide a functional communication and operation station for a range of departments and agencies to rapidly respond to emergencies and establish operational command. Currently, this is the only facility of its kind in North San Diego County.

In addition, San Marcos is included in the County of San Diego's Multi-Jurisdictional Hazard Mitigation Plan. This plan was developed to comply with the Disaster Mitigation Act of 2000, and serves as both a county-wide plan and a plan for local jurisdictions to identify risks posed by natural and human-caused disasters before a hazard event occurs. Hazards are assessed and mapped on a regional basis.

The City of San Marcos Building Division employs five certified damage assessment inspectors for emergency response. Damage assessment inspectors respond to earthquakes, fires, high wire, and other emergencies to assess building and structural damage post-event and coordinate the damage assessment certification that is required to receive federal and state disaster relief funding.

Airport and Aircraft Hazards

There are no public or private airports located within City boundaries; however, the McClellan-Palomar Airport is located approximately 2.5 miles west of the City within the city of Carlsbad. As described in the McClellan-Palomar Airport Land Use Compatibility Plan (ALUCP) and shown in Figure 6-5, a majority of the City is considered to be in the Airport Influence Area (AIA) (SDCRAA 2009). The AIA is defined in California Business and Professional Code 11010(b)(13)(b) as "the area in which current or future airport-related noise, overflight, safety, or airspace protection factors may significantly affect land uses or necessitate



State-of-the-art Mobile Emergency Command Vehicle, used by City of San Marcos safety personnel for all emergency management needs.

Photo credit: City of San Marcos



McClellan-Palomar Airport is located 2.5 miles from the City of San Marcos.

Photo credit: AECOM



The Sheriff's Department maintains a helipad in the City.

Photo credit: City of San Marcos

restrictions on those uses." The McClellan-Palomar AIA is divided into Review Area 1 and Review Area 2. The composition of each area is determined as follows:

- Review Area 1 consists of locations where noise and/or safety concerns may necessitate limitations on the types of land use actions. Specifically, Review Area 1 encompasses locations exposed to aircraft noise levels of 55 decibels (dB) Community Noise Equivalent Level (CNEL) or greater, along with safety zones established in the ALUCP.
- Review Area 2 consists of locations beyond Review Area 1 but within the airspace protection and/or overflight notification areas. Limits on the heights of structures, particularly in areas of high terrain, are the only restrictions on land uses within Review Area 2.

As shown in Figure 6-5, Review Area 2 encompasses approximately two-thirds of the City; its boundaries fall north and south of State Route 78 and extend eastward to Interstate 15. No portion of the planning area lies within Review Area 1.

The ALUCP establishes six safety zones within the AIA to evaluate the safety compatibility of land use actions. These safety zone boundaries are based on general aviation aircraft accident location data, runway configuration, and aircraft operational procedures. No portion of the City lies within these established safety zones (SDCRAA 2009).

Hazard-Related Planning, Response, and Recovery

The City participates in local and county-level plans to prepare for and respond to disaster emergencies. Local emergencies are handled using the SEMS. All safety, fire, and Emergency Operations Center staff are trained to respond to emergencies. Additional planning and response duties belong to the Building Division, cooperating jurisdictions, and Community Emergency Response Team (CERT) members.

Emergency Operations Plan

The Unified San Diego County Emergency Services Organization approved the EOP, a regional planning document, for local jurisdiction planning in 2007. The City adopted an EOP in March 2009 to plan for and address response to a moderate evacuation emergency scenario. The EOP takes into account the Operational Area Hazard Mitigation Plan, employs local safety and emergency staff resources, uses the SEMS, and provides evacuation planning. Strategies of the EOP for evacuation planning include identification of evacuation points and corresponding evacuation routes, traffic signal coordination and timing to direct evacuation flow, closure of on- and off-ramps to local highways, and intelligent transportation systems (City of San Marcos 2009).

Multi-Jurisdictional Hazard Mitigation Plan

The City participates in the San Diego County's Multi-Jurisdictional Hazard Mitigation Plan. The countywide plan identifies risks posed by natural and manmade disasters including fires, earthquakes, landslides, and floods and ways to minimize damage from those disasters. The plan serves many purposes, including enhancing public awareness and understanding, creating a decision tool for management, promoting compliance with state and federal program requirements, enhancing local policies for hazard mitigation capability, and providing inter-jurisdictional coordination. The federal government requires all local governments to create such a disaster plan in order to qualify for disaster relief funding.

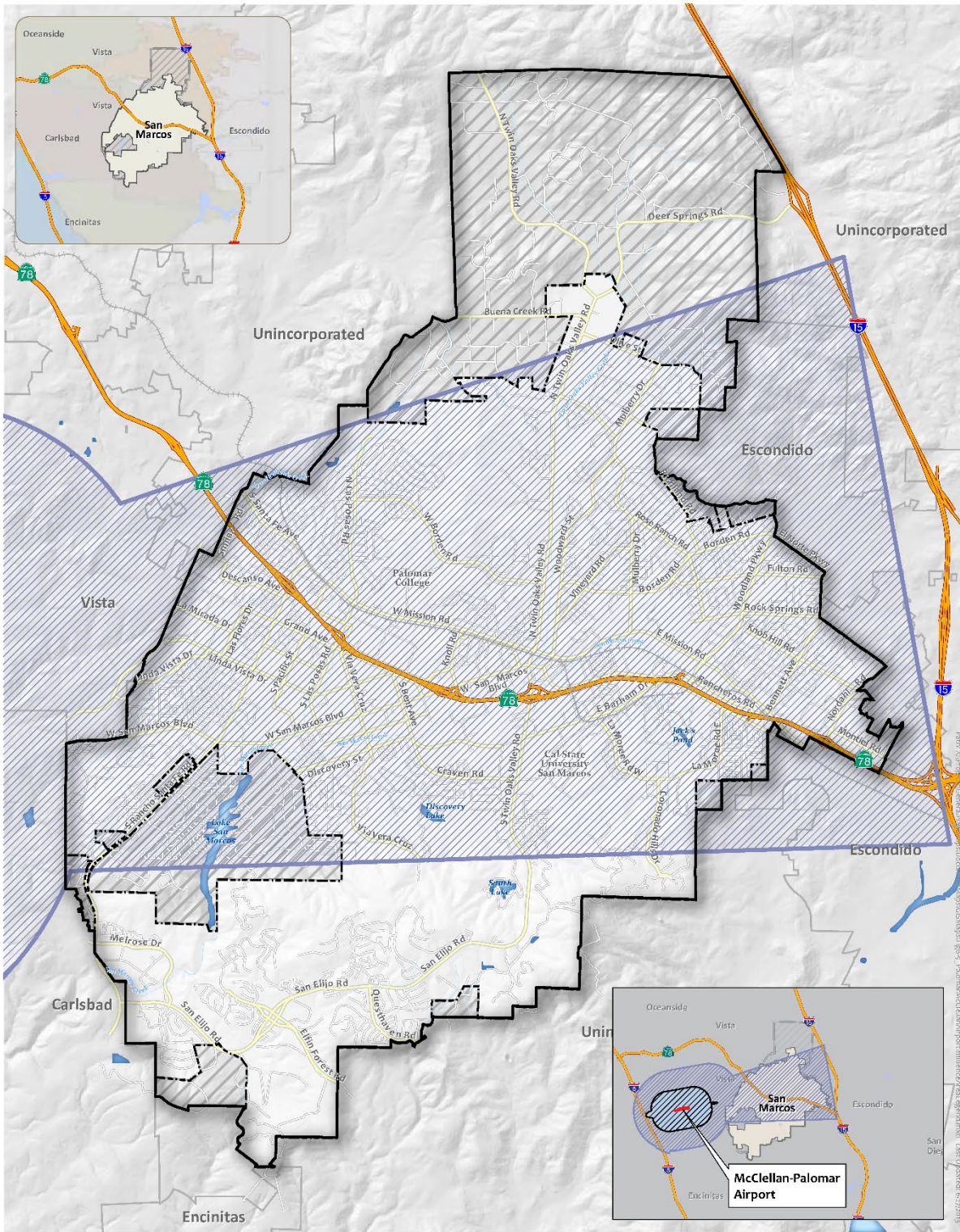
The State requires local jurisdictions to integrate climate adaption into the general plan to support the State's overall climate adaption strategy. The City will develop climate resiliency and adaptation strategies and work with stakeholders on amendments to San Diego County's Multi-Jurisdictional Hazard Mitigation Plan to address this issue.

Land use planning is an important component of hazard mitigation. Site selection that avoids proximity to natural hazards or hazardous facilities, and building construction techniques designed for fire protection, life safety and temporary systems failure, can reduce hazard risks within the built environment.

Climate Adaptation

San Marcos' Climate Action Plan (CAP) provides measures to reduce human-caused greenhouse gas emissions and enhance carbon storage, or sequestration, as a local response to mitigate global climate change and comply with state and federal legislation (also see the Conservation and Open Space Element Discussion on Climate Change). Some degree of climate change will occur regardless of the City's effort to reduce and mitigate greenhouse gas emissions. The City will need to adapt to these changes within the context of the community's environmental and socioeconomic system.

Community resilience is maintaining desired socio-ecological functions when relatively sudden changes occur through implementation of adaptations practices that can reduce vulnerability of human and wildlife populations. Forecasted effects to San Marcos from climate change include increased temperatures, precipitation extremes (more severe periods of drought and flooding), and rising sea levels (resulting in flooding of low-lying areas). Exposure to these events can leave a community vulnerable to an increased rate of wildland fires, flooding, coastline erosion, reduced air quality, availability of fresh water, and negative impacts on wildlife. All of these effects can potentially generate multiple concomitant effects on public health and safety.

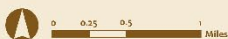


6
SAFETY ELEMENT

FIGURE 6-5

City of San Marcos

**McClellan-Palomar
Airport Areas of
Influence**



SOURCES OF DATA:
City of San Marcos g12 and San Diego Airport Authority, 5/2010

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- San Marcos City Limits
- Sphere of Influence
- Planning Area
- Major Hydrologic Features
- Creeks
- Railroad
- Freeway
- Highway
- Major Road
- Minor Road
- McClellan-Palomar Airport Areas of Influence
- Review Area 1
- Review Area 2

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The City of San Marcos maintains an Emergency Operations Plan and a Regional Emergency Services Training Center.

Photo credit: City of San Marcos

A key part of the City emergency planning is the AM radio station and operating license acquired in 2011. The 1610 AM frequency radio station will be used as a Traffic Advisory Station for emergency information, dispatch, and other important local area information. The station was secured through State Homeland Security Grant funds and will be run by the City Emergency Operation Center. In the event the City or its environs are affected by wildfires, earthquakes, terrorist attack, large transportation accidents, or any other disaster that impacts traffic flow or evacuations, the radio station will broadcast pertinent information to serve residents and those passing through. The station will also be used to alert and mobilize City volunteers, who include CERT volunteers, San Marcos MetroNet (ham radio) operators, Volunteer Rangers, Trauma Support Volunteers, and SMFD's senior volunteers.

The radio system will be run through the use of permanently installed infrastructure and software by the City and California State University San Marcos. Upon installation of the radio transmitter and fixed antenna, the City will broadcast 24 hours a day, 7 days a week on AM1610 to provide up-to-date community information, roadwork notifications, significant event notifications, and emergency preparedness information. The low 10-watt frequency will be accessible through car and other types of radios, and City residents are encouraged to set radio presets to this frequency for quick access. During a disaster or emergency affecting San Marcos, the content of AM1610 will be updated to transmit important public information directly to residents. This will provide virtually real-time information about evacuations, travel routes, and shelter locations. The tower location and redundant systems will allow the AM1610 signal to be reliable and easily received on any AM radio (City of San Marcos 2009).

Joint Agreements

The City maintains fire protection agreements with the cities of Carlsbad, Del Mar, Encinitas, Escondido, Oceanside, Solana Beach, and Vista, and the Fire Protection Districts of Deer Springs, Elfin Forest, North County, Rancho Santa Fe, and Rincon del Diablo (LAFCO 2005). California State University San Marcos (CSUSM) campus maintains an Emergency Management Plan that encompasses the 304-acre campus; the plan includes student evacuation, hazards mitigation response, an Incident Command System, and campus management (CSUSM 2010).

Community Emergency Response Team (CERT)

The Department of Homeland Security urges communities to train and prepare themselves by establishing a CERT program. The program educates people about disaster preparedness and trains them in basic disaster response skills, such as fire safety, light search and rescue, and disaster medical operations. In the event of a disaster, CERT members can use their training to attend to themselves and their families, neighbors, and coworkers.

The San Marcos CERT program is administered by the SMFD. Its mission is to assist and supplement professional emergency responders during emergencies or unusual events. The SMFD, in partnership with Palomar Community College, sponsors CERT classes. Graduates of the course can apply to become a member of the San Marcos CERT Team. San Marcos CERT Team members are issued free CERT equipment kits, periodically attend training refresher sessions, and participate in rescue drills with the SMFD (City of San Marcos 2011).

Existing Evacuation Routes

According to the City's EOP, evacuation routes are determined based on event type, location, and variables of the emergency, in coordination with shelter facilities. Emergency communication systems will be used to provide information on event-specific evacuation routes, and the Traffic Management Center will help to manage evacuation routes through traffic control systems. For this reason, official evacuation routes have not been established; however, there are several main thoroughfares that would serve as primary evacuation corridors for most of the planning area in the event of an emergency. North/south roads that should remain relatively open and passable are Twin Oaks Valley Road (away from State Route 78), Las Posas Road, Rancho Santa Fe Road, Woodland Parkway, and Nordhal Road. Similarly, east/west streets are Mission Road, South Santa Fe Road, Barham Drive, Craven Road, West San Marcos Boulevard (away from State Route 78), Borden Road, Buena Creek Road, Knob Hill Road, and Montiel Road (Wilson Geosciences 2009). Existing and future road/bridge crossings of San Marcos Creek, including crossings at Discovery Street, Via Vera Cruz, and Borden Road, would provide vital connectivity between areas of San Marcos. Other major circulation thoroughfares identified in Figure 3-1 of the Mobility Element would also be appropriate for use as evacuation routes, depending on the location of the emergency event.

The City prepared an analysis consistent with Senate Bill 99 and verified by the San Marcos Fire Department to identify residential developments in hazard areas that do not have at least two emergency evacuation routes. The analysis identified four residential areas of concern in high hazard zones that warranted further study. Road data obtained from the SANDAG/SanGIS Regional Data Warehouse Open Portal were utilized to identify evacuation routes in these residential areas. The analysis determined that all four areas have two or more evacuation routes. A White Paper describing the methodology used to map the evacuation routes is included as an Appendix to the Safety Element.

Neighborhood Safety

Law Enforcement and Criminal Activity

San Marcos sets high standards for neighborhood safety and has consistently reported low crime rates within the region. The City is committed to promoting and maintaining a high level of safety for residents and businesses by providing quality law enforcement protection and crime prevention programs.

The San Diego County Sheriff's captain assigned to the San Marcos Station serves as the City's chief of police and is responsible for deploying law enforcement resources that are available via the City's contract. Deployment plans are made in consultation with the City Manager, City Council, and other City departments, and are designed to protect the public from harm. Sheriff's deputies are responsible for general patrol, traffic enforcement, criminal investigations, and other law-enforcement-related duties. Maintaining one of the largest Sheriff's contracts in the county has resulted in a low crime rate for San Marcos. In addition to personnel assigned to the San Diego County Sheriff's San Marcos Station, the City has immediately available the entire scope of services offered by the San Diego County Sheriff's Department, as discussed under the Emergency Preparedness section above.

The City maintains local community efforts that supplement the Sheriff's Department with the Crime Prevention Unit. Local community-oriented policing programs run by the Crime Prevention Unit are free of charge and include Neighborhood Watch, Residential Security Consultation, Operation Identification, and parking enforcement. The Public Works Department assists in these efforts with graffiti abatement. This partnership between county and local law enforcement helps residents of all ages take a proactive approach to crime prevention and protection within their own community.

For further information on the San Diego County Sheriff's Department's function within San Marcos, see Chapter 2, Land Use and Community Design Element.

Crime Prevention Through Environmental Design (CPTED)

The safety of a place is directly related to design, orientation, and access of the individual space. The use and promotion of the Crime Prevention Through Environmental Design (CPTED) program in the design or redevelopment of projects and buildings could be a proactive tool in preventing crime for San Marcos.

CPTED development concepts are based on the premise that proper design and effective use of the built environment can lead to an improved quality of life by reducing fear and crime incidences. Traditional policing to maintain security within San Marcos will be assisted by CPTED guidelines to create a safer environment.

CPTED is a multi-disciplinary method of using physical and psychological strategies to deter crime. It incorporates four broad design and usage concepts. Development and redevelopment of certain areas within the City allows the opportunity to incorporate CPTED principles.

Possible planning techniques and strategies associated with CPTED are included below. As this is not intended to be a comprehensive list of strategies, the following represent a sample of the types of CPTED- suggested actions:

- Surveillance. Surveillance focuses on keeping intruders easily observable. Surveillance is promoted by design features that maximize visibility of people, parking areas, and building entrances.
 - Building location and orientation can create or remove views. Design should promote visibility. This could be accomplished by placing windows to overlook sidewalks and parking lots to provide natural surveillance or “eyes on the street.”
 - Adequate lighting in potential problem areas can be a deterrent in areas such as stairs, entrances/exits, parking lots, and near ATMs.
- Access control. Access control is characterized by clearly demarcating public areas from private ones so that access to potential targets is reduced and perception of risk to potential offenders is increased.
 - Limit the number of access points into a building.
 - Control access by creating both real and perceptual barriers to entry and movement. Clearly mark the transitions from public to private spaces, and use signs, fences, borders, art, and landscaping to prevent or discourage access into unmonitored areas.
- Territoriality. Territoriality fosters a sense of defensible space, encouraging individuals to take ownership and control of their environment. Potential offenders will then be discouraged to engage in criminal activities nearby.
- Maintenance. Maintenance promotes the frequent upkeep of CPTED measures to maintain surveillance, access control, and territoriality effectiveness. While crime in San Marcos is relatively low, the application of CPTED guidelines in the existing built environment can further reduce the opportunity for, and the likelihood of, crime.
 - Ensure buildings, yards, gardens, sidewalks, and other features are well maintained, clean, and in working order, which is a sign of guardianship.

San Marcos will continue to encourage the use of CPTED in the design and redevelopment of projects and buildings to take a proactive approach to crime prevention. For more information and detailed CPTED design guidelines please visit: http://www.cptedsecurity.com/cpted_design_guidelines.htm.



Careful consideration of lighting, landscape and pathway/building design all contribute to create safe places.

Photo credit: City of San Marcos

6.3 Safety Plan

San Marcos faces natural and human-related hazards including limited earthquake ground shaking, urban and wildland fires, geologic hazards and the use of hazardous materials. Reduction of these risks through preparedness is essential in continuing the City of San Marcos' guiding theme of providing "A Healthy and Safe Community."

San Marcos participates in the San Diego County Multi-Jurisdictional Hazard Mitigation Plan. This planning document enables the City of San Marcos and County to be consistent with federal legislation for local hazard planning and assists in meeting eligibility for funding and technical assistance from state and federal hazard mitigation programs. Continued participation in the County plan and action efforts identified therein ensures San Marcos is taking sufficient action in the education and preparation for such hazards.

To further the effort to provide "a healthy and safe community," the City of San Marcos has established goals and policies to maintain community safety. The Safety Plan identifies specific issues by background hazard area to provide strategies for the minimization of hazard potential and protection of the overall well-being of community residents.

Natural Geologic Hazards

Connection to Guiding Themes

A Healthy and Safe Community

Generally, natural and man-made geologic risks are low for the City of San Marcos due to the specific geography of and formations within the City of San Marcos. However, the areas of Questhaven/ La Costa, Lake San Marcos, Barham/Discovery and eastern College Area neighborhoods have scattered moderate susceptibility for landslides, mudflows, and instability. Potential for surface fault rupture and significant ground shaking from earthquakes is low. Some ground shake is considered reasonable based on proximity to the Rose Canyon Fault, Oceanside Blind Thrust (OBT) and Thirtymile Bank Blind Thrust Fault.

It is important that the City of San Marcos and each citizen make every possible effort to maximize protection to lives and property. City of San Marcos implementation of geology engineering investigations and building code conformance requirements for all new construction will allow for best development practices in minimizing the risks of geologic hazards, including specific risk factors such as shallow water, liquefaction, landslides, liquefaction-induced lateral spread landslides, and mudflows.

Goal S-1

Reduce risks to the community from earthquakes by regulating new development and redevelopment to prevent the creation of new geologic and seismic hazards.

- Policy S-1.1: Reduce the risk of impacts from geologic and seismic hazards by applying current and proper land use planning, development engineering, building construction, and retrofitting requirements.
- Policy S-1.2: Investigate specific groundwater levels and geologic conditions underlying all new development or redevelopment proposals in areas where potential fault rupture, liquefaction, or other geologic hazards are suspected.

Flooding Hazards***Connection to Guiding Themes***

A Healthy and Safe Community

Risk of flooding and inundation due to dam failure is possible due to the prevalence of natural drainage corridors and the presence of human-made water reservoirs within the City of San Marcos. The Business/Industrial District and other productive areas of San Marcos lie within FEMA 100 year flood plains. Dam failures at any of the man-made reservoirs such as the South Lake, Jacks Pond, Discovery Lake, or Lake San Marcos could cause potential downstream inundation and flooding.

Goal S-2

Minimize the risk to people, property and the environment due to flooding hazards.

- Policy S-2.1: Continue to provide well-maintained regional flood control facilities capable of accommodating, at a minimum, 100-year storm flows consistent with federal requirements.
- Policy S-2.2: Require existing private development to take responsibility for maintenance and repair of structures to resist flood damage.

Fire Hazards***Connection to Guiding Themes***

A Healthy and Safe Community

The methodology for this assessment uses the Community Wildfire Hazard Rating system (WHR) developed specifically to evaluate communities within Wildfire Urban Interface (WUI) for their relative wildfire hazard. The WHR model combines physical infrastructure, and fire behavior components like fuels and topography with the knowledge

of the wildfire experts. Conformance with existing ordinances for the provision and maintenance of separate water systems will continue to ensure the fire department has adequate resources for emergencies. Efforts to reduce the occurrence of fires will also be facilitated through Fuel Management Plans and the promotion of appropriate hillside and yard landscaping measures to reduce risks.

Goal S-3

Minimize injury, loss of life, and damage to property resulting from structural or wildland fire hazards.

- Policy S-3.1: Require development to be located, designed and constructed to provide adequate defensibility and reduce the risk of structural loss and life resulting from wildland fires. Development will consider hazards relative to terrain, topography, accessibility and proximity to vegetation. One such provision for development to minimize the risk of structural loss and life shall be the inclusion of overhead fire sprinklers.
- Policy S-3.2: Provide sufficient level of fire protection service to reduce risk from urban and wildland fire. Advocate and support regional coordination among fire protection and emergency service providers.
- Policy S-3.3: Require development to provide additional access roads when necessary to provide for safe access of emergency equipment and civilian evacuation concurrently.
- Policy S-3.4: Coordinate with fire protection and emergency service providers to assess fire hazards before and after wild-fire events to adjust fire prevention and suppression needs, as necessary, commensurate with both short and long term fire prevention needs.
- Policy S-3.5: Support programs and plans, such as Strategic Fire Plans, consistent with state law that require fuel management/modification within established defensible space boundaries and when strategic fuel modification is necessary outside of defensible space, balance fuel management needs to protect structures with the preservation of native vegetation and sensitive habitats.

Wildfire Planning

- Policy S-3.6: Protect communities from unreasonable risk of wildfire within very high fire hazard severity zones.
- a. Assess site constraints when considering land use designations near wildlands to avoid or minimize wildfire hazards as part of a community plan update or amendment.

- b. Identify building and site design methods or other methods to minimize damage if new structures are located in very high fire hazard severity zones on undeveloped land and when rebuilding after a fire.
- c. Require ongoing brush management to minimize the risk of structural damage or loss due to wildfires.
- d. Provide and maintain water supply systems to supplies for structural fire suppression.
- e. Provide adequate fire protection.

Policy S-3.7: Incorporate fire safe design into development within very high fire hazard severity zones (VHFHSZs) to have fire-resistant building and site design, materials, and landscaping as part of the development review process.

- a. Minimize new residential development in VHFHSZs, and locate future public facilities, including new essential and sensitive facilities, outside of VHFHSZs when possible
- b. Locate, design and construct development to provide adequate defensibility and minimize the risk of structural loss from wildland fires.
- b. Design development on hillsides and canyons to reduce the increased risk of fires from topography features (i.e., steep slopes, ridge saddles).
- c. Minimize flammable vegetation and implement brush management best practices in accordance with the Zoning Ordinance.
- d. Design and maintain public and private streets for adequate fire apparatus vehicles access (ingress and egress) and install visible street signs and necessary water supply and flow for structural fire suppression.
- e. Coordinate with the San Marcos Fire Department to provide and maintain adequate fire breaks where feasible or identify other methods to slow the movement of a wildfire in VHFHSZs.

Policy S-3.8: Implement brush management along City maintained roads in very high fire hazard severity zones adjacent to open space and canyon areas.

- Policy S-3.9: Maintain access for fire apparatus vehicles along public streets in very high fire hazard severity zones for emergency equipment and evacuation.
- Policy S-3.10: Provide wildland fire preparedness education for fire safety advance planning.
- Policy S-3.11: Coordinate with local, state, and federal fire protection agencies with respect to fire suppression, rescue, mitigation, training and education.
- Policy S-3.12: Coordinate with local, state, and federal agencies to update emergency, evacuation, and hazard mitigation plans, as necessary.
- Policy S-3.13: Support city-wide emergency and disaster preparedness education programs.
- Policy S-3.14: Locate, when feasible, new essential public facilities and utilities outside of very high fire hazard severity zones, including but not limited to, hospitals and health care facilities, emergency shelters, emergency command centers, and emergency communication facilities, or identify construction methods or other methods to minimize damage if these facilities are located in very high fire hazard severity zones.

Hazardous Materials

Connection to Guiding Themes

A Healthy and Safe Community

Certain types of development and uses within San Marcos use, handle, and dispose of hazardous materials. The City of San Marcos continues efforts to remediate brownfield sites through redevelopment, promote safe use and handling of materials, and ensures responsible siting of facilities through proper land planning and enforcement of existing regulations.

Updates in proper site design and street access for industrial properties that could handle hazardous materials will facilitate expedited emergency response and maneuvering throughout San Marcos. Additionally, continued enforcement of Hazardous Materials disclosures will maintain control of, and thus limit the risks of, these materials.

Goal S-4

Protect life, structures, and the environment from the harmful effects of hazardous materials and waste.

- Policy S-4.1: Promote and support the proper disposal, handling, transport, delivery, treatment, recovery, recycling, and storage of hazardous materials in accordance with applicable federal, State, and local regulations.
- Policy S-4.2: Require areas of known or suspected contamination to be assessed prior to reuse or redevelopment. Plan for reuse of contaminated areas in a manner that is compatible with the nature of the contamination and subsequent remediation efforts.
- Policy S-4.3: Require that land uses using hazardous materials be located and designed to ensure sensitive uses, such as schools, hospitals, day care centers, and residential neighborhoods, are protected.
- Policy S-4.4: Avoid locating sensitive uses near established hazardous materials users or industrial areas where incompatibilities would result, except in cases where appropriate safeguards have been developed and implemented.

Emergency Preparedness / Neighborhood Safety***Connection to Guiding Themes***

A Healthy and Safe Community

The current structure of inter-agency coordination and emergency readiness efforts for the City of San Marcos is sufficient based on hazard risks. Public notification systems, including the City's AM radio station and Reverse 911, will be utilized in the event of an emergency to notify residents of information such as appropriate evacuation routes. Primary circulation corridors function to connect all parts of the community to potential evacuation routes based on the location of the emergency.

An additional crime-deterrent measure, to improve the overall safety and livability of San Marcos, is the adoption of CPTED design guidelines. Requiring new construction and redevelopment projects to incorporate CPTED design strategies could reduce law enforcement work-load and promote safer places throughout San Marcos.

Goal S-5

Establish and maintain an effective emergency response program to respond to disasters and maintain continuity-of-life support functions during an emergency.

- Policy S-5.1 Follow the policies and procedures of the City of San Marcos Emergency Operations Plan, which is periodically updated. Use and dispatch the City's mobile Emergency Operations Center as necessary.
- Policy S-5.2 Continue to enhance and strengthen communication and coordinate participation among and within public agencies, citizens, school districts, water districts, utilities, non-profit organizations, business, and industry to foster a vested interest in implementation.
- Policy S-5.3 Develop, implement, and maintain an effective evacuation program for areas of risk in the event of a disaster.

Goal S-6

Provide neighborhood safety through effective law enforcement.

- Policy S-6.1 Continue to maintain demand-based law enforcement service levels to reduce the risk of criminal activity.
- Policy S-6.2 Continue public education efforts and community outreach programs to promote community involvement in crime and drug prevention.
- Policy S-6.3 Use Crime Prevention through Environmental Design (CPTED) principles in the design or redevelopment of projects and buildings.

Goal S-7

Comply with the McClellan-Palomar Airport Land Use Compatibility Plan.

- Policy S-7.1 Record an overflight notification document in association with the approval of any new residential land use within the AIA overflight notification area consistent with the ALUCP. See Figure 6-5 McClellan-Palomar Airport Influence Area.

Goal S-8

Protect the community from risks posed by climate change.

- Policy S-8.1: Collaborate with local, regional, state and/or federal jurisdictions and agencies on climate resiliency and adaptation strategies.
- Policy S-8.2: Develop a climate resiliency plan that integrates and builds upon the strategies identified in the General Plan and Climate Action Plan.
- Policy S-8.3: Monitor climate change-related effects with local, regional, state, and/or federal partners to provide information of effectiveness of existing infrastructure and programs.

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