6. SAFETY ELEMENT

BACKGROUND AND CONTEXT

Protecting and preserving the health, safety, and welfare of the community is an issue of fundamental concern to the City. As such, it is important that the City of Palm Springs maintain and improve programs that effectively address safety considerations. The Safety Element discusses natural and manmade hazards that might occur and presents goals, policies, and actions that can help reduce the risk these hazards pose to the City and its residents. More detailed information regarding hazards can be found in the Technical Background Report to the Safety Element.

RELATIONSHIP TO OTHER PLANS AND PROGRAMS

Federal, state, and local regulations and policies such as the California Environmental Quality Act (CEQA), the California Government Code, the Uniform Building Code, and the Palm Springs Municipal Code regulate and/or influence land use and development in Palm Springs. Not only do they help to protect the health, safety, and welfare of Palm Springs residents, visitors, and businesses by ensuring that proper analyses are conducted, sound construction practices are implemented, and uses are appropriately sited within the City, they can also help to minimize the recovery time following a disaster.

GOALS, POLICIES AND ACTIONS

This section contains an overview and policy direction related to safety provisions within the City. The safety items addressed in this element should be given careful consideration when new development, roads, parks, critical emergency facilities, infrastructure, or other projects are designed.

SEISMIC SAFETY CONSIDERATIONS

The City of Palm Springs is located in an area subject to substantial seismic hazards such as earthquakes, liquefaction and earthquake-induced slope failure and landslides. These seismic hazards can affect the structural integrity of buildings and utilities, and, in turn, cause property damage and potential loss of life. Although it is not possible to prevent earthquakes, their destructive effects can be minimized through comprehensive hazard-mitigation programs and efforts.

Earthquakes and Fault Zones

The City of Palm Springs is located in an area where numerous active faults are present. At least two active faults, the Banning and Garnet Hill faults, depicted in Figure 6-1, *Seismic Hazards*, extend through portions of the City. Both fault zones are capable of causing damage to the City. Other faults in the region, such as the San Andreas, San Gorgonio Pass, and San Jacinto faults, also have the potential to produce strong ***seismic shaking*** in Palm Springs.

Seismic Shaking: Lateral movement, or acceleration, of the ground during an earthquake.

Surface Rupture: Occurs when movement on a fault deep within the earth breaks through to the surface. Although surface rupture typically results in a small percentage of the total damage in an earthquake, being too close to a rupturing fault can cause severe damage to structures.

Surface Trace: Commonly referred to as a "fault line," it is the intersection of a fault plane with the surface of the earth.

The potential for ground rupture due to fault movement is commonly related to the seismic activity of known fault zones. Active faults are present along the northernmost reaches of the City, where the traces of the Garnet Hill and Banning faults have been mapped. These faults have the potential to generate ***surface rupture*** or ground deformation in the City of Palm Springs. As shown in Figure 6-1, an Alquist-Priolo Earthquake Fault Zone has been assigned to the portion of the Banning fault that extends through Palm Springs, and to the San Gorgonio Pass fault located immediately north of the City's northwest corner. Under the Alquist-Priolo Earthquake Fault Zoning Act, the location of structures for human occupancy across the ***surface trace*** of an active fault is restricted. A Riverside County Fault Management Hazard Zone has been assigned to the portion of the Garnet Hill fault that extends through the City.

Although the Garnet Hill fault is not designated as an Alquist-Priolo fault zone, Riverside County has established Fault Management Hazard Zones in order to require subsurface investigations of the Garnet Hill fault to determine, over time, if the traces of the fault are active. This designation for the Garnet Hill fault allows the City of Palm Springs to regulate future development across the trace of the fault. Consideration should also be given to known faults that, though not active, are mapped in the Palm Springs area, including but not limited to the South Pass fault, the Palm Canyon fault, and the Deep Canyon fault (see Figure 6-1).

Laws to Mitigate Earthquake Hazards

The State of California regulates development in potentially seismically active areas through a variety of tools that reduce or mitigate potential hazards from earthquakes or other geological hazards.

The ***California Building Code*** (CBC) contains provisions to safeguard against major structural failures or loss of life caused by earthquakes or other geologic hazards, and identifies zones of seismic activity subject to varying degrees of potential impact and frequency of large earthquakes. The City of Palm Springs lies entirely within Seismic Zone 4 and is potentially subject to the highest acceleration, or changes in speed or velocity, due to seismic shaking.

Enacted in 1986, the ***Unreinforced Masonry Law*** requires all cities and counties within Seismic Zone 4 to identify potentially hazardous unreinforced masonry (URM) buildings in their jurisdictions, establish a URM loss-reduction program, and notify the owners of such buildings of the potential earthquake hazard their buildings pose.

The primary purpose of the ***Alquist-Priolo Earthquake Fault Zoning Act*** is to prohibit the location of structures for human occupancy across active surface traces of fault lines until geotechnical investigations determine that a potential building site is safe for habitation. The Act also requires cities to disclose to the general public, through the use of maps and other appropriate materials, areas that are subject to seismic hazards.

The ***Seismic Hazards Mapping Act*** (SHMA) of 1990 addresses nonsurface fault rupture earthquake hazards, including strong ground shaking, liquefaction, and seismically induced landslides. The California Geological Survey (CGS) has not yet mapped the Palm Springs area under the SHMA. However, performing geological studies in those areas

identified as having a liquefaction or slope-instability hazard would reduce the potential for damage from these hazards.

Liquefaction

Liquefaction occurs when loose, soft, unconsolidated, or sandy soils that are saturated with water are subjected to ground vibrations during a seismic event. Significant ground shaking causes soil to lose strength and "liquefy," triggering structural distress or failure due to the settling of the ground or a loss of strength in the soils underneath structures.

The northern and eastern areas of the City have a low possibility of being affected by liquefaction (see Figure 6-1). This hazard is considered low in the Palm Springs area because the approximate depth to groundwater is greater than 50 feet. Research and historical data indicate that loose, granular materials saturated with groundwater and located at depths of less than 50 feet with silt and clay contents of less than 30 percent are most susceptible to liquefaction. Shallow groundwater that can contribute to the occurrence of liquefaction is known to occur locally in the downtown area, immediately surrounding the Agua Caliente Springs. A strong earthquake could cause liquefaction in this area, most likely expressed as "sand volcanoes" immediately surrounding the spring. Seasonal fluctuations in groundwater levels and the introduction of residential irrigation increase liquefaction risk.

Earthquake-Induced Slope Failures and Landslides

Strong ground motions can worsen existing unstable slope conditions, particularly if coupled with saturated ground conditions. Earthquake-induced slope failures generally include rock falls, landslides, and debris flows that can overrun structures, people, or property, sever utility lines, or block roads, which can hinder rescue operations after an earthquake. After the 1986 North Palm Springs earthquake, numerous landslides consisting primarily of debris slides and rockfalls were reported over an area of 600 square kilometers.

The southern parts of Palm Springs are most vulnerable to seismically induced slope failure, due to the steep terrain. Those areas of the City at the foot of the San Jacinto Mountains or below hills covered with large boulders are most susceptible to rockfall. In areas where there is development at the base of steep slopes, dislodged boulders can roll down onto roadways, with the potential to impact passing motorists.

GOAL SA1:

Reduce, to the greatest extent possible, the physical and environmental effects of seismic hazards within the City.

Policies

SA1.1 Minimize the risk to life and property through the identification of potentially hazardous areas, adherence to proper construction design criteria, and provision of hazards information to all residents and business owners.

SA1.2 Require geologic and geotechnical investigations in areas of potential seismic hazards such as fault rupture, seismic shaking, liquefaction, and slope failure, as part of the environmental and/or development review process for all structures, and enforce structural setbacks from faults that are identified through those investigations in accordance with the Seismic Hazards Mapping Act. Require subsurface investigations of the Garnet Hill fault if and as that area of northern Palm Springs is developed.

SA1.3 Coordinate with the National Earthquake Hazard Reduction Program of the Federal Emergency Management Agency to identify earthquake risks and available mitigation techniques.

SA1.4 Enforce the requirements of the California Seismic Hazards Mapping and Alquist-Priolo Earthquake Fault Zoning Acts when siting, evaluating, and constructing new projects within the City.

SA1.5 Disallow the construction of buildings designed for human occupancy within 50 feet of an active fault and prevent new critical, sensitive, and high-occupancy facilities from being located within 100 feet of a potentially active fault.

SA1.6 Maintain a strong, enforceable ordinance for upgrading unreinforced masonry buildings that is tailored to the local conditions in the City of Palm Springs.

SA1.7 Require that engineered slopes be designed to resist earthquake-induced failure.

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SA1.8 Require that ***lifelines*** crossing a fault be designed to resist damage in the occurrence of fault rupture.

SA1.9 Require removal or rehabilitation of hazardous or substandard structures that may collapse in the event of an earthquake, in accordance with the Unreinforced Masonry Law and other applicable regulations.

SA1.10 Designate, where appropriate, hazard zones (earthquake fault lines, floodways and floodplains, steep or unstable slopes, areas susceptible to rockfalls and landslides, etc.) as open space, and these areas on the land use map.

SA1.11 Encourage and cooperate with Caltrans to stabilize susceptible slopes and strengthen bridges, elevated roadways, and other structures along state highways, which may be subject to failure during major seismic events, thereby isolating portions of the community from emergency aid and assistance.

SA1.12 Ensure that the highest and most current professional standards for seismic design are used in the design of Critical, Sensitive, and High-Occupancy facilities such as water tanks, dams, levees, and hospitals.

SA1.13 Require liquefaction-assessment studies in those areas identified as being susceptible to liquefaction.

SA1.14 Include liquefaction-mitigation measures in the construction of bridges, roadways, major utility lines, or park improvements in potentially liquefiable areas, such as the Whitewater riverbed or at the mouths of canyons.

SA1.15 Determine the areas potentially subject to flooding in the event of a rupture of flood-control facilities in the Palm Springs area due to earthquake activity, especially where such facilities cross or are near active faults.

Actions

SA1.1 Prepare a detailed geotechnical analysis for new construction and significant alterations to structures located in areas identified as being subject to slope failure, rockfalls, or landslides.

SA1.2 Participate with surrounding communities and applicable state and federal agencies to establish and maintain maps illustrating the location of seismic and geological hazard zones occurring within the City boundaries and sphere of influence.

SA1.3 Initiate an educational public outreach program in coordination with local utility companies, the Coachella Valley Water District, the Desert Water Agency, the Palm Springs Unified School District, police and fire departments, and others outlining appropriate action before, during, and after earthquakes and other disasters.

SA1.4 Keep the City's public awareness programs on natural-disaster management and emergency preparedness up-to-date on current hazards and issues and seek public participation in the development of hazard mitigation and disaster recovery programs.

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Figure 6-1 Seismic Hazards

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GEOLOGIC SAFETY CONSIDERATIONS

Geologic hazards generally consist of environmental processes occurring on the surface of the earth that have the potential to cause harm to life and limb, and to disrupt vital services, economic vitality, and social order. In Palm Springs, these hazards include slope instability, landslides, debris flows, ground subsidence, erosion, and windblown sand.

An increasing population and demands for new development within the City can disrupt natural processes, often leading to negative impacts on the environment and development. Through proper site planning, new advances in scientific research, and coordination with regional planning agencies, potential risks from associated geologic hazards can be minimized.

Slope Instability, Landslides and Debris Flows

Slope instability could be a widespread hazard in the City if the areas of the San Jacinto and Santa Rosa mountains within city limits were open to development. However, since most of these highlands have been set aside as a preserve, little development is expected to occur within the mountainous areas that are moderately to highly susceptible to slope instability. Slope stability issues do pose a concern along those developed areas of the City that abut the mountainous terrain, including roads, like Highway 111, that locally run along the base of the slopes. Intense rainfall, ground shaking, and other environmental factors, including time, can cause boulders to fall or roll onto these areas, posing a threat to structures and passing motorists. Planning for developments and infrastructure placed in these areas should be supported by site-specific geotechnical analyses for slope stability. Careful land management in hillside areas can reduce the risk of economic and social losses from slope failures.

Slope failure is the downslope movement of rock, debris, and soil in response to gravitational stresses and pressures. Slope failures can occur on natural or manmade slopes. For manmade slopes, most failures occur on older slopes, many of which were built at slope gradients steeper than those allowed by today's grading codes. Although infrequent, failures can also occur on newer, graded slopes, generally due to poor engineering or poor construction.

The potential for slope failure is dependent on many factors. Some of the most important factors include slope height, slope steepness, and the

strength of weaker layers of soil underlying the slope. Heavy and prolonged rainfall, erosion, undercutting by streams, manmade alterations to the slope, and seismic shaking all contribute to conditions in which slope failures are likely to occur.

Potential as well as past landslides pose risks to the Palm Springs area (see Figure 6-2, *Landslide Susceptibility*). Landslides are downward movements of mixes of bedrock blocks, fragments, debris, and soils. Large landslide deposits are present in the San Jacinto and Santa Rosa Mountains, but only one landslide deposit has been identified in the Palm Springs area. This deposit is located in the San Jacinto Mountains overlooking Blaisdell Canyon. Failed slopes in northwestern area of Palm Springs resulting from the 1986 North Palm Springs earthquake also pose risks for potential landslides and other associated hazards, such as compressible soils. In addition, the foothills and mountains adjacent to Palm Springs have steep slopes along which landslides and other slope failures can occur during or after periods of intense rainfall or in response to strong seismic shaking. Areas of high topographic relief, such as steep canyon walls, are most likely to be impacted by rockfalls, rockslides, soil slips, and to a lesser degree, large landslides. Likewise, locations in the Garnet Hill and Whitewater Hill areas contain unstable soil types along which slope failures could occur.

During exceptional storm periods or prolonged rainfall, the risk of debris flows increases. Debris flows are the most dangerous and destructive type of slope failure, generally consisting of a rapidly moving slurry of water, mud-rock, vegetation, and debris. This type of slope failure usually occurs during an intense rainfall event, following saturation of the soil by previous rains.

Rockfalls are free-falling or tumbling masses of bedrock that have broken off steep canyon walls or cliffs. Rockfalls can happen wherever fractured rock slopes have become steep from stream erosion or human activities. This hazard is present in the hills that frame the southern part of the Coachella Valley, along the southwestern portions of Palm Springs. Rockfalls can occur suddenly and without warning, but are more likely to occur in response to earthquake-induced ground shaking, during periods of intense rainfall, or as a result of human activities such as grading and blasting.

Ground Subsidence

Ground subsidence is the gradual settling or sinking of the ground surface with little or no horizontal movement. In the areas of southern California where ground subsidence has been reported, this phenomenon is usually associated with the extraction of oil, gas, or groundwater from below the ground surface, or the organic decomposition of peat deposits. Ground subsidence can also occur as a response to natural forces such as earthquake movements.

Ground-surface effects related to ground subsidence can include earth fissures, sinkholes, depressions, and disruption of surface drainage. Permanent (irreversible) subsidence can occur if groundwater is removed from clay and silt layers in an underlying aquifer. With expected increases in population, overdraft of the aquifers underlying the Coachella Valley will be one of the most serious challenges ahead for maintaining the region's environmental quality.

Erosion and Sedimentation

Erosion, the removal of earth materials by moving water, wind, or ice, is a significant geologic hazard in the Palm Springs area because of topographic and weather conditions. Erosion, runoff, and sedimentation are influenced by several factors, including climate, topography, soil and rock types, and vegetation. Natural erosion processes are often accelerated through human activities—whether they are agricultural or land-development related. Grading increases the potential for erosion and sedimentation by removing protective vegetation, altering natural drainage patterns, compacting the soil, and constructing cut-and-fill slopes, which may be more susceptible to erosion than the natural condition.

Because of the topographic relief in and around Palm Springs, erosion and ***sedimentation*** are significant elements of the natural setting. Land development can affect these elements by altering natural processes, topography, and protective vegetation, in addition to reducing ground in which water may drain. This, in turn, can lead to damage from increased flooding, erosion, and sedimentation in other areas, typically downstream. Erosion and sedimentation are also important factors to consider with respect to developments adjacent to slopes and drainage channels, not only during the design of a project, but also during construction and long-term maintenance of the developed site. Development can minimize the impacts of sedimentation by reducing the amount of permeable surfaces provided within a project that can lead to increased flooding and sedimentation downstream of the project.

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Windblown Sand

Strong winds are endemic to the Palm Springs area, due to the tunneling effect of air through the narrow San Gorgonio Pass. Wind can damage land and vegetation, and in this region, where surface sediments are predominantly dry and granular, windblown sand and dust can impact surface improvements, air quality (creating health hazards), and visibility.

Wind erosion commonly occurs in flat, bare areas, dry, sandy soils, or anywhere the soil is loose, dry, and finely granulated. Figure 6-3, *Geologic Map*, details areas of Palm Springs in which surficial sediments are easily transported by wind. Wind erosion damages land and natural vegetation by removing soil from one place and depositing it in another. Since high winds blow down the axis of the Coachella Valley, recreational and resort communities that first developed in the upper Coachella Valley were generally located in areas sheltered from these winds, tucked in coves at the base of the mountains. However, as the area has grown, development has had to move into the central axis of the valley and into the high-wind areas. As seen in Figure 6-4, *Wind Hazard Zones*, most of the urban development in the City of Palm Springs lies within an area of high susceptibility to wind erosion. Recreational land uses, especially use of off-road vehicles, can also accelerate erosion in the area.

Windblown sand hazard along Indian Canyon Drive.

Wind and windblown sand pose an environmental hazard throughout the Coachella Valley. Buildings, fences, roads, crops, automobiles, trees, and shrubs can all be damaged by abrasive blowing soil. In some areas, windblown sand has actually forced the abandonment of dwellings and subdivided tracts in the central Coachella Valley. In Palm Springs, windblown sand has repeatedly caused the closure of several roads, costing the City thousands of dollars in cleanup. The roads with the most frequent closures include Indian Canyon Drive, Gene Autry Trail, and Vista Chino.

GOAL SA2:

Reduce, to the greatest extent possible, the physical and environmental effects of geologic hazards within the City.

Policies

SA2.1 Minimize grading and otherwise changing the natural topography to protect public safety and reduce the potential for property damage as a result of geologic hazards.

SA2.2 Require geologic and geotechnical investigations in areas of potential geologic hazards as part of the environmental and/or development review process for all structures.

SA2.3 Limit the development of permanent slopes to the inclinations permitted by building codes.

SA2.4 Analyze the stability of large temporary slopes prior to construction, and provide mitigation measures as needed.

SA2.5 In the areas of Palm Springs susceptible to slope instability, require geotechnical investigations that include engineering analyses of slope stability, surface and subsurface drainage specifications, and detailed recommendations for fill placement and excavation.

SA2.6 Prohibit the reconstruction of structures meant for human habitation that are damaged or destroyed by failed slopes unless the applicant can prove that the remedial measures proposed will improve slope conditions and make the site suitable for redevelopment.

SA2.7 Conduct a focused assessment of the effect of debris flow hazards on individual structures located or planned in vulnerable positions, including canyon areas, the toes of steep, natural slopes, and the mouths of drainage channels.

SA2.8 Require that new construction and significant alterations to structures located within potential landslide areas (see Figure 6-3) be evaluated for site stability, including the potential impact to other properties, during project design and review.

SA2.9 In areas susceptible to rockfalls or landslides, erect protective devices such as barriers, rock fences, retaining structures, or catchment areas.

SA2.10 Participate in regional programs designed to protect groundwater resources and the regional groundwater basin from the hazard of regional ground subsidence.

SA2.11 Protect slopes from the effects of erosion by directing surface water away from slope faces and planting slopes with drought-resistant, ground-covering vegetation.

SA2.12 Adequately set back developments that are adjacent to natural drainage channels to protect them from eroding channel banks, or modify the channel to reduce the potential impacts created by erosion.

SA2.13 Prohibit the construction of hilltop homes or structures above natural slopes at the head of steep drainage channels or gullies.

SA2.14 Ensure the protection of structures placed near the bases of slopes or the mouths of small canyons, swales, washes, and gullies from sedimentation.

SA2.15 Protect slopes within developed areas from concentrated water flow over the tops of the slopes by the use of berms or walls. Engineer all ridge-top building pads to direct drainage away from slopes.

SA2.16 Provide protection for roadways and utility lines from erosion and sedimentation.

SA2.17 Encourage the incorporation of wind barriers, architectural design or features, and drought-resistant ground coverage in new development site designs to mitigate the impacts from erosion and windblown sand.

Actions

SA2.1 Establish and maintain maps illustrating the location of geologic hazard zones occurring within the City boundaries and sphere of influence in coordination with the California Division of Mines and Geology and the United States Geological Survey (USGS).

SA2.2 Initiate a public education program that focuses on reducing losses from geologic hazards, including the importance of proper irrigation practices and the care and maintenance of slopes and drainage devices.

SA2.3 The City Engineer shall conduct regular inspection of grading operations to maximize site safety and compatibility with community character.

SA2.4 Develop and implement a groundwater monitoring program to combat ground subsidence as a result of groundwater withdrawal.

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SA2.5 Establish ordinances and guidelines to reduce the hazards from windblown sand and dust.

Figure 6-2 Landslide Susceptibility

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Figure 6-3 Geologic Map

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Figure 6-4 Wind Hazard Zones

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FLOOD AND DAM INUNDATION HAZARDS

Flooding

Because of the desert climate, the City of Palm Springs, like most of southern California, is subject to unpredictable seasonal rainfall. Most years the scant winter rains are barely sufficient to turn the hills green for a few weeks, but every few years the region is subjected to periods of intense and sustained precipitation that results in flooding. The Federal Emergency Management Agency (FEMA) cites that flooding is one of the most destructive natural hazards in the world, responsible for more deaths per year than any other geologic hazard. Therefore, the potential for flooding is a safety concern that Palm Springs continues to address.

Portions of the City of Palm Springs are susceptible to storm-induced flooding of the San Gorgonio River, Whitewater River, and other drainages that extend across the City. Palm Springs is susceptible to ***flash flooding***, since the local mountains are very steep and consist of rock types that are fairly impervious to water, meaning that little precipitation is absorbed into the ground. Instead, rainwater flows across the surface as runoff, collecting in the major drainages that pass through the City. Because of the steep terrain, scarcity of vegetation, and frequency of rockfalls and minor landslides, water from major storms can collect rapidly and run off quickly, overcoming manmade and natural channels, resulting in flash flooding.

Flooding is also expected to occur on the alluvial fans that the developed part of the City occupies, primarily from ***sheet flow***. Flood-control structures built and maintained by the Riverside County Flood Control and Water Conservation District (RCFCWCD) have helped reduce flood damage in the City since they were installed. Outside of the developed area of the City, most drainage channels are still in their natural state. Due to the construction of flood-control structures, sheet flow in most of these areas is estimated to be infrequent in occurrence and less than one foot deep.

FEMA has identified the ***100-*** and ***500-year flood*** zones, which are shown in Figure 6-5, *Flood Hazards*. These include the Whitewater and San Gorgonio River floodplains and along Snow Creek, Blaisdell Creek, Chino Creek, Palm Canyon Wash, and Tahquitz Creek. Most of the flood-prone areas are outside of the highly developed portion of the City. The mountains surrounding the developed portions of Palm Springs have the

Flash Flooding: Occurs during periods of heavy precipitation when rapidly moving high volumes of water flow downward from the mountains into the valley, often carrying mud, sand, and rock fragments.

Sheet Flow: Occurs when the capacities of flood channels, either natural or manmade, are exceeded and water flows over and into adjacent areas.

100-Year Floodplain: Land that is subject to flooding by a 100-year flood or the flood elevation that has a 1 percent chance of being equaled or exceeded each year. Structures located in a 100-year flood plain have a 26 percent chance of being flooded over the course of a 30-year mortgage, and only a 4 percent chance of being impacted by fire during the same time frame.

500-Year Floodplain: Land that has the potential to be flooded in a storm that has a 0.2 percent chance of occurring each year.

potential to contribute substantial debris to flood flows, endangering lives and property, as well as increasing flood problems by filling or plugging structures meant to convey water through the City.

Historic Flooding in Palm Springs

Major flooding occurred in Palm Springs in 1938, when the Whitewater River flooded the Coachella Valley. Overflow from the Tachevah Creek caused major flooding in Downtown Palm Springs and people in the City were isolated for nearly a week. Similarly, in the winter of 1965, the Cottonwood Creek overflowed Interstate 10 east of Highway 111, blocking traffic and isolating the City of Palm Springs.

Figure 6-5 identifies areas within the City that have the potential to be impacted in the event of a 100- or 500-year flood. FEMA's Flood Insurance Rate Maps (FIRMs) provide more detailed flood hazard map information. FIRMS are available for reference from FEMA.

The ***National Flood Insurance Program*** makes federally subsidized flood insurance available in communities that agree to adopt and enforce floodplain management ordinances to reduce future flood damage. Owners of all structures within the FEMA-mapped Special Flood Hazard Areas (100-year flood) are required to purchase and maintain flood insurance as a condition of receiving a federally related mortgage or home equity loan on that structure. National Flood Insurance is available in the City of Palm Springs; homeowners within the 500-year flood zones, and even outside these zones, should be encouraged to buy flood insurance. Section 93.17.00 of the City Municipal Code contains additional regulations designed to reduce the impacts of flood hazards. The City has also adopted and is implementing a master drainage plan that has been prepared and adopted in conjunction with RCFCWCD.

Flood damage to Indian Avenue by the 1965 Whitewater River floodwaters caused the road to be closed for 30 days, adding to the isolation of Palm Springs. *(Source: RCFCWCD)*

Major flood control structures in the Palm Springs area include the Whitewater River Levee, the Chino Canyon Levee and Channel, and the Palm Canyon Wash Levee. The levee between Palm Canyon Wash and Indian Drive, maintained by the RCFCWCD, protects the portion of the City south of the Whitewater River from flooding. The Chino Canyon Levee and Channel protect the northern part of the highly developed Palm Springs area from 100- and 500-year flooding from Chino Creek and the Whitewater River. The Palm Canyon Wash levee directs flows from Palm Canyon and Arenas Canyon northeastward to the Tahquitz Creek, then eastward to the Whitewater River. It provides 100-year storm protection on the north side of the channel down to Tahquitz Creek and on the south side of Tahquitz Creek channel to the Whitewater River.

Dam Inundation

Flooding resulting from dam failure is a potential hazard for the City. The Tachevah Creek Detention Reservoir and the Tahquitz Creek Debris Basin are two flood-control structures in the Palm Springs area required by the California State Water Code to be monitored for structural safety and that have the potential to pose a flooding risk to the City. General limits of flood hazard due to dam failure are shown on Figure 6-5, *Flood Hazards*.

The Tachevah Creek Detention Reservoir, about 1,200 feet downstream from the mouth of Tachevah Canyon, is formed by a 42-foot-high embankment constructed of compacted earth fill, and has a capacity of approximately 650 million gallons. This dam was built in 1964 and protects the highly urbanized central part of the City from floods and debris flows. Figure 6-5 shows the inundation path that would most likely occur in the event of dam failure at this facility.

Flood damage to Highway 111 from 1965 storms. *(Source: RCFCWCD)*

The Tahquitz Creek Debris Basin, which is a considerably smaller structure, was designed and constructed to reduce the risk of flooding that the Tahquitz Creek has historically posed to Palm Springs. Completed in May 1991 by the U.S. Army Corps of Engineers, the basin consists of a natural channel and dam with a debris storage capacity of about 33 million gallons and a two-mile reach of grass-lined channel used as a golf course and bicycle and equestrian trails. An inundation pathway for this dam is not available, possibly because it holds water only rarely during periods of intense and continuous rainfall. Therefore, its inundation threat is considered very low.

Inundation from Above Ground Storage Tanks

Inundation from aboveground storage tanks is another safety consideration for the City of Palm Springs. Flooding can occur if strong ground shaking causes structural damage to aboveground water tanks. Sloshing water can lift a water tank off its foundation or break the pipes leading to the tank, releasing water to surrounding areas. All water tanks in the City of Palm Springs are owned and operated by the Desert Water Agency and meet or exceed the design standards and safety requirements applicable at the time the tanks were constructed.

Flooding along Indian Canyon Drive, January 11, 2005.

Seiche Potential

A seiche is an earthquake-generated wave occurring in an enclosed body of water, such as a lake, reservoir, or harbor. Ground shaking caused by earthquakes can cause oscillations, or sloshing, in enclosed bodies of water, forming a wave that may spill over and flood adjacent land uses. In the Palm Springs area, seiching is not anticipated to pose a significant risk to facilities such as recharge basins and manmade lakes due to their shallow nature and the quick absorption of water into the sandy underlying surfaces. The City of Palm Springs does not have open reservoirs. However, sloshing within steel water storage tanks can cause damage or failure of the structure. Seiching in swimming pools can also occur, and since pools are generally relatively deep, it is not unusual for pool owners to report a loss of one or more feet of water due to sloshing during an earthquake.

GOAL SA3:

Reduce, to the greatest extent possible, the risk to life, property, and essential facilities from flooding and other hydrological hazards within the City.

Policies

SA3.1 Provide appropriate land use regulations and site-development standards for areas subject to flooding.

SA3.2 Evaluate all development proposals located in areas that are subject to flooding to minimize the exposure of life and property to potential flood risks.

SA3.3 Require that future planning for new development consider the impact on flooding potential as well as the impact of flood control structures on the environment, both locally and regionally.

SA3.4 Continue to work with the Federal Emergency Management Agency, Riverside County Flood Control and Water Conservation District, the Coachella Valley Water District, and the United States Army Corps of Engineers to receive and implement updated flood-control measures and information.

SA3.5 The City shall provide drainage controls and improvements that enhance local conditions and are consistent with and

Master Drainage Plan: Addresses the current and future drainage needs of a given community. The plan includes an inventory of existing and proposed drainage facilities, and an estimate of facility capacities, sizes, and costs. The plan provides a guide for the orderly development of the plan area, provides an estimate of costs to resolve flooding issues, and can be used to establish Area Drainage Plan fees.

Area Drainage Plan: A financing mechanism used to offset taxpayer

complement the Regional ***Master Drainage Plan*** and ensure that updated and effective Master Drainage Plans are implemented in a timely fashion.

SA3.6 The City shall establish ***Area Drainage Plans*** for purposes of funding needed drainage improvements benefiting defined tributary areas of the community.

SA3.7 Provide direction and guidelines for the development of on-site stormwater retention facilities consistent with local and regional drainage plans and community design standards.

SA3.8 Implement the regulations of the City of Palm Springs Flood Damage Prevention Ordinance (Sections 93.17.00 et seq.) to minimize public and private losses for properties within 100-year flood zone areas.

SA3.9 Continue to utilize the Emergency Announcement System to implement flood warnings and evacuation plans for those portions of the 100- and 500-year flood zones that have already been inhabited or developed and for critical facilities such as schools.

SA3.10 Ensure emergency evacuation routes are constructed to appropriate all-weather standards.

SA3.11 Design underground storm drains serving local neighborhoods to accommodate runoff from a 10-year frequency storm for conveyance to a downstream outlet and locate them in existing or proposed street rights-of-way where possible. Flows exceeding the 10-year frequency storm will be carried within public rights-of-way.

SA3.12 Design flood-control facilities so that biological impacts are minimized and locally significant habitat is either avoided or replaced.

SA3.13 Discourage the introduction of flood-control measures in the undeveloped areas of Palm Springs at the expense of environmental degradation.

SA3.14 Continue to leave existing watercourses and streams natural wherever possible by developing them as parks, nature trails, golf courses, or

The Tahquitz River is an example of a watercourse along which there are recreational opportunities for the City.

other types of recreation areas that could withstand inundation and provide for their enhancement as wildlife habitat.

SA3.15 In conjunction with the Coachella Valley Water District and the Riverside County Flood Control District, assure that design opportunities for enhanced open space and recreation amenities, including habitat enhancement, hiking, and equestrian trails, are fully explored and incorporated when designing and constructing channels, debris and detention basins, and other major drainage facilities, to the greatest extent practical.

SA3.16 Require the extensive landscaping of open-space areas in new development, provide the maximum permeable surface area to reduce site runoff, and prohibit unnecessary paving.

SA3.17 Continue to participate in the National Flood Insurance Program.

Actions

SA3.1 With assistance from the Coachella Valley Water District and the Riverside County Flood Control and Water Conservation District, develop and continually update a Regional Master Drainage Plan for the City, providing these entities with land use and other relevant data and information.

SA3.2 Establish and/or update local regulations and guidelines to direct the management of runoff and provide for local drainage facilities that tie into and maximize the effective use of regional drainage facilities.

SA3.3 Adopt or update local drainage policies and development standards that reduce the rate of runoff from developed lands that are consistent with capacities of public facilities and local and regional management plans, while providing opportunities for open space enhancement and multi-use.

SA3.5 Inspect bridges before and after a flood event to determine whether or not there is ***scouring*** damage that could impact their foundations.

Scouring is the removal of streambed material caused by water-flow erosion processes from around the bridge structure, causing structural damage or collapse.

SA3.6 Investigate the feasibility for additional all-weather crossings of the major drainage channels: e.g., Indian Canyon Drive, Gene Autry Trail, and Vista Chino across the Whitewater River.

SA3.7 With assistance from the Coachella Valley Water District, file the appropriate FEMA application materials and secure amendments to Flood Insurance Rate Maps as improvements are made to flood-control facilities or as changes in property elevations occur that warrant such considerations.

SA3.8 Develop a public outreach program to inform property owners about the potential for flooding in their area, including potential flooding of access routes to and from their neighborhoods.

Figure 6-5 Flood Hazards

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URBAN AND WILDLAND FIRE HAZARDS

Wildfires

The Blaisdell Canyon Fire came close to the Palm Springs Aerial Tramway on August 28, 2005. *(Source: Jay Calderon, The Desert*

Wildfires are a significant hazard in the West, where they occur naturally and have always been part of the natural environment. Large areas of southern California are particularly susceptible to wildfire due to the region's weather, topography, and native vegetation. The typically mild winters, characteristic of the region's Mediterranean climate, result in an annual growth of grasses and plants that dry out during the hot summer months. This dry vegetation provides fuel for wildfires in the autumn, when the area is intermittently impacted by Santa Ana winds—the hot, dry winds that blow across the region in the late fall. Although dangerous, wildland fire is a natural process and a necessary part of the natural ecosystem of southern California.

Relatively few wildland fires have occurred in the urbanized areas of Palm Springs within the past ten years. However, between 1980 and 1994, three very large wildfires occurred in the San Jacinto Mountains and foothills along the western border of Palm Springs and its sphere of influence—the Dry Falls fire of 1980, the Tram Fire of 1985, and the Palm Fire of 1994. The Blaisdell Canyon Fire of 2005 burned more than 5,000 acres in the mountains above Palm Springs proper, threatening the Palm Springs Aerial Tramway area. Fortunately, these fires were mostly limited to undeveloped areas of rugged terrain.

As seen in Figure 6-6, *Direct Fire Protection Areas*, only one relatively small area in the northwest corner of the City of Palm Springs and its Sphere of Influence is designated as a ***State Responsibility Area*** (SRA). The California Department of Forestry and Fire Protection (CDF) has primary responsibility for fire protection in this area. Fire suppression in the remaining wildland areas in and near Palm Springs is the responsibility of the USDA Forest Service (USFS) and the Bureau of Land Management. The direct protection area assignments shown in Figure 6-6 all affect firefighting resources in the City and should be a consideration in all fire hazard mitigation. Within the Palm Springs city limits, the western and southwestern portions of the City, specifically the neighborhoods located along the foothills and canyon mouths, are generally the most susceptible

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to wildland fire. Also susceptible to wildland fire are those areas with more vegetation, such as in the lower canyon reaches draining the San Jacinto Mountains, including Tachevah Canyon, Tahquitz Creek, Andreas Canyon, and Palm Canyon, where water may be more plentiful.

Urban Fires

In the developed areas of the City, the landscape vegetation is carefully maintained and watered regularly, conditions that limit the possibility for vegetation fires to ignite and spread. However, three wildland fires have occurred close to the urbanized areas of Palm Springs—the Tram Fire of 2001, the Tram Fire of 1998, and the Tramway Fire of 1996. Thus, there is still the potential for wildfires to affect the urbanized portions of Palm Springs, which can be minimized through the application of fuel-modification zones and other fire-mitigation techniques.

Still, the occurrence of a burn in one location lessens the likelihood of another burn in the same location in the future, since fuel for the fire was consumed and takes some time to return. Therefore, those areas that have not burned in four or more decades have a higher potential of burning again in the future.

In order to quantify the structural fire risk in a community, it is necessary for the local Fire Department to evaluate all occupancies based upon their type, size, construction type, built-in protection (such as internal fire sprinkler systems), and risk (high occupancy versus low occupancy) to assess whether or not they are capable of controlling a fire in the occupancy types identified. In newer residential areas where construction includes fire-resistant materials and interior fire sprinklers, most structural fires can be confined to the building or property of origin. In older residential areas where the building materials may not be fire-rated and the structures not fitted with fire sprinklers, there is a higher probability of a structural fire impacting adjacent structures, unless there is ample distance between structures, no strong winds, and the Fire Department is able to respond in a timely manner. The area's infrastructure also must be considered, including adequacy of nearby water supplies, transport routes, access for fire equipment, addresses and street signs, and maintenance.

Earthquake-Induced Fires

Earthquake-Induced Fires in Palm Springs: Two earthquake-induced fires in Palm Springs were caused by the 1992 Landers/Big Bear Earthquake.

Although wildland fires can be devastating, *earthquake-induced fires* have the potential to

generate the worst-case fire-suppression scenarios for a community because an earthquake typically causes multiple ignitions over a broad geographic area. If fire fighters are involved in search and rescue operations they are less available to fight fires, and the water distribution system could be impaired, limiting fire-suppression efforts even further. If earthquake-induced fires occur during Santa Ana wind conditions, the results can be far worse.

There are some areas in Palm Springs where breaks in gas mains and the water distribution system caused by an earthquake could lead to a significant fire danger. A moderate to strong earthquake on any of the faults that affect the City could trigger multiple fires, disrupt lifelines services (such as the water supply), and trigger other geologic hazards, such as landslides or rockfalls, which could block roads and hinder disaster response. Therefore, the capacity of water systems to provide sufficient water to fight fires is a significant issue.

GOAL SA4:

Protect the lives and property of residents, business owners, and visitors from the hazards of urban and wildland fires.

Policies

SA4.1 Assess the need for greenbelts, fuel breaks, fuel reduction, and buffer zones around existing and newly proposed communities to minimize potential losses created by fires.

SA4.2 Support brush removal and weed abatement in developed areas to minimize fire risk, and coordinate with the Riverside County Fire Department Hazard Reduction Office regarding jurisdictional issues relating to brush removal.

SA4.3 Continue to classify areas of varying fire-hazard severity based upon the proximity to open wildland slope, grades, accessibility, water supply, and building construction features.

SA4.4 Require property owners adjacent to wildland areas to maintain a defensible space around structures that is free from dry brush and other flammable materials and to comply with the 100′ Defensible Space Requirement in the Public Resources Code (PRC 4291) and Government Code (GC 51182) for fuel modification to reduce fire danger.

SA4.5 Continue to conduct long-range fire safety planning, including enforcement of stringent building, fire, subdivision, and other Municipal Code standards; improved infrastructure; and mutual-aid agreements with other public agencies and the private sector.

SA4.6 Continue to refine procedures and processes to minimize the risk of fire hazards by requiring new and existing development to:

- Utilize fire-resistant building materials;
- Incorporate fire sprinklers as appropriate;
- Incorporate defensible-space requirements;
- Comply with Riverside County Fuel Modification Guidelines;
- Provide Fire Protection Plans;
- Develop fuel modification in naturalized canyons and hills to protect life and property from wildland fires, yet leave as much of the surrounding natural vegetation as possible; and
- Use selective trimming and obtain permits when necessary in designated areas to preserve environmentally sensitive native plants.

SA4.7 Encourage owners of nonsprinklered properties, especially midrise structures and high-occupancy structures, to retrofit their buildings and include internal fire sprinklers.

SA4.8 Ensure that public and private water distribution and supply facilities have adequate capacity and reliability to supply both everyday and emergency firefighting needs.

SA4.9 Utilize reservoirs, tanks, and wells for emergency fire suppression water sources.

SA4.10 Ensure that fuel modification and controlled fire burns are consistent with any adopted habitat-conservation plans.

SA4.11 Ensure adequate firefighting resources are available to meet the demands of new development, including the construction of midrise structures, by ensuring that:

- Response times do not exceed desired levels of service;

- Fire-flow engine requirements are consistent with Insurance Service Office (ISO) recommendations; and,
- The heights of truck ladders and other equipment are sufficient to protect multiple types of structures.

SA4.12 As areas of the City and its sphere of influence are developed, construction of new fire stations should be considered so that the Fire Department can continue to respond to any emergency call within six minutes of receiving the call at dispatch.

SA4.13 Continue public education efforts to inform residents, business owners, and visitors of fire hazards and measures to minimize the damage caused by fires to life and property.

Actions

SA4.1 Evaluate the adequacy of access routes to and from fire hazard areas relative to the degree of development or use (e.g., road width, road type, length of dead-end roads, etc.).

SA4.2 Develop education and mitigation strategies that focus on the enhanced or higher hazard present in the summer and fall, when dry vegetation and hot, windy weather coexist.

SA4.3 Regularly evaluate specific fire-hazard areas and adopt reasonable safety standards, covering such elements as adequacy of nearby water supplies, routes or throughways for fire equipment, clarity of addresses and street signs, and maintenance.

SA4.4 Form a task force to review the adequacy of the City's water-storage capacity and distribution network in the event of an earthquake. Redundant systems should be considered and implemented in those areas of the City where ground failure could result in breaks to both the water and gas mains, with the potential for significant conflagrations.

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Figure 6-6 Direct Fire Protection Areas

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HAZARDOUS MATERIALS AND WASTE

Palm Springs has many businesses that manufacture, transport, store, use, and dispose of hazardous materials. The City, therefore, has the potential to be affected by a major hazardous material emergency or affected in general by hazardous materials and waste.

In the City of Palm Springs there are several identified hazardous or toxic materials sites associated with commercial, industrial, quasi-industrial, and medical operations and processes (see Figure 6-7, *Hazardous Materials*), which have the potential for accidental spills, purposeful illegal dumping, air emissions, and other uncontrolled discharges into the environment. Only one transporter of hazardous waste is listed by the EPA in the Palm Springs area.

Most of the hazardous materials generators within the City are located within five miles of the Garnet Hill and Banning faults, which have a relatively high probability of generating an earthquake in the next 30 years. Fourteen of the hazardous materials facilities have been identified as being located between the 100- and 500-year floodplain for the Whitewater River. Therefore, all of the hazardous materials sites within the City could be subject to moderate to severe seismic shaking or flooding.

Transport of Hazardous Materials

State Highway 111, I-10, and the Southern Pacific Railroad corridor are all used to transport hazardous materials through the City. It is these areas that have the highest likelihood of potential spills or leaks. The California Highway Patrol is in charge of spills that occur in or along freeways, with Caltrans and local sheriffs and fire departments responsible for providing additional enforcement and routing assistance. Additionally, natural gas transmission pipelines extend across the City and sphere of influence north of I-10. Rupture of any portion of this pipeline would adversely impact the area.

Surface and Subsurface Groundwater Contamination

Other potential hazards to the City of Palm Springs include groundwater and drinking-water pollution, leaking underground fuel tanks, household hazardous waste, and old landfill sites.

The City of Palm Springs is a co-permittee and the local enforcing agency for the National Pollutant Discharge Elimination System (NPDES). The NPDES requires the development, adoption, and implementation of plans and programs for stormwater management which prohibits nonstormwater runoff into storm drains and seeks to reduce and eliminate the discharge of pollutants to local groundwater and nearby bodies of water.

The Desert Water Agency (DWA) provides drinking water to the City of Palm Springs. According to the EPA Safe Drinking Water Violation Report, the DWA has not had a health violation since 1993, the earliest date for which records are available.

Residents of Palm Springs can safely dispose of hazardous household materials at the ABOP Collection Center at the Palm Springs Fire Department Training Facility, 3000 East Alejo Road.

In accordance with the California Integrated Solid Waste Management Act of 1989, the Riverside County Department of Environmental Health, Hazardous Materials Management Division (DEH-HMMD) adopted a Household Hazardous Waste (HHW) program, called ABOP (antifreeze, batteries, oil, and paint) to promote the recovery and recycling of hazardous materials and prevent groundwater contamination. The City of Palm Springs participates in the program and has an HHW drop-off facility located at the Palm Springs Fire Department Training Center, 3000 East Alejo Road.

There are no active landfills in the Palm Springs area. Solid waste generated in Palm Springs is collected by the Palm Springs Disposal Service and deposited in the Riverside County–operated Edom Hill Sanitary Landfill, located to the northeast of Cathedral City. The former municipal landfill site located at Ramon Road and Gene Autry Trail has been cleaned up under the supervision of state and local authorities and reclaimed as a commercial development.

Hazardous Materials Management Plan

In response to the need for safe management of hazardous materials and waste products, Riverside County, along with Palm Springs and other cities within the county, have jointly developed the Riverside County Hazardous Waste Management Plan (HWMP) to address the disposal, handling, processing, storage, and treatment of local hazardous materials and waste products. The Riverside County HWMP assures that adequate

treatment and disposal capacity will be available to manage the hazardous wastes generated within each jurisdiction.

The Riverside County DEH-HMMD is responsible for coordinating hazardous material planning and response efforts with city departments, as well as local and state agencies. The goal is to improve public and private sector readiness, and to mitigate local impacts resulting from natural or manmade emergencies. The Hazardous Materials Division of the Riverside County Fire Department deals with the hazardous materials coordination and inspection in the City.

GOAL SA5:

Decrease the risk of exposure of life, property, and the environment to hazardous and toxic materials and waste.

Policies

SA5.1 Promote the proper disposal, handling, transport, delivery, treatment, recovery, recycling, and storage of hazardous materials in accordance with applicable federal, state, and local regulations.

SA5.2 Encourage businesses to utilize practices and technologies that will reduce the generation of hazardous wastes at the source.

SA5.3 Confer with the appropriate responsible agencies to determine the need for, and the appropriateness of, developing a permitting process for the establishment of facilities which manufacture, store, use, or dispose of hazardous and toxic materials within the community or adjacent areas.

SA5.4 Establish and implement procedures in coordination with appropriate state and federal agencies for the cleanup of existing and future hazardous and toxic waste sites.

SA5.5 Follow the response procedures outlined within the Riverside County Fire Department's Hazardous Materials Area Plan in the event of a hazardous materials emergency.

SA5.6 Establish transportation management and contingency emergency procedures and training programs for police, fire, medical, and other organizations that would be involved in an

airborne release or ground spill of hazardous and toxic materials or waste.

SA5.7 Ensure Fire Department staff has properly trained personnel and appropriate equipment to handle hazardous materials spills.

SA5.8 Cooperate with the state and gasoline station owners and operators in monitoring the conditions of subsurface gasoline tanks, tracking leaks that may occur, and requiring the prompt removal of hazardous tanks.

SA5.9 Regulate and limit the use of herbicides, pesticides, and other hazardous chemicals associated with the maintenance of landscaped areas in the City.

SA5.10 Employ effective emergency preparedness and emergency-response strategies to minimize the impacts to health and safety that can result from hazardous materials emergencies such as spills or contamination.

SA5.11 Prohibit the transport of hazardous waste materials through the City except along Highway 111, Interstate 10, and the Southern Pacific Railroad.

SA5.12 Continue to partner with the County of Riverside to provide needed programs such as the Household Hazardous Waste ABOP Program to provide disposal of household hazards at no cost to Palm Springs residents and participating agencies.

SA5.13 Prohibit the location of facilities using, storing, or otherwise involved with substantial quantities of on-site hazardous materials in flood zones, unless all standards of elevation, anchoring, and flood-proofing have been satisfied and hazardous materials are stored in watertight containers that are not capable of floating.

Actions

SA5.1 Compile and maintain an inventory of all hazardous waste sites in the City.

SA5.2 Prepare and/or disseminate information and instructive education program materials for residents, including direction

on the identification and proper management and disposal of household hazardous waste.

SA5.3 Identify the location and monitor the use of all underground fuel storage tanks located within the City limits with the potential to release hazardous or toxic materials into the environment.

SA5.4 Continually update maps of the City's emergency facilities, evacuation routes, and hazardous areas to reflect additions or modifications.

Figure 6-7 Hazardous Materials

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AIRPORT SAFETY

Safety considerations for land uses located immediately adjacent to the Palm Springs International Airport are especially important to the City. Figure 6-8, *Airport Compatibility Plan*, shows "compatibility zones," or areas where take-off and landing patterns create the risk for aircraft-related hazards. The Riverside County Airport Land Use Compatibility Plan (RCALUCP) designates zones of airport influence within the City and offers policies and criteria to ensure compatibility between airports and surrounding land uses. The RCALUCP provides Basic Compatibility Criteria, which include such considerations as the prohibition of tall structures, hazardous materials storage, siting of high-occupancy buildings and facilities, and critical infrastructure within compatibility zones, as well as limits on dwelling units per acre and regulatory procedures for approval of land uses. The Palm Springs International Airport Master Plan guides future development within the airport itself and offers useful information for determining aircraft-related risks and hazards.

Part of the Aircraft Rescue Fire Fighting fleet, an ARFF 151. *(Source: City of Palm Springs Fire Department)*

In addition, considerations for development around airports include the potential for noise nuisance, the intensity of development, and the height of structures. Refer to Figure 6-8 for areas impacted by height-review overlay zones and land use compatibility zones surrounding the Palm Springs International Airport. Goals and policies related to potential noise impacts created by the airport, as well as noise contours for the airport facility, can be found in the Noise Element.

The Palm Springs Fire Department has provided Aircraft Rescue Fire Fighting (ARFF) services to the Palm Springs International Airport for over 50 years. Services provided include emergency medical services, fire protection services, fire protection planning, fire prevention, hazardous materials response, and public education.

GOAL SA6:

Reduce, to the greatest extent possible, the risk to life and property associated with air transportation.

Airport Influence Area: Areas affected by airport operations. Noise, fumes, or hazards to aerial navigation are examples of factors that may define such an area. Generally defined, the airport influence area includes land within two miles of the airport boundary (California Public Utilities Code Section 21675.1 (b)).

Clear Zone: Area off the end of a runway used to enhance the protection of people and property on the ground.

Airport Surveillance Radar (ASR): A radar system that allows air traffic controllers to identify an arriving or departing aircraft's distance and direction from an airport.

Policies

SA6.1 Minimize risks associated with air transportation at Palm Springs International Airport.

SA6.2 Develop zoning regulations, including an "airport protection overlay zone" to safeguard land uses within *airport influence areas*.

SA6.3 Encourage development of land uses in airport influence areas that do not create incompatibility between the airport and surrounding land uses or cause potential hazards to aviation or the public.

SA6.4 Review projects for their compliance with the policies of the Riverside County Airport Land Use Compatibility Plan.

SA6.5 Maintain an Airport Emergency Operations Plan as required by FAA regulations.

SA6.6 Building heights within the airport *clear zones* shall conform to runway approach surfaces and ASR critical areas.

Actions

SA6.1 Continually review the Palm Springs International Airport Master Plan to ensure that operational and safety procedures and land use compatibility are up to date and consistent with those provisions.

SA6.2 Implement applicable policies and programs identified in the Riverside County Airport Land Use Compatibility Plan.

SA6.3 Secure and maintain open space adjacent to the Palm Springs International Airport for the safety of aviation and the public, as well as for future expansion of the airport.

Figure 6-8 Airport Compatibility Plan

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Law Enforcement and Crime Prevention

The Palm Springs Police Department offers response service, criminal investigation, traffic enforcement, and preventive patrol for the City. Although many private, gated communities have internal security for their residents, the Police Department provides all law enforcement services within these development projects.

The Police Department's two divisions, Operations and Services, employ 88 sworn and 59 nonsworn personnel. Operations include patrol, jail, and airport operations. Services include investigation, records, animal control, and communications.

Although National Census Bureau figures indicate that the Palm Springs population is approximately 42,000, the population increases significantly to approximately 60,000 when part-time residents and tourists are included. In 2004, the department responded to 75,395 calls for service, an increase of approximately 35,000 calls since 1990.

The desired response times for priority one calls (emergencies) and priority two calls (nonemergencies) are 5 minutes and 30 minutes, respectively. The Palm Springs Police Department has mutual-aid agreements with other local law enforcement agencies in the event of a major incident that exceeds the department's resources.

There are currently six patrol beats (geographical patrol areas) serving the City and its sphere of influence in the northern portion of Palm Springs. As the City continues to grow it will be necessary to expand the existing beat system and possibly add additional satellite field offices. Because of the mountains to the south and west of the City, communications between patrol units and officers using handheld radios can be poor at best. Additional relay towers and communications equipment, particularly in the Palm Hills area and in the City's northern Snow Creek area, would improve communications between patrol units and officers.

The Department's Community Policing Program seeks to enhance involvement with residents of Palm Springs to further promote public safety. The Citizens on Patrol (COP) Program extensively trains volunteers in such areas as traffic control, safe patrol techniques, CPR, and first aid. The Department's Community Policing Program also operates the Citizen's Police Academy and the volunteer-based horseback

Palm Springs Police Department Mission Statement

The men and women of the Palm Springs Police Department, empowered by and in partnership with the community, are dedicated to providing professional, ethical, and courteous service to all.

Members of the Palm Springs Mounted Enforcement Unit. *(Source: City of Palm Springs Police Department)*

Mounted Enforcement Unit, which consists of sworn police officers offering their time for high-visibility public events. Each week, interested residents can listen in on KNWT 1270 AM for the Palm Springs Police "Radio Call" show.

Fire Protection and Emergency Services

A Palm Springs Firefighter responds to a two alarm structure fire in downtown Palm Springs on September 28, 1998.
(Source: City of Palm Springs Fire Department)

The Palm Springs Fire Department, established in 1931, provides for fire, paramedic, and emergency services within the corporate boundaries of the City of Palm Springs and through mutual agreements in the City's sphere of influence. The Fire Department is authorized and directed to enforce the provisions of the Fire Code throughout the City. Its responsibilities also include plan reviews for new construction and additions, coordination with the City for disaster preparedness programs, weed abatement, inspections, and the Hazardous Materials Business Program.

The Palm Springs Fire Department, with a rating of ***ISO Class 3***, protecting 96 square miles of the Palm Springs area, constantly monitors fire hazards in the City and has ongoing programs for investigation and alleviation of hazardous situations. Firefighting resources in the Palm Springs area include five fire stations located throughout the City so that the response time to any resident is under five minutes, the standard used by the Department for maximum first-response time. All structures built beyond the five-minute response area are required by the City's Community Fire Protection Plan and Municipal Code to install automatic fire sprinklers and other built-in fire protection equipment, as deemed appropriate by the Fire Department.

ISO Rating System

The Insurance Services Office (ISO) evaluates fire protection needs and services in communities across the country. Each community evaluated is rated on a point scale from 1 to 10, with a Class 1 rating representing excellent fire protection services. The City of Palm Springs currently has a Class 3 ISO rating.

In addition, the Palm Springs Fire Department strives to meet the National Fire Protection Association (NFPA) Standard 1710 requirements for response time. NFPA 1710 requires that fire departments establish a six-minute response time for the first-due engine company 90 percent of the time, which includes one minute for dispatch, one minute for "turnout" in the station, and four minutes for travel to the incident. NFPA 1710 also requires an eight-minute response 90 percent of the time for a full-alarm assignment.

The locations of the fire stations in the City are shown on Figure 6-6, *Direct Fire Protection Areas*. There are a total of 18 on-duty firefighting personnel available during each 24-hour period. The Fire Department's five stations respond to approximately 6,400 calls per year. Their records

indicate that the number of responses has increased every year by approximately 5 to 7 percent.

If needed, additional fire assistance can be provided by the following agencies and municipalities with whom Palm Springs has ***automatic-*** and ***mutual-aid agreements***:

Automatic-aid agreements: Obligate the nearest fire company to respond to a fire regardless of the jurisdiction.

Mutual-aid agreements: Obligate fire department resources to respond outside of their district upon request for assistance.

- Riverside County Fire Department (RCFD) – mutual aid
- United States Forest Service (USFS) – mutual aid
- California Department of Forestry (CDF) – mutual aid
- Bureau of Land Management (BLM) – mutual aid
- Cathedral City – automatic aid

The USFS, RCFD, CDF, and BLM generally respond to fire emergencies outside the City's boundaries and in the sphere of influence. The Palm Springs Fire Department is primarily a structure-oriented protective force—these automatic- and mutual-aid agreements ensure that there will be an appropriate response to both urban and wildland fires.

A Palm S firefighte Palm Spr return fr rescue. *(Source: C*

GOAL SA7:

Provide quality police and fire protection to residents, businesses, and visitors of the City.

Policies

SA7.1 Maintain adequate resources to enable the Police Department to meet response-time standards, keep pace with growth, and provide high levels of service.

SA7.2 Maintain a well-trained, well-equipped police force to meet changing needs and conditions by continually updating and revising public safety techniques and providing for effective evaluation and training of personnel.

SA7.3 Combat crime and increase public safety through community education programs, including active involvement in the Neighborhood Watch Program, and coordinate crime prevention programs at local schools and other meeting locations.

SA7.4 Periodically evaluate population growth, development characteristics, level of service, and incidence of crime within the City to ensure that an adequate level of police service is maintained.

SA7.5 Maintain adequate resources to enable the Fire Department to meet response-time standards, keep pace with growth, and provide high levels of service.

SA7.6 Provide safe firefighting facilities of adequate size and at the best locations to meet NFPA 1710 standards for response time.

SA7.7 Maintain adequate fire training facilities, equipment, and programs for firefighting and inspection personnel and educational programs for the general public, including fire safety and prevention and emergency medical information.

SA7.8 Maintain and/or upgrade water facilities to ensure adequate response to fire hazards.

SA7.9 Require that all buildings subject to City jurisdiction adhere to fire safety codes.

SA7.10 Continue uniform reporting of all fire emergency data, including type and cause of fire alarm, response time, and damage/injury data.

SA7.11 Promote public education regarding fire safety to address issues such as storage of flammable material and other fire hazards.

Actions

SA7.1 Maintain a ratio of at least one sworn police officer per 1,000 residents in the City.

SA7.2 The City shall maintain ISO Class 3 status and strive to improve its rating.

SA7.3 Maintain and update, as necessary, the Community Fire Protection Master Plan. The plan shall include a fire station location plan that provides for a response level of service of five minutes. Require all structures located beyond that response time to build in automatic fire suppression systems.

DISASTER PREPAREDNESS, RESPONSE, AND RECOVERY

The Palm Springs area is subject to significant environmental and manmade hazards that pose risks to life and property. Advance preparation for potential disasters can prevent losses and improve the City's ability to respond to emergency situations created by catastrophic events. Due to the large number of public, quasi-public, and private agencies involved in disaster preparedness planning, cooperation and coordination between agencies is essential.

Depending on the type of incident, several different agencies and disciplines may be called in to assist with emergency response. Agencies and disciplines that can be expected to be part of an emergency response team include medical, health, fire and rescue, police, public works, and coroner. The challenge is to accomplish the work at hand in the most effective manner, maintaining open lines of communication between the different responding agencies to share and disseminate information, and to coordinate efforts. Once a disaster has occurred, the capability of the City to respond to the situation at hand affects how quickly it can recover from impacts.

The City of Palm Springs participates in the Standardized Emergency Management System (SEMS), which is required by the California Government Code and was developed to provide a "common language" for emergency response personnel to request resources and equipment from other agencies. In addition to resource allocation, SEMS was established to minimize the duplication of efforts during emergency response by defining common tactics and identifying a clear chain of command. The SEMS program responds to incidents as they occur but does not provide long-term recovery guidelines.

Following a major disaster, the resources of public safety agencies and emergency responders can be depleted quickly. The City of Palm Springs, in an effort to prepare residents for potential disasters, participates in the Federal Emergency Management Agency's (FEMA) Community Emergency Response Training (CERT) program, a series of classes that train residents to effectively respond in dangerous situations if emergency services are delayed in responding. In the CERT program, citizens learn to manage utilities and put out small fires, perform CPR, control bleeding, provide basic medical aid and treatment for shock, search for and rescue victims safely, organize themselves and spontaneous volunteers to be effective, and collect disaster intelligence to support first-responder

CERT tr
control.
(Source: C
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efforts. Additional educational resources are provided to the public via disaster-preparedness presentations, flyers, and a telephone information-retrieval system.

Lifelines and Essential Facilities

Lifelines are those services that are critical to the health, safety, and functioning of the community, such as water, sewage, electrical power, communication, transportation (highways, bridges, railroads, and airports), natural gas, and liquid fuel systems. Lifelines are particularly essential for emergency response and recovery after an earthquake or other disaster that causes considerable citywide damage in a matter of minutes. Essential facilities include public services that are critical to the health and welfare of the City and that are especially important following hazard events. These facilities include hospitals, police stations, fire stations, emergency operation centers, communication centers, generators and substations, and reservoirs. Essential facilities designed to remain functional during and immediately after a disaster may provide limited services if the lifelines they depend on are disrupted. The impact of the 1994 Northridge earthquake on lifeline systems was widespread and illustrated the continued need to study earthquake impacts, to upgrade substandard elements in the systems, to provide redundancy in systems, to improve emergency-response plans, and to provide adequate planning, budgeting, and financing for seismic safety.

Water supply facilities, such as dams, reservoirs, pumping stations, water treatment plants, and distribution lines are especially critical after an earthquake, not only for drinking water, but to fight fires. Failure of reservoirs during an earthquake is discussed further in this element under Flood and Dam Inundation Hazards.

Access into and out of the City is also a consideration that is particularly important for Palm Springs. There are currently only four main points of access via roadway in the City, and in the event of a disaster, these routes constitute lifelines that must remain operable.

Because lifelines deliver essential services to the community it is important to consider the impacts to society from their disruption or failure in an earthquake disaster. Loss of lifeline infrastructure and the time it takes to restore it can have far-reaching, long-term effects on businesses, jobs, environmental quality, health, and people displaced from their homes, as well as many other consequences such as gas fires, hazardous material spills, and sanitation overflows.

GOAL SA8:

Reduce the risk to life, property, and essential facilities through emergency preparedness and public awareness.

Policies

SA8.1 Take measures to reduce the level of death, injury, property damage, economic and social dislocation, and disruption of vital services that would result in the event of a major disaster.

SA8.2 Ensure, to the fullest extent possible, that in the event of a major disaster, essential structures and facilities remain safe and functional.

SA8.3 Require that proposed essential, sensitive, and high-occupancy facilities undergo careful seismic review prior to any approvals and that earthquake survival and efficient postdisaster functioning be a primary concern in the siting, design, and construction standards for essential facilities.

SA8.4 Encourage the local gas and water purveyors to review and retrofit their main distribution pipes, with priority given to those lines that cross or are located near the mapped traces or of the Banning and Garnet Hill faults, in order to maintain lifelines.

SA8.5 Prohibit the location of new essential, sensitive, and high-occupancy facilities within 100 feet of an active or potentially active fault, or require compensating design characteristics where fault identification is not feasible.

SA8.6 Coordinate disaster preparedness and recovery with other governmental agencies and continue to cooperate with Cathedral City, Riverside County, the State of California, and the various federal agencies to provide cooperative police and fire assistance in emergency situations.

SA8.7 Maintain effective mutual- and automatic-aid agreements for fire, police, medical response, public works, building inspection, mass care, and heavy rescue.

SA8.8 Prepare the community to respond to emergencies by conducting public outreach programs such as CERT.

SA8.9 Urge owners and managers of hotels and restaurants and other places of public assembly to maintain CPR-certified employees on their staffs.

SA8.10 Enlist the cooperation of the business community to develop its own disaster response plans and have provisions for food, water, first aid, and shelter for employees who may not be able to return home for several days following a major earthquake.

SA8.11 Formulate and maintain police, fire, evacuation, hospitalization, and recovery programs in response to a natural gas leakage and/or explosion, railroad accident, earthquake, or other similar event.

SA8.12 Plan for and facilitate the rapid and effective recovery of the City following a disaster, prevent the recurrence of specific problems and hazards encountered during a disaster, and plan for alternative sources of financing for reconstruction.

SA8.13 Establish the mitigation of hazards as a high priority for City programs, both before and after a disaster.

SA8.14 Evaluate the adequacy of access routes to and from hazard areas relative to the degree of development or use (e.g., road width, road type, length of dead-end roads) and evaluate the sufficiency of signage related to public safety and evacuation.

SA8.15 Include procedures for traffic control, emergency evacuations and housing, and security of damaged areas in all disaster response plans.

SA8.16 Evaluate new developments for their ability to provide proper police and fire protection. Project review should include, but is not limited to, adequacy of internal circulation systems and provision of project directories, street names, and numbering systems.

SA8.17 The City will continue to participate in the Master Mutual Aid Agreement for the provision of emergency fire protection services.

SA8.18 Establish a six-minute response time for the first-due engine company and an eight-minute response time for a full-alarm assignment in compliance with NFPA 1710.

SA8.19 Use percentage of completion goals as the standard for the distribution and concentration of fire crews throughout the City, as recommended in the Standards for Response Cover Deployment Analysis for the City of Palm Springs Fire Department.

SA8.20 Ensure that new development does not result in a reduction of law enforcement or fire protection services below acceptable levels.

SA8.21 Analyze the site plan layout for new projects to ensure they provide an adequate amount of defensible space around structures.

SA8.22 Continue to regulate and enforce the installation of fire protection water system standards for all new construction projects built within the City. Standards shall include the installation of fire hydrants providing adequate fire flow, fire sprinkler systems, and wet and dry on-site standpipe systems.

SA8.23 Develop an ongoing fire protection water system program that will provide adequate water supply for firefighting purposes within the City.

SA8.24 Require all new commercial and multiple-unit residential development to install fire protection systems and encourage the use of automatic sprinkler systems.

SA8.25 Require all new construction to use noncombustible roofing materials.

SA8.26 Require that all new buildings incorporate adequate egress systems into project design and encourage existing structures to upgrade existing exit systems.

SA8.27 The Fire Department should develop requirements for existing and future development occurring in ***wildland-urban interface areas***. These requirements include, but are not limited to, the use of noncombustible (Class A) roofing materials, thermal pane or safety glass for glazing purposes, and drought- and fire-resistant landscaping.

SA8.28 Developers of property on or abutting hillsides shall implement, with consultation and approval from the City Fire Department, a safety buffer zone, otherwise known as a fuel-

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modification zone, between natural open space and planned development to lessen the fire hazard potential in these interface areas.

SA8.29 Ensure adequate provision of public information to residents and businesses on actions to minimize damage and facilitate recovery from a natural disaster.

SA8.30 Continue to conduct public outreach efforts to prepare the community and provide them with guidance on how to respond to natural disasters.

Actions

SA8.1 Assess existing essential and sensitive facilities with significant seismic vulnerabilities, and upgrade, relocate, or phase them out as appropriate.

SA8.2 Develop, maintain, and continually update a Citywide, coordinated, responsive, and effective emergency- and disaster-preparedness, response and implementation plan to assure a high degree of readiness to respond to and recover from daily emergencies, major catastrophes, and disastrous events.

SA8.3 Implement the Emergency Response Plan adopted by the City incorporating the following three emphases: hazard mitigation, disaster response, and self-sufficiency/mutual support of residents, business, and industry.

SA8.4 Ensure the availability of both the Safety Element and City emergency-preparedness plans to employers and residents of Palm Springs.

SA8.5 Exercise and upgrade the City's disaster response plans and, at least annually, conduct periodic exercises to evaluate their practicality and effectiveness.

SA8.6 Conduct earthquake- and disaster-response exercises at least once a year using the adopted emergency management system.

SA8.7 Establish a standing committee for disaster recovery to provide contingency planning for the rapid and effective reconstruction of the City of Palm Springs following a disaster. The committee shall include representatives of the City Council, Planning Commission, Economic Development Commission, and appropriate City staff.

SA8.8 Guidelines shall be developed by the Disaster Recovery Committee for the exercise of emergency authorities for such purposes as:

- rapid designation of redevelopment areas;
- revision of land use, circulation and parking requirements, and institution of other programs for improving the community environment;
- adoption and institution of special programs for disaster recovery;

- funding of disaster recovery measures;
- moratoria on reconstruction in any high-hazard areas where damage could be repeated in aftershocks or in future earthquakes;
- amendments to codes and ordinances;
- establishment of Geologic Hazard Abatement Districts, as appropriate; and
- designation of sites for temporary housing (e.g., travel trailers and prefabricated construction) of households made homeless in a disaster, in cooperation with the Disaster Housing Program of the Federal Emergency Management Agency.

SA8.9 Solicit state and federal funds to implement the City's disaster programs as such revenues become available.

SA8.10 The Fire Department should develop the capability to place 40 to 50 trained and equipped firefighters on scenes of major fires within 30 minutes of receipt of alarm, through the development of a reserve force, off-duty recall of firefighting personnel, and mutual aid.

SA8.11 Formulate and implement a fire safety and emergency evacuation program for multistory structures. Such a program should include zoning and building code requirements for the use of sprinklers, smoke alarms, emergency evacuation stairways and other routes, fire-resistant building materials, architectural design elements that do not obstruct or hinder emergency access, and other pertinent components.

SA8.12 Conduct a study to identify the types of systems that can be installed in existing commercial and multifamily residential buildings where automatic sprinkler and other fire protection systems do not exist and evaluate their feasibility for implementation.

SA8.13 Train multilingual personnel to assist in evacuation and other emergency response activities to meet the community need.

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