City of Laguna Hills

Safety Element Update

Adopted by Laguna Hills City Council on June 28, 2022
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Table of Contents

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Safety

Introduction

Laguna Hills residents consider their City one of the safest and best places to live in Southern California. The City has a strong sense of community and is composed of established residential neighborhoods that are deeply valued by their residents. Laguna Hills also has a low crime rate and good schools, important indicators of a community's quality of life. However, this idyllic setting can be impacted by natural hazards that have the potential to cause death, injuries, property damage, and substantial economic and social dislocation. The Safety Element addresses these safety issues, with emphasis on the naturally occurring conditions that pose a risk to Laguna Hills and provides goals and policies aimed at reducing the City's risk from these hazards. The Safety Element assesses these safety issues and assigns vulnerability scores in **Appendix A.** Implementation programs aimed at accomplishing the identified goals and policies are included in **Appendix B**.

Purpose and Scope of the Safety Element

All urban areas in California are subject to both natural and human-caused hazards. None of these hazards can be avoided entirely, but their impacts can be reduced through the recognition of safety risks and the application of policies designed to protect life and property to the greatest feasible extent.

The purpose of the Safety Element is to address existing or anticipated safety threats that may cause adverse effects in Laguna Hills. This Element specifically covers seismic and geologic hazards, fires, neighborhood safety, hazardous materials and waste, nuclear power, flood hazards, stormwater management, and climate change vulnerability. Emergency preparedness planning, such as identifying actions needed to manage crisis situations, is also addressed. By establishing goals and policies to minimize danger to residents and visitors, the Safety Element sets forth the framework that will regulate existing and proposed development in hazard-prone areas, promote urban design to ensure safe streets and neighborhoods, and establish methods to ensure safety and organization during emergency situations.

Background

The City of Laguna Hills (City) strives to maintain a safe environment for all members of the community. However, numerous potential hazards that could affect life and property are present in and around the City. For example, Laguna Hills is in a seismically active region and residents could potentially be

exposed to dangers caused by earthquakes. The presence of hillside terrain and steep slopes could potentially cause residents and property to be vulnerable to fire hazards. The City can experience flooding and inundation from severe rain events and dam and reservoir failures. Further, climate change may exacerbate hazards, such as, but not limited to, flooding, extreme storms, air quality, drought, extreme heat,[1] warm nights,[2] and human health hazards. The City recognizes it may be vulnerable to a number of hazards and that maintaining a safe environment requires constant assessment of the City's needs regarding these hazards.

Local Hazard Mitigation Plan

A Local Hazard Mitigation Plan (LHMP) identifies and profiles hazard conditions, analyzes risk to people and facilities, and provides hazard mitigation actions to reduce or eliminate hazard risks. A LHMP and Safety Element address similar issues, but the Safety Element provides a higher-level framework and set of policies, while a LHMP focuses on more specific mitigation, often short-term, actions. LHMPs focus on hazard mitigation-related actions, while the Safety Element also includes policies for emergency response, recovery, and preparedness.

The City is currently in the process of developing a LHMP, in accordance with the federal Disaster Mitigation Action of 200 and the Federal Emergency Management Agency (FEMA), to ensure hazard risks are minimized for community members, as well as infrastructure and buildings citywide. The mitigation actions in the LHMP will include both short-term and long-term strategies, and involve planning, policy changes, programs, projects, and other activities. When adopted by the City and certified by FEMA, the current LHMP will be incorporated into this Safety Element by reference, as permitted by California Government Code Section 65302.6.

Orange County also has an LHMP, which, focuses on addressing natural hazards impacting unincorporated areas and County facilities. The Orange County LHMP also provides a history of disasters in Orange County, including historical flooding events. The Orange County LHMP further lists a number of resources, including administrative and technical resources, that can support Laguna Hills in the event of a disaster. Laguna Hills contracts with a number of County agencies, including Orange County Fire Authority and Orange County Sheriff's Department.

1. An extreme heat day in Laguna Hills is defined as a day when the high temperature is at least 90.1 degrees Fahrenheit (°F).

2. Warm nights in Laguna Hills is defined as temperatures above 65°F at nighttime.

Safety Plan

Laguna Hills faces both natural and human-related hazards, including earthquakes, urban and wildland fires, geologic hazards, climate change hazards, and hazards caused by the use of hazardous and/or toxic materials. Protection from the risks of natural and human-caused hazards is essential in continuing to provide a sense of safety and well-being for the residents and visitors of Laguna Hills. In addition, safety is a significant consideration in attracting new businesses to the City. While the likelihood of occurrence for most of these natural and human-caused hazards is low, the consequences can be very serious. Understanding hazards, vulnerabilities, and preparing to deal with them on both an incident-related and ongoing basis are important objectives. Proper planning and preparation for potential hazards is an essential action to minimize the disruption, personal injury, and property damage associated with such hazards and resulting emergency conditions.

The City has established goals and policies to maintain community safety and reduce the risks associated with natural and human-caused hazards. The Safety Plan addresses these issues and provides strategies to minimize hazard potential and vulnerabilities and protect the overall well-being of the residents and visitors in the community.

GEOLOGY AND SEISMICITY

Geologic Hazards

Landslides, Mudflows, and Slope Instability

The topography of Laguna Hills includes several hills and valleys and therefore has the potential for slope instability and landslides. Slopes steeper than 25 degrees (approximately 2:1) are potentially subject to instability. Such areas may be prone to hazards such as surficial failures, mudflows, debris flows, rock falls, soil creep, and erosion. Failures of human-made slopes could also occur in some of the previously developed areas of the City. In addition, wildfires can destabilize hillsides and create hydrophobic soils, leading to an increased potential of landslides and debris flows. The potential for earthquake-induced landslides in hillside terrain is also present. Areas of known landslides or areas generally susceptible to landslides and slope instability within Laguna Hills have been identified and mapped by the California Geological Survey (CGS) (Figure S-1, *Deep-Seated Landslide Susceptibility*). Laguna Hills continues to update development standards and adopt the latest building and construction codes to guide future development throughout the City, including in areas that could be potentially vulnerable to landslides and slope instability.

Figure S-1, *Deep-Seated Landslide Susceptibility*, shows the areas that are vulnerable to landslides in Laguna Hills. Landslide susceptibility is a function of rock strength and slope angle. Landslide susceptibility is classified on a scoring system ranging from 0 to 10 using roman numerals. The lower classifications show low landslide susceptibility, and higher classifications signify very high landside susceptibility.

Shallow Groundwater

Shallow groundwater is characterized as an area where the water table is within 20 to 30 feet of the ground surface at any time during the year. The areas described in the liquefaction discussion are also the areas most likely to encounter shallow groundwater that could interfere with construction. The shallowest water levels are found in Sulphur Creek (and its main tributary), Aliso Creek, and Oso Creek, where groundwater is estimated to be approximately 5 to 10 feet deep. At these depths, water can interfere with subsurface excavations (e.g., underground parking) and deep foundations (e.g., piles).

Additionally, some shallow perched water may be encountered within the more southerly portions of Laguna Hills. In the remaining creeks, the levels are expected to be closer to 20 feet deep.

Unstable Soils

Unstable soils include expansive, compressible, erodible, corrosive, or collapsible soils. Natural soil, colluvium, and young alluvial deposits may be susceptible to expansion; consolidation; collapsing; or hydro-collapsing, which occurs with the addition of water. For each of these factors, minor to severe damage to overlying structures is possible. Based on the reported soil types within and around Laguna Hills, it is possible that one or more of these soil characteristics are present during the necessary engineering, geology, and geotechnical investigations for new development and redevelopment projects.

Figure S-1
Deep-Seated Landslide Susceptibility

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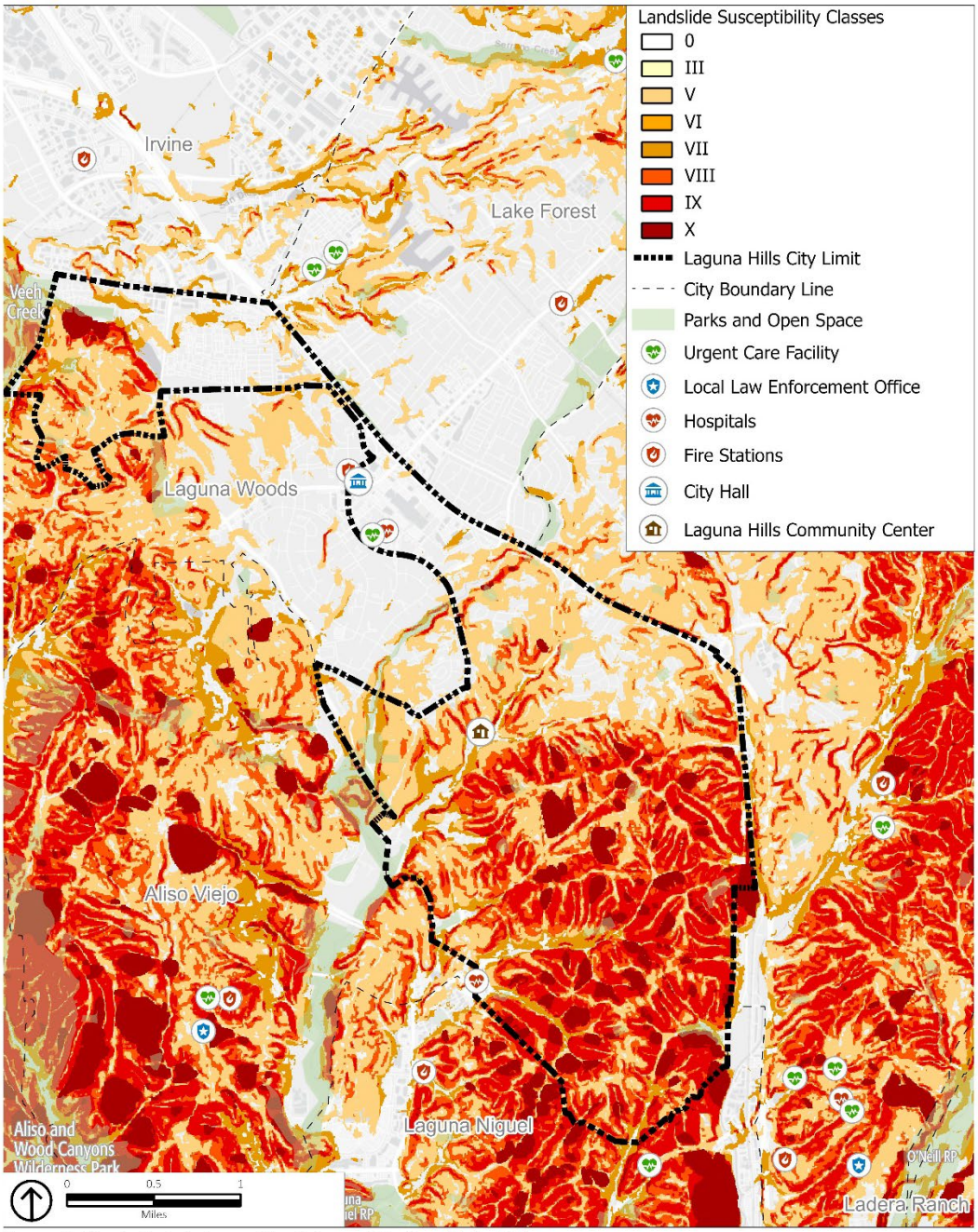

Source: California Geologic Survey, City of Laguna Hills, PlaceWorks, ESRI

Seismic Hazards

Ground Shaking

Southern California as a whole is subject to potential ground shaking in the event of an earthquake. Ground shaking can result in extensive structural damage, injury, and death. Safety planning must prepare for both frequent moderate earthquakes and infrequent large earthquakes (both local and regional) since any type of ground shaking may affect standard construction and infrastructure.

Earthquakes of low to moderate magnitude have occurred infrequently in the region around the City based on instrumental recordings. The level of impact resulting from any seismic activity depends on factors such as distance from epicenter, earthquake magnitude, and characteristics of soils and subsurface geology. Figure S-2, *Regional Fault Lines,* depicts regional faults in the vicinity of Laguna Hills delineated by the United States Geological Survey. Figure S-2 shows the San Joaquin Hills thrust fault running along the northern border of the City. However, the major regional faults likely to generate significant earthquakes of a magnitude of 7 or higher are the San Andreas, San Jacinto, Elsinore-Whittier, and Newport-Inglewood faults. The Newport-Inglewood Fault Zone is the nearest major active fault and lies approximately three miles to the southwest of Laguna Hills. The San Joaquin Hills fault that underlies the City is believed to be capable of a large local earthquake, but it is considered unlikely to rupture in the near future. As development and redevelopment occur within Laguna Hills, the City will require a proper investigation of the expected level of ground shaking in a major earthquake based on the Uniform California Earthquake Rupture Forecast and the California Geological Survey's Probabilistic Seismic Hazard Map, and the level of risk to the buildings and other structures associated with seismic ground shaking.

Fault Rupture and Surface Deformation

Fault rupture is a ground movement that occurs during an earthquake. Although impact is limited, these ground movements can cause structures to collapse, make roads impassable due to offsets, and sever utility lines. In Laguna Hills, the chance of an earthquake leading to surface rupture hazards is minimal, but both "active" faults and "potentially active" faults should not be discounted as sources of potential seismic harm. Due to the absence of active faults in the City, the risk of damage from fault rupture during an earthquake is limited. In addition, no faults within or near the City are within State of California-established Alquist-Priolo Earthquake Fault Zones, which are subject to special land use controls and building standards.

Figure S-2
Regional Fault Lines

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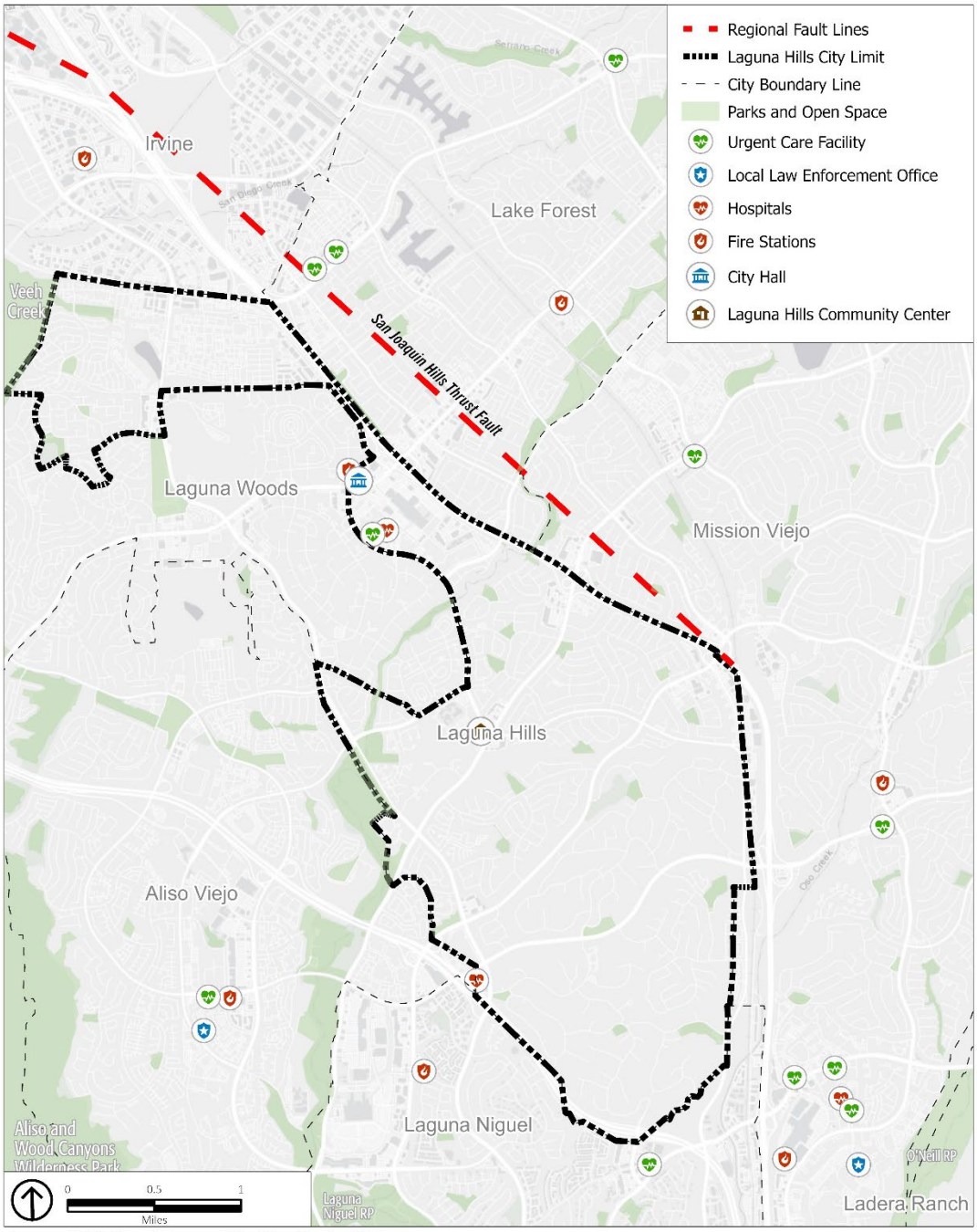

Source: USGS, City of Laguna Hills, PlaceWorks, ESRI

Earthquake-Induced Liquefaction

Liquefaction occurs when severe ground shaking leads to loss of shear strength of a soil and is a function of soil type and groundwater. Soils that are poorly consolidated and combine with groundwater during an earthquake lose their shear strength and take on the properties of a heavy liquid. Liquefaction generally occurs within areas that have high groundwater (less than 20 to 30 feet below the surface), loose sandy alluvial deposits (usually of recent age), and the potential for significant ground shaking.

Portions of the City occupied by alluvial valleys have these characteristics, as mapped by the CGS (shown in liquefaction Figure S-3). In particular, the following areas within the City are susceptible to liquefaction:

- The northern portion of the City in drainages south of Lake Forest and along Ridge Route Drive.
- Aliso Creek (Laguna Hills Mall area) and tributaries to the south (including Alicia Parkway).
- Sulphur Creek and a tributary.
- Oso Creek along southbound Interstate 5 (I-5).

Laguna Hills recognizes that planning for a safe community requires consideration of all geologic hazards, including liquefaction. Incorporating proper geotechnical engineering techniques in development projects within these areas can reduce the risks associated with seismic hazards to people and property.

Inundation due to Seismically Induced Ground Movement or Seiche

Seismically induced inundation refers to flooding that occurs when water retention structures fail during an earthquake. Often, inundation is triggered by damage from a seiche. A seiche is a wave that reverberates on the surface of water in an enclosed or semi-enclosed basin, such as a reservoir, lake, bay, or harbor, in response to ground shaking during an earthquake. Seismically induced inundation can also occur if strong ground shaking causes structural damage to aboveground water tanks.

There are several small reservoirs and water storage tanks located within, and just outside of City boundaries (Figure S-4, *Dam Inundation Areas*). These reservoirs and water tanks store water for various purposes, such as ensuring adequate water supply reserves, providing recreational opportunities, and/or providing non-potable water for irrigation. Table S-1 lists reservoirs within and near Laguna Hills.

Figure S-3
Liquefaction Zones

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CITY OF LAGUNA HILLS

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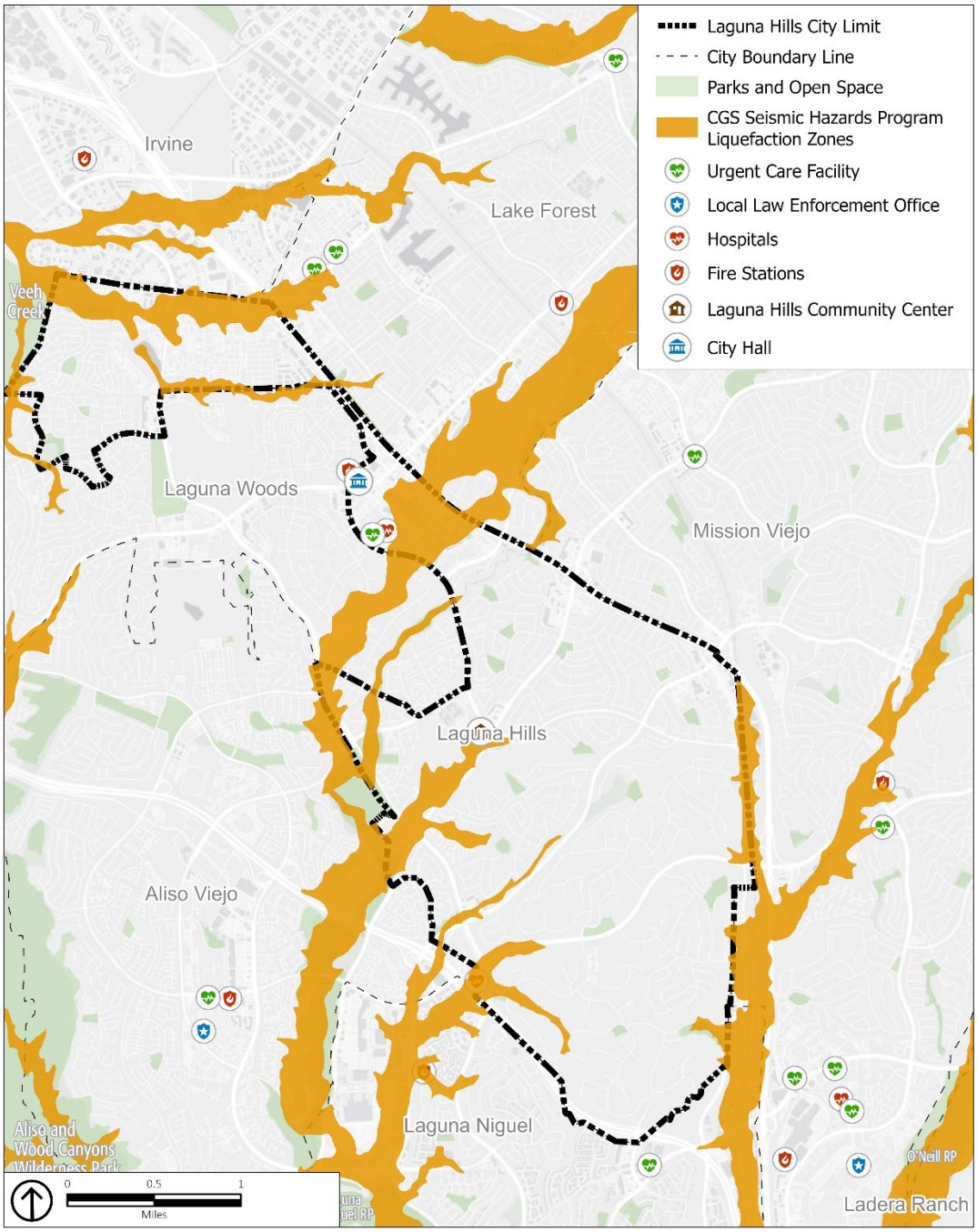

Source: CGS, City of Laguna Hills, PlaceWorks, ESRI

Figure S-4
Dam Inundation Areas

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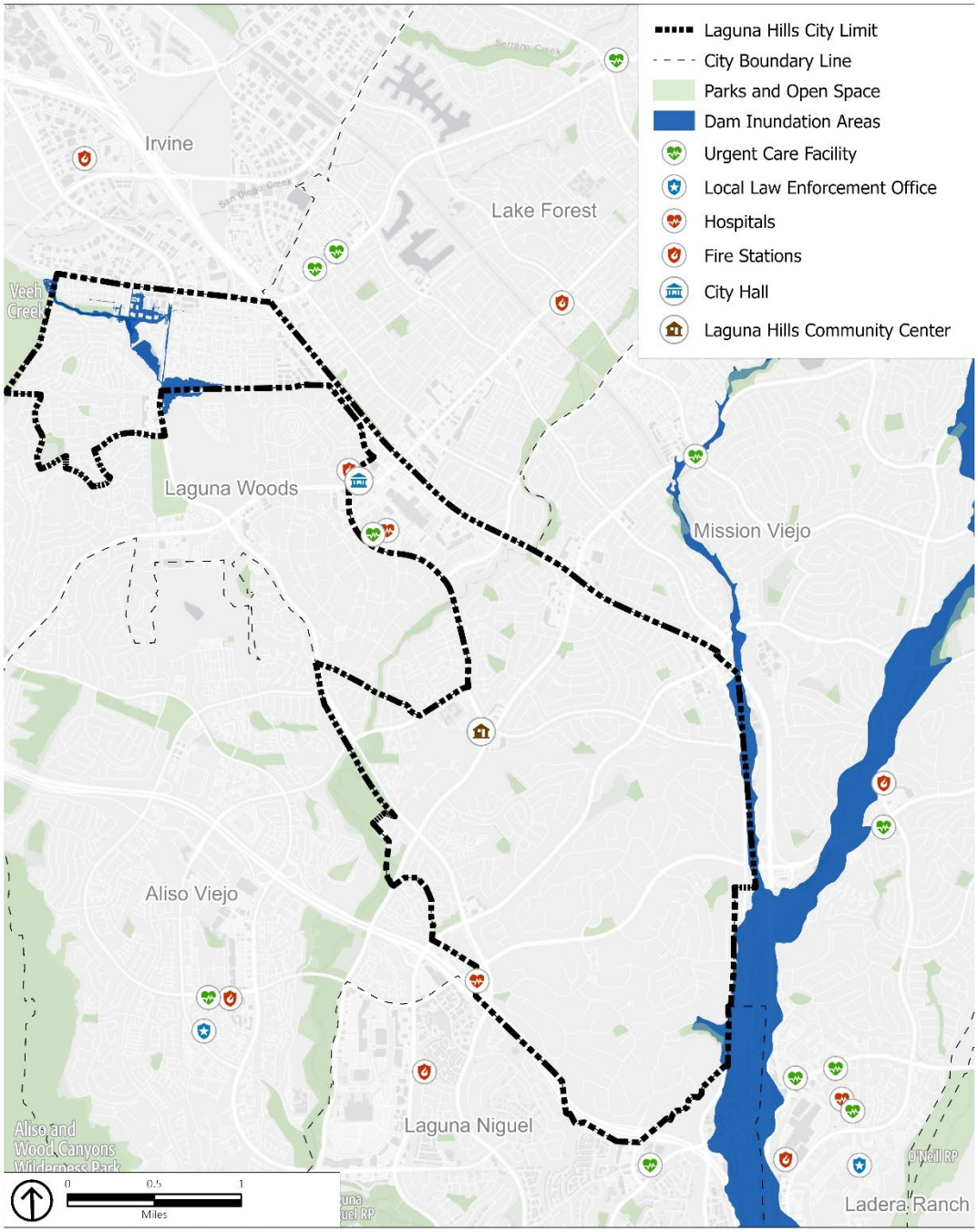

Source: OES, City of Laguna Hills, PlaceWorks, ESRI

Table S-1 Reservoir and Dams within/near Laguna Hills	
Reservoir/Dam Name	Location (City or County)
Veeh Reservoir	Laguna Hills
Rossmoor No. 1 Reservoir	Laguna Woods
Sulphur Creek Reservoir	Laguna Niguel
Upper Oso Reservoir	County of Orange
El Toro Reservoir	Mission Viejo
Lake Mission Viejo Reservoir	Mission Viejo
Upper Chiquita Reservoir	Rancho Santa Margarita

Source: Department of Water Resources, Division of Safety of Dams

The primary hazards that could cause failure of the reservoirs and their associated dams are strong earthquake ground shaking, seiche, and liquefaction; however, none of the sites listed above are associated with known faults or landslides. Water tank sites could also potentially be impacted by slope instability. The flood impacts of reservoir failures could be somewhat significant for Lake Mission Viejo, Upper Oso Reservoir, and El Toro Reservoir since water flows down Oso Creek and might also affect the southeastern most edge of the City adjacent to I-5. Local inundation and erosion effects could impact the area and water tanks immediately adjacent to the Veeh Reservoir and Rossmoor No. 1 Reservoir, depending on the amount of water impounded at the time of the reservoir failure. However, water from Sulphur Creek Reservoir in Laguna Niguel and Upper Chiquita Reservoir in Rancho Santa Margarita would likely not reach the City. Should any of the reservoirs or water tanks fail, persons and property in Laguna Hills could be subjected to inundation, flooding, and/or erosion. These potential hazards are addressed in the County of Orange and Orange County Fire Authority (OCFA) LHMP.

URBAN AND WILDLAND FIRE HAZARDS

Urban Fires

Urban fires have the potential to cause significant loss of life and property; however, improvements in architecture, building and landscape design and maintenance, construction materials, and emergency response have helped reduce the likelihood of catastrophic occurrences. Nevertheless, residents of Laguna Hills could potentially be exposed to structural fire hazards within the City for several reasons. OCFA, the agency responsible for providing fire services in the event of a fire emergency, noted the top causes of structural fires are triggered by electrical equipment, smoking, candles left unattended, smoke alarms deficiency, and arson. OCFA's Standard of Cover for fire services for urban areas include:

"Over 70% of residential fires occur in homes without a working smoke alarm. Be sure to test your alarm monthly, replace the batteries every 6 months, and replace your alarm every 10 years or as directed by the manufacturer"

- First-in engines should arrive on scene to medical aids and/or fires within 7 minutes and 20 seconds 80 percent of the time.
- First-in truck companies should arrive on scene to fires within 12 minutes 80 percent of the time.
- First-in paramedic companies should arrive on scene at all medical aids within 10 minutes 80 percent of the time.

Response times are based on receipt of the service call to a unit and its arrival on scene.

Wildland Fires

While major wildfires pose a significant risk in the large, open space hillsides and areas in other parts of Orange County, the urbanized nature of Laguna Hills and the adjacent areas significantly reduces the threat of large, catastrophic wildfires within the City. Nevertheless, wildland fire hazards do exist. While there are no areas of Laguna Hills that are within designated Very High Fire Hazard Severity Zones (see Figure S-5, *Fire Hazard Severity Zones*), the northwestern neighborhoods of the City are adjacent to areas designated as High and Very High Fire Hazard areas by the California Department of Forestry and Fire Protection (CAL FIRE), including the open space in the Laguna Coast Wilderness Park in the City of Irvine. Due to the City's proximity to these wildland areas, the northwest portion of the City is within a wildland-urban interface (see Figure S-6, *Wildland-Urban Interface*). In addition, areas within the southern portion of the City, as well as some hillside corridors with natural terrain and open areas, are also at risk for fire hazards. Historically, there have been few wildfires within and near Laguna Hills (see Figure S-7, *Historic Wildfires*).

According to California's *Fourth Climate Change Assessment*, the frequency of wildfires and acreage of burn area are anticipated to increase because of climate change. Wildfires with conflagration potential can occur during any time of the year; however, wildfire potential is typically greatest during the months of August, September, and October with the presence of dry and hot Santa Ana winds and dry vegetation. Drought conditions further exacerbate fire hazard conditions, especially in areas susceptible to wildfires, as discussed previously.

OCFA has several community resources to educate residents on fire safety and on ways they can protect themselves from potential wildfire threats, such as creating defensible space around homes. Defensible space describes a bare or sparsely planted area around a home or building that is clear of dry grass, brush, and dead leaves, which acts as a fire break and gives firefighters a safe place to stand while protecting properties from approaching flames. The City will continue to support the public education efforts of the OCFA as well as integrate new technologies, such as using geographic information systems (GIS) for mapping fire hazard data from CAL FIRE, and fire prevention concepts, such as fire-resistant landscaping, into the design and construction of

new development and redevelopment. The City also manages an annual weed abatement program, in accordance with Government Code Section 39560 et seq., in which all private properties and City open spaces are subject to direction to remove dry weeds and other debris that may contribute to a fire. The community and City operations responsibly respond to such direction, and the City has annually maintained a reduced local fire risk.

Wildfire Smoke

Wildfire smoke consists of air pollutants and particulate matter (including fine particulate matter, $PM_{2.5}$). $PM_{2.5}$ is particularly damaging to human health since particulate matter of this size can deeply penetrate lung tissue and affect a person's respiratory and cardiovascular systems. While poor air quality affects everyone, persons with weakened immune systems or preexisting conditions, children, seniors, and persons who spend a disproportionate amount of time outside are at an increased risk to wildfire smoke. The increase in wildfire frequency and size can contribute to periods of unhealthy to hazardous air quality, which leads to respiratory health impacts and worsens health impacts in persons with preexisting health conditions.

Figure S-5
Fire Hazard Severity Zones

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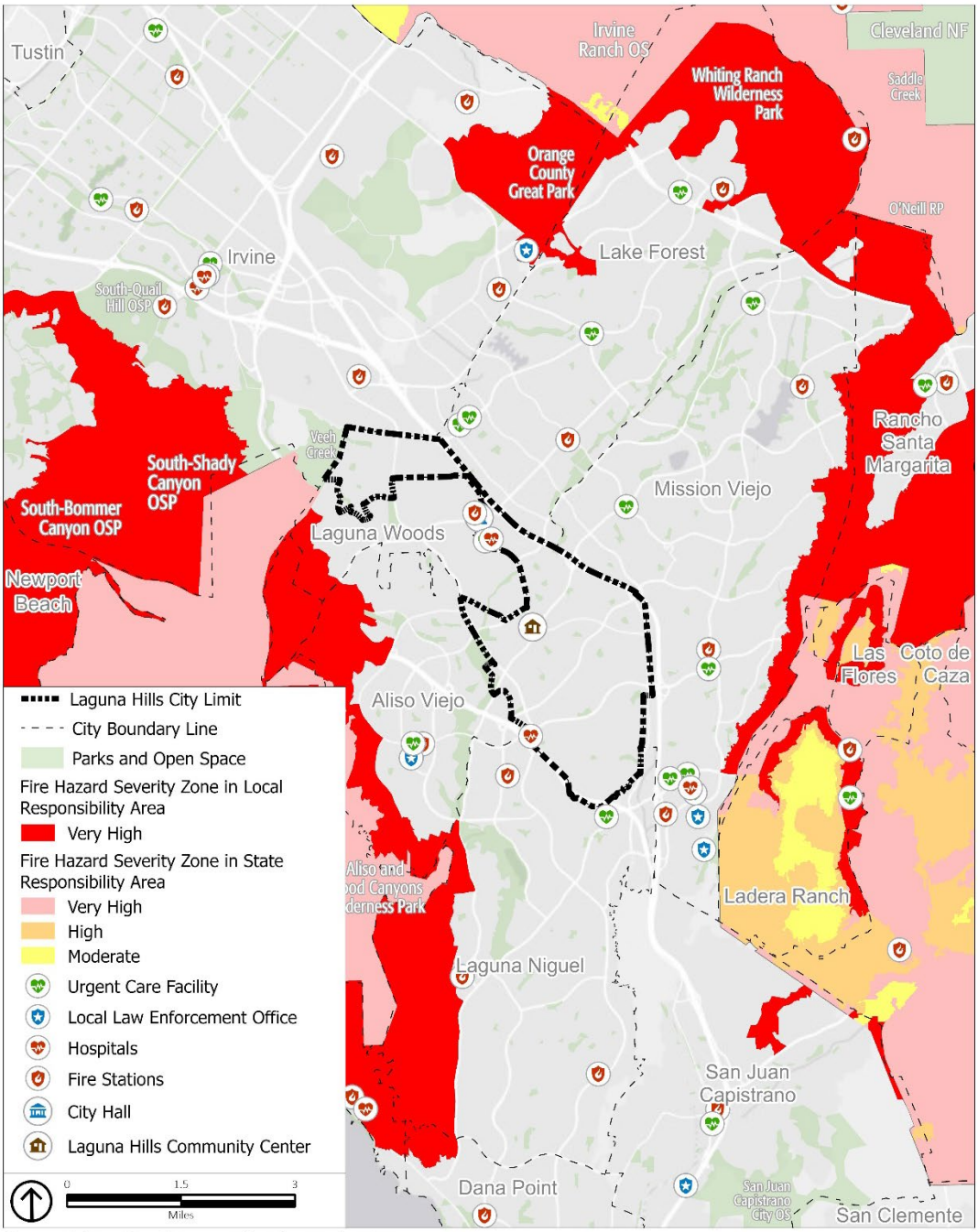

Source: CalFire, City of Laguna Hills, PlaceWorks, ESRI

Figure S-6
Wildland-Urban Interface

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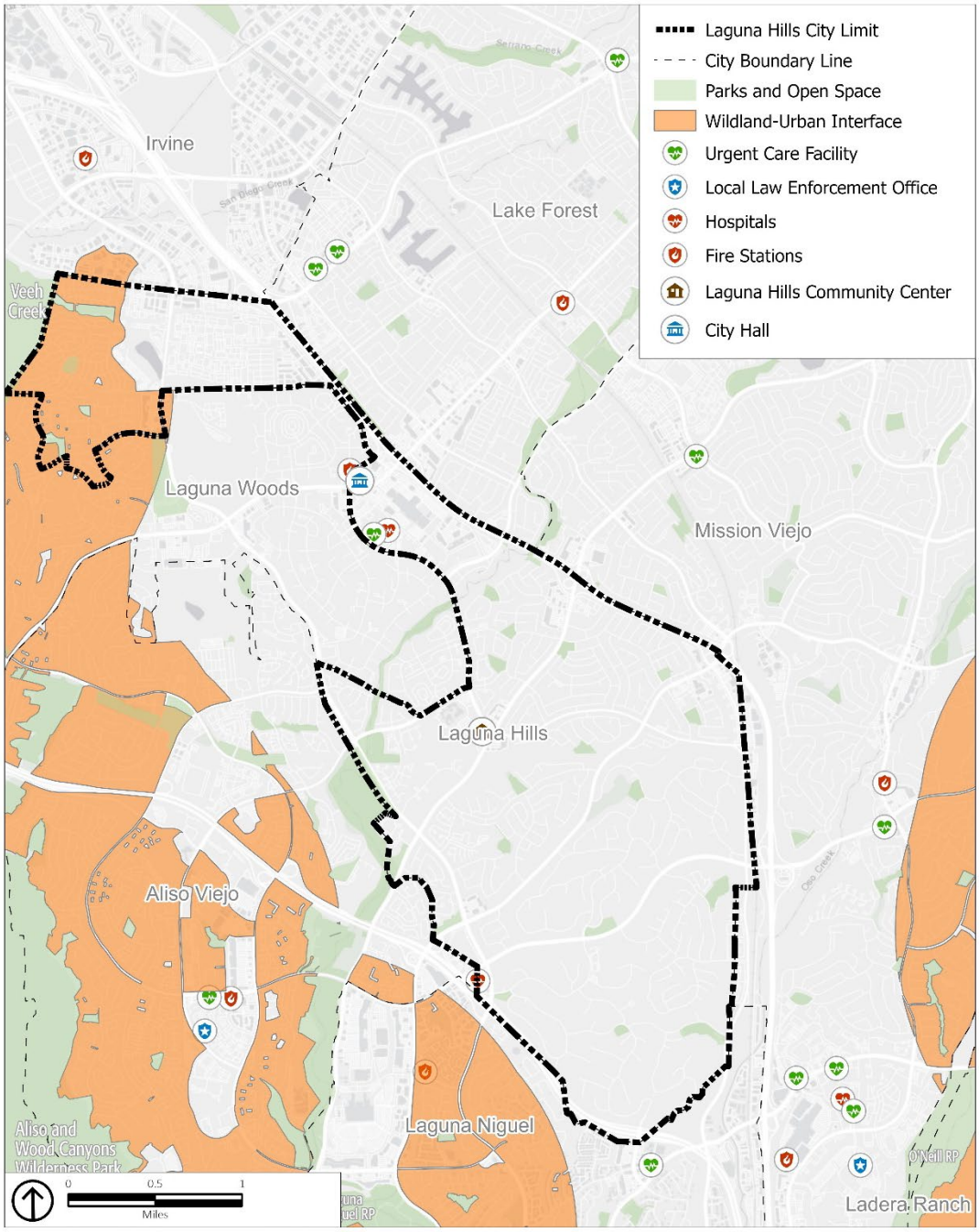

Source: SILVIS Labs, City of Laguna Hills, PlaceWorks, ESRI

Figure S-7
Historic Wildfires

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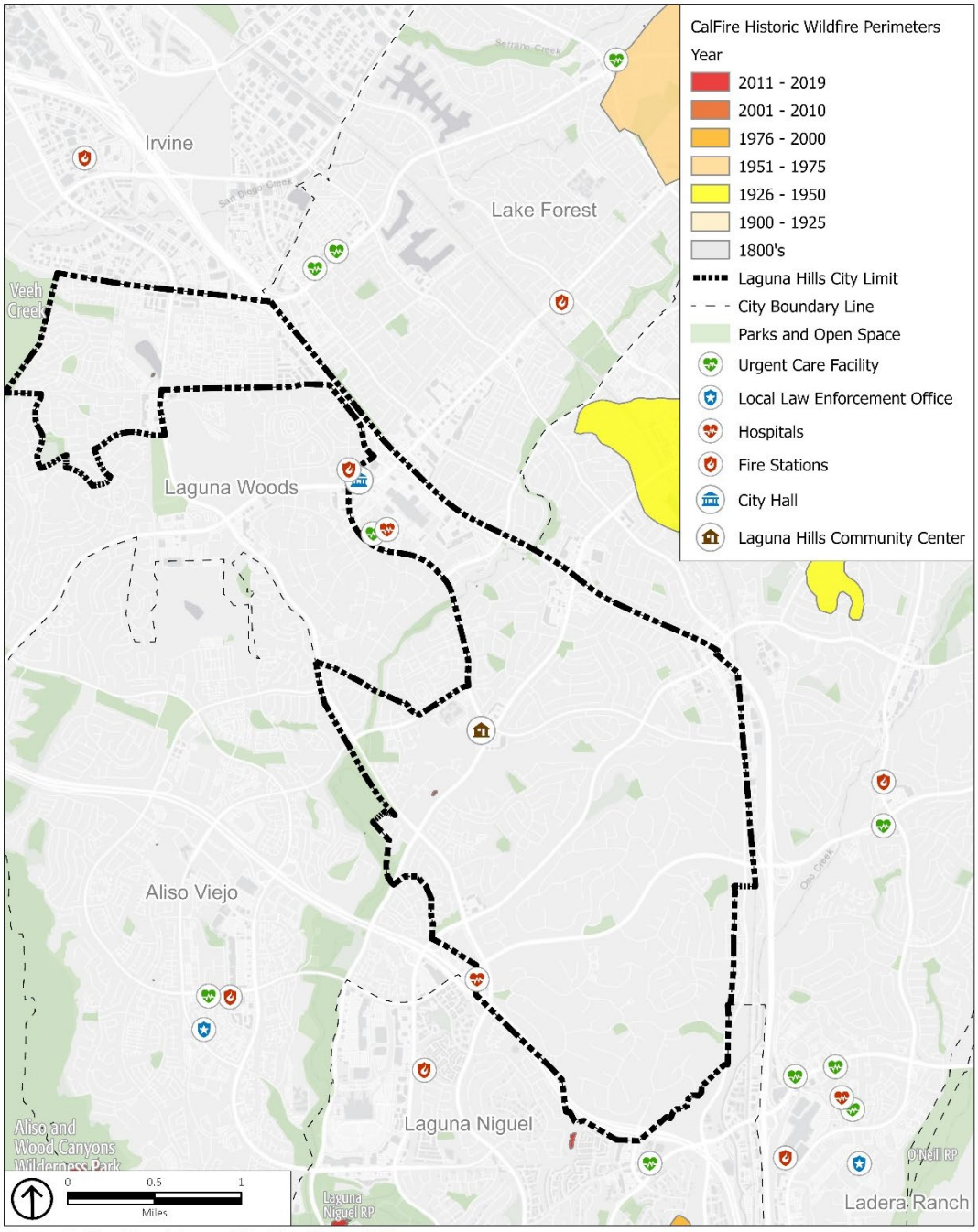

Source: CalFire, City of Laguna Hills, PlaceWorks, ESRI

LAW ENFORCEMENT AND CRIMINAL ACTIVITIES

Crime and Neighborhood Safety

Laguna Hills sets high standards for neighborhood safety and maintains a low crime rate amongst cities in Orange County. The City is committed to maintaining this level of safety by providing superior police protection and crime prevention programs.

Police services are provided by the Orange County Sheriff's Department (OCSD). Deputies are responsible for general patrol, traffic enforcement, criminal investigations, and other law enforcement-related duties.

OCSD prides itself on maintaining a working partnership with the community of Laguna Hills to serve and protect its neighborhoods. Crime prevention and community-oriented policing programs, including Neighborhood Watch, Speed Watch, Business Watch, and school resource programs designed to educate and build a stronger partnership with our youth, as well as help residents of all ages take a proactive approach to crime prevention and protection. Refer to the Community Services and Facilities Element for further discussion of police services.

Response Times

In accordance with the Laguna Hills Police Services annual report for 2019, emergency calls are all calls that have the potential to be life threatening. Priority 2 calls are serious crimes that just occurred, incidents likely to escalate to a crime against a person, or any incident where a delay would impede further investigation or put someone in jeopardy. During 2019, the average reconciled response time for emergency response calls was 4 minutes and 57 seconds and average response time for priority 2 calls was 15 minutes and 6 seconds from when the call was received to deputies arriving at the location. These response times are within standard and reflect an appropriate staffing level for Police Services.

Crime Prevention through Environmental Design

Crime Prevention through Environmental Design (CPTED) is based on the premise that the proper design and effective use of the built environment can lead to a reduction in the fear of crime and incidence of crime. While traditional methods of policing are important to maintain security in Laguna Hills, CPTED guidelines can be used to prevent crime before it occurs. CPTED is a multi-disciplinary method of using physical and psychological strategies to deter crime.

While crime in Laguna Hills is low, the application of this method in the existing and new built environment can further reduce the opportunity for, and the likelihood of, crime. In addition, the development and redevelopment of certain areas within the City also allows the opportunity to incorporate CPTED principles into the design of development as well as operational aspects.

HAZARDOUS MATERIALS AND NUCLEAR POWER PRODUCTION

Hazardous Materials and Waste

A hazardous material is defined as any injurious substance, including pesticides, herbicides, toxic metal and chemicals, explosives, and nuclear fuels and materials. The use of these hazardous materials is common 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 wastes pose certain risks to the general population of the City. Interstate 5 and the San Joaquin Hills Transportation Corridor (State Route [SR-] 73) are major transportation arterials that border Laguna Hills and it is likely that hazardous materials are transported along these roadways, thus potentially exposing people to potential catastrophic events. Hazardous materials require special methods of disposal, storage, and treatment, and the release of hazardous materials requires an immediate response to protect human health and safety and/or the environment.

OCFA provides 24-hour emergency response services to hazardous materials incidents occurring throughout Orange County, including Laguna Hills. In addition, the Safety and Environmental Services Section (SESS) of OCFA is responsible for gathering and maintaining inventories of chemicals stored, handled, and used within Laguna Hills. Once identified, SESS is responsible for compiling this information into a database, which can be accessed through the Community's Right to Know program. This program responds to all requests from the public for hazardous materials information and disclosure. In addition, OCFA has developed a Hazardous Materials Area Plan addressing day-to-day hazardous material operations as well as extreme emergencies. The role of Laguna Hills in the event of a hazardous materials emergency is focused on discovery, notification evaluation, and initiation of immediate on-scene action.

The City will continue to maintain permitting requirements that parallel County requirements for businesses within Laguna Hills that handle, store, or generate hazardous waste. In addition, common household items, such as medical waste (syringes), latex and oil-based paints, antifreeze, batteries, used motor oil, fertilizers, pesticides, herbicides, and electronic waste, such as used cell phones and computers, are considered hazardous waste, and cannot be

disposed of along with other residential trash. To ensure that household hazardous wastes are collected and disposed of in a safe manner, Orange County Waste and Recycling (Integrated Waste Management Department) developed a household hazardous waste collection program at Orange County landfills. Four permanent collection facilities are located throughout the County, with the nearest Household Hazardous Waste Collection Center (HHWCC) located approximately 5 miles north of Laguna Hills in the City of Irvine. The City of Laguna Hills will continue to support this program and supporting programs, as appropriate, to address the City's hazardous waste disposal needs.

Nuclear Power Production

The San Onofre Nuclear Generating Station (SONGS) is located in San Diego County approximately 15 miles south of Laguna Hills within the Camp Pendleton military reserve. The U.S. Nuclear Regulatory Commission has identified the area surrounding SONGS, and every nuclear power facility, as an Emergency Planning Zone, and the State of California has defined the area outside and adjacent to the Emergency Planning Zone as a Public Education Zone. Laguna Hills is located outside of the Emergency Planning Zone but lies within the Public Education Zone. For areas within this zone, the State of California and Southern California Edison have created education programs to ensure that residents are prepared for any potential problems associated with the facility.

Radioactive by-products are primarily contained within the plant; however, small quantities of radioactive gas are released into the air and liquids into the Pacific Ocean. The releases are monitored by SONGS personnel; according to SONGS, radiation exposure due to material release is less than typical exposure from natural background radiation. The two most likely sources of radiation contamination are transportation accidents involving the transport of radioactive materials and uncontrolled releases at the plant site.

SONGS was granted Permanently Defueled Status in 2015 and is in the process of being decommissioned and dismantled. Dismantlement of the facility began in 2020and decommissioning activities are anticipated to be completed by 2045. While the decommissioning process is regulated by the Nuclear Regulatory Commission (NRC), spent radioactive material continues to be stored onsite and the potential for accidental release is possible. Continued safety and emergency response policies and protocols are still needed until SONGS is fully decommissioned and the land returned to the U.S. Navy.

FLOODING AND STORMWATER MANAGEMENT

Floods have the potential to cause extensive property damage and injury to the community. Some areas of Laguna Hills are determined to be within a Federal Emergency Management Agency (FEMA)-designated flood zone; therefore, the City participates in the Federal Flood Insurance Program to determine the mandatory insurance necessary for identified properties. As shown on Federal Insurance Rate Maps (FIRMs), flood areas that have a 1-percent annual chance of flooding (the "100-year floodplain") are identified around Aliso Creek, Veeh Reservoir, Mill Creek, and in a zone northwest of Alicia Parkway in the southern portion of the City (Figure S-8). Additional zones in the periphery of these flood areas may pose a flood risk, but since they are outside the designated 1-percent annual chance floodplain, they do not require additional flood insurance. Lower risk areas are also located along the La Paz Channel on the eastern border of Laguna Hills, and along North Sulfur Creek around Moulton Parkway.

According to California's *Fourth Climate Change Assessment* for the Los Angeles region, dry and wet extremes are anticipated to increase in the future, which can lead to increased flooding. While the short-term and long-term risks associated with climate change are uncertain, experts agree that increased heat and precipitation events increase the frequency and severity of flooding. Increases in flood events endanger public health and safety, damage property, and can lead to displacement and loss of life.

The County of Orange and the City maintain an extensive storm drain system that would normally divert any excessive rainfall into appropriate channels. However, a significant rain event could cause flooding in the zones identified below, or minor, localized flooding elsewhere in the City. Most of the City does not lie downstream from any Dam Inundation Area or major levees, so there is little risk of inundation from structural failures. However, strong seismic events and more intense precipitation events could result in impacts to a residential area surrounding Veeh Reservoir in the northwestern area of the City. Figure S-4 shows dam inundation areas within and surrounding the City.

The City will continue to coordinate with the Orange County Flood Control District to maintain the necessary flood control and stormwater management facilities. In addition to the City and County, the U.S. Army Corps of Engineers, the Federal Insurance Administration, FEMA, and the California Department of Water Resources manage and protect waterways and are responsible for flood-control infrastructure.

Figure S-8
Flood Hazard Zones (100-year and 500-year)

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CITY OF LAGUNA HILLS

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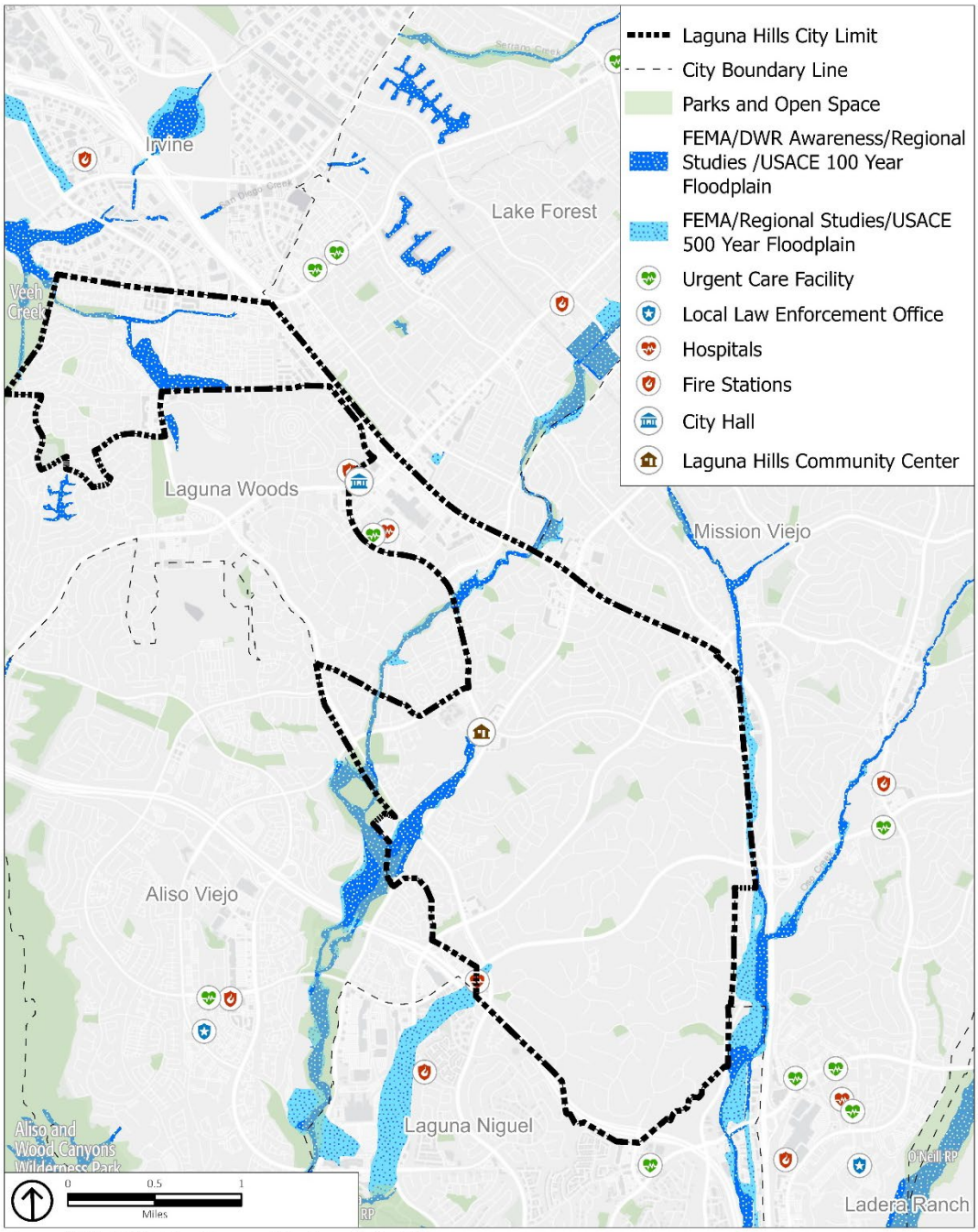


Source: DWR, FEMA, City of Laguna Hills, PlaceWorks, ESRI

CLIMATE CHANGE VULNERABILITY

Changes to the global climate system are expected to affect future occurrences of natural hazards in and around Laguna Hills. Many hazards are projected to become more frequent and intense in coming years and decades, and in some cases, these trends have already begun. According to California's *Fourth Climate Change Assessment,*[3] the Los Angeles region, where Laguna Hills is located, is projected to experience various changes due to climate-related hazards.

Air Quality

Pollution burden[4] throughout Laguna Hills ranges between 12 and 69, with the southern portion of the City (south of Paseo de Valencia) generally having less pollution burden and the northern portion of the City (north of Paseo de Valencia) having a higher pollution burden. Climate change can exacerbate poor air quality due to the increase of ozone, particulate matter, and other pollutants. Worsening air quality affects human health and compounds preexisting health problems, such as asthma, pulmonary disease, and cardiovascular disease. Health impacts from poor air quality are most often associated with senior citizens, persons with chronic illnesses, households in poverty, and populations that spend a significant amount of time outdoors, such as children, outdoor workers, and individuals experiencing homelessness.

Drought

A drought occurs when conditions are drier than normal for a long period of time, making less water available for people and ecosystems. Drought conditions are projected to become more frequent and severe, as precipitation is expected to occur in fewer, more intense storms. With drought events becoming more severe and prolonged, soils can dry out and condense, leading to more surface runoff and flooding when it does rain.

The Moulton Niguel Water District (MNWD) and the El Toro Water District (ETWD) supply the City with potable water. Water from both districts comes from the Colorado River and State Water Project. Water service and infrastructure is further discussed in the Conservation and Open Space Element and the Community Services and Facilities Element. Both water districts include programs that can help residents respond to drought

[3] Bedsworth, Louise, Dan Cayan, Guido Franco, Leah Fisher, Sonya Ziaja. (California Governor's Office of Planning and Research, Scripps Institution of Oceanography, California Energy Commission, California Public Utilities Commission). 2018. *Statewide Summary Report. California's Fourth Climate Change Assessment*. Publication number: SUMCCCA4-2018-013.

[4] Pollution burden is based on CalEnviroScreen, which is a health screening tool developed by the California Office of Environmental Health Hazards Assessment that helps identify communities that are affected by pollution and environmental conditions caused by pollution. Pollution burden is reported as a percentile that is made up of many indicators that include exposure and environmental effects.

conditions. The ETWD provides conservation pricing, public education and outreach, and rebate programs. MNWD establishes water budgets for customers and price penalties for exceeding water budget. Both water districts can further prohibit water waste activities and restrict water use. MNWD provides an extensive system of recycled water for use by the City and major commercial properties for landscaping irrigation.

Extreme Heat and Warm Nights

Climate change is projected to increase extreme heat events during the day and at night and average daily temperature. The number of extreme heat days in Laguna Hills, defined as a day when the high temperature is at least 90.1 degrees Fahrenheit (°F), is expected to rise from a historical annual average of five (5) days per year to 12 days per year by the middle of the century (2040-2069), and to an average of 25 days per year by the end of the century (2070 to 2099). The number of warm nights in Laguna Hills is also expected to increase, which is defined as temperatures above 65°F. Climate change is expected to increase the number of warm nights from a historical annual average of four nights per year to 41 warm nights per year by the middle of the century and 80 warm nights per year by the end of the century.

Human Health Hazards

Climate-related human health hazards are usually diseases carried by animals (i.e., vectors), such as mice and rats, mosquitos, and ticks. Climate change can increase the rates of infections from these vectors because many of the animals that carry diseases are more active during warmer weather. This can lead to an increase of reported cases of vector-borne diseases, such as with the West Nile Virus, Lyme disease, hantavirus pulmonary syndrome, and influenza.

Extreme Storms

Extreme storm events can include strong storms and high winds, which are anticipated to become more frequent and intense due to climate change. Laguna Hills is projected to experience a slight increase in overall annual precipitation levels, with precipitation expected to fall in fewer, more extreme events, such as atmospheric rivers. Heavy rainfall can contribute to an increased risk of landslides in hillside areas in and around Laguna Hills. The types of dangers posed by extreme storms may include injuries or deaths, damage to properties, roadway closures or damages, fallen trees, and fires sparked by lightning.

Vulnerability Assessment Results

Under California law, the Safety Element is required to include a vulnerability assessment that looks at how populations and assets may be affected by climate change. The City conducted a Climate Change Vulnerability

Assessment in 2021 to analyze Laguna Hills' susceptibility to climate-related hazards. The Laguna Hills' vulnerability assessment, prepared in accordance with the most recent available guidance in the *California Adaptation Planning Guide*, assesses how eight different climate-related hazards (air quality, drought, extreme heat and warm nights, extreme storms, flooding, human health hazards, landslides, and wildfire) may affect 51 population groups and assets. Each population or asset received a score of low, medium, or high for each climate-related hazard. The Climate Change Vulnerability Assessment indicates that the City's populations and assets are most vulnerable to extreme heat and warm nights, extreme storms, landslides, and wildfire.

Most vulnerable populations in the city include households in poverty, persons experiencing homelessness, persons with chronic medical conditions, and seniors living alone. Results from the vulnerability assessment indicate that these populations rank high in vulnerability with at least six hazards. These populations are less likely to have the financial resources and social network to rely on and are more likely to have limited mobility to quickly evacuate (e.g., lack access to a vehicle).

Climate hazards affect populations differently. Populations especially vulnerable to poor air quality include seniors and persons with chronic medical conditions who have weaker immune systems, and populations that may be disproportionately exposed to poor air quality, such as children, outdoor workers, households in poverty, and undocumented persons.

Drought affects water availability and prices and disproportionately affects populations that have financial hardships. Populations especially vulnerable to extreme heat include children, seniors, households in poverty, outdoor workers, persons with chronic medical conditions, undocumented persons, and persons experiencing homelessness.

Populations most vulnerable to extreme storms, flooding, and landslides include populations that lack financial resources to prepare and respond to these hazards, such as weatherizing one's home; populations that have reduced mobility to prepare for and quickly evacuate in the event of a hazard; households on single-access roads that may be blocked during these hazards; and persons experiencing homelessness. Populations with weakened immune systems or populations that may be more exposed to vectors are most vulnerable to human health hazards. Lastly, wildfires can lead to property damage and wildfire smoke, which contributes to decreased air quality. Within the City, populations within the wildland-urban interface are more likely to experience property damage, personal injury, and loss of life, and populations throughout the City would be exposed to reduced air quality from wildfire smoke. Populations with weak immune systems or reduced mobility, populations with financial hardship, and persons living on single-access roads are most vulnerable to wildfires and smoke.

Citywide, energy delivery is vulnerable to multiple hazards, including severe weather, such as high winds, severe storms, landslides, and wildfire that could

disrupt energy service. Furthermore, energy delivery services, specifically electricity delivery, is subject to harm during extreme heat events. Extreme heat puts more stress on power lines and energy infrastructure, which can cause the energy grid to perform less efficiently. This, coupled with more electricity demand from air conditioning units, can lead to power shutoffs, which exacerbate extreme heat risks.

Additionally, hazards can damage infrastructure or block roadways, which affect the availability of services. For example, damage to roadways and bus stops can hinder or halt public transit service throughout the City.

Channels/streams, riparian habitat, and wetlands are most vulnerable to drought, extreme heat, and warm nights, which can decrease water availability and change the water chemistry of these resources. Channels, streams, and riparian habitat are also vulnerable to extreme storms and landslides, which can disrupt or block these resources.

The Safety Element includes goals, policies, and implementation measures to increase community resilience and help lower vulnerability scores, particularly for the populations and assets that received a score of high vulnerability in the Vulnerability Assessment. A full list of the Vulnerability Assessment results can be found in **Appendix A**.

EMERGENCY PREPAREDNESS

All urban areas are faced with the possibility of major disasters that threaten life, safety, and property, and Laguna Hills is no exception. Laguna Hills is committed to providing the most effective and economical use of all available resources for the maximum benefit and protection of population and structures within the City.

As discussed throughout this element, Laguna Hills is exposed to multiple hazards, all of which have the potential to disrupt the community, and cause damage and casualties. In response to these realities, Laguna Hills operates under the Orange County Operational area, which has an Operational Area Emergency Operations Plan (EOP) and has conducted training exercises with the Office of Homeland Security and the State Office of Emergency Services to ensure that the plan serves as an extension to, and is consistent with, the guidelines provided in the statewide Standardized Emergency Management System (SEMS). The EOP takes the "all hazards" approach and determines the actions that need to be taken by the City to (1) prevent disasters where possible; (2) reduce vulnerability of residents to any disasters that cannot be prevented; (3) respond effectively to actual occurrences of disasters; and (4) provide recovery in the aftermath of any emergency involving extensive damage or other debilitating influence on the normal pattern of life within the community. The EOP is not intended for day-to-day emergencies, but rather for disaster situations where normal resources are exhausted or nearly exhausted. The EOP becomes activated when a threat to lives and property is so great that the City needs to expand beyond normal

day-to-day operations to meet the demands. While it is likely that outside assistance would be available in most large-scale disaster situations and plans have been created to facilitate the coordination of this mutual aid, the City is prepared to carry out disaster response and short-term recovery operations on an independent basis.

Two Emergency Operation Centers (EOCs) can be used as emergency facilities and shelters in the event of an emergency or disaster. They are as follows:

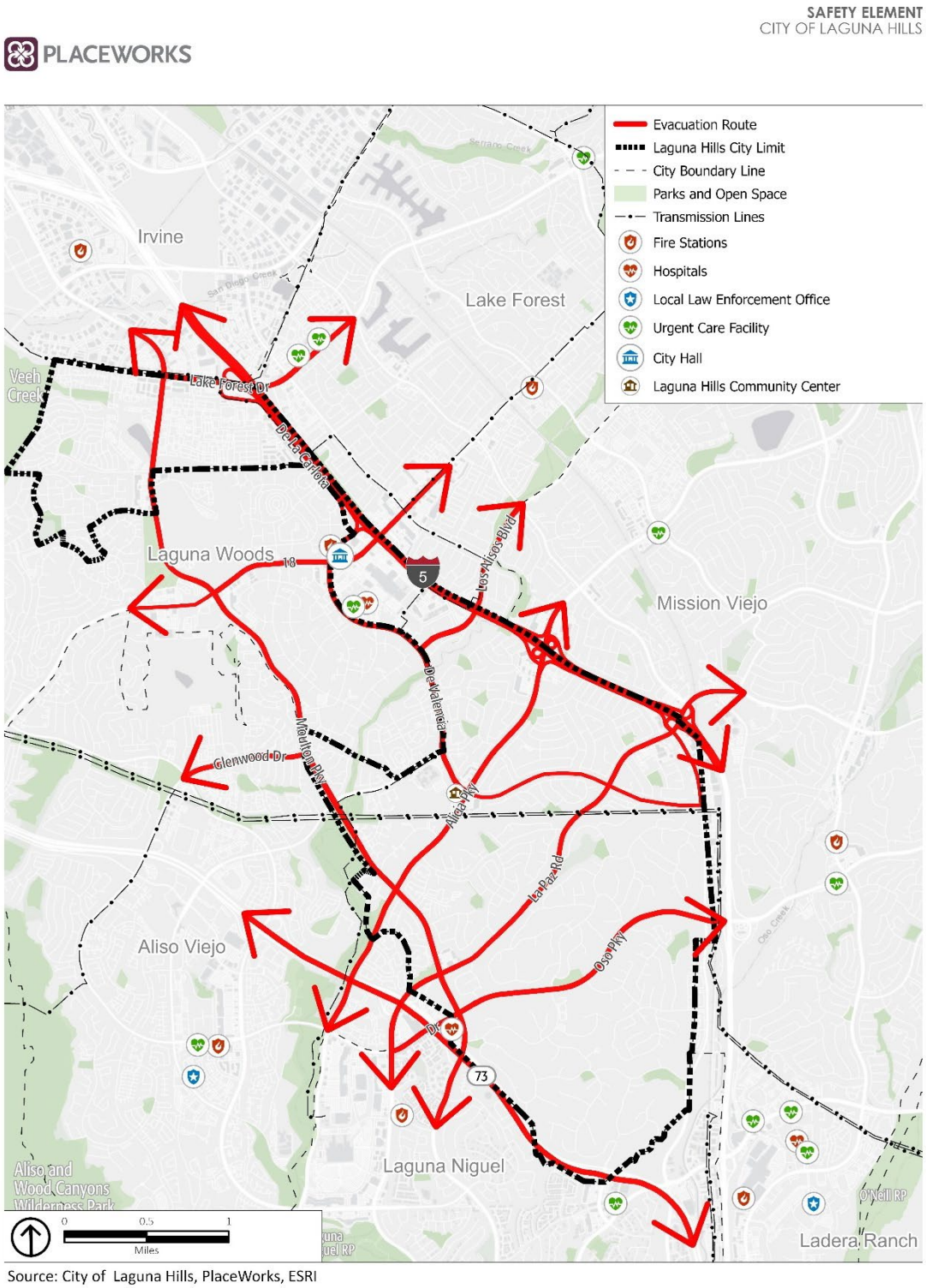
- **Primary Emergency Operation Center (EOC)** is located at: Laguna Hills Civic Center 24035 El Toro Road Laguna Hills, CA 92653
- **Alternate Emergency Operation Center (EOC)** is located at: Laguna Hills Community Center
  25555 Alicia Parkway Laguna Hills, CA 92653

Evacuation can be effective to minimize injury and death during a hazardous event. The City maintains evacuation routes, as shown in Figure S-9. Roadways identified as evacuation routes include primary thoroughfares through the City, which are classified as major, primary, secondary, and smart arterial streets by the Mobility Element. Many of the major roadways in the City connect to larger evacuation routes, including I-5 and SR-73. Figure S-10 shows residential parcels that have evacuation constraints, which is defined as residential parcels that have only one ingress or egress point. The lack of multiple roadway access points may increase difficulties in an evacuation. Evacuation routes through the City may be disrupted or blocked in the event of a hazard, such as flooding or wildfire. If an evacuation route becomes unusable, other evacuation routes may become congested.

The City sponsors a Community Emergency Preparedness Academy to educate citizens about first-aid techniques and also offers training techniques to first responders for duties in the event of a hazard or disaster. The City will continually educate its residents on the need to adequately prepare for emergencies and will make the EOP a readily available document so the community can gain familiarity with the City's emergency plans and policies.

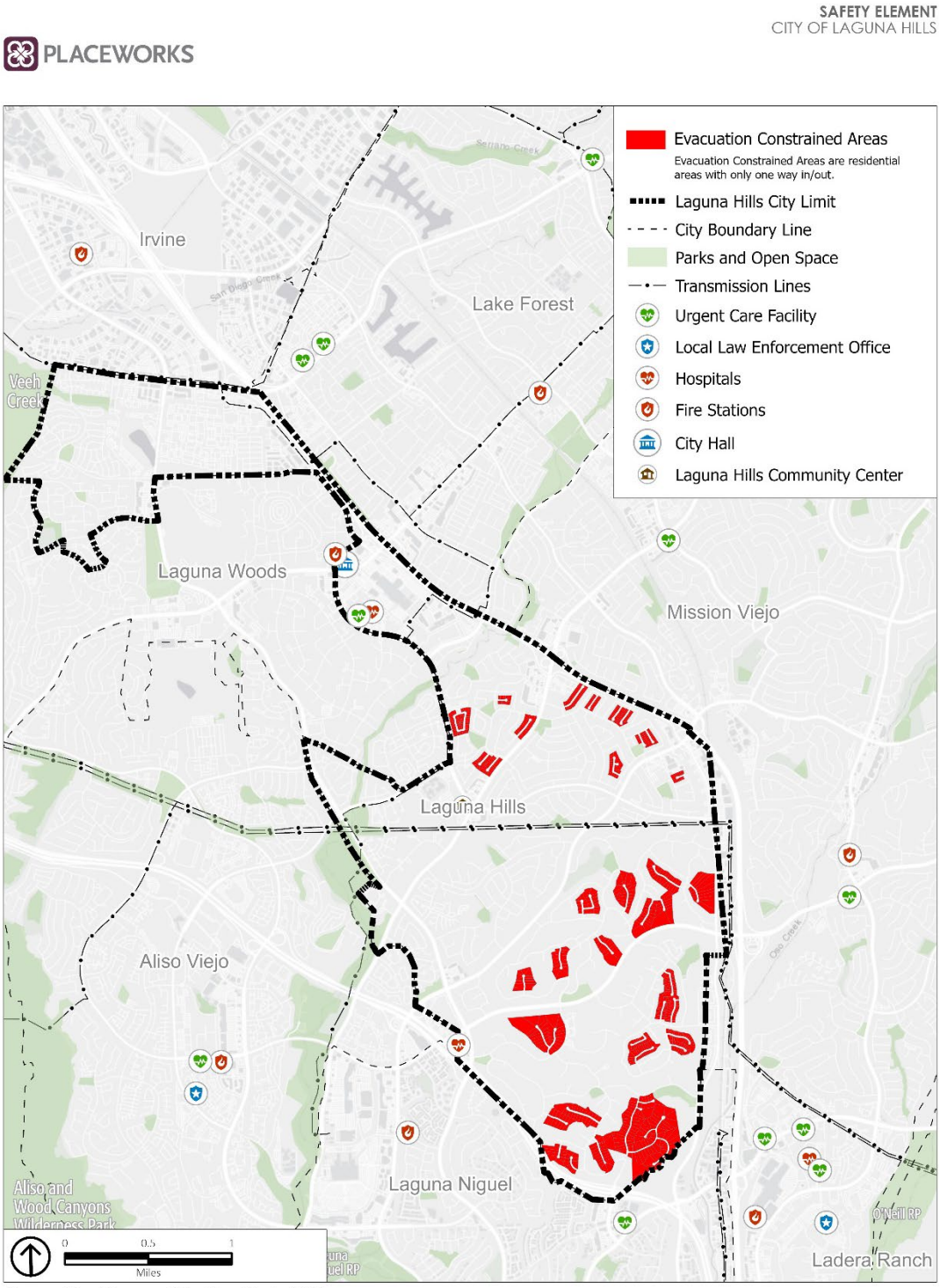
One community in the city, Nellie Gail Ranch, has an Emergency Preparedness Committee (EPC) to help organize and prepare for the earliest stages of disaster response. This committee is comprised of eight members and several volunteer teams that support emergency communications, first aid needs, and the needs of the equestrian community at the neighborhood and block levels. The EPC also established an Emergency Command Center that is active during an emergency to communicate with first responders to ensure effective distribution of fire, police, and rescue services. Several emergency preparedness articles are published throughout the year by the EPC to help residents prepare for different types of emergencies and disasters.

Figure S-9
Evacuation Routes



Source: City of Laguna Hills, PlaceWorks, ESRI

Figure S-10
Evacuation-Constrained Areas



Source: City of Laguna Hills, PlaceWorks, ESRI

Goals and Policies

This section sets both broad and specific direction for the future of Laguna Hills based on identified issues, as captured in the City's Guiding Themes and expressed by the community, City staff, and decision makers.

Seven major issue areas are addressed in the goals and policies of the Safety Element. The major issues are:

- Reducing the risk and damage caused to residents from natural geologic and seismic hazards through proper land use planning and geotechnical investigations.
- Reducing the risks associated with urban and wildland fires through education and fire prevention measures.
- Providing effective law enforcement that helps maintain community safety and further reduces crime.
- Protecting the community from hazardous waste and nuclear power production risks.
- Reducing the risks associated with flooding and improper stormwater management.
- Reducing the impacts of climate hazards by reducing vulnerability and promoting adaptive capacity.
- Maintaining a high level of emergency preparedness to protect public health and safety in emergency situations.

GEOLOGY AND SEISMICITY

Geologic and seismic hazards are constraints to development and could potentially pose safety risks to the residents of Laguna Hills. Because of the active seismic nature of the Southern California region, residents of Laguna Hills are vulnerable to seismic hazards due to the City's proximity to nearby faults. Current and future residents could be exposed to geologic hazards such as landslides, particularly in hillside locations or areas of unstable soil. The goals and policies in this Section emphasize the need for careful investigation of geologic conditions to help assess their potential threats. The goals and policies will also ensure that Laguna Hills will regulate the standards for development and address the need for preventative land use planning and development requirements to minimize structural damage and protect residents from unforeseeable seismic and geologic hazards.

Goal S-1: Reduce the risk of injury and the loss of life and property from seismic activity and geologic conditions.

Policy S-1.1: Investigate specific geologic conditions underlying all proposed significant development proposals in areas where potential fault rupture, liquefaction, slope instability, ground failure, subsidence, or other geologic hazards are suspected.

Policy S-1.2: Apply current and proper land use planning, development engineering, building construction, and retrofitting requirements.

Policy S-1.3: Require that grading activities be designed, per City standards, to avoid obstructing or impeding the natural flow of stormwaters, causing accelerated erosion, or aggravating any existing flooding condition.

URBAN AND WILDLAND FIRE HAZARDS

Since the City is potentially vulnerable to wildland fire and urban fire events, the City will continue to administer proper fire protection services and promote fire prevention measures through community education; design features, such as fire-resistant landscaping; and technological advances.

Goal S-2: Reduce the threat to life, structures, and the environment from urban and wildland fires.

Policy S-2.1: Provide a sufficient level of fire protection service to reduce the risk from urban and wildland fires.

Policy S-2.2: Continue to involve the Orange County Fire Authority (OCFA) personnel in the development review process for new development and redevelopment activities.

Policy S-2.3: Work with OCFA Community Educators on public education efforts, including elementary and secondary school students, and training programs about fire hazard prevention measures and evacuation routes.

Policy S-2.4: Continue to work with OCFA to integrate new technologies and fire prevention concepts into the design and construction of new development projects and redevelopment activities.

Policy S-2.5: Continue to work with OCFA to reduce the risk of wildland fire hazards by requiring fire-resistant landscaping and incorporate site design and maintenance standards for new development located in areas of high wildfire risk.

Policy S-2.6: Enforce the California Fire Safe Standards and City's Building Code and Fire Code to support fire safety in new and existing developments. Require that new developments demonstrate compliance with local and state standards for fire safety.

Policy S-2.7: Encourage the use of fuel breaks and vegetation clearance to maintain emergency access on public and private roads.

Policy S-2.8: Ensure that infrastructure and assets that are essential for public health and safety are hardened against fire hazards and critical community services continue to function during and after a fire hazard event.

Policy S-2.9: Work with OCFA and water providers in the City to ensure adequate water supply and pressure is available to fight fires.

LAW ENFORCEMENT

The City is committed to maintaining the low crime rate and further reducing the instances of criminal activity within the community. The City takes a proactive approach to crime prevention and the goals and policies below will enable the City to continue to maintain high quality and efficiency in police services as well as emphasize the pivotal role community involvement plays in crime prevention.

Goal S-3: Provide a safe, peaceful, and orderly community through effective law enforcement and community involvement.

Policy S-3.1: Provide a sufficient level of law enforcement service to reduce the risk of criminal activity and terrorism.

Policy S-3.2: Continue to involve law enforcement personnel in the development review process for new development and redevelopment activities.

Policy S-3.3: Continue public education efforts and community outreach, including elementary and secondary school students, about crime and drug prevention measures.

Goal S-4: Maintain and design neighborhoods and buildings in a manner that can help reduce crime and provide security and safety for people and property.

Policy S-4.1: Integrate appropriate Crime Prevention Through Environmental Design (CPTED) principles in the design or redevelopment of projects and buildings.

HAZARDOUS MATERIALS AND NUCLEAR POWER PRODUCTION

To reduce or eliminate potential dangers posed by the misuse and mismanagement of hazardous materials, waste, and nuclear power production, the City will continue to establish and enforce measures to identify hazard areas and to review and regulate development and redevelopment where such hazards may occur. The City will also promote the proper disposal of hazardous waste materials by educating the community of the dangers of improperly handled hazardous materials and adhering to the guidelines set forth by OC Waste & Recycling and other applicable regulations.

Goal S-5: Protect life, structures, and the environment from hazardous materials.

Policy S-5.1: 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-5.2: Encourage businesses and residents to use practices and technologies that will reduce the generation of hazardous wastes at the source.

Policy S-5.3: Continue to cooperate with the Orange County Fire Authority and Orange County Integrated Waste Management Department to address hazardous materials.

Policy S-5.4: Continue public education efforts regarding proper use, storage, and disposal of household hazardous materials.

Policy S-5.5: Coordinate with the County, Caltrans, rail line authorities, and other hazardous materials regulating agencies, to identify designated routes for the ground transportation of hazardous materials through Laguna Hills.

Policy S-5.6: Coordinate public education and emergency response activities addressing nuclear power production risks with other local, state, and federal agencies.

FLOODING AND STORMWATER MANAGEMENT

The City of Laguna Hills will seek to protect its residents and visitors from flood hazards through structural planning and design, as well as facilitate efforts with local, state, and federal agencies, including special districts, to address flooding issues. Since the existing flood-control and stormwater drainage system has been designed and constructed to accommodate anticipated population increases as well as future land development and redevelopment projects, the following goals and policies will optimize this existing system and seek to maintain the natural drainage courses as they are, in their natural condition to ensure proper flood control and stormwater drainage facilities.

Goal S-6: Reduce injuries and danger to life, property damage, and public health hazards associated with flooding.

Policy S-6.1: Cooperate with the Orange County Flood Control District to provide well-maintained regional flood-control facilities capable of accommodating, at a minimum, 100-year storm flows consistent with federal requirements.

Policy S-6.2: Require that new development and redevelopment minimize stormwater and urban runoff into drainage facilities by incorporating on-site design features, such as detention basins, water features, or other suitable strategies. Where feasible, support the use of common detention facilities serving more than one development.

Policy S-6.3: Prohibit new development in flood-hazard zones. When not possible, require construction and operation strategies that would minimize the flood damage to new buildings within flood zones.

Policy S-6.4: Continue to implement National Pollutant Discharge Elimination System (NPDES) stormwater permits issued by the state and regional water quality control boards.

Policy S-6.5: Require design and development practices for transportation and utilities infrastructure that would maintain the structural and operational integrity of essential public services during flooding.

Policy S-6.6: When feasible, locate new essential public facilities outside of flood hazard zones, including hospitals and health care facilities, emergency shelters, fire stations, emergency operation centers, and emergency communications facilities.

CLIMATE CHANGE

As mandated by the State of California pursuant to (legislation references here), Laguna Hills will reduce the impacts of climate change to its residents, businesses, and visitors through goals and policies that focus on reducing vulnerability and increasing resilience. Climate change affects multiple natural hazards, including wildfire, flooding, air quality, drought, extreme heat and warm nights, human health hazards, and extreme storms. The goals and policies in this Safety Element provide guidance to minimize exposure to natural hazards, which are exacerbated by climate change.

Air Quality

Goal S-7: A resilient community with healthy air quality that minimizes health risk from pollution sources.

Policy S-7.1: Work with the South Coast Air Quality Management District to monitor air pollutants of concern in the City.

Policy S-7.2: Encourage the siting of new developments for sensitive receptors, such as schools, playgrounds, childcare centers, senior services and housing, and health care facilities, away from significant pollution sources. When this is not possible, consider appropriate mitigation measures to protect human health (e.g., enhanced indoor air filtration systems).

Policy S-7.3: Support training and workshop opportunities for residents to learn about strategies to promote safe indoor air quality and protect themselves from poor outdoor air quality, such as wildfire smoke.

Policy S-7.4: Prioritize new street tree plantings and increase the tree canopy to reduce community health impacts from exposure to elevated concentrations of diesel, ozone, and $PM_{2.5}$.

Drought

Goal S-8: A resilient community able to adapt to short-term and long-term drought impacts, including reduced water supply.

Policy S-8.1: Use the most current data to maintain a continuous understanding of drought impacts in Laguna Hills, including natural resources.

Policy S-8.2: Prepare for a reduced, long-term water supply resulting from more frequent and severe drought events, including working with state and regional water providers to implement extensive water conservation measures and ensure sustainable water supplies.

Policy S-8.3: Transition towards less water-intensive landscaping on City-owned properties and encourage native, drought-tolerant, and low-water use landscaping on private properties.

Policy S-8.4: Work with water agencies to ensure that vulnerable populations, including households with financial instability and persons that spend an extended amount of time outdoors have access to safe and affordable water.

Policy S-8.5: Install water-efficient irrigation at the City's trees to maintain a thriving urban forest.

Policy S-8.6: Coordinate with water agencies to explore ways to improve and increase storage capacity and generation efficiency.

Extreme Heat and Warm Nights

Goal S-9: A population and community resilient to extreme heat and warm nights.

Policy S-9.1: Provide an equitable distribution of shade structures, trees, and drinking fountains at bus stops, City parks, and other public outdoor spaces.

Policy S-9.2: Weatherize City buildings and adopt standards encouraging private property owners to weatherize buildings to maintain a comfortable and healthy indoor temperature.

Policy S-9.3: Provide an equitable distribution of cooling centers throughout the City where residents and visitors seek relief from extreme heat and establish a temperature threshold for when these facilities open.

Policy S-9.4: Work with electricity providers to maintain access to electricity and prepare for potential brown-outs and black-outs during extreme heat events, to the extent feasible in the City.

Policy S-9.5: Support the restoration of natural habitats that are vulnerable and may be degraded from extreme heat, drought, and extreme storms.

Human Health Hazards

Goal S-10: A community and population safe from vector-borne health hazards.

Policy S-10.1: Continue to collaborate with local and regional partners, such as the Orange County Mosquito and Vector Control District (OCVCD), to reduce vectors within the City.

Policy S-10.2: Distribute informational material for property owners on methods to reduce vectors, such as eliminating standing water and open refuse containers as provided by the OCVCD.

Policy S-10.3: Support the implementation of vector abatement measures in public spaces, including parks and along bicycle paths and sidewalks in a manner that maintains public and environmental health in coordination with OCVCD.

Extreme Storms

Goal S-11: A population and community resilient to extreme storm events.

Policy S-11.1: Collaborate with regional partners to provide messaging to residents and visitors on emerging weather conditions and forecasted extreme weather.

Policy S-11.2: Coordinate with local and regional organizations to provide evacuation assistance and emergency housing to vulnerable populations, which includes, but is not limited to, seniors, persons experiencing homelessness, persons with chronic medical conditions, or persons with limited resources.

Policy S-11.3: Coordinate with local and regional organizations to provide low-cost weatherization programs for households with financial instability.

Policy S-11.4: Work with regional partners to reduce impacts of extreme storm events on public property and critical infrastructure and services.

Policy S-11.5: Ensure the community is prepared during times of power shutoff events.

EMERGENCY PREPAREDNESS

The City recognizes that preparing for emergencies is essential to minimize the potential damage associated with a disastrous event. The City will work to provide proper response and preparedness by establishing preventative measures, implementing its local Emergency Operation Plan (EOP), and educating its residents on how to respond and recover in emergency situations.

Goal S-12: Maintain a high level of emergency preparedness to limit damage and risks to public health and safety from natural and other disasters.

Policy S-12.1: Coordinate with local Homeowners Associations, businesses, and surrounding jurisdictions to create public-private partnerships and support the development of local preparedness plans and multi-jurisdictional cooperation and communication agreements for emergency situations.

Policy S-12.2: In coordination with the Orange County Fire Authority and Orange County Sheriff's Office, educate residents and businesses regarding appropriate actions to safeguard life and property before, during and immediately after emergencies, in languages appropriate to the demographics of City residents.

Policy S-12.3: Participate in federal, state, and local hazard preparedness programs, emergency response education programs, and evacuation plans.

Policy S-12.4: Ensure emergency evacuation routes are clearly identified with adequate signage throughout the City.

Policy S-12.5: Ensure evacuation transportation services are available for populations with limited mobility or populations that lack access to a personal vehicle.

Policy S-12.6: Establish equitably distributed resilience hubs[5] at existing facilities throughout the City that provide safe refuge from hazards and disasters, including, but not limited to, poor air quality, wildfire smoke, flooding, storms, and extreme heat. Facilities should be easily accessible, have a reliable energy supply, and available for all persons.

Policy S-12.7: Incorporate an adopted Local Hazard Mitigation Plan into this Safety Element by reference, as permitted by California Government Code Section 65302.6 to ensure that emergency response and evacuation routes are accessible throughout the City.

5 As defined by the California Adaptation Planning Guide (2020), resilience hubs are "well-used, existing community-serving facilities that are upgraded to provide local communities with shelter and electricity during extreme heat events, poor air quality, and disasters".

Summary of Approach

The goals, policies, and programs in the Safety Element will help the City to minimize the threat of both natural and human-caused hazards on the community, protect public health, maintain safe neighborhoods, and provide timely and effective response in the event of an emergency by continually assessing the City's needs and taking proactive measures to ensure Laguna Hills is a safe environment in which to live, learn, work, and play. Table S-2 identifies the seven major issue areas described in the Goals and Policies section. These major issues represent the direction the City will take in its safety goals, policies, and programs to implement the vision of Laguna Hills as captured in the Guiding Themes and expressed in the Safety Plan.

Table S-2 Description of Actions to Address Safety Issues						
Issues	Element	Section	Policy	Programs	Figure	Table
Geology and Seismicity	Safety	Geology and Seismicity	S-1.1 and S-1.3	S-1 through S-4	S-1 (Landslide Zones); S-2 (Fault Locations); S-3 (Liquefaction Zones) S-4 (Flood Hazards)	S-1 (Reservoirs and Dams in/ near Laguna Hills)
Urban and Wildland Fire Hazards	Safety	Urban and Wildland Fire Hazards	S-2.1 through S-2.9	S-2, S-5 through S-7	S-5 (Fire Hazard Zones)	
	Community Services and Facilities	Fire Protection and Emergency Services	CSF-3.1	CSF-3	CSF-1 (Community Facilities)	CSF-1 (Fire Station Locations)
Law Enforcement and Criminal Activities	Safety	Law Enforcement and Criminal Activities	S-3.1 though S-3.3; S-4.1	S-7		
Hazardous Materials and Nuclear Power Production	Safety	Hazardous Materials and Nuclear Power Production	S-5.1through S-5.6	S-7, S-9, S-11		
Flooding and Stormwater Management	Safety	Flooding and Stormwater Management	S-6.1 through S-6.6	S-2, S-10	S-4 (Flood Hazards)	
	Community Services and Facilities	Flood Control and Stormwater Drainage	CSF-11.1 and CSF-11.2	CSF-9		
	Conservation and Open Space	Sustaining Our Resources	COS-1.3 and COS-1.4	COS-3		
Climate Change	Safety	Air Quality	S-7.1 through S-7.4	S-7, S-14, S-17, S-18		
		Drought	S-8.1 through S-8.6	S-17, S-18		
		Extreme Heat and Warm Nights	S-9.1 through S-9.5	S-11, S-13, S-16, S-18		
		Human Health Hazards	S-10.1 through S-10.3	S-7, S-18		
		Extreme Storms	S-11.1 through S-11.5	S-13, S-16		
Emergency Preparedness	Safety	Emergency Preparedness	S-12.1 through S-12.6	S-11, S-15, S-16		

Appendix A: Vulnerability Assessment Results Matrix

In 2021, Laguna Hills completed a Climate Change Vulnerability Assessment consistent with California Government Code Section 65302(g)(4) as part of the update to the Safety Element. This analysis assesses the extent to which the diverse populations and assets in Laguna Hills are vulnerable to different hazards that may be created or made worse by climate change. The primary categories of populations and assets assessed include populations, buildings and infrastructure, important economic assets, natural systems, and key community services. The assessment follows the recommended process in the *California Adaptation Planning Guide*, which is the state's guidance for how local communities should conduct climate adaptation planning efforts, including vulnerability assessments. As defined by the *California Adaptation Planning Guide*, climate change vulnerability is considered the degree to which natural, built, and human systems are susceptible to harm from exposure or stresses associated with climate change and from the absence of adaptive capacity.

Table A-1 shows the results of the vulnerability assessment prepared for Laguna Hills, in accordance with Senate Bill 379, as codified by California Government Code Section 65302(g)(4)(A). For each population or asset that may be vulnerable to each climate-related hazard, the population or asset is scored on a scale of low, medium, and high. The vulnerability scores reflect the severity of climate-related impacts on the populations and assets in Laguna Hills, as well as the ability of Laguna Hills' populations and assets to resist and recover from these hazards.

Table A-1. Vulnerability Assessment Results

	Populations and Assets	Air Quality	Drought	Extreme Heat & Warm Nights	Extreme Storms	Flooding	Human Health Hazards	Landslides	Wildfire
Population	Children (Under 10)	High	--	High	Low	Low	Medium	Low	High
	Cost-burdened households	Medium	Low	Low	Medium	Medium	Medium	Medium	Low
	Households in poverty	High	High	High	High	High	High	High	High
	Low-income households	Medium	Medium	Medium	High	High	Medium	High	Medium
	Low-resourced people of color	Medium	High	Medium	High	High	High	Medium	High
	Outdoor Workers	High	Medium	High	Medium	Medium	Medium	Medium	High
	Persons experiencing homelessness	High	High	High	High	High	High	High	High
	Persons with chronic medical conditions	High	Low	High	High	Medium	High	High	High
	Persons with disabilities and/or cognitive function	Medium	Low	Medium	Medium	Medium	Medium	High	Medium
	Persons with limited English proficiency	Low	Low	Low	Medium	Medium	Low	Low	Low
	Renters	Low	Medium	Low	Medium	Medium	Low	Low	Low
	Seniors (65 years of age or older)	High	Medium	High	Medium	Medium	High	High	High
	Seniors living alone	High	Medium	High	High	High	High	High	High
	Undocumented persons	High	Low	High	High	High	High	Medium	Medium
	Persons living on single access roads	Low	--	Low	Medium	High	Low	High	High

	Populations and Assets	Air Quality	Drought	Extreme Heat & Warm Nights	Extreme Storms	Flooding	Human Health Hazards	Landslides	Wildfire
Infrastructure	Bicycle and equestrian paths	--	Low	Low	Low	Low	--	Medium	Medium
	Communication facilities	--	--	Low	Low	--	--	Medium	--
	Electrical transmission and distribution lines	--	--	High	Low	--	--	High	--
	Flood control and stormwater drainage	--	--	--	Medium	High	--	Medium	Medium
	Gas transmission and hazardous liquid pipelines	--	--	--	--	--	--	Medium	--
	Major Roadways and Highways	--	--	Medium	Medium	Medium	--	High	Low
	Bus routes	--	--	--	Medium	Low	--	High	--
	Parks and open space	Medium	Medium	Low	Medium	Low	Low	Low	Medium
	Union Pacific Railroad corridor/Metrolink	--	--	Medium	Medium	High	--	Medium	--
	Water and Sewer System	--	Low	--	Medium	Medium	--	Medium	--
Buildings	City Hall and Civic Center	--	--	Low	Low	--	--	--	--
	Community and recreation centers	--	Medium	Low	Medium	Low	--	Medium	--
	Government and administration facilities	--	--	Low	Medium	--	--	--	--
	Laguna Hills Technology Library	--	--	Low	Medium	--	--	Medium	--
	Memorial Care Saddleback Medical Center	--	--	Medium	Low	--	--	--	--
	Laguna Hills Police Station	--	--	Low	Medium	--	--	--	--
	Schools	--	--	Low	Medium	--	--	Medium	--
	Transit Center	--	--	Low	Medium	--	--	--	--

	Populations and Assets	Air Quality	Drought	Extreme Heat & Warm Nights	Extreme Storms	Flooding	Human Health Hazards	Landslides	Wildfire
Economic Drivers	Commercial plazas and strip malls	Medium	--	Medium	Medium	Medium	Medium	Medium	Medium
	Education	Medium	--	Medium	Low	Low	Medium	Low	Medium
	Healthcare	Medium	Low	Medium	Medium	Medium	Medium	Low	Low
	Major Employers	Medium	Low	Medium	Medium	Medium	Medium	Medium	Low
Ecosystems and Natural Resources	Scenic Resources	--	Medium	--	Low	Low	--	Low	High
	Sensitive vegetation communities	--	Medium	Medium	Medium	Medium	--	Low	--
	Water channels, streams, and riparian habitats	--	High	High	High	Medium	--	High	Low
	Wetlands	--	High	High	Medium	Low	--	Medium	Low
Key Services	Communication services	--	--	Medium	High	Medium	--	Medium	Medium
	Emergency medical response and fire protection	Medium	--	Medium	Low	Low	High	Medium	Low
	Energy delivery	Low	Low	High	High	--	--	High	High
	Government administration and community services	Low	--	Low	Low	Low	Low	Medium	Low
	Non-Profit/ Non-Governmental Organization Services	Low	--	Low	Low	Low	Low	Low	Low
	Public safety response	Low	--	Low	Low	Low	Medium	Medium	Low
	Public Transit	Medium	--	Medium	High	Medium	Low	High	Medium
	Educational Services	Medium	--	Medium	Medium	Medium	Low	Low	Medium
	Solid waste removal	Medium	--	Low	Medium	Medium	Low	Medium	Medium
	Water and Wastewater Services	--	High	Medium	Low	High	Low	Medium	High

Appendix B: Implementation Programs

Safety		2022- 2024	Annual	Bi-annual	Ongoing
S-1. Geologic Hazard Assessments Pursuant to state law, geologic and/or geotechnical studies are required for proposed new development projects in areas identified as susceptible to landslides and liquefaction, and binding mitigation strategies must be adopted. Compliance with the recommendations set forth in site-specific geologic and/or geotechnical studies will be made a condition of the site development permit for subsequent projects. In addition, the City may require applicants to incorporate measures to stabilize and maintain slopes on a site-by-site basis, such as, but not limited to, proper planting, irrigation, retaining walls, and benching. Figures S-1 through S-4 in the Safety Element depict the location of known geologic/seismic hazards in Laguna Hills.					●
Implements policy(ies):	S-1.1, S-1.2				
Responsible department:	Community Development, Public Services				
Funding source:	Applicant provided				
S-2. Natural Hazards Risk Reduction Reduce the risk to the community from hazards related to geologic conditions, seismic activity, flooding, and structural damage and wildfires by requiring feasible mitigation of such impactson discretionary development projects. Assess development proposals for potential hazardspursuant to CEQA. Require measures to mitigate all identified significant public safety hazards.					●
Implements policy(ies):	S-1.2				
Responsible department:	Community Development, Public Services				
Funding source:	Applicant provided				
S-3. Slope Monitoring and Remediation Continually monitor and encourage remediation of unstable slope areas, particularly in areas characterized by the presence of crib walls or where evidence of instability exists.					●
Implements policy(ies):	S-1.1, S-1.2				
Responsible department:	Community Development, Public Services				
Funding source:	General Fund for Public Properties, otherwise privately funded				

Safety		2022- 2024	Annual	Bi-annual	Ongoing
S-4. Building Codes Continually update development standards and adopt the latest building construction codes to guide future development and redevelopment throughout the City, especially in areas with known geologic and seismic- related hazards and wildfire hazards.					●
Implements policy(ies):	S-1.2, S-2.6				
Responsible department:	Community Development				
Funding source:	General Fund, development fees				
S-5. Orange County Fire Authority Work closely with the Orange County Fire Authority (OCFA) to implement fire hazard education and fire prevention programs, including fuel modification programs and controlled burns. Coordinate with OCFA to ensure that response times and water pressure is adequate for firefighting purposes in all areas of the City, particularly in redevelopment projects/areas. Coordinate with OCFA to implement the Hazardous Materials Area Plan within Laguna Hills.					●
Implements policy(ies):	S-5.1, 5.2, 5.3, 5.4				
Responsible department:	Community Development, Public Services				
Funding source:	General Fund, OCFA property taxes				
S-6. New Fire Prevention Technology Support research and development of new technologies to prevent and suppress fires (e.g., foam treatments for new construction and other means). If appropriate, encourage OCFA to use such technologies to improve fire safety in Laguna Hills.					●
Implements policy(ies):	S-2.4				
Responsible department:	Community Development, OCFA, Public Safety				
Funding source:	General Fund				

Safety		2022- 2024	Annual	Bi-annual	Ongoing
S-7. Public Education Programs Use public education activities to accomplish the following objectives: 1. Raise public awareness of fire safety issues, including urban and wildland fire prevention, where to take pets during fire-related evacuations, and the benefits of fire-resistant slope cover. Continue to educate elementary and secondary school students about fire hazards and prevention measures. 2. Coordinate with the Orange County Sheriff's Department (OCSD) to increase public awareness about criminal activity and crime prevention activities. Continue to educate elementary and secondary school students about crime and drug prevention awareness. 3. Educate the public regarding proper disposal of household hazardous waste (including medical wastes) and other safety concerns related to improper use or storage of hazardous materials. 4. Ensure that residents are prepared for any problems associated with the San Onofre Nuclear Generating Station (SONGS). Coordinate education activities and make materials available to residents. Use forums, flyers, brochures, and the City's website to accomplish these objectives. 5. Raise public awareness regarding the City's Emergency Operations Plan to ensure that residents and businesses are prepared to safeguard life and property during and after emergencies/disasters. 6. Continue to work with the Orange County Fire Authority (OCFA) to raise public awareness on urban and wildland fire prevention and response, including evacuation when needed. 7. Raise public awareness and provide training and workshop opportunities for residents to learn about how to protect themselves against wildfire smoke and poor indoor and outdoor air quality. 8. Continue hosting a yearly Community Emergency Preparedness Academy through the Public Safety Department to provide education on emergency and disaster preparedness skills. 9. Educate property owners and provide informational material, such as brochures and pamphlets, on methods to reduce vectors that may cause a risk to human health.					●
Implements policy(ies):	S-2.3, S-3.3, S-5.4, S-5.6, S-12.2, S-7.4, S-10.2				
Responsible department:	Community Development, Public Services, Public Safety, OCSD, OCFA				
Funding source:	General Fund				
S-8. County Hazardous Waste Reduction Program The City shall promote the use of the County of Orange's Household Hazardous Waste Collection Centers for the proper disposal of hazardous waste. Continue to identify locations where residents can properly dispose of hazardous waste and advertise these locations at public counters and on the City's website.					●

Safety		2022- 2024	Annual	Bi-annual	Ongoing
Implements policy(ies):	S-5.1, S-5.2, S-5.3, S-5.4				
Responsible department:	Community Services, Administration/Finance				
Funding source:	General Fund				
S-9. Nuclear Power Risks Reduction Participate in programs and emergency response exercises with federal and state agencies and Southern California Edison to minimize community risks related to nuclear power production at SONGS. Implement measures related to SONGS within the City's Emergency Operations Plan (EOP) to ensure that residents are prepared for any problems associated with the facility.					●
Implements policy(ies):	S-5.6				
Responsible department:	Community Development, Public Services, Police Services				
Funding source:	General Fund				
S-10. Project-Related Flood Control and Stormwater Management and Comprehensive Drainage Studies As a condition of project approval, require new development and redevelopment to provide adequate on-site and off-site stormwater and flood management facilities to control direct and indirect erosion and discharges of pollutants and/or sediments. To determine the facility needs and best management practices (BMP), the City will require, when necessary, a hydrological/drainage analysis be performed by a state-licensed and City-approved engineer, with the cost of said analysis the responsibility of the project applicant.					●
Implements policy(ies):	S-6.2; S-6.3; COS-1.3				
Responsible department:	Public Services				
Funding source:	Development fees				
S-11. Emergency Operations Plan Implement the City's Emergency Operations Plan (EOP) according to requirements and provisions of the State Emergency Management System and National Incident Management System. Ensure that the EOP establishes community emergency shelter facilities and is easily available to the public. Ensure that the EOP establishes emergency evacuation routes, consistent with the General Plan, and cooling centers. Work with nearby jurisdictions to enhance multi-jurisdictional coordination during emergency situations. Coordinate with the Orange County Sheriff's Department and the Orange County Fire Authority on countywide emergency planning efforts, including the County's Local Hazard Mitigation Plan.					●

Safety		2022- 2024	Annual	Bi-annual	Ongoing
Implements policy(ies):	S-9.2, S-11.5, S-12.1, S-12.3, S-12.6				
Responsible department:	All departments				
Funding source:	General Fund				
S-12. Community Emergency Preparedness Academy Continue to educate and promote Laguna Hills residents and businesses in eight-week training programs focusing on survival and recovery from disasters.					●
Implements policy(ies):	S-12.2				
Responsible department:	Public Safety				
Funding source:	General Fund				
S-13. Essential Infrastructure and Buildings Harden essential infrastructure and buildings, such as resilience hubs, power and electricity infrastructure, stormwater infrastructure, and encourage maintenance procedures around essential infrastructure and buildings, such as vegetation clearance, to withstand hazardous and emergency events. Coordinate with local and regional organizations, such as non-profits and religious organizations, to provide low-cost weatherization programs and financial support to property owners and residents that have financial instability.					●
Implements policy(ies):	S-2.7, S-2.8, S-6.5, S-9.2, S-11.3, S-11.4				
Responsible department:	Community Development and Public Services				
Funding source:	General Fund				
S-14. Siting of Critical Facilities and Sensitive Receptors Encourage the siting of essential public services and buildings outside of areas that are susceptible to hazards, such as wildfire and flooding, Encourage the siting of new developments for sensitive receptors, such as schools, playgrounds, childcare centers, senior services and housing, and health care facilities, away from significant pollution sources.					●
Implements policy(ies):	S-2.8, S-6.3, S-7.3				
Responsible department:	Community Development and Public Services				
Funding source:	General Fund, development fees				

Safety		2022- 2024	Annual	Bi-annual	Ongoing
S-15. Resilience Hubs Work with local school and community centers to establish resilience hubs that can serve as gathering places during emergencies and hazardous conditions. Ensure that these resilience hubs are adequately hardened to maintain access to water and electricity.					●
Implements policy(ies):	S-9.2, S-12.6				
Responsible department:	Community Development and Public Services				
Funding source:	General Fund				
S-16. Emergency Accessibility Work with OCFA to provide and maintain emergency evacuation transportation programs for persons with limited mobility or populations that may lack access to a personal vehicle.					●
Implements policy(ies):	S-11.2, S-12.1, S-12.3, S-12.5				
Responsible department:	Public Safety and Public Services				
Funding source:	General Fund				
S-17. Vulnerability Assessment Update the Vulnerability Assessment every three to five years to incorporate new technology, programs, and policies to improve adaptation to climate-related hazards. Integrate the results of the Climate Vulnerability Assessment into other City planning documents where feasible, such as elements throughout the General Plan and specific plans. Review and update resiliency strategies to ensure compliance with state laws and community needs.					●
Implements policy(ies):	S-7.1, S-8.1				
Responsible department:	Community Development				
Funding source:	General Fund				

Safety		2022- 2024	Annual	Bi-annual	Ongoing
S-18. Natural Infrastructure Encourage the use of existing natural features and ecosystem processes, or the restoration thereof, when considering climate adaptation and resilience projects and when weatherizing infrastructure and properties and open space. This includes, but is not limited to, the conservation, preservation, or sustainable management of any form of aquatic or terrestrial vegetated open space, such as parks, rain gardens, and urban tree canopies. It also includes systems and practices that use or mimic natural processes, such as permeable pavements, bioswales, and other engineered systems, such as levees that are combined with restored natural systems, to provide clean water, conserve ecosystem values and functions, and provide a wide array of benefits to people and wildlife.					●
Implements policy(ies):	S-7.5, S-8.2, S-8.3, S-8.5, S-8.6, S-9.1, S-10.3				
Responsible department:	Community Development, Public Services				
Funding source:	General Fund / Development Fees				

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