2021–2029 SAFETY ELEMENT

November 2022

This page intentionally left blank.

ACKNOWLEDGEMENTS

CITY COUNCIL

Debra Jones, Mayor
Leslie Irving, Mayor Pro Tem
Elizabeth Becerra, Council Member
Blanca Gomez, Council Member

PLANNING COMMISSION

Rob Kurth, Chair
Rob Harriman, Vice-Chair
Kenneth Cook-Askins, Jr., Commissioner
Kimberly Mesen, Commissioner
Bill Thomas, Commissioner

EXECUTIVE MANAGEMENT

Keith Metzler, City Manager
Sophie Smith, Deputy City Manager
Jenele Davidson, Deputy City Manager

CITY STAFF

Scott Webb, City Planner
Alex Jauregui, Assistant City Planner
Sue Jones, Public Information Officer
Charlene A. Johnson, Secretary

CONSULTANT TEAM

Harris & Associates

This page intentionally left blank.

TABLE OF CONTENTS

This page intentionally left blank.

1 INTRODUCTION

The City of Victorville is committed to protecting the health and safety of the community by addressing and mitigating risk from natural and public safety hazards. The Safety Element is an analysis of the City's risk to natural hazards, such as fire, flood, seismic and geologic, and climate change, and identifies actions to reduce those risks through goals, objectives, and policies. In compliance with California Government Code Section 65302 (g), the goal of the Safety Element is to reduce the potential short and long-term risk of death, injuries, property damage, and economic and social dislocation resulting from fires, floods, droughts, earthquakes, landslides, climate change, and other locally-relevant hazards.

1.1 Purpose of this Element

The Safety Element is one of the General Plan elements mandated by California Government Code Section 65302 (g). It is intended to identify and, whenever possible, reduce the impact of natural and human-made hazards that may threaten the health, safety, and property of the residents living and working in the Victorville Planning Area. It emphasizes hazard reduction and mitigation, accident prevention, and emergency response and management. In addition, the Safety Element emphasizes the importance of policies that reduce risk, prevent disasters, and increase preparedness.

Natural hazards addressed in the Safety Element include flood, fire, seismic risk and seismically induced surface rupture, ground shaking, subsidence, ground failure, and liquefaction, along with slope instability leading to mudslides and landslides. Threats of tsunami and seiche hazards do not occur in the Planning Area. The Safety Element has been updated to comply with SB 379 by addressing the impacts of climate change and strategies to adapt and mitigate climate-related hazards. In addition to natural and climate change hazards, the Safety Element evaluates human-made hazards, evacuation routes, and emergency services and response. Maps are provided to identify locations of known natural hazards, critical facilities, and primary evacuation routes. Peak load water supply requirements, minimum road widths and clearances around structures are discussed, as these pertain to identified fire and geologic hazards.

1.2 State Law

The Safety Element was prepared to meet State General Plan requirements for safety, with a focus on reducing the potential short and long-term risk of death, injuries, property damage, and economic and social dislocation resulting from fire, floods, geologic and seismic, and climate change hazards. California Government Code Section 65302 (g) includes the requirements that should be addressed in a community's general plan Safety Element.

In 2015, SB 379 revised Section 65302(g)(4) to require that cities and counties update their Safety Elements to address climate adaptation and resiliency strategies applicable to their jurisdiction. The updates are required at the next update of their local hazard mitigation plan (LHMP) on or after January 1, 2017. Local jurisdictions without an LHMP must update their

Safety Elements beginning on or before January 1, 2022. The Safety Element update must include:

1. A vulnerability assessment identifying the risks that climate change poses to the local jurisdiction.
2. A set of goals, policies, and objectives based on a vulnerability assessment for the protection of the community.
3. A set of feasible implementation strategies to carry out the goals, policies, and objectives. The City's LHMP was updated in 2020–2021 and is referenced throughout the Safety Element.

The Safety Element was prepared in accordance with the requirements of California Government Code 65302(g) and is organized to follow the code's required subdivisions, as follows:

1. 65302(g)(1) identifies the hazards that should be addressed in the Safety Element, including unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence; liquefaction, and other geologic hazards; flooding; and wildland and urban fires; evacuation routes, military installations, peak load water supply requirements, and minimum road widths and clearances around structures, as those items relate to identified fire and geologic hazards.
2. 65302 (g)(2) identifies the requirements for updating the Safety Element with flood hazard information and mapping, as well as establishing goals, policies, and objectives for the protection of risk of flood.
3. 65302 (g)(3) addresses the risk of fire for land classified as state responsibility areas, as defined in Section 4102 of the Public Resources Code, and land classified as very high Fire Hazard Severity Zones.
4. 65302 (g)(4) identifies the requirements for updating the Safety Element to address climate adaptation and resiliency strategies.
5. 65302 (g)(5) identifies the requirements for identifying residential developments in any hazard area identified in the Safety Element that do not have at least two emergency evacuation routes.
6. 65302 (g)(6) requires revisions to the Safety Element upon each revision of the housing element or LHMP to incorporate new information relating to flood and fire hazards and climate adaptation and resiliency strategies that was not available during the previous revision of the Safety Element.
7. 65302 (g)(7) allows the use of flood plain management ordinances that have been approved by the Federal Emergency Management Agency (FEMA) or equivalent provisions that substantially comply with this section by reference into the Safety Element, specifically showing how each requirement of this subdivision has been met.

8. 65302 (g)(8) requires consultation with the California Geological Survey of the Department of Conservation, the Central Valley Flood Protection Board, if the city or county is located within the boundaries of the Sacramento and San Joaquin Drainage District, as set forth in Section 8501 of the Water Code, and the Office of Emergency Services for the purpose of including information known by and available to the department, the agency, and the board required by this subdivision.
9. Allows cities to adopt that portion of the county's Safety Element that pertains to the city's planning area in satisfaction of the requirement imposed by this subdivision.

AB 747 requires upon the next revision of a LHMP on or after January 1, 2022, or beginning on or before January 1, 2022, if a local jurisdiction has not adopted a LHMP, would require the Safety Element to be reviewed and updated as necessary to identify evacuation routes and their capacity, safety, and viability under a range of emergency scenarios. The bill would authorize a city or county that has adopted a LHMP, emergency operations plan, or other document that fulfills commensurate goals and objectives to use that information in the Safety Element to comply with this requirement by summarizing and incorporating by reference that other plan or document in the Safety Element.

1.3 Relationship to Other General Plan Elements and Other Plans

The Safety Element identifies hazards and hazard abatement provisions to guide local decisions related to zoning, subdivisions, and land use entitlement permits. The Safety Element was developed in coordination and integration with the Land Use, Housing, and Environmental Justice Element updates.

The Safety Element is also complementary to and references the City's adopted Local Hazard Mitigation Plan (LHMP). The LHMP for the City of Victorville planning area was developed in accordance with the Disaster Mitigation Act of 2000 (DMA 2000) and followed FEMA's 2011 Local Hazard Mitigation Plan guidance. The LHMP incorporates a process where hazards are identified and profiled, the people and facilities at risk are analyzed, and mitigation actions are developed to reduce or eliminate hazard risk. It is a comprehensive analysis of natural hazards, including climate change, flooding, earthquake and seismic-related hazards, fire, and other natural and human-made hazards. The implementation of mitigation actions, which include both short-term and long-term strategies, involve planning, policy changes, programs, projects, and other activities. The Local Hazard Mitigation Plan can be found at this location: https://www.victorvilleca.gov/government/city-departments/emergency-services/emergency-management

1.4 Vision

The City of Victorville Safety Committee met twice during the planning process to set the vision of the Safety Element, update the hazard profiles and re-establish goals, policies, and objectives to protect the community from such risks. The goals, objectives, policies, and implementation measures of the Safety Element envision a Victorville that has all of the following characteristics:

- Protects the community from natural and human-made hazards,
- Protects public health and safety,
- Maintains optimal emergency preparedness,
- Fosters interagency cooperation and coordination, and
- Increases resilience to the impacts of climate change.

2 POTENTIAL HAZARDS

2.1 Geologic and Seismic Hazards (GC § 65302(g)(1))

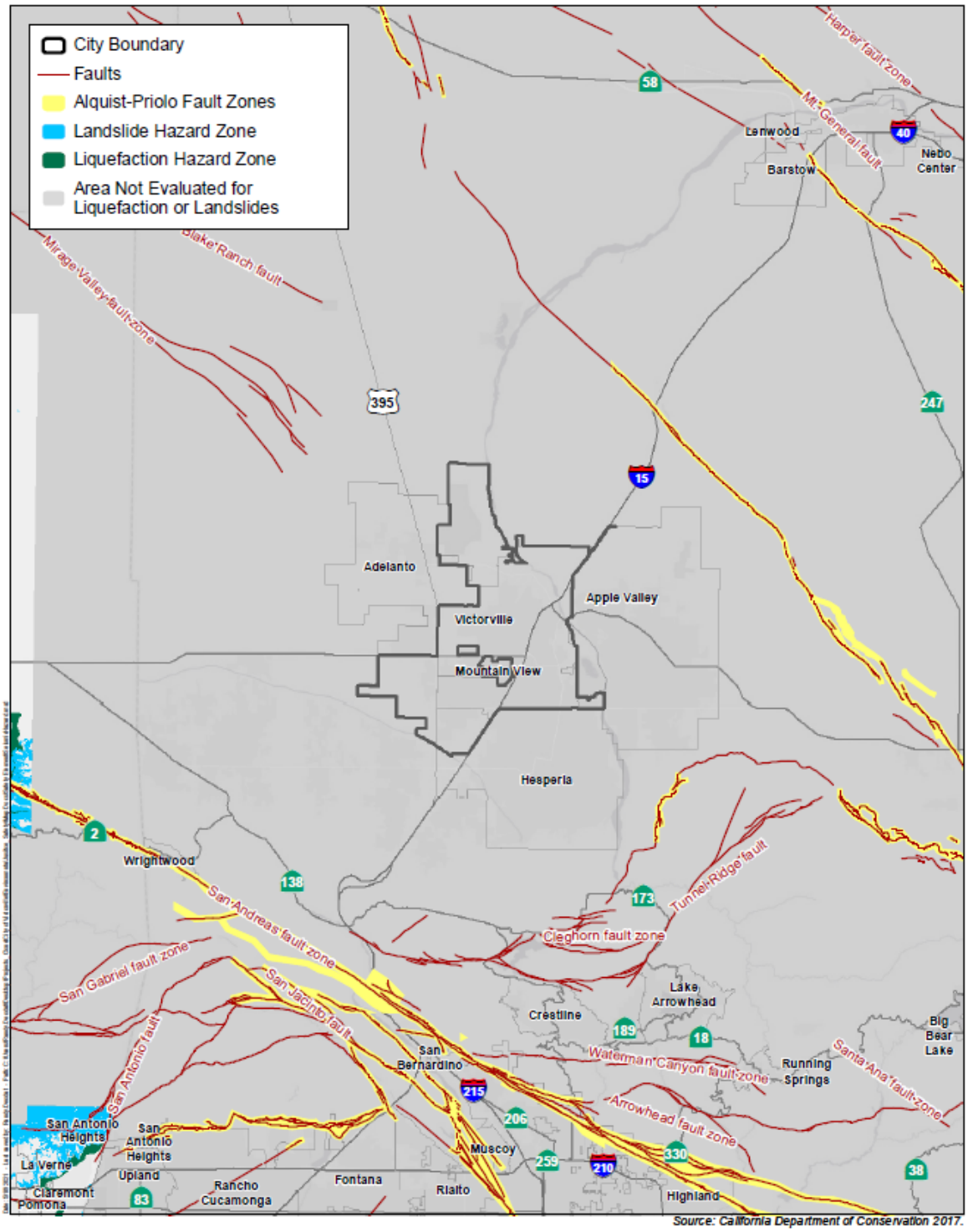
Earthquakes and their induced effects have the potential to impact the City and its residents. The LHMP and the Safety Element evaluate the geologic and seismic hazards with the greatest potential to impact people and property, which include earthquake, landslides, surface rupture, ground shaking, ground failure, and damages to local dams, subsidence, liquefaction, and other hazards. Surface rupture, tsunami, and seiche were considered by the committee but were determined to have a low likelihood of occurrence, so no further analysis was not conducted.

Earthquake. Like other areas of California, Victorville is susceptible to the effects of earthquakes from nearby faults. An earthquake is a sudden motion or trembling caused by a release of energy accumulated within or along the edge of the earth's tectonic plates. The effects of an earthquake can be felt far beyond the epicenter (i.e., where the earthquake originates). Earthquakes usually occur without warning and can cause massive damage and extensive casualties in just a few seconds.

The City is located within the seismically active Southern California region, probably best known for the San Andreas Fault, which stretches from the Mexican border to San Francisco. Though there are no known or suspected fault traces within the planning area, there are five nearby fault systems that could produce earthquakes and earthquake induced hazards. The five nearby fault systems located outside of the planning boundary include San Andreas (24 miles south of the planning area), Helendale (9 miles northeast), San Jacinto fault (26 miles south), North Frontal (5.5 miles southeast), and Landers (50 miles southeast). The San Andreas Fault is considered most likely to produce a major earthquake within the planning period, though the Helendale Fault could also be responsible for a moderate earthquake with a Richter magnitude of approximately 5.9. The North Frontal fault zone of the San Bernardino Mountains has the potential to produce a moderate earthquake with a Richter magnitude of 6.2. The Landers Fault was discovered as a result of a 7.4 Richter magnitude sized earthquake on June 28, 1992. Although the epicenter (i.e., a surface point directly above the earthquake's focus) was approximately fifty miles from the Planning Area, intense local ground shaking occurred. However, no substantial damage to buildings or facilities in the Planning Area was reported (Figure 1, Seismic Hazards).

This page intentionally left blank.

Figure 1. Seismic Hazards



This page intentionally left blank.

Earthquakes can induce other hazards like ground shaking, slope instability and landslides, surface rupture, ground failure, liquefaction, subsidence, dam failure, tsunami, and seiche. The extent and severity of earthquake-induced hazards depend on several factors, including soil and slope conditions, proximity to the fault, earthquake magnitude and depth, and the type of earthquake. When a fault ruptures, seismic waves radiate and cause the ground to vibrate. The severity of the vibration increases as the amount of energy released increases and decreases with distance from the fault or epicenter. Earthquake-induced hazards of concern to the Planning Area are analyzed and described below:

Ground shaking: Ground shaking is the motion felt on the earth's surface caused by seismic waves from an earthquake. It is the primary cause of earthquake damage. The strength of ground shaking depends on the magnitude of the earthquake, the type of fault, and distance from the epicenter. Buildings on poorly consolidated and thick soils will typically see more damage than buildings on consolidated soils and bedrock.

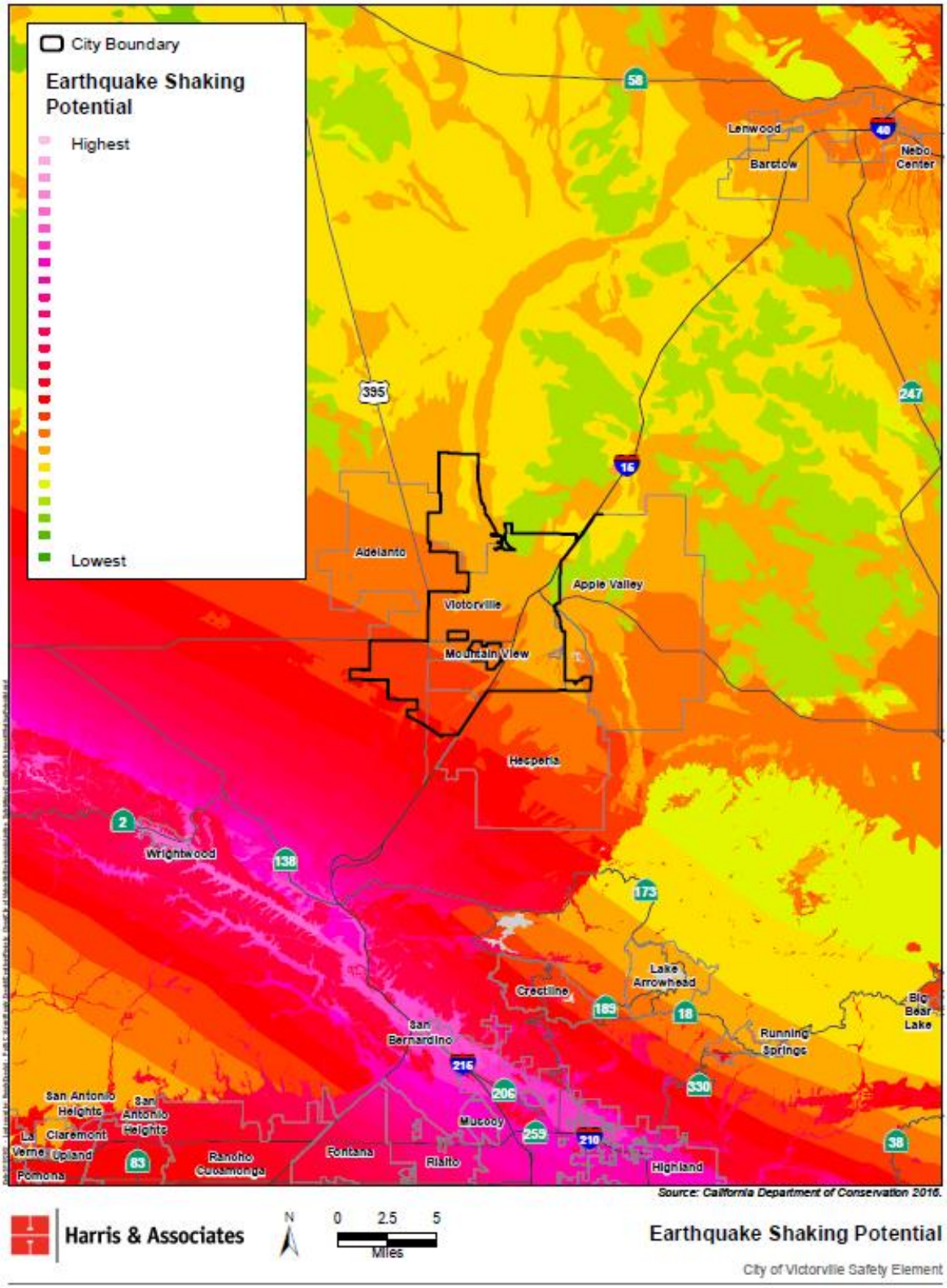
There are no fault systems located within the Planning Area, so the majority of the City would experience low to moderate shaking potential in the event of an earthquake on a nearby fault system. The areas with the highest shaking potential are located in the southern-southwestern portions of the City in the direction of the fault systems. Ground shaking potential is analyzed using the State probabilistic earthquake hazard map. Earthquake probabilities are calculated by projecting earthquake rates based on earthquake history and fault slip rates. The result is expressed as the probability that an earthquake of a specified magnitude will occur on a fault or within an area.

During moderate to strong earthquake-induced ground shaking, unreinforced masonry construction may be hazardous to life and property as a result of partial or complete structure collapse. To mitigate this hazard, the City has adopted Chapter 15.38 of the Victorville Municipal Code, in compliance with State law (California Government Code Section 8875), which promotes public safety and welfare by reducing the risk of death or injury that may result from such structural damage. The provisions of the chapter set minimum standards for structural seismic resistance established to reduce the risk of life, loss, or injury, but will not necessarily prevent these hazards.

Generally, most unreinforced masonry structures are located in the Old Town area of the City, where buildings were constructed before modern building codes were developed to require design with respect to seismic safety considerations. The City has been actively pursuing funding sources, such as Community Development Block Grant funds, to financially assist property owners with seismic retrofit requirements (Figure 2, Earthquake Shaking Potential).

This page intentionally left blank.

Figure 2. Earthquake Shaking Potential



This page intentionally left blank.

Ground failure: ground failure refers to earthquake-triggered landslides and liquefaction, analyzed in more detail below. Landslide may impact the Planning Area, but there haven't been any detailed studies performed by the State or local agencies that identify the risk.

Slope instability and earthquake-induced landslides: The topography within the Victorville Planning Area varies considerably from gently sloping topography occasionally dissected by an intermittent stream channel, to nearly vertical slopes adjacent to the Mojave River. The major environmental factors controlling stability of the steeper hillsides include precipitation, topography, geology, soils, vegetation, and human-made modifications to the natural topography.

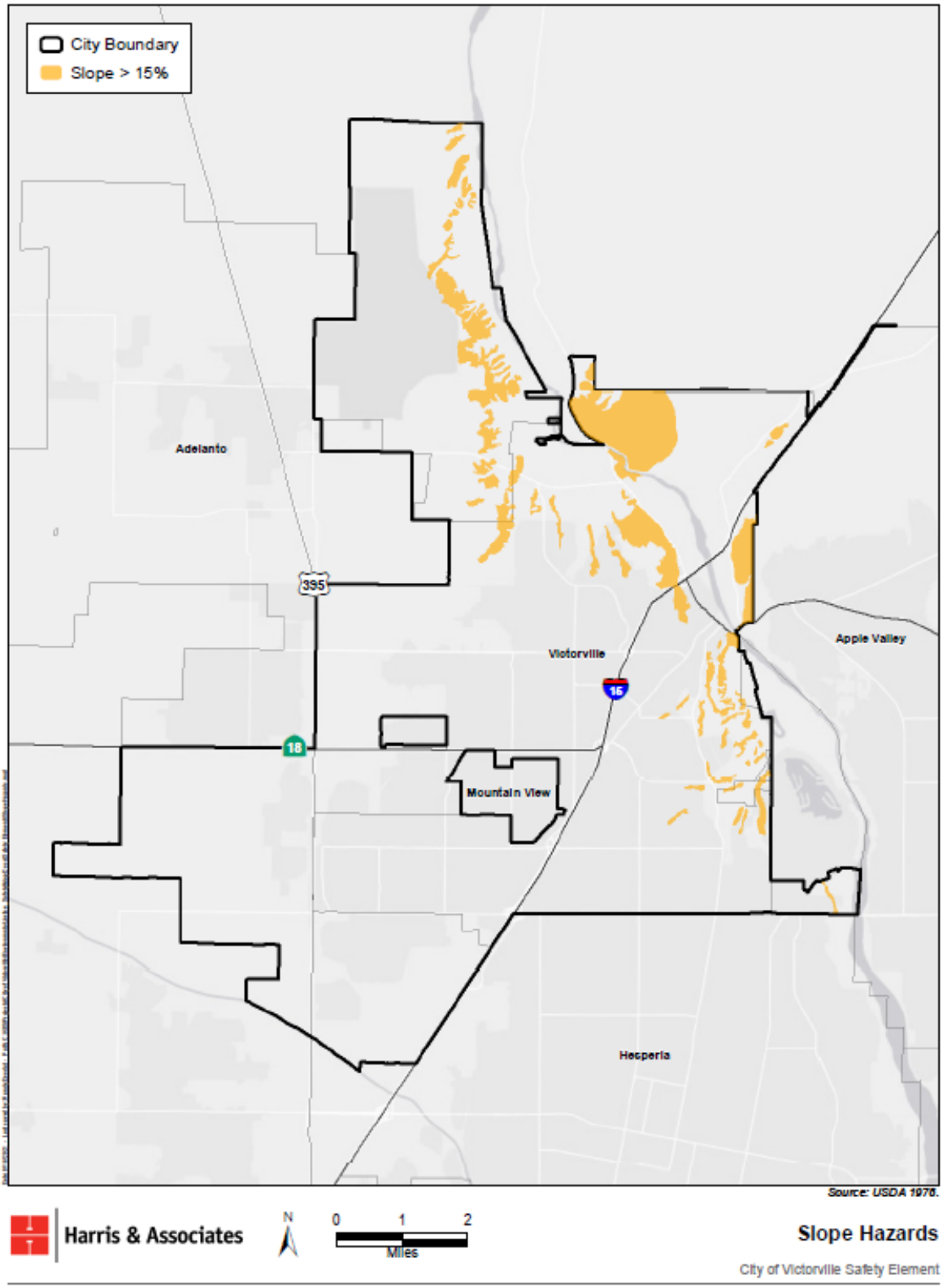
The portions of the Planning Area found to have slope gradients of greater than 15% are identified on Figure 3, Slope Hazards. Slope of 15% or higher are consider steep. If plant cover is removed, the slope is highly susceptible to erosion or gully formation. If the gradient is 50% or more, construction activities could cause widespread slope failure. The City's LHMP identifies earthquakes as an exacerbating hazard to landslides. Earthquake-induced landslides are secondary earthquake hazards that occur from ground shaking. They can destroy the roads, buildings, utilities, and other critical facilities necessary to respond and recover from an earthquake and are common in areas with steep slopes.

Development on hillside areas when steep slopes are present can increase rates of erosion and exacerbate landslide hazards which may threaten structures. If the City's Building Official determines there is a probability that development in the hillside areas can increase rates of erosion and exacerbate landslide hazards which could threaten structures, a geotechnical investigation will be required in accordance with the 2007 California Building Code (Sections 1805.3 to 1805.3.5). Additionally, the Victorville Municipal Code contains a "slope protection combining district" as part of the zoning regulations, to require landscaping on manufactured slopes greater than five feet high as a way to minimize erosion potential.

Liquefaction: Liquefaction occurs when ground shaking causes wet granular soils to change from a solid state to a liquid state. This results in the loss of soil strength and the soil's ability to support weight. Buildings and their occupants are at risk when the ground can no longer support these buildings and structures. Portions of the Planning Area, especially those areas along the Mojave River, may be susceptible to liquefaction, though it is usually not considered a hazard if the groundwater table is greater than fifty feet in depth. Detailed studies have not been prepared to indicate the precise location of areas prone to liquefaction; therefore, the extent of potential impact cannot be stated conclusively at this time. In any case, geologic studies can detect liquefaction problems prior to the construction of any new building. If the City's Building Official determines there is a significant probability that a site is susceptible to liquefaction, a geotechnical investigation is required in accordance with the 2007 California Building Code, Section 1802.2.7.

This page intentionally left blank.

Figure 3. Slope Hazards



This page intentionally left blank.

Surface rupture: Surface rupture is not anticipated to be a hazard since there are no known or suspected fault traces within the Planning Area. Surface rupture occurs when movement on a fault breaks through to the surface. This displacement creates a visible offset on the ground's surface.

Dam failure: The California Department of Water Resources' Division of Safety of Dams (DSOD) provides oversight to the design, construction, and maintenance of over 1,200 dams in California. DSOD periodically reviews the stability of dams as well as findings regarding earthquake hazards and hydrologic estimates in California. In the event of a major earthquake, critical damage may occur to buildings and infrastructure, including those that provide critical services, such as water, gas, power, sewer, and storm drainage. A major earthquake could induce damage causing a dam to fail. The area downstream of the dam that would be flooded in the event of a failure is called the inundation area. DSOD reviews and approves dam inundation maps. Dam failure, seismically-induced or otherwise, has not affected the City in the past. Dam inundation is further analyzed in the Flood Hazards section, on pages 17–25. This section includes a map of nearby major dams and waterways.

Subsidence: Subsidence is the gradual or sudden sinking of the ground surface. No areas of subsidence have been identified during the City's history of community development.

Tsunami and Seiche: Seismically-induced tsunami and seiche (a standing wave, commonly observed on lakes) were deemed not to be hazards of concern and thus not evaluated as part of the LHMP or Safety Element due to the low likelihood of occurrence. Lakes in the planning area include the Mojave Narrows Regional Park, a County-owned and operated park located in the center of the planning area, with two lakes open to the public for fishing. Spring Valley Lake is located in a private residential community open only to those residents only recreation. As such, the threats of tsunami and seiche hazards do not occur in the Planning Area.

2.2 Flood Hazards (GC § 65302(g)(2))

Flooding is a temporary or persistent condition where normally dry land is partially or completely inundated with water. Flooding is commonly associated with riverine overflow, where downstream channels receive more rain or snowmelt from their watershed than normal, or a channel is blocked by an ice jam or debris. Excess water overloads the channels and flows out onto the floodplain.

Local hydrology in the Victorville Planning Area is dominated by the Mojave River, which originates in the San Bernardino Mountains and flows northeast for approximately 80 miles where it empties into Soda Lake. The Mojave River is the principal flood hazard to the developed portions of the Planning Area. The surface flow of the river fluctuates seasonally, though it carries discharges from Lake Arrowhead, Silverwood Lake, and Mojave Forks Reservoir. There are several intermittent streams that drain the Planning Area and empty into the Mojave River. Two intermittent streams, Ossom Wash and West Fork Ossom Wash, drain a large area of the City west of the I-15 Freeway. Three smaller unnamed intermittent streams drain the areas south of Southern California Logistics Airport. The Bell Mountain Wash is located north of the Mojave River and drains a portion of the North Mojave Planning Area. The Oro Grande Wash originates

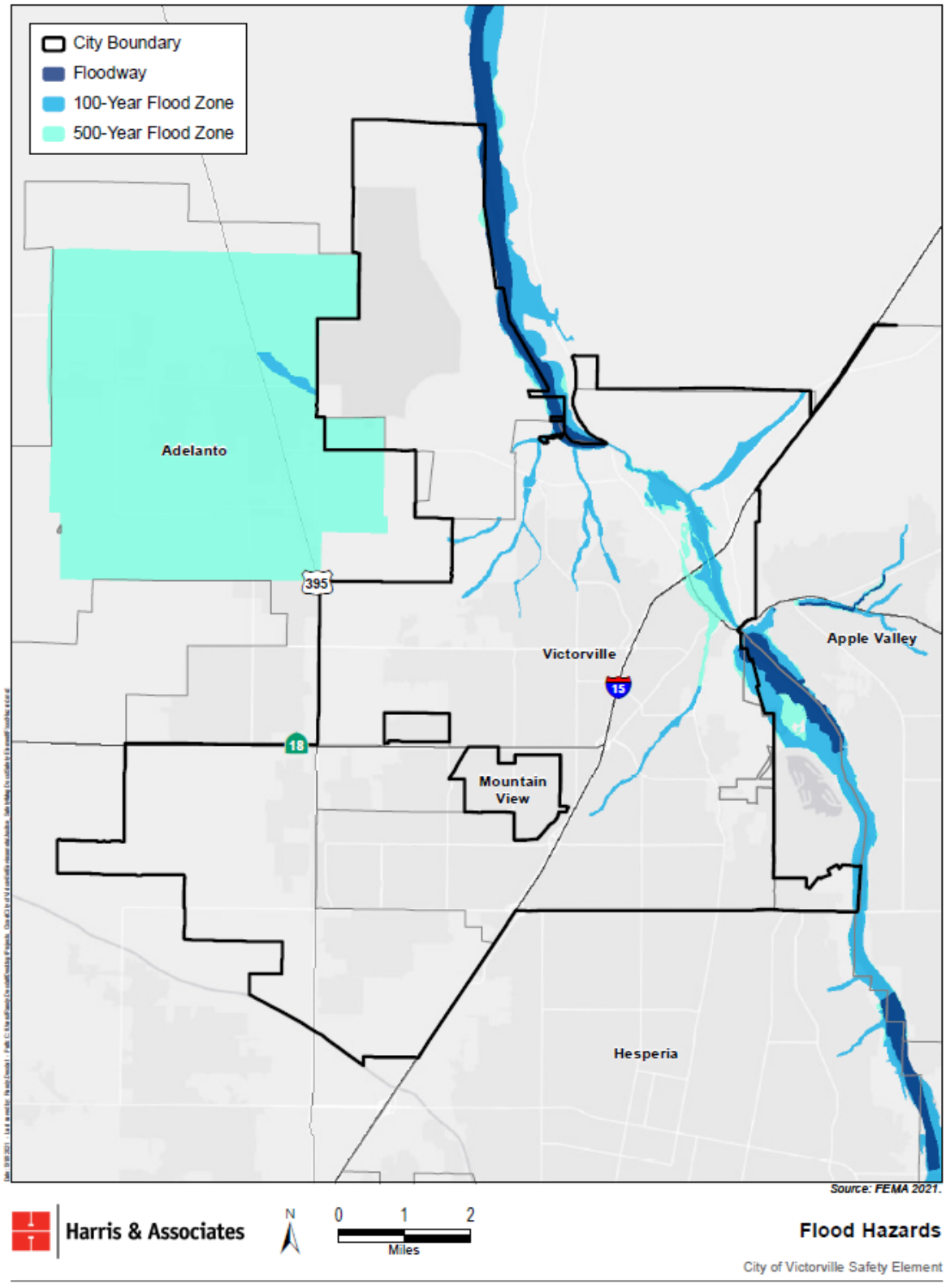
in the San Gabriel Mountains near the Cajon Pass, where it parallels I-15 before crossing to the east, just north of La Mesa and Nisqualli Roads.

Figure 4, Flood Hazards, depicts the City's 100-year and 500-year flood zones. The magnitude of flooding that is used as the standard for floodplain management in the U.S. is a flood with a probability of occurrence of one percent (1%) in any given year. This flood is also known as the 100-year flood or base flood. The most readily available source of information regarding the 100-year flood, as well as the 500-year flood (i.e., 0.2% probability of occurrence in any given year), is the system of Flood Insurance Rate Maps (FIRMs) prepared by FEMA.

There is a potential for flooding from these streams in the event of a 100-year flood. In the event of a 100-year flood, flood water will likely be confined to the river's flood plain. Some of these areas may be subject to flooding in the event of a 100-year flood, assuming base flood elevations on the FIRM are correct. Geospatial analysis used to map the 100-year and 500-year flood zones identified 300 residential parcels located in the 100-year flood zone and 200 residential parcels in the flood zone (County GIS parcel data and Assessor's Tax Roll, along with City Land Use GIS data). Flood control improvements, including numerous levees and the West Fork Dam, reduce the potential for this flooding. The LHMP identifies past flooding events have inundated roadways near Turner Wash Trunk (north of Mojave Drive), Ossum Wash (north of Capistrano Street and south of Rancho Road), and along Eucalyptus Street (east of Cloverly Street). Some of the notable flooding events include:

- August 31, 1998 – Strong thunderstorms fed by intense heat and humidity under strong high pressure aloft developed as an upper-level low that was over southern Nevada and began drifting toward southern California. A few thunderstorms reached coastal areas, but most of the flooding and high winds remained farther inland. Flooding was widespread throughout the Victor Valley where one (1) to two (2) inches of rain was reported. In Hesperia, water was running half a foot deep over some roads, flooding homes and intersections.
- July 7, 2001 – Heavy rains from thunderstorms caused significant flooding of area roadways near the City. Water was reported to be two (2) feet deep in places.
- August 14, 2004 – Flash-flooding in eastern parts of the City and in the Spring Valley Lake vicinity trapped many vehicles in rapidly rising water. Flood waters eight (8) feet deep covered the BNSF railroad tracks and forced a halt to train traffic. The result was a sixty (60) train backup that extended well into the Cajon Pass.
- August 26, 2010 – Moist and unstable monsoonal flow triggered scattered showers and thunderstorms across San Diego, San Bernardino, and Riverside Counties, a few of which reached severe status with large hail and damaging winds. Localized flash flooding was also reported in a few locations over the two- (2) day event.

Figure 4. Flood Hazards



This page intentionally left blank.

Dam Failure: According to the City's LHMP, the term "dam failure" encompasses a wide variety of circumstances. Situations that would constitute a dam failure vary widely, from developing problems to a partial or catastrophic collapse of the entire dam. Potential causes of a dam failure are numerous and can be attributed to deficiencies in the original design of the dam, the quality of construction, the maintenance of the dam, operation of the appurtenances while the dam is in operation, and acts of nature including precipitation in excess of the design, flood, and damage from earthquakes. Water overtopping the dam crest is a common cause of failure in earth dams. Overtopping will cause erosion and the dam crest and eventual dam breach. Inundation refers to the specific areas of land that would become flooded and covered with water if a dam fails.

Though dam failure has not affected the City in the past, previous Safety Element planning efforts and the LHMP have identified several dams within the general vicinity of the City: Amethyst Basin Dam, Cedar Springs Dam (also identified as Silverwood Lakes Dam), Mojave Forks Dam, and Arrowhead Lakes Dam, and that failures of those dams could potentially inundate parts of the City.

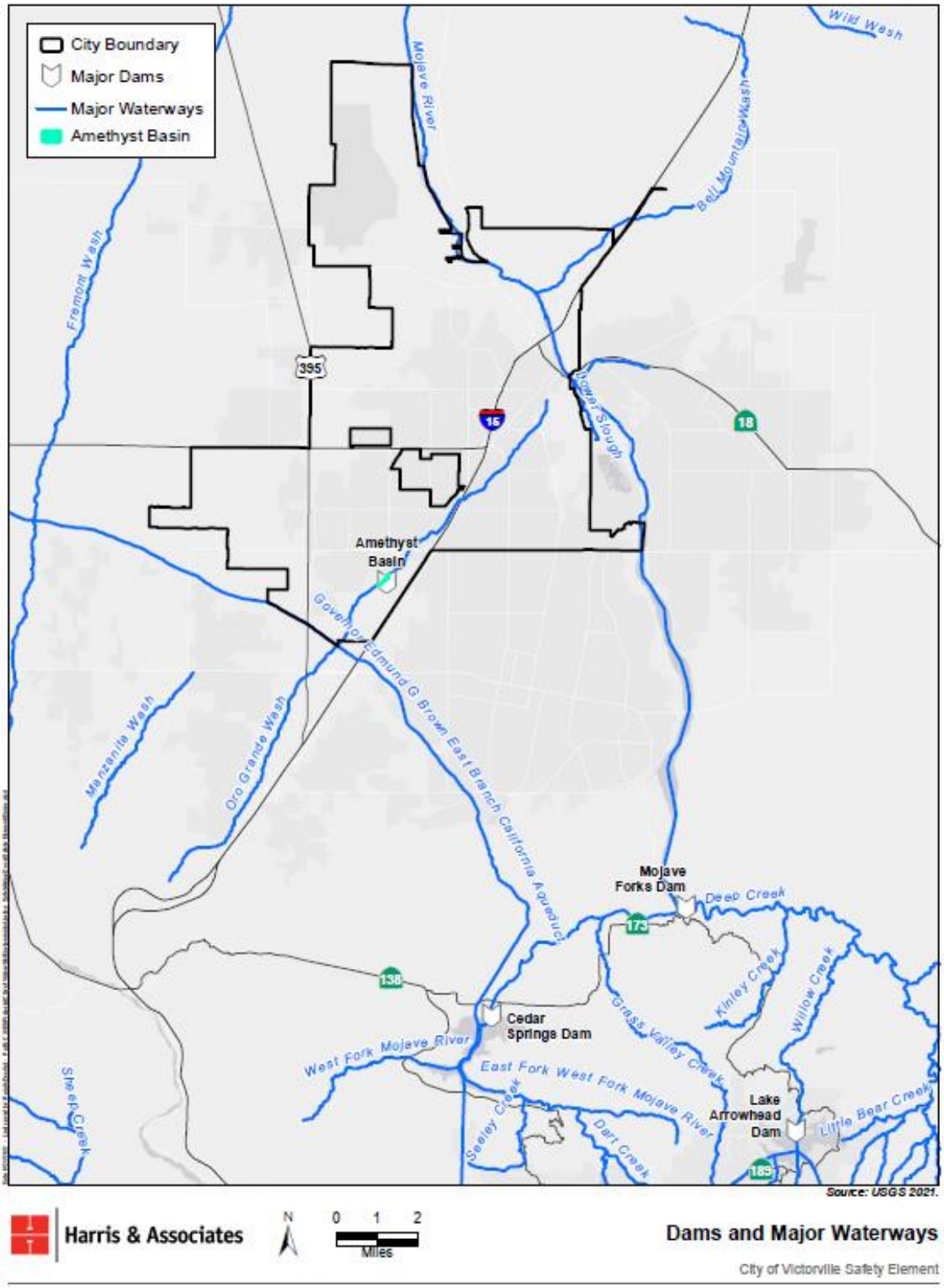
Amethyst Basin Dam is located within the City limits. It has never experienced any high flow issues or flooding of downstream facilities. The Dam is owned and operated by the Department of Public Works, San Bernardino County Flood Control District, who is responsible for activating the Emergency Action Plan (EAP). The purpose of the EAP is to reduce the risk of loss of human life or injury and to minimize property damage in the event of a dam safety emergency or flooding caused by large uncontrolled releases. The Amethyst Basin EAP has never been activated.

The Cedar Springs Dam created the Silverwood Reservoir in 1971 as part of the State Water Project and is located in nearby Hesperia. Mojave Forks Dam is a flood risk management project located on the Mojave River in San Bernardino County, approximately 14 miles south of Victorville. The City's previous update to the Safety Element planning recognizes potential threats of dam inundation to the Planning Area could occur if the dams at Arrowhead Lakes failed and emptied into the Mojave River through Deep Creek.

The LHMP acknowledges that dam failure can result from natural or human activities, such as earthquakes, internal erosion, improper siting, design flaws, or rising floodwaters. However, it did not identify the probability of a dam failure, and though while technically possible, it is unlikely that a dam failure event would happen within the next 10 years. Based on event history, likelihood is less than or equal to ten percent a year (Figure 5, Dams and Major Waterways).

This page intentionally left blank.

Figure 5. Dams and Major Waterways



This page intentionally left blank.

Agencies with responsibility for flood protection: The City of Victorville, the San Bernardino County Flood Control District, and San Bernardino County Office of Emergency Services all have responsibilities for flood protection within the planning area. The City Building Official/Floodplain Administrator and the Office of Emergency Services as well as Engineering, Public Works, and Planning departments are involved in implementing and maintaining development regulations, permitting requirements, and building code specifications that identify flood risk and promote mitigation. The Engineering and Planning Departments coordinate land use and flood control planning between City staff, the County Flood Control District, special districts, and cities within the county. Engineering and Public Works implement flood protection and prevention projects. Planning works to integrate FEMA floodplain and NFIP information with City planning. The City's LHMP identifies mitigation actions for the agencies involved with flood protection, such as Engineering developing floodplain inundation evacuation plans with County OES.

Titles 15 and 18 of the Victorville Municipal Code establish required methods of preventing and reducing flood hazards, including:

- Restricting or prohibiting uses which are dangerous to health, safety and property due to water or erosion hazards, or which result in damaging increases in erosion or flood heights or velocities;
- Requiring that uses vulnerable to floods, including facilities which serve such uses, are protected against flood damage at the time of initial construction;
- Controlling the alteration of natural flood plains, stream channels, and natural protective barriers which help accommodate or channel floodwaters;
- Controlling filling, grading, dredging, and other land altering activities that could increase flood damage; and
- Preventing or regulating the construction of flood barriers which will unnaturally divert floodwaters, or which may increase flood hazards in other areas.

2.3 Fire Hazards (GC § 65302(g)(3))

Wildland and urban fires are fires occurring in suburban or rural areas that contain uncultivated lands, timber, range, watershed, brush, or grasslands. This includes areas where there is a mingling of developed and undeveloped lands (General Plan Guidelines). Wildfires can present a significant potential for disaster in the southwest, a region of relatively high temperatures, low humidity and low precipitation during the summer and spring and moderately strong daytime winds. Combine these severe burning conditions with people or lightning and the stage is set for the occurrence of large, destructive wildfires.

Wildfires are a necessary part of the natural ecosystem in Southern California, but they become a hazard when they extend out of control into developed areas, with the resultant of loss of property, injuries, or the loss of life. The wildfire risk in the United States has increased in the last few decades with the increasing encroachment of residences and other structures into the

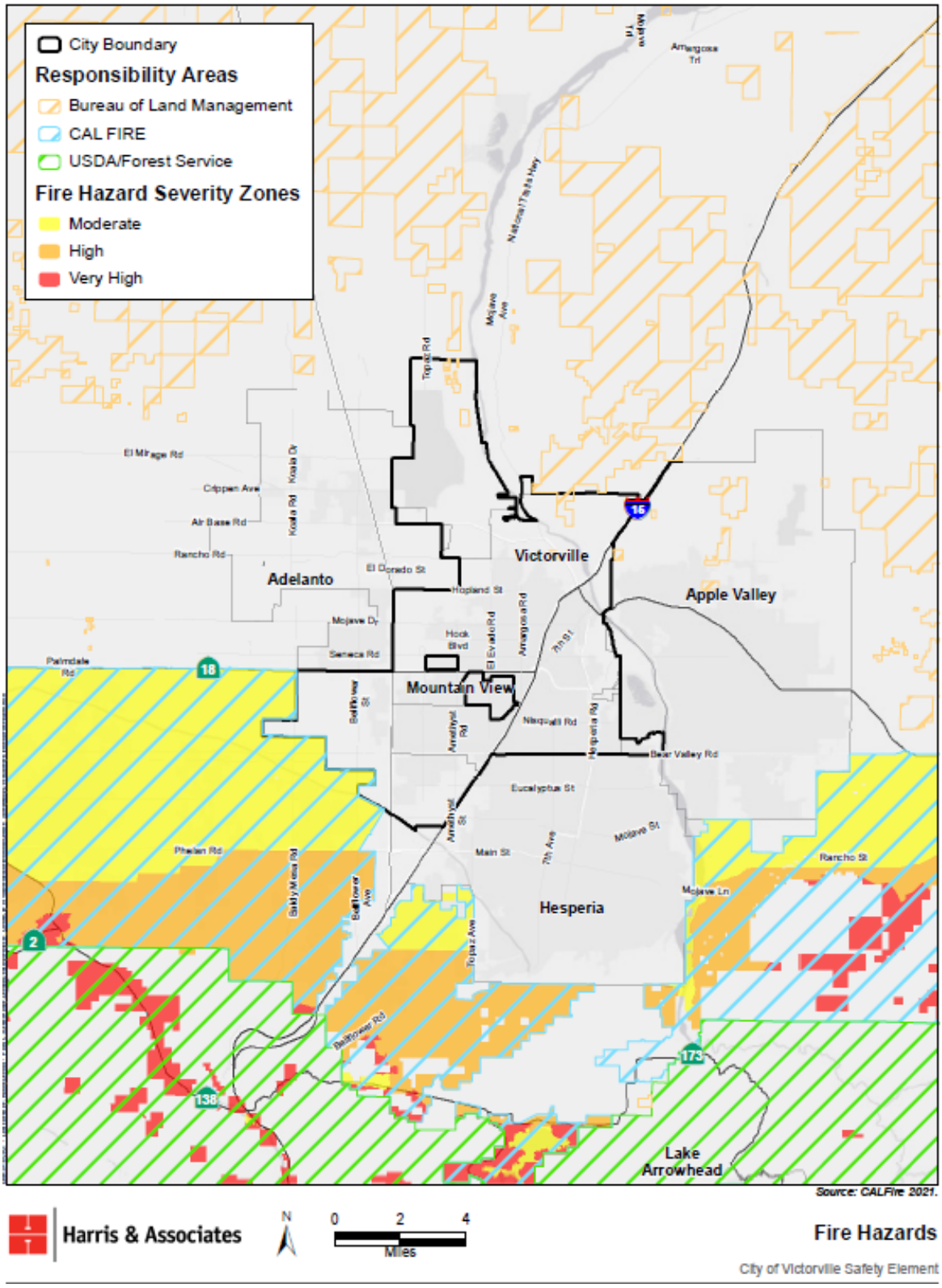
wild land environment and the increasingly larger number of people living and playing in wild land areas.

In compliance with California Government Code Section 65302(g)(3), the Planning Area was analyzed to identify land classified as state responsibility areas, very high Fire Hazard Severity Zones, and USGS wildfire hazard areas, of which there are none located within City limits. This can be attributed to the City's location in the lower Mojave section of the Southeastern Deserts Bioregion, an area characterized by isolated, steep-sided mountain ranges separated by broad alluvial basins. About one-third of the desert floor in the Mojave section is devoid of vegetation, limiting amount of surface fuel loads available to burn. Because of the low fuel loads in the City and adjacent areas, wildfires are not expected to occur within any year. The probability is less than ten percent (10%) annually, according to the City's LHMP.

The types of fires more common to Victorville include small vegetation fire and structural fires. Dozens of small vegetation fires, typically less than one (1) acre in size, are reported in Victorville annually (LHMP). There are a relatively small number of structure fires reported annually in Victorville, but depending on the size, age and occupancy of the structure, the economic and social losses can be substantial.

Historically, San Bernardino County has experienced 148 days of wildland fires since June 2000 resulting in ten (10) deaths and 157 injuries. The City has had a single wildland fire. On October 1, 2003, a wildfire in the Mojave riverbed consumed ten (10) acres of brush before being contained. Past fires that have occurred in the Cajon Pass have impeded High Desert residents from going to work in population centers south of the Pass and have disrupted supplies goods shipments and commercial activity due to loss of this key transportation corridor. Impacts have generally been in the three (3) to five (5) day range (Figure 6, Fire Hazards).

Figure 6. Fire Hazards



This page intentionally left blank.

The purpose of the Safety Element is to protect the community from any unreasonable risks associated with seismic and geologic hazards, flooding, wildland and urban fires, and climate change. Legislation identifies the types of hazards and vulnerabilities the Safety Element should address, including critical facilities. Critical facilities are structures and institutions necessary for a community's response and recovery from emergencies. Critical facilities must continue to operate during and following a hazard event to reduce the severity of impacts and accelerate recovery. This section incorporates the critical facilities identified and analyzed in Section 5.5 of the LHMP. The LHMP identifies the name and type of critical facilities, as well as the type of hazard, each facility is vulnerable to (See Appendix A). These facilities include City Hall, fire stations, police stations, hospitals, community centers, transportation infrastructure, public facilities, and wells. This analysis incorporated from the LHMP is used by the Safety Committee in order to define goals, policies, and objectives that protect the community from the identified hazards.

2.4 Vulnerability Assessment

The purpose of climate adaptation planning is to reduce vulnerability to projected climate change effects, increase the local capacity to adapt, and build resilience through the adoption of goals and policies. A climate resilient city is one that is prepared for the effects of climate change and is able to provide essential services during and after hazard events.

The City prepared a vulnerability assessment, in conformance with the Adaptation Planning Guide, which identifies the risks that climate change poses to the City. The Adaptation Planning Guide was designed to ensure that the vulnerability assessment meets Safety Element requirements in California Government Code Section 65302(g)(4), as updated by SB 379 and SB 1035. The vulnerability assessment follows the process outlined in Phase 2 of APG 2.0 and is composed of the following five steps:

1. **Exposure:** The purpose of this step is to understand existing hazards within the planning area, and how these hazards will change. Climate projection data from Cal-adapt are used to develop projections for how existing hazards are expected to change by mid- and late-century.
2. **Sensitivity:** This step identifies the location of population groups and critical facilities that are sensitive to localized climate change effects.
3. **Potential Impacts:** This step seeks to understand how sensitive populations and facilities may be affected by climate change. Potential Impact is a function of exposure and sensitivity.

4. **Adaptive Capacity:** The purpose of this step is to characterize the City's current ability to cope with climate impacts. The ability of the City to adapt to each of the identified climate impacts is determined through a review of existing plans, policies, and programs, and through stakeholder engagement.
5. **Vulnerability Scoring:** Vulnerability is a function of potential impact and adaptive capacity. The vulnerability scoring method allows the City to understand which populations and assets will potentially face the greatest threats and where there are gaps in current planning efforts. The scoring rubric used to assess the potential impact, adaptive capacity, and overall vulnerability are shown below.

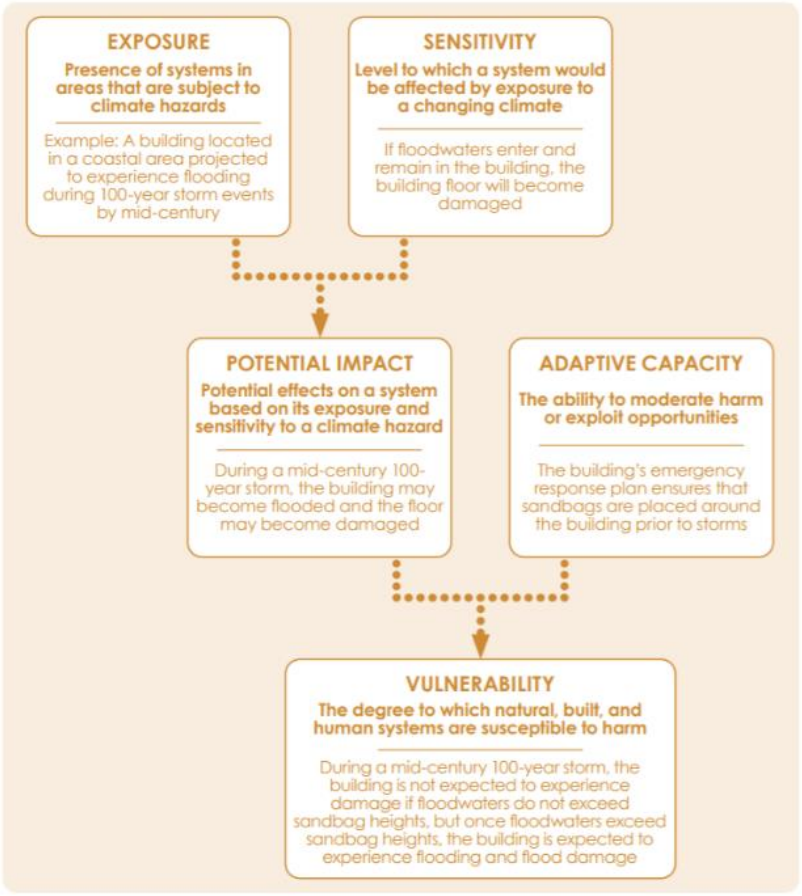
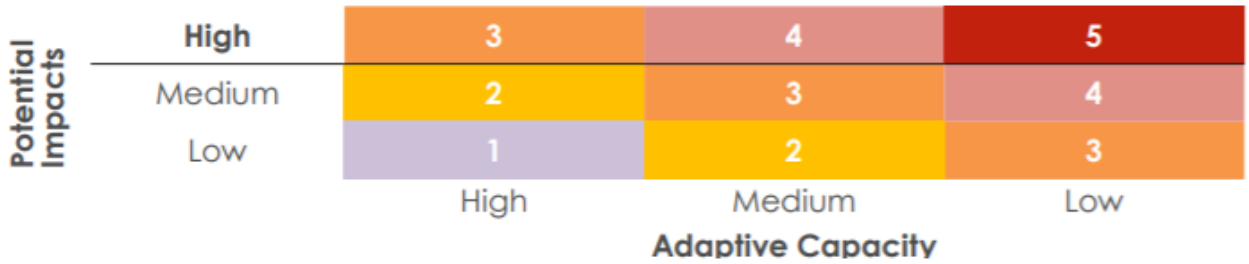


Table A: Potential Impact and Adaptive Capacity Scoring Rubric

SCORE	POTENTIAL IMPACT	ADAPTIVE CAPACITY
Low	Impact is unlikely based on projected exposure; would result in minor consequences to public health, safety, and/or other metrics of concern.	The population or asset lacks capacity to manage climate impact; major changes would be required.
Medium	Impact is somewhat likely based on projected exposure; would result in some consequences to public health, safety, and/or other metrics of concern.	The population or asset has some capacity to manage climate impact; some changes would be required.
High	Impact is highly likely based on projected exposure; would result in substantial consequences to public health, safety, and/or other metrics of concern.	The population or asset has high capacity to manage climate impact; minimal to no changes are required.

Table B: Vulnerability Scoring Rubric



Source: CalOES, 2020; Adapted by Harris and Associates, 2021

The information provided in the vulnerability assessment below integrates information provided from the City's 2021 LHMP with supplemental information collected through the General Plan Update planning process. Specifically, this vulnerability assessment adopts the LHMP's definition and categorization of critical facilities. Information on historical hazard events was documented in the 2021 LHMP, as was the identification of populations and critical community assets in hazard zones.

The following vulnerability assessment analyzes the potential impact and adaptive capacity of the following asset categories to climate-driven hazards, including extreme heat, extreme precipitation, drought, and wildfire (Table 1, Sensitive Populations and Critical Facilities):

Table 1. Sensitive Populations and Critical Facilities

ASSET CATEGORY	DESCRIPTION
People	City residents
Critical Facilities	--
City Operations	City Hall, City EOC
Public Safety Facilities	Fire Stations
Public Health Facilities	Hospital
Community Centers	Community, Libraries, Activities, and Sports Centers
Utility Facilities	Water Treatment and Distribution Facilities, Energy utilities
Critical Transportation	Airport, Bridges, Bus
Schools	Educational Facilities

2.5 Extreme Heat

Overall temperatures are expected to rise in California during the 21st century. While the entire state will experience temperature increases, the local impacts will vary greatly. The City of Victorville is already experiencing the effects of rising temperatures. Extreme heat days are defined by days where the daily maximum temperature exceeds a threshold temperature of 103.0°F. Threshold temperatures are defined as the 98th percentile value of historical daily maximum temperatures (from 1961–1990, between April and October) in Victorville.

2.5.1 Exposure

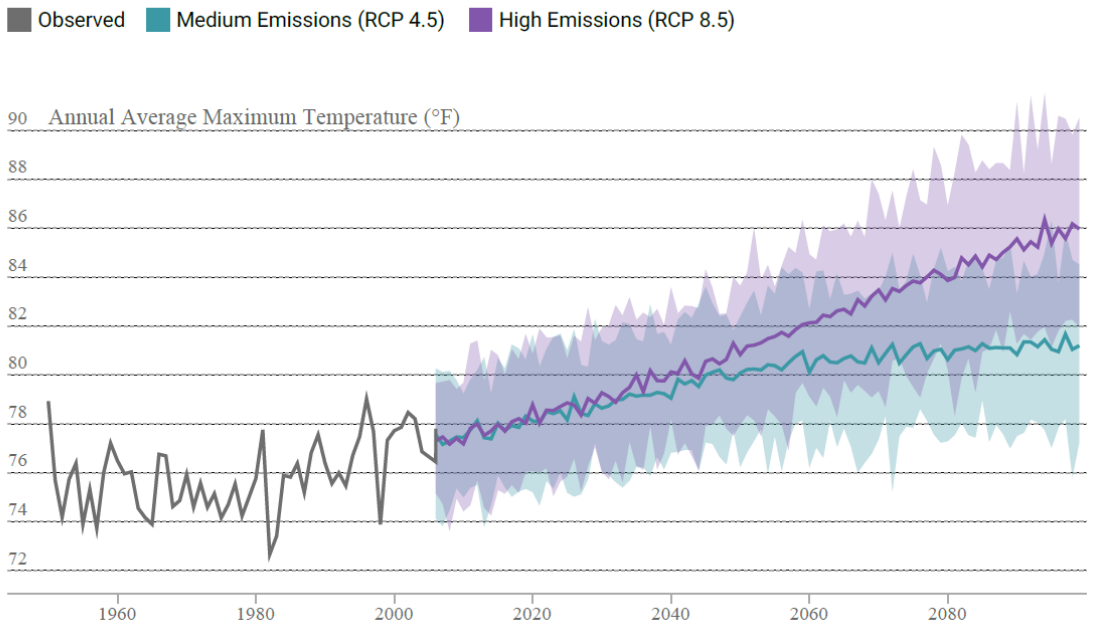
Average temperatures are projected to increase between 4.3°F and 5.3°F by mid-century (2035–2064), and between 5.4°F and 9.0°F by end-century (2070–2099). In addition, the number of extreme heat days is projected to increase from a historical average of 5 days per year to between 27 and 34 days by mid-century and 35 to 62 days by end-century (Cal-Adapt 2021). Warmer days will also be accompanied by an increasing number of warmer nights.

Heat exposure, however, is not distributed equally throughout the City. “Intra-urban” heat islands refer to areas within a city that are hotter than others due to uneven distribution of heat-absorbing buildings and pavements, and cooler spaces with trees and greenery (EPA 2020).

In 2019 CAPA Strategies, organized the Urban Heat Watch program in Victorville to understand how urban heat varies across neighborhoods. The Victorville campaign engaged City staff, researchers, and community members in the collection of tens of thousands of measurements of temperature and humidity throughout the region to provide localized data that can be used to map heat distribution for the City. The results for afternoon (3–4pm) sensor readings are shown on Figure 7, Victorville 3–4PM Area-Wide Temperature (°F).

Annual Average Maximum Temperature

Average of all the hottest daily temperatures in a year.

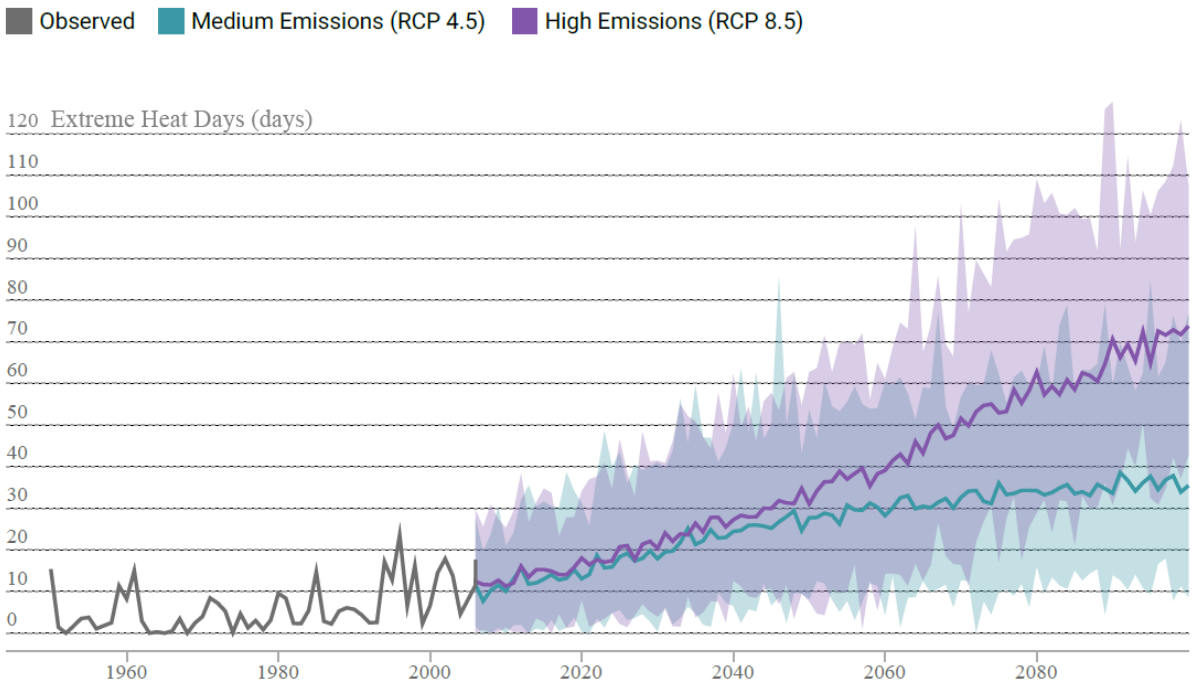


Observed (1961-1990) 30yr Average: 75.4 °F

		30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	75.7 °F	75.5 - 76.0 °F
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	+4.3 °F	80.0 °F	78.1 - 81.7 °F
HIGH EMISSIONS (RCP 8.5)	+5.3 °F	81.0 °F	79.0 - 82.5 °F
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	+5.4 °F	81.1 °F	78.8 - 83.1 °F
HIGH EMISSIONS (RCP 8.5)	+9.0 °F	84.7 °F	81.7 - 87.5 °F

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented are aggregated over all LOCA grid cells that intersect Victorville boundary.

Extreme Heat Days



Observed (1961-1990) 30yr Average: 4 days

		30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	5 days	3 - 6 days
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	+22 days	27 days	15 - 48 days
HIGH EMISSIONS (RCP 8.5)	+29 days	34 days	17 - 52 days
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	+30 days	35 days	20 - 61 days
HIGH EMISSIONS (RCP 8.5)	+57 days	62 days	47 - 98 days

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented are aggregated over all LOCA grid cells that intersect Victorville boundary.

Figure 7. Victorville 3–4PM Area-Wide Temperature (°F)

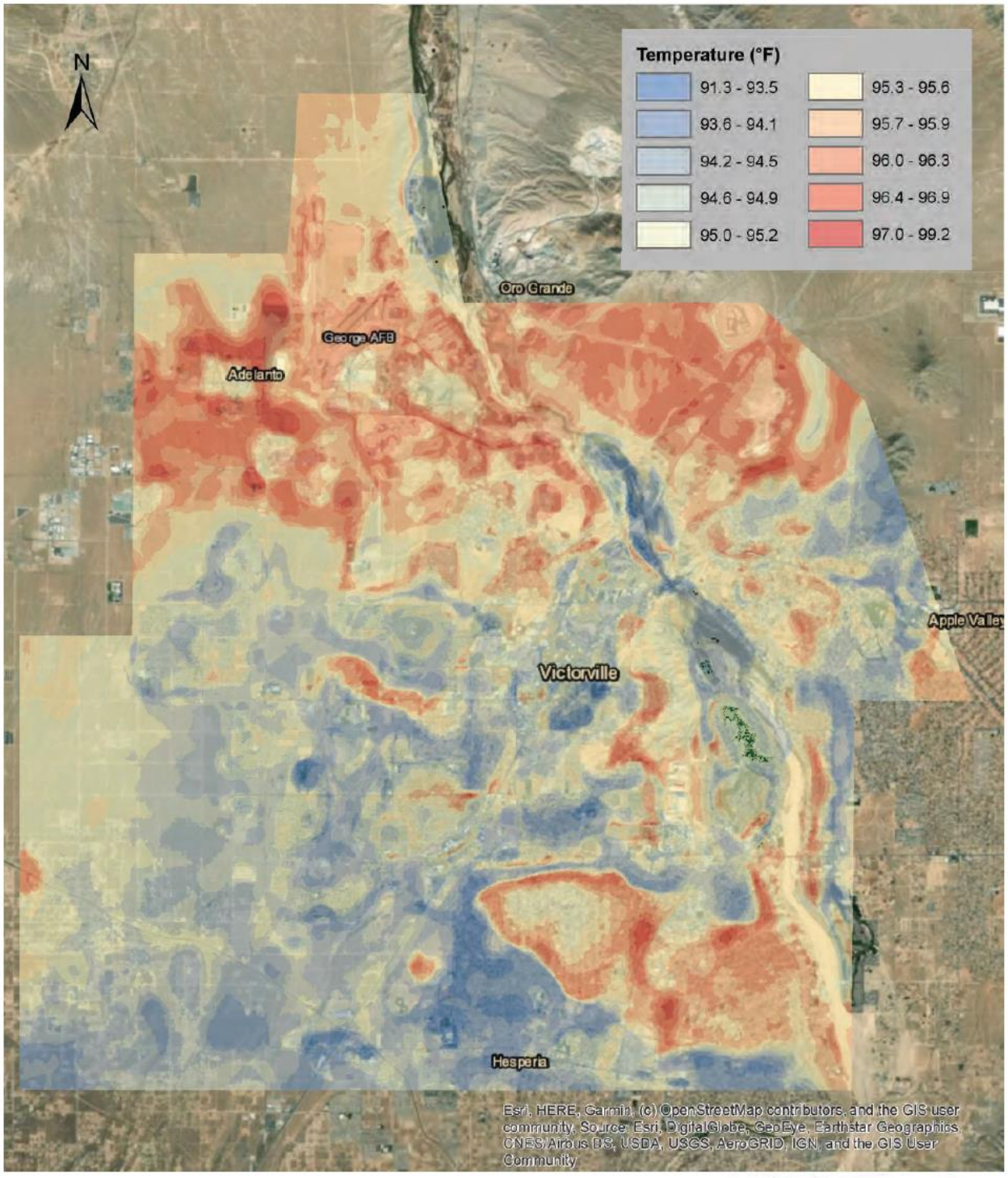


Figure 6: Victorville 3-4PM Area-Wide Temperature (°F)

This page intentionally left blank.

2.5.2 Sensitivity

2.5.2.1 People

A number of factors contribute to the sensitivity of people to extreme heat. Intrinsic factors that contribute to heat-related risk include age (those over sixty-five, infants, and children), and pre-existing medical conditions (e.g., cardiovascular disease, diabetes, and mental illness). Extrinsic factors, or those external to an individual, include neighborhoods with high levels of impervious surfaces and low tree cover, or housing units that lack air conditioning. Immigration status and occupational profession are other significant factors that may contribute to an individual's sensitivity to heat events, particularly farmworkers and warehouse workers who do not have adequate accommodations and protections. The City's homeless or unsheltered population are among the most sensitive to heat events.

The Heat Health Action Index score is a statistically weighted result of indicators that is intended to represent geographic areas of greater heat sensitivity (Table 2, Heat Health Action Index Indicators and Description). Figure 8, Heat Health Action Index, shows HHAI scores for Victorville by census tract, providing an overall summary of heat vulnerability for the City. Higher scores indicate greater vulnerability. As shown on Figure 8, populations residing to the southeast of I-15 are most sensitive to extreme heat.

Table 2. Heat Health Action Index Indicators and Description

HHAI INDICATORS	INDICATOR DESCRIPTION
Percent Children	Percent of population aged 5 years or younger
Percent Without a High School Diploma	Percent over the age of 25 with a high school diploma or GED
Percent 65 Years or Older	Percent of population aged 65 years or older
Percent Outdoor Workers	Percent of people employed and aged > 16 years working outdoors
Total Population	Number of residents
Percent in Poverty	Percent of population whose income in the past year was below the national poverty level
Percent Two or More Races	Percent of residents who identify as two or more races
Percent Non-White	Percent of residents who identify as a race other than White
Percent Without a Vehicle	Percent of occupied households with no vehicle ownership
Percent Non-English-Speaking Households	A "limited English-speaking household" is one in which no member 14 years old and over (1) speaks only English or (2) speaks a non-English language and speaks English "very well." In other words, all members 14 years old and over have at least some difficulty with English
Percent No Transit Access	Percent of population residing within at least 0.5 mile of a major transit stop
Asthma Prevalence	Asthma emergency department visits per 10,000 people
Percent Low Birth Rate	Percent of low weight births (<5.5 lbs)
Cardiovascular Disease Rate	Heart attacks per 1,000
Percent Ambulatory Disability	Percent of population having serious difficulty walking or climbing stairs
Percent Cognitive Disability	Percent of population having physical, mental, or emotional problem, difficulty remembering, concentrating, or making decisions
PM 2.5 Concentration	Annual mean ambient concentration of PM2.5

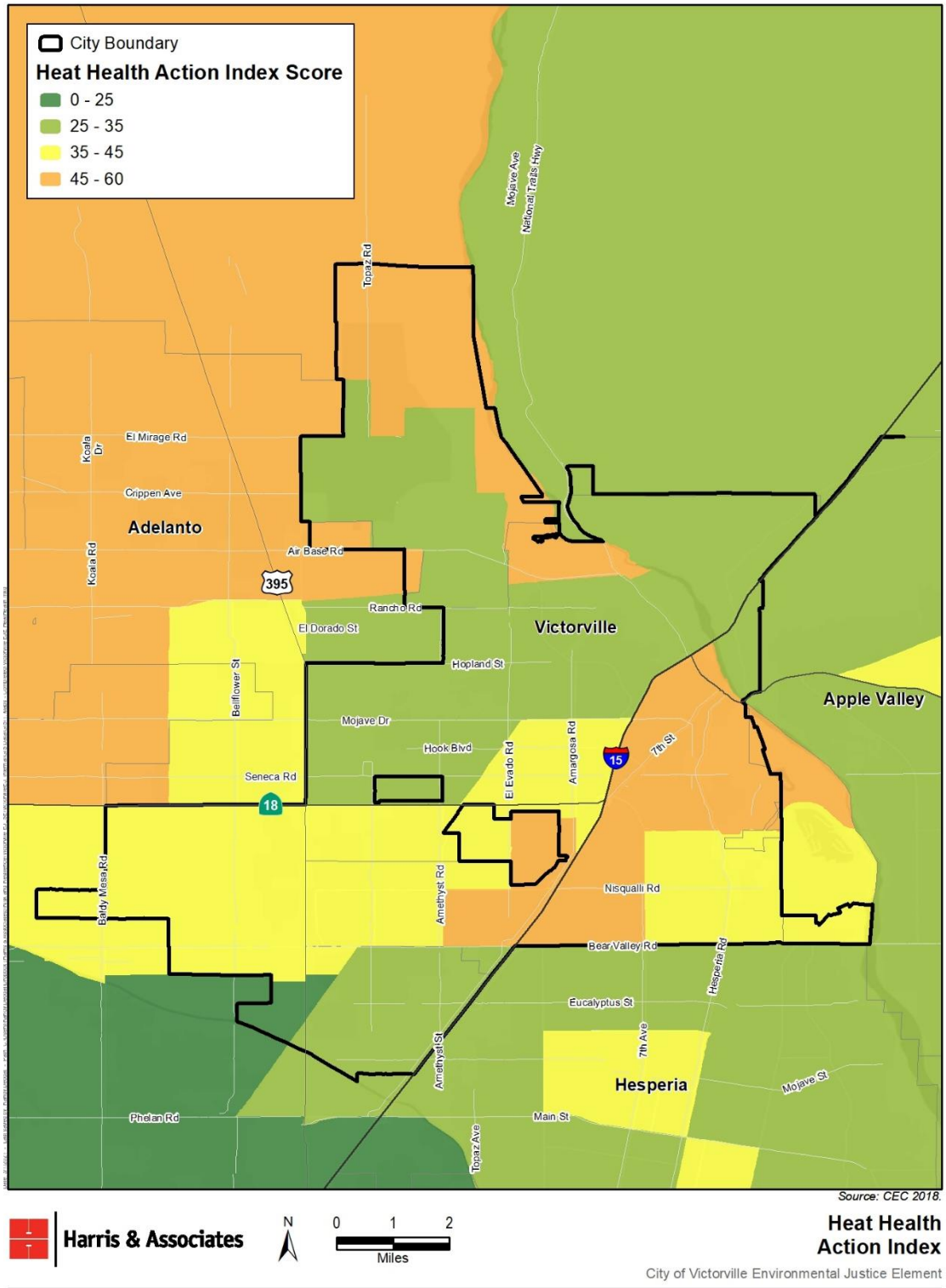
Table 2. Heat Health Action Index Indicators and Description

HHAI INDICATORS	INDICATOR DESCRIPTION
Percent Impervious Surfaces	Percent of the land area covered by impervious surfaces (population weighted)
Changes in Development	Percent change (estimated) of land area from unpaved to paved due to development in 2050. Projections by the Land Use and Carbon Scenario Simulator by USGS, 2016
Percent No Tree Canopy	Percent of area not under tree canopy (population weighted)
Urban Heat Island	Temperature difference from nearby rural areas
Ozone Exceedance	Three-year ozone concentration exceedance above state standard

2.5.2.2 Critical Facilities

To the extent that the City's electrical infrastructure is sensitive to extreme heat, so are the City's critical facilities that depend on reliable electricity to power their operations, including hospitals, fire/police stations, schools, and water facilities. Higher temperatures can decrease the capacity of grid components (i.e., power plants, substations, and transmission lines) while increasing electricity demand due to increased cooling needs.

Figure 8. Heat Health Action Index



This page intentionally left blank.

2.5.3 Potential Impact

2.5.3.1 People

Climate change, particularly extreme heat events, present serious health risks to City residents and workers. Increased temperature or extended periods of elevated temperatures can increase heat-related mortality, cardiovascular-related mortality, respiratory mortality, and heart attacks while increasing hospital admissions and emergency room visits. Extreme heat can also affect a person's ability to thermo-regulate, causing heat stress and sometimes leading to death. Heat also intensifies smog and air pollutants that can contribute to and exacerbate respiratory disease and result in more asthma and heart attacks. Furthermore, the same areas that are most exposed to extreme heat are the same areas that lack tree canopy and have high concentrations of racial minorities, making extreme heat an issue of environmental justice in addition to community safety. The severity of this potential impact to people is given a high potential impact score in the Table 3, Vulnerability Assessment Results: Extreme Heat.

2.5.3.2 Critical Facilities

Potential impact refers to how incidents of extreme heat will affect sensitive critical facilities. Extreme heat events do not necessarily have significant impacts on critical facilities, assuming that all facilities maintain their power supply. However, extreme heat events may result in power demand outpacing supply, resulting in power outages. When this happens, Southern California Edison implements California Independent System Operator (CAISO) Rotating Outages, wherein SCE rotates the outage across groups of customers throughout the service territory to protect the integrity of the electric system, while limiting the inconvenience to any one customer or community. Loss of power can disrupt essential public facilities and services (i.e., hospitals, water treatment operations, etc.) and pose a public health risk to residents, particularly those who rely on electricity for the provision of healthcare.

In the event of extreme heat that causes power outages, the loss of power would have the most significant impact impacts on utilities, such as electricity and water, in addition to public health, public safety, and school facilities. Power outages, without back-up generation, could result in the loss of foundational critical services that are necessary to function: electricity, water, medical care, and police and fire protection services. Loss of services would have wide-reaching impacts for services and community members, especially those with medical conditions, those over the age of 65, and children. Water and power are also critical to emergency response to the impacts of extreme heat, which is why the potential impact score is rated high. Community centers serve as cooling centers, providing a key service and mitigation strategy to residents during an extreme heat event. A loss of power to a community center providing cooling would decrease its ability to provide this critical service to residents, so its potential impact is rated a medium due to its secondary function as a cooling center. Other critical facilities, such as critical transportation and city operations, would be impacted, though the impact of loss of service maybe less severe than at a water utility or hospital.

2.5.4 Adaptive Capacity

2.5.4.1 People

The City has posted its own heat advisories as well as heat advisories announced by the County to its website during past high heat events, particularly during the 2017–2018 season. Heat advisories have been posted to the City's website with information directing residents to the designated cooling center at the Victorville City Library, as well as links to other countywide cooling centers and the County's heat advisory resources posted on the County's website. The City's resources and leveraging of the County resources results in a medium adaptive capacity score.

2.5.4.2 Critical Facilities

The City's public libraries operate as designated cooling centers during extreme heat. Certain community centers such as the Victorville Activities Center and Recreation Center are equipped with evaporative cooling centers, as are schools. The cooling capabilities of libraries, recreation centers, and schools are given medium adaptative capacity scores, though there is room to improve reliability by equipping sites with air conditioning rather than evaporative cooling. The majority of bus stops are equipped with shade structures and parks are equipped with gazebos that provide shade as well as drinking fountains. Most pedestrian trails have gazebos and drinking fountains located at the trailheads. The City's Climate Action Plan and Park Master Plan identify strategies to reduce heat impacts, including increasing tree canopy cover and shade structures, though a lack of funding has prevented implementation. At the time of this update, all fire stations and police department buildings are equipped with back-up generators, though the extent to which it is unknown the extent to which public health and utility facilities are equipped with back-up power so a default score of low is given to those facility categories.

2.5.5 Vulnerability

Extreme heat poses the most significant threat to people, especially vulnerable residents. The City provides cooling centers and extreme heat warnings to help keep residents safe during extreme heat events. Extreme heat may pose minimal threat to buildings themselves, though extreme heat can result in demand for power that outpaces supply, causing outages and disruptions. Utilities have the highest vulnerability to losses in water and power, as do public health facilities such as hospitals. City Hall, schools, and community centers, such as libraries and the Victorville Activity Center are designated cooling centers, providing capacity to mitigate impacts of extreme heat. Libraries are included in the definition of community centers based on their multi-purpose function to provide resources to the community.

Table 3. Vulnerability Assessment Results: Extreme Heat

ASSET CATEGORY	POTENTIAL IMPACT	ADAPTIVE CAPACITY SCORE	VULNERABILITY SCORE
People	High	Medium	4
Critical Facilities		--	
City Operations	Low	Medium	2
Public Safety Facilities	High	High	3
Public Health Facilities	High	Low	5
Community Centers	Medium	Medium	3
Utility Facilities	High	Low	5
Critical Transportation	Low	Medium	2
Schools	Medium	Medium	3

2.6 Wildfire

2.6.1 Exposure

The City's wildfire risk is profiled in Section 2, Potential Hazards. Climate change can exacerbate the risk of wildfire. Wildfire risk is expected to continue to increase as a result of warmer temperatures, more frequent drought, and the expanding urban-wildlife interface. While it is difficult to project exactly where and how wildfires will burn, climate scientists have estimated the annual average area burned in state and federal protection responsibility areas to help inform whether wildfire activity is likely to increase in a given area. However, climate scientists recognize that the data is not complete, and more detailed analyses and projections are needed for local decision-making. The Victorville boundary does not include fire state and federal protection responsibility areas; therefore, the City was excluded from Cal-Adapt wildfire simulations and have no climate projections.

Regardless of the exact extent or location, wildfires can generate significant amounts of smoke. Wildfire smoke can travel long distances, in some instances spreading across state and national boundaries.

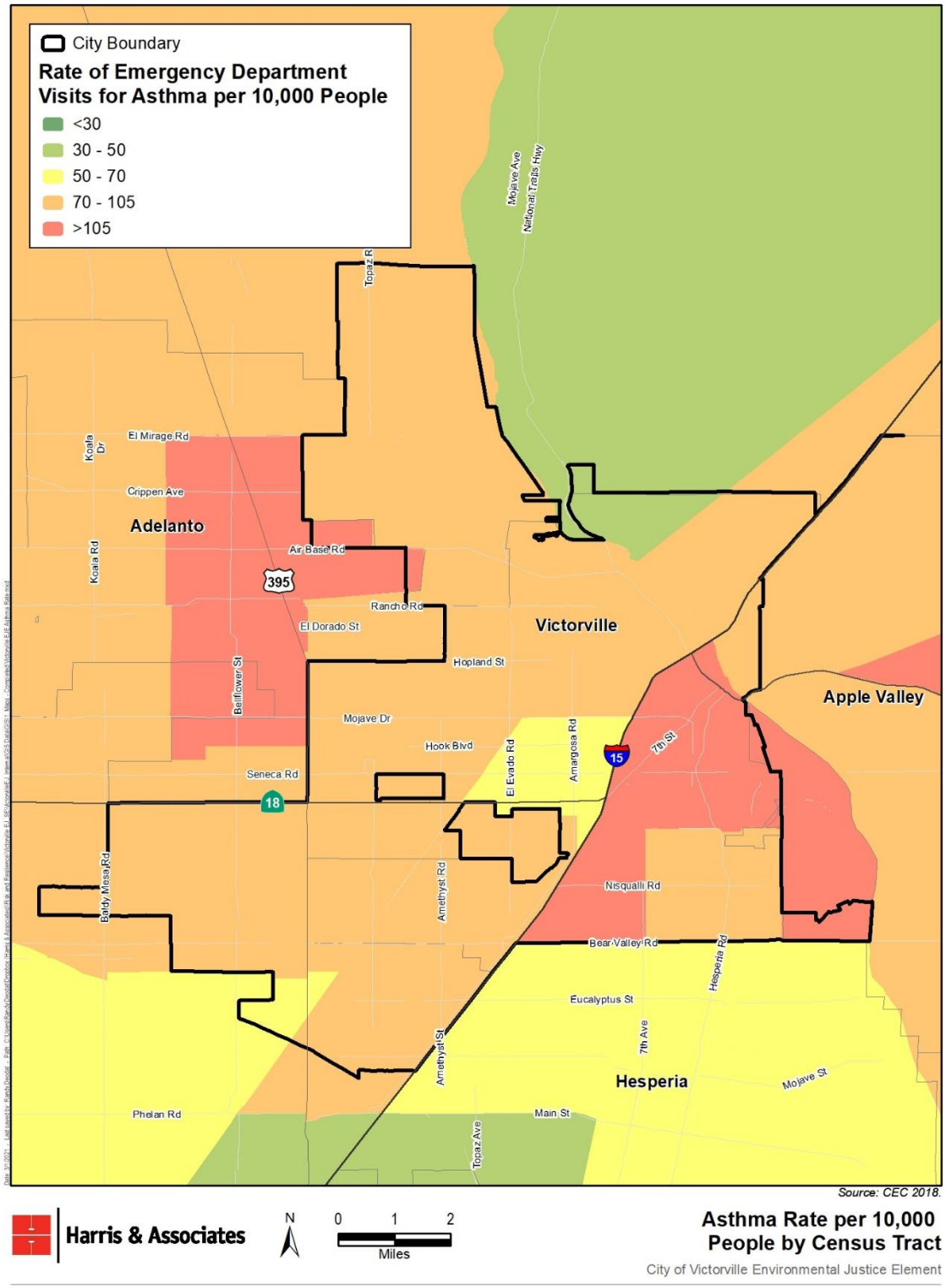
2.6.2 Sensitivity

2.6.2.1 People

Increased wildfire risk could adversely affect populations with reduced mobility, including disabled people as well as those who do not have access to a personal vehicle and who may have difficulty evacuating. Outdoor essential workers and individuals with respiratory conditions such as asthma are particularly vulnerable to wildfire smoke. Living conditions and housing types also influence levels of protection from smoke; mobile homes and older homes with unsealed windows are more sensitive than modern homes that feature airtight windows and air purification systems (Figure 9, Asthma Rate).

This page intentionally left blank.

Figure 9. Asthma Rate



This page intentionally left blank.

2.6.2.2 Critical Facilities

As wildfires increase in frequency and intensity, disruptions in electrical infrastructure are likely to become more common. When there is a high risk for a wildfire, Southern California Edison, the City's electric utility, may temporarily shut off power to prevent our electric system from becoming the source of ignition. Electric utility infrastructure has historically been responsible for less than ten percent of reported wildfires; however, fires attributed to power lines comprise roughly half of the most destructive fires in California history (https://www.cpuc.ca.gov/psps/). These events, termed Public Safety Power Shutoffs (PSPS), can pose a serious risk for medical-sensitive (those who rely on medication/respirators that requires power generation) and low-income populations.

2.6.3 Potential Impacts

2.6.3.1 People

Wildfire frequency may exacerbate already existing air quality issues in the City, posing a health risk for sensitive populations. Smoke and poor air quality can increase respiratory and cardiovascular hospitalizations, emergency department visits, medication dispensations for asthma, bronchitis, chest pain, chronic obstructive pulmonary disease (commonly known as COPD), respiratory infections, and medical visits for lung illnesses (Centers for Disease Control and Prevention, Climate Health: Wildfires). Those with pre-existing medical conditions, that work outdoors, populations over 65 years of age, and young children maybe at additional risk of poor air quality.

2.6.3.2 Critical Facilities

There are no Fire Hazard Severity Zones within the Planning Area nor are there State Responsibility Areas, where the State would have responsibility for wildland fire protection and prevention. Due to low exposure, there is a relatively low probability that wildfire will threaten critical facilities or other structures within the City boundaries. However, critical facilities may be impacted by PSPS events, particularly the loss of power can disrupt essential public facilities and services, requiring many to utilize back-up generators to maintain adequate levels of service.

2.6.4 Adaptive Capacity

2.6.4.1 People

Though risk is low, the City has established adaptive capacity to support its residents. The City has a Memorandum of Understanding with San Bernardino County regarding use of facilities designated as evacuation centers. In the past, fairgrounds, local schools, community sports complexes, and the Victorville Activity Center have been designated evacuation centers. The Emergency Operations Center also maintains a list of facilities, such as city facilities, churches, hotels, schools, and County facilities that are being evaluated as facilities that could be used in the event as an emergency, such as being used to support the mobilization of emergency services.

Air quality is a secondary impact that can impact residents. The Mojave Desert Air Quality Management District is located in Victorville and provides an Air Quality Index on its website.

Residents can select their city from a dropdown menu and review the air quality conditions for the current day as well as the forecast for the following day. The Air Quality Index values range from good air quality through hazardous air quality, and also features a map that users can use to view what air quality is in or near their city. Users can also sign up to receive email, phone, or Twitter alerts of the daily air quality forecast. The MDAQMD website also has tips page for residents to help protect and improve air quality, as well as a wildfire page that links to current smoke advisories, tips to reduce risks to public health, and additional air quality and smoke advisory resources.

In the event of a public safety power shutoff (PSPS), the City's Public Information Officer can release informational notices and resources to the public on the City's website.

2.6.4.2 Critical Facilities

Since there are no Fire Hazard Severity Zones within the Planning Area, potential impact to critical facilities is likely minimal. Further, the City has a Fire Hazard Abatement Ordinance (Chapter 8 of the Victorville Municipal Code), which requires the abatement of weeds in excess of three inches above the grade in the area of growth on such portion of the lot or premises within one hundred feet of any structure. Adherence to this ordinance reduces the likelihood of fires on undeveloped lands and on vacant lots in the developed portions of the Planning Area. Another protective measure is the California Building Code, which reduces fire hazards in structures. Measures in the code include use of materials, fire separation walls, building separation, fire sprinklers, clearances around structures, and minimum road widths to provide adequate access for fire-fighting equipment.

Though there are no Fire Hazard Severity Zones within the Planning Area, critical facilities can be impacted by PSPS events. City Hall is equipped with generators and other facilities may have on site back-up generation or energy storage. At the time of this update, the extent of back-up power capabilities and other fire-prevention methods are unknown. As a result, adaptive capacity was given a default medium score to account for the Fire Code but to also allow for additional mitigation measures.

2.6.5 Vulnerability

Utilities and public health facilities are ranked as having medium impact, due to the critical nature of those services to operate during a wildfire event. Some city operations facilities are equipped with back-up power, earning a high vulnerability score, while the remaining categories were ranked as medium to account for the citywide ordinance and codes in place that help protect the city from wildfire (Table 4, Vulnerability Assessment Results: Wildfire).

Table 4. Vulnerability Assessment Results: Wildfire

ASSET CATEGORY	POTENTIAL IMPACT	ADAPTIVE CAPACITY SCORE	VULNERABILITY SCORE
People	High	Medium	3
Critical Facilities		--	
City Operations	Low	High	1
Public Safety Facilities	Low	Medium	2
Public Health Facilities	Medium	Medium	3
Community Centers	Low	Medium	2
Utility Facilities	Medium	Medium	3
Critical Transportation	Low	Medium	2
Schools	Low	Medium	2

2.7 Extreme Precipitation

Extreme precipitation may exacerbate riverine flooding (discussed in Section 2.2, Flood Hazards and may result in localized flooding outside of the flood zone.

2.7.1 Exposure

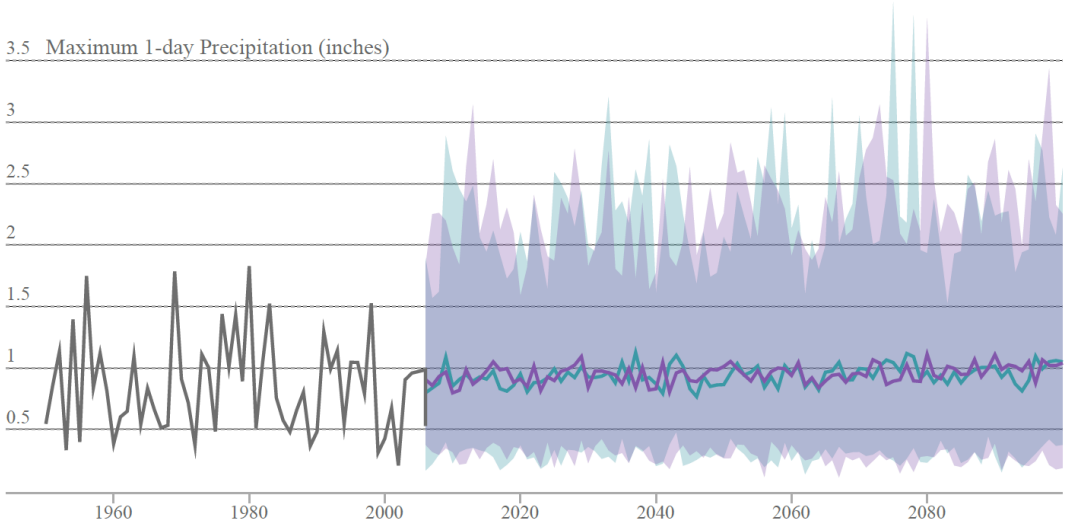
Riverine flooding may be exacerbated by extreme precipitation or storms. In addition to riverine flooding, extreme precipitation may result in localized flooding outside of the flood zone. Severe weather such as more powerful rainstorms are likely to occur as a result of climate change. Atmospheric rivers which can create flooding throughout California may occur more frequently due to warmer weather and more moisture in storm systems. Climate change has the potential to cause more frequent and more heavy precipitation incidents that result in flood damage. The results could be additional flows into the Silver Lake and Mojave Reservoirs with the potential for overtopping or other dam failure mechanisms. While major flooding is not likely to occur in Victorville, minor street flooding is possible during any severe summer or winter storms, which can ensue on an annual basis.

While the City is not projected to see average annual precipitation change significantly in the next 50–75 years, precipitation will likely be delivered in more intense storms during a shorter period of time. The following figure illustrates the projected maximum daily precipitation amount for each year (i.e., the greatest amount of rain over a 24-hour period). Projections indicate that maximum daily precipitation may increase by less than one inch through mid- and end-century. Therefore, the City's exposure to extreme precipitation is low.

Maximum 1-day Precipitation

The maximum daily precipitation amount for each year. In other words, the greatest amount of daily rain or snow (over a 24 hour period) for each year.

Observed Medium Emissions (RCP 4.5) High Emissions (RCP 8.5)



Observed (1961-1990) 30yr Average: 0.854 inches

		30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	0.891 inches	0.759 - 1.015 inches
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	+0.039 inches	0.930 inches	0.746 - 1.129 inches
HIGH EMISSIONS (RCP 8.5)	+0.049 inches	0.940 inches	0.783 - 1.186 inches
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	+0.085 inches	0.976 inches	0.784 - 1.199 inches
HIGH EMISSIONS (RCP 8.5)	+0.092 inches	0.983 inches	0.762 - 1.261 inches

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented are aggregated over all LOCA grid cells that intersect Victorville boundary.

2.7.2 Sensitivity

2.7.2.1 People

Residents living in the floodplain, especially those with physical disabilities that limit their mobility, may be vulnerable to extreme precipitation events that necessitate evacuation. Even just a few inches of moving water can be unsafe for children and people with disabilities. People experiencing homelessness are at particular risk from flooding, especially if encampments are located in or near the floodplain.

2.7.2.2 Critical Facilities

Critical assets in low-lying areas may be sensitive to extreme precipitation. The LHMP identifies the following critical facilities as vulnerable to flood and flash flood hazards: the Victorville Water Wastewater Treatment Plant (Helendale Road), 34 active wells, Stoddard Wells Sewer Lift station, and Ground Water Production Well (Peral Street). These critical facilities are at further risk because extreme precipitation has the potential to exacerbate riparian flooding along the Mojave River. More information about critical facilities sensitive to flood and extreme precipitation can be found in Section 5.5.1 and 5.5.3 of the City's LHMP.

2.7.3 Potential Impact

2.7.3.1 People

Extreme precipitation events may result in flooding that can threaten human life. Though overall exposure to extreme flood is low within the Planning Area, impacts to vulnerable populations could be somewhat likely in a major event and would result in some impacts to public health and safety. Low-income residents without renters' insurance may experience significant financial impacts if extreme precipitation events resulted in the flooding of their property. Furthermore, flooded homes may also result in the growth of mold and mildew, which are allergenic and potentially harmful.

2.7.3.2 Critical Facilities

Extreme precipitation events may result in rainfall runoff that overwhelms the stormwater management system, causing water to inundate roads and property. Evacuation personnel may need to be dispatched in order to evacuate homeless populations from the floodplain. Shallow flooding may result in mold and mildew in flooded buildings, the spread of contaminants including gasoline and chemicals, and serve as breeding grounds for mosquitos.

2.7.4 Adaptive Capacity

2.7.4.1 People

Though overall exposure to extreme precipitation is low, the City does have several adaptive measures in the event of a major flood. If a major event were to occur, the City has a Memorandum of Understanding with San Bernardino County regarding use of facilities designated as evacuation centers. In the past, fairgrounds, local schools, community sports complexes, and the Victorville Activity Center have been designated evacuation centers. The Emergency Operations Center also

maintains a list of facilities, such as city facilities, churches, hotels, schools, and County facilities that are being evaluated as facilities that could be used in the event as an emergency, such as being used to support the mobilization of emergency services.

The City also has rescue capacity in coordination with San Bernardino County. During a previous flood event, the City worked with the San Bernardino County Fire and San Bernardino County Sheriff's Department to rescue people experiencing homelessness from the floodplain.

The San Bernardino County Flood Control District has flood safety information posted on its website for residents, including instructions to do in a flood event, sandbag tips and sandbag availability, real-time weather conditions and rainfall information, flood after fire factsheets, information on the National Flood Insurance Program, and debris and erosion control sheets.

2.7.4.2 Critical Facilities

The City has adopted several programs and policies that provide adaptive capacity to extreme precipitation. The City has existing Safety Element policies to restrict development in areas susceptible to flooding hazards, reducing the number of critical facilities located in flood hazard areas. The City of Victorville has a Master Plan of Drainage and Comprehensive Storm Drain Plan that evaluates existing drainage systems, identifies deficiencies, and recommends improvements and new facilities. The San Bernardino Flood Control District oversees an extensive system of facilities, including dams, basins, channels, and storm drains that intercept and convey flood flows through and away major developed areas of the County.

Further, the City of Victorville recently completed a Stormwater Flood Reduction Project that will improve flood control. The newly constructed Amethyst Basin will help capture stormwater and decrease downstream flows, protecting public infrastructure and I-15, which is located near the basin. The 27.4-acre project is designed to provide additional protections to handle a 100-year storm – a flood event that has a one percent chance of exceeding anticipated flood hazards within a given year.

The Mojave River Watershed Group (MRWG) consists of representatives from the City of Victorville, Hesperia, Town of Apple Valley, and San Bernardino County. The MRWG is committed to protecting the Mojave River and its watershed and preventing stormwater pollution. The MRWG provides stormwater pollution prevention resources for businesses, educators, and residents, including Best Management Practices for local businesses, assemblies, fairs, clean-up events, and tips for home and lawncare, car maintenance, animal care, and landscaping. These measures help keep the watershed clean and reduce the impact of polluted flood water in the event of a major precipitation event.

2.7.5 Vulnerability

While extreme precipitation events have the potential to threaten critical assets and pose a safety threat to City residents, the projected probability and severity (exposure) is low for most facilities. The medium score for people reflects the risk poses to people experiencing homelessness and primary and secondary impacts to people and their residences. Overall, the City has low to medium vulnerability to extreme precipitation. The City has policies, programs, and projects in

place to mitigate the impact of extreme precipitation, however the City can also re-evaluate to ensure vulnerable communities and critical utilities are protected to the extent possible (Table 5, Vulnerability Assessment Results: Extreme Precipitation).

Table 5. Vulnerability Assessment Results: Extreme Precipitation

ASSET CATEGORY	POTENTIAL IMPACT	ADAPTIVE CAPACITY SCORE	VULNERABILITY SCORE
People	Medium	Medium	3
Critical Facilities		--	
City Operations	Low	High	1
Public Safety Facilities	Low	High	1
Public Health Facilities	Low	High	1
Community Centers	Low	High	1
Utility Facilities	High	High	3
Critical Transportation	Low	High	1
Schools	Low	High	1

2.8 Drought

2.8.1 Exposure

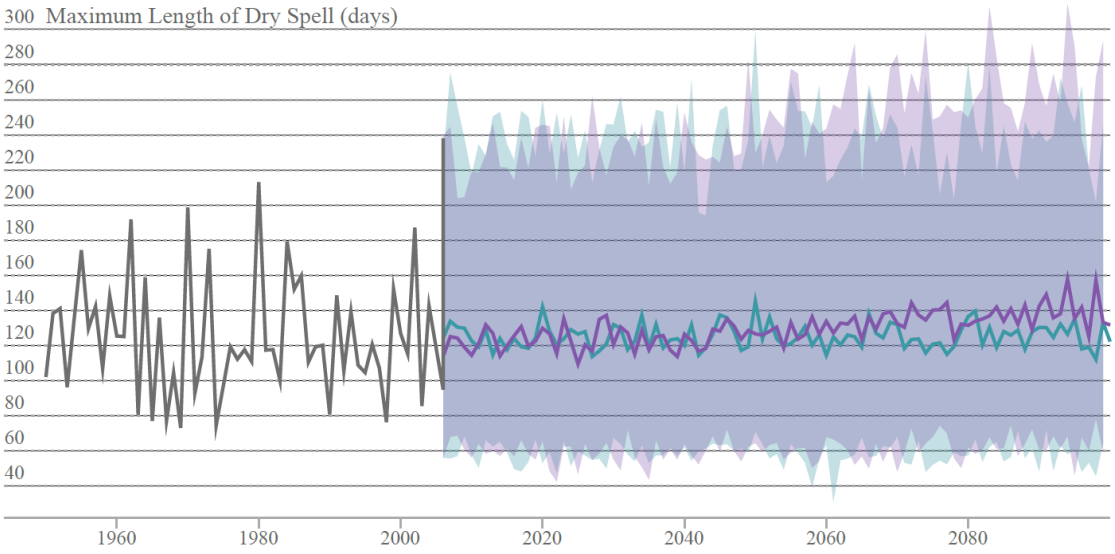
The Victorville Water District relies on groundwater to service the City's drinking water. Groundwater is naturally stored below the surface of the ground. Drought events can affect the amount of soil infiltration, through which the water table is recharged.

Droughts are projected to become more frequent and intense in San Bernardino County, and throughout southern California by mid-century. Cal-adapt provides projections on the maximum length of a dry spell, days with precipitation <1mm, for each year through mid- and end-century. Historically, the City has averaged a 124 day dry spell for each year between 1961 and 1991. Dry spells are projected to increase by 9 to 11 days by mid-century, and 9 to 22 days by end-century, depending on the emissions pathway.

Maximum Length of Dry Spell

The maximum length of dry spell for each year. In other words, the maximum number of consecutive days with precipitation < 1mm for each year.

Observed Medium Emissions (RCP 4.5) High Emissions (RCP 8.5)



Observed (1961-1990) 30yr Average: 124 days

		30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	116 days	100 - 133 days
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	+9 days	125 days	99 - 152 days
HIGH EMISSIONS (RCP 8.5)	+11 days	127 days	96 - 149 days
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	+9 days	125 days	97 - 153 days
HIGH EMISSIONS (RCP 8.5)	+22 days	138 days	101 - 197 days

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented are aggregated over all LOCA grid cells that intersect Victorville boundary.

2.8.2 Sensitivity

2.8.2.1 People

Low-income households, which spend a greater percentage of their income on basic water service, are particularly sensitive to drought events. Water prices are susceptible to rising in response to water shortages. Drought and limited water supply can impact businesses that rely on water, however in Victorville that impact is very likely to be low. Victorville's largest job sectors are education (30%), retail (20%), and leisure (14%), while agriculture is the smallest sector and comprises less than 1% of the jobs by sector. Manufacturing and construction are also on the smaller side of the City's job sectors, comprising 4% and 1% respectively (Southern California Association of Governments, Local Profiles. California Economic Development Department data, 2018).

2.8.2.2 Critical Facilities

Victorville's potable water system supplies water solely from groundwater pumped from the Mojave River Basin. Critical utilities, such as water infrastructure, are identified by the City's LHMP as most susceptible to the impacts of drought. The LHMP lists specific assets and facilities that could be impacted by drought, such as the Victorville Water District's treatment facilities, booster stations, pump and pipeline deluge system, water houses, wastewater treatment plant, and 34 wells.

2.8.3 Potential Impact

2.8.3.1 People

The Pacific Institute and Environmental Justice Coalition for Water released a report, accessible on the California Adaptation Clearinghouse's website, called Drought and Equity in California. It is the first statewide analysis of the impacts of the five-year and ongoing drought on California's most vulnerable communities. The report identifies impacts of drought on people can include water supply shortages and rising costs, which affects people's access to safe, affordable water in their homes. Drought can create domestic water shortages, which can cause the cost of water to increase (Drought and Equity in California, January 2017). Low-income communities often are disproportionately burdened by rising costs. This can place pressure on the local economy and low-income households.

2.8.3.2 Critical Facilities

According to the State's Hazard mitigation Plan, drought is a gradual process and is not usually caused by a year of drought. A city's water supply can help mitigate the impact of short-term droughts or dry periods. However, prolonged drought can have a greater impact on water supply and may result in reduced surface-water availability and cause a city to rely on greater groundwater pumping. However, the City's source of drinking water is from groundwater, which is withdrawn from city wells. In this case, drought can trigger an increase demand for water, placing additional demand and stress on the water system to withdraw groundwater and potentially over drafting the groundwater basin. In the event of a severe drought, the State of

California could declare a statewide drought and mandate that water suppliers reduce demands, as occurred in 2014.

2.8.4 Adaptive Capacity

2.8.4.1 People

The Water Conservation Division of the Public Works and Water Department provides education on water-saving practices and conducts internal operations to conserve water. The City posts on its website a water conservation FAQs: Frequently Asked Questions, water-wise landscaping resources, and outdoor watering restrictions.

2.8.4.2 Critical Facilities

The Victorville Water District's 2020 Urban Water Management Plan (UWMP) includes a Drought Risk Assessment for the years 2021–2025 and projections show that Victorville Water District (VWD)'s water supplies are sufficient to meet the demands even during a 5-year drought (Section 7.2, UWMP). VWD is committed to water conservation and to being a good steward of local water resources to preserve supplies for the future due to the probability of experiencing droughts outside of the requirements of the UWMP. In addition to the Drought Risk Assessment, the UWMP includes a Water Shortage Contingency Plan that details how VWD intends to respond to foreseeable and unforeseeable water shortages. The impacts of drought are not immediately recognized because the region uses the local groundwater basins to simulate a large reservoir for long-term shortage. VWD is able to pump additional groundwater to meet increase demand and has capacity to replenish the basins with imported and local water through regional recharge programs. Overall, VWD does not anticipate any supply shortage due to a single or consecutive dry years.

The City has a robust water conservation program that includes water conservation education and workshops and landscaping resources. The Board of Directors of the Victorville Water District (District) adopted a water conservation program pursuant to Water Code Section 375 and amended the District's Water Supply Shortage Contingency Plan (WSSCP) to comply with emergency regulations adopted by the State Water Resources Control board pertaining to drought conservation.

The amended WSSCP plan features three water conservation stages that determine what measures shall be enforced to reduce the use of water (Table 6, Water Conservation and Shortage Stages).

Table 6. Water Conservation and Shortage Stages

Water Supply Condition/ Demand Reduction Requirement	*Year-round Water Conservation*	*Water Shortage Response Stage*
Year-Round Water Conservation Water waste prohibitions/mandatory restrictions in effect.	**Stage 1**	
Threatened Water Supply Shortage Ten percent (10%) to twenty-eight percent (28%) reduction.		**Stage 2**
Critical Water Supply Shortage Twenty-nine percent (29%) to forty percent (40%) reduction.		**Stage 3**
Emergency Water Supply Shortage Forty-one percent (41%) or more required.		**Stage 4**

Source: City of Victorville, 2021

The recently completed Amethyst Basin, in addition to capturing stormwater, will also help meet the water needs of the growing Victorville community by delivering water from the State Water Project's California Aqueduct through a pipeline to groundwater recharge basins and ponds in the Oro Grande Wash.

2.8.5 Vulnerability

Climate change is expected to create more frequent and intense droughts. However, the City, including the Victorville Water District is committed to water conservation. The City's Urban Water Management Plan concluded that the District has adequate water supply to meet demands during average, single-dry, and multiple-dry years throughout the 25-year planning period. Though drought could increase demand for water, the District's water supply is sufficient to meet the increased demand (Table 7, Vulnerability Assessment Results: Drought).

Table 7. Vulnerability Assessment Results: Drought

ASSET CATEGORY	POTENTIAL IMPACT	ADAPTIVE CAPACITY SCORE	VULNERABILITY SCORE
People	Low	High	1
Critical Facilities		--	
City Operations	Low	High	1
Public Safety Facilities	Low	High	1
Public Health Facilities	Low	High	1
Community Centers	Low	High	1
Utility Facilities	High	High	3
Critical Transportation	Low	High	1
Schools	Low	High	1

2.9 Hazardous Materials

The Victorville Planning Area is traversed by major transportation arteries including I-15, US Highway 395, State Highway 18, and the Atchison, Topeka, and Santa Fe Railroad right-of-way. Transportation of hazardous materials along these routes exposes people to potential for catastrophic events. Hazardous chemicals in the form of solids, liquids or gases may be released accidentally at an industrial site or from railcars or trucks transporting hazardous materials. Such an event could require evacuation for a few hours or several days, depending on the hazard and its severity. The release of hazardous materials requires an immediate response in order to protect human health and safety, and/or the environment.

Recognizing the potential risks of hazardous materials, the City has adopted Chapter 6.49 of the Victorville Municipal Code, in compliance with Chapter 6.95 of the California Health and Safety Code, establishing a hazardous materials release response and inventory program. Additionally, the City of Victorville Fire Department has prepared a Hazardous Materials Incident Emergency Response Plan. This plan is subject to occasional amendment as new procedures develop or situations warrant. The objectives of this plan are as follows:

- Save lives and protect the environment and property in case of emergency;
- Describe the overall emergency response organization within the City of Victorville and its relationship to those of County, State, and Federal organizations;
- Establish lines of authority and coordination for hazardous materials incidents; and
- Identify and facilitate mutual aid to supplement needs.

2.10 Aircraft Mishap

As the Southern California Logistics Airport develops into a commercial aviation center, the possibility of aircraft mishap increases. In response to potential aircraft mishap and in accordance with State law (Public Utilities Code, Section 21670 et seq.) the City of Victorville has prepared a Comprehensive Land Use Plan (CLUP). This plan is necessary because airports present unique public health and safety issues that require special land use planning efforts to ensure protection

of public welfare. The intent of this plan is to utilize land use control mechanisms (e.g., zoning and subdivision regulations) to reduce the potential for and effects of an accident. The purpose of the CLUP prepared for the Southern California Logistics Airport is to:

- Promote the development of compatible land uses in the area influenced by airport operations;
- Safeguard the general welfare of the inhabitants within the vicinity of the airport by minimizing exposure to excessive noise levels;
- Safeguard the general welfare of the inhabitants within the vicinity of the airport by minimizing exposure to crash hazards associated with aircraft operations; and
- Safeguard the general welfare of aviation activities within the vicinity of the airport by imposing appropriate height restrictions for the protection of aircraft operations.

2.11 Safety Zones

Aircraft accidents happen infrequently, and the time, place, and consequences of their occurrence cannot be predicted. From the standpoint of airport land use planning, the potential for aircraft accidents weighs heavily into the types of land uses that are compatible with airport operations. To minimize the risk and reduce the severity of aviation accidents, the SCLA CLUP establishes a combination of six safety zones and associated policies. The CLUP and safety zones are modeled after the California Airport Land Use Planning Handbook recommended zones and are intended to limit uses with higher-use intensity (people per acre) from being developed in high-risk areas. The six safety zones are established according to the type of aircraft using the runways; they are illustrated on Figure 10, Southern California Logistics Airport (SCLA) Safety Zones, and summarized below.

Safety Zone 1: This zone is the Runway Protection Zone (RPZ). For airports with no military operations, this zone is defined by FAA criteria. Because SCLA has military operations, this zone is established using the military's Air Installations Compatible Use Zones (AICUZ) criteria. The resulting zone covers a portion of land at each runway end. This zone is owned and operated by the airport and allows no residential uses. Only low intensity nonresidential uses may be permitted on the extreme edges of the zone.

Safety Zone 2: This zone is the Inner Approach/Departure Zone. This zone includes land that is over-flown at low altitudes, typically on approach or departure. According to the AICUZ, the Inner Approach/ Departure Zone and the RPZ together encompass the location of 30–50 percent of near-airport aviation accidents. Residential use is appropriate only on large, agricultural parcels, and only low intensity nonresidential uses may be permitted. Because of the potential for aviation accidents in this zone, schools, daycare centers, hospitals, nursing homes and above ground fuel storage are not appropriate uses.

Safety Zone 3: Safety Zone 3 is the Inner Turning Zone. This zone primarily applies to general aviation airports. For approaches, this zone covers lands where general aviation aircraft typically

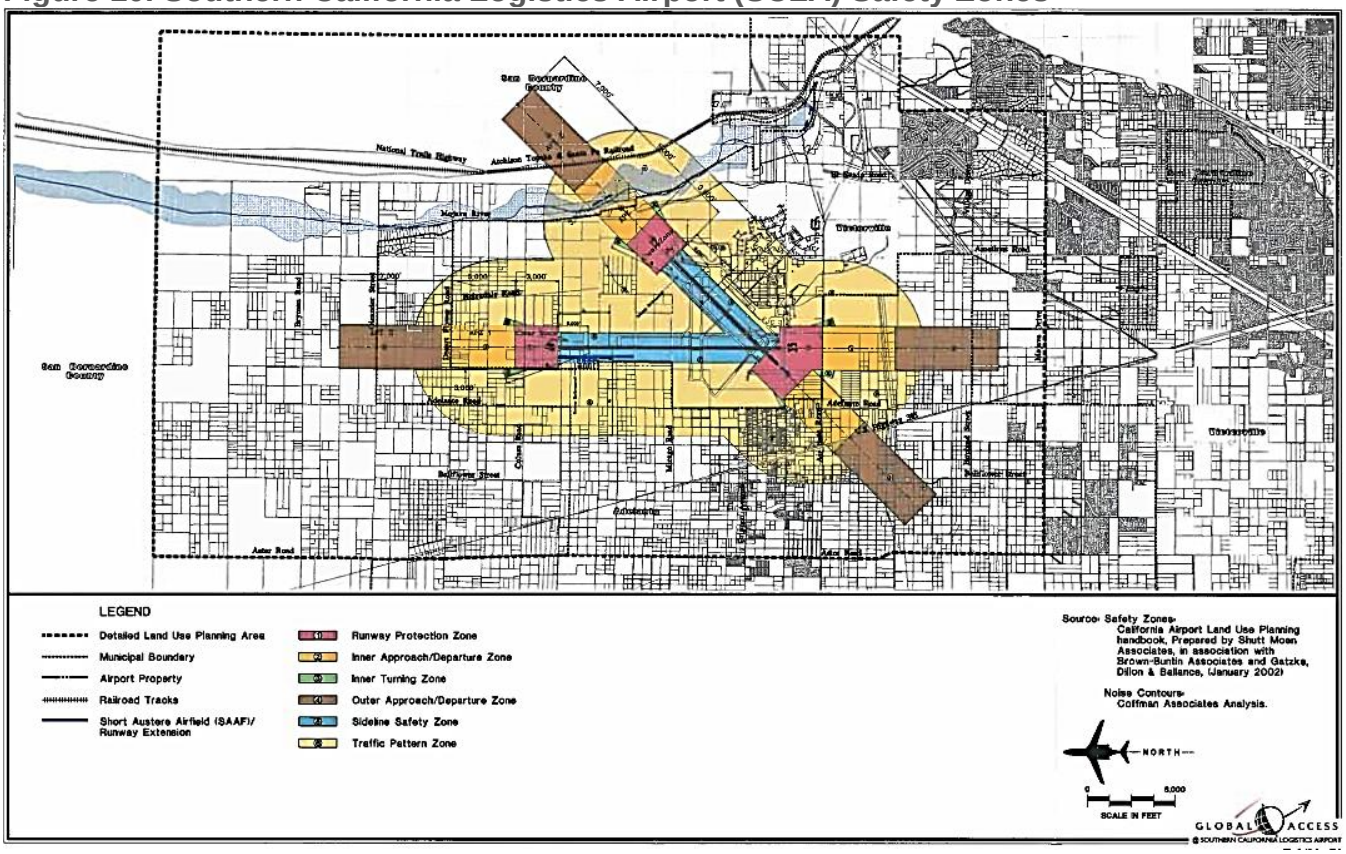
turn from the base to final approach legs of the standard traffic pattern and continue their descent from the traffic pattern altitude. For departures, this safety zone includes the lands where aircraft are typically turning towards their en-route heading. Residential uses should be limited to very low density, unless they are not acceptable due to excessive noise. Nonresidential uses should be limited to low intensity uses. Children's schools, daycare centers, hospitals, and nursing homes are some land uses that should be avoided, as well as aboveground storage of bulk fuel.

Safety Zone 4: This zone is the Outer Approach/Departure Zone. This zone is extended beyond Zone 3 along the centerline of the runway. It is generally used for runways with straight-in approaches, such as the one for Runway 17. Residential uses should be limited to very low density, unless they are not acceptable due to excessive noise. Nonresidential uses should be limited to low intensity uses. Children's schools, daycare centers, hospitals, and nursing homes are some land uses that should be avoided, as well as aboveground storage of bulk fuel.

Safety Zone 5: This zone is the Sideline Zone. This safety zone is parallel to the runway and is established for general aviation aircraft in case directional control is lost on takeoff. Typically, this area is part of the airport property. Aviation-related structures should be allowed provided they meet the height limit restrictions. Residential uses should be avoided unless they are related to aviation, such as pilots' quarters. Nonresidential uses should be low intensity and structures such as children's schools, daycare centers, hospitals, and nursing homes should be avoided.

Safety Zone 6: This zone is the Traffic Pattern Zone. It includes all other parts of the regular traffic patterns and pattern entry routes. Generally, there is a low likelihood of an accident in this zone. Residential uses of all densities are allowed, as well as most nonresidential uses. Uses with very high intensity, such as outdoor stadiums or amphitheaters, should be avoided. Children's schools, daycare centers, hospitals, and nursing homes are among the uses that should also be avoided.

Figure 10. Southern California Logistics Airport (SCLA) Safety Zones



Source: SCLA CLUP, 2002; Map incorporated as is from SCLA CLUP

This page intentionally left blank.

3 EMERGENCY PLANNING AND PREPAREDNESS

3.1 Emergency Planning

This section of the Safety Element discusses risk assessment and emergency preparedness planning in the event of a major catastrophe. This section serves as a mini-emergency preparedness plan in that appropriate actions and response by City staff and community residents are summarized. Emergency preparedness planning, as considered in this Safety Element, consists of three main components: (1) hazard identification and risk assessment; (2) hazard prevention and abatement; and (3) emergency response and action. The potential hazards section of the Safety Element identifies hazards present in the Victorville Planning Area.

This section focuses on assessing the scope of risk associated with the hazards; emergency preparedness issues are also presented. Additionally, fire, police, and medical facilities and/or staffing are discussed. An earthquake, or a more localized incident such as a chemical spill or flooding, may require evacuation, affecting a few individuals to thousands of people. Thousands of others may require emergency shelter and medical treatment. The Emergency Response and Action section delineates emergency evacuation routes and emergency shelters. An emergency preparedness strategy will assist existing efforts by the public officials in improving public readiness. The emergency operation procedures described in the following sections outline the responsibilities of City and contract County personnel in the event of disaster. As indicated, this information serves as a mini-emergency preparedness plan.

3.1.1 Hazard Identification and Risk Assessment

The following section, “Hazard Identification and Risk Assessment,” has been incorporated by reference to the City’s LHMP.[1]

Natural and human-made disasters that could impact Victorville Planning Area residents, businesses and property owners are identified in Table 8, Environmental Risk Assessment Framework. The table also identifies the level of risk, the geographical scope of the potential impact area, and the anticipated level of emergency response that would be required. Each potential hazard to the public safety and welfare has been assessed according to the following levels of risk:

- Low Risk – The level of risk below which no specific action is deemed necessary. The occurrence of a specific event is unlikely.
- Medium Risk – The level of risk at which specific action is required to protect life and property, though the probability of the event taking place is low to moderate.

[1] City of Victorville. 2021. “Local Hazard Mitigation Plan.” https://www.victorvilleca.gov/home/showdocument?id=9601&t=637862370648270000.

- High Risk – Risk levels are significant, and occurrence of a particular emergency situation is highly probable or inevitable. One or more actions are urgently required to protect life, property and/or the environment.

The "scope of risk" refers to the geographic area that could be affected with the occurrence of one of the hazards. The scope of risk also includes three levels:

- Local – The affected geographic area is localized or site specific;
- Citywide – The affected area includes a significant portion or all of the City; and
- Regional – The affected area includes the entire City of Victorville and the surrounding region.

The State Office of Emergency Services (OES) has established three levels of emergency response to peacetime emergencies, which are based on the severity of the situation and the availability of local resources in responding to that emergency. The three levels of emergency response include:

- Level 1 – A minor-to-moderate incident wherein local resources are adequate in dealing with the current emergency.
- Level 2 – A moderate-to-severe emergency where local resources are not adequate in dealing with the emergency and mutual assistance would be required on a regional or statewide basis.
- Level 3 – A major disaster where local resources are overwhelmed by the magnitude of the disaster and state and federal assistance are required.

Those hazards of greatest concern to Victorville Planning Area residents are localized risk, as identified in Table 8.

3.1.2 Hazard Mitigation

The following section, “Hazard Mitigation,” has been incorporated by reference to the City’s LHMP.[2]

Hazard mitigation is concerned with the prevention, reduction or elimination of potential damage, injury, hardship, and loss from actual or potential disasters. Federal efforts are primarily concerned with the abatement of hazards in post-disaster situations. However, to be truly effective, hazard mitigation must be taken in advance of a major disaster. The State of California Office of Emergency Service (OES) provides guidelines concerning hazard mitigation measures that should be implemented in the aftermath of a major disaster. A majority of these mitigation measures can also be applied to hazard prevention/mitigation prior to the occurrence of a local emergency or major catastrophic event. The City of Victorville has prepared a LHMP and an Emergency Plan to comply with OES guidelines. It applies to large-scale disasters that pose

[2] City of Victorville. 2021. “Local Hazard Mitigation Plan.” https://www.victorvilleca.gov/home/showdocument?id=9601&t=637862370648270000.

major threats to life and property. Smaller scale, less urgent emergencies are handled by routine procedures and existing City resources. The Emergency Plan is in conformance with State OES Guidelines and is occasionally updated with new information and procedures.

State legislation specifically requires local agencies to formulate plans relating to the handling and release of hazardous materials. As the Certified Unified Program Agency (CUPA), the agency is responsible for implementing a unified hazardous materials and hazardous waste management regulatory program, the Fire Department provides the following services to assist citizens and businesses in the Planning Area:

- Consulting on how to safely store and use hazardous materials
- Responding to hazardous materials complaints and emergencies
- Conducting inspections of facilities that store chemicals or generate hazardous waste
- Reviewing construction/remediation plans involving hazardous materials or wastes

As part of its CUPA responsibilities, the Department implements several programs to monitor the presence, storage, use and disposal of hazardous materials and wastes, to ensure compliance with a variety of state and federal regulations developed to prevent dangerous releases of hazardous materials and to act quickly to contain any such accidental releases. Local CUPA programs include:

- Hazardous Materials Management/ Business Plans
- Monitoring Underground Storage Tanks
- Monitoring Above Ground Storage Tanks
- Permitting of Hazardous Waste Generators
- Participation in California Accidental Release Prevention Program (CalARP)

Table 8. Environmental Risk Assessment Framework

Table S-1

Environmental Risk Assessment Framework

Environmental Hazard	Potential of Occurrence			Scope of Risk			Emergency Response		
	Low	Me-dium	High	Local	City	Re-gional	Level I	Level II	Level III
Earthquake									
Surface rup-	•								
Liquefaction			•	•				•	•
Ground-			•		•	•		•	•
Slope failure	•			•			•	•	
Dam failure		•		•				•	•
Landslide	•			•			•	•	
Flooding									
Local ponding		•		•			•		
100 year flood	•			•			•	•	
500 year flood	•					•			•
Fire									
Industrial		•		•			•	•	
Chemical		•		•			•	•	
Fuel mains		•		•			•	•	
High-rise	•			•			•	•	
Wildland		•		•			•	•	
Chemical Con-tamination									
Road spill		•		•			•	•	
Airborne		•			•			•	
Subsurface		•		•				•	
Radiological	•			•				•	•
Severe Air-borne Pollution Episode	•					•			
Major Accident									
Industrial	•			•			•	•	
Major Road		•		•			•	•	
Aircraft		•		•			•	•	
Railway		•		•			•	•	
Water Shortage	•			•			•		

Source: City of Victorville, 2008; Table incorporated as is from City of Victorville General Plan – Safety Element

3.1.3 Emergency Response and Action

The following section, “Emergency Response and Action” has been incorporated by reference to the City’s LHMP.[3]

The final component of the emergency preparedness plan consists of emergency response and action identification. This section will identify the appropriate emergency shelters, evacuation routes, and actions required by City personnel and elected officials to manage emergency operations. The appropriate response and actions required will vary, depending on the nature and scope of the disaster as identified in the City of Victorville Fire Department's Emergency Plan. More importantly, the employment of specific emergency personnel will vary depending on the nature and scope of an emergency.

In the event of a major disaster, shelter may be required for a large number of residents and possibly daytime workers. If an evacuation order is given, residents will be required to proceed to the nearest emergency shelter/facility, unless otherwise directed. Evacuation may be required in response to a disaster. Fire, police, or other public safety officials will direct persons out of affected areas. Evacuation routes will be determined on a case-by-case basis and may change from that shown.

The emergency shelters will offer emergency first aid, disseminate information, provide shelter for persons in need, and serve as a community information center where individuals can leave messages for friends and relatives. Table 9, Local Schools That re Available as Emergency Shelters, lists local public school sites that can function as emergency shelters within the Planning Area. The primary emergency shelter is located at the San Bernardino County Fairgrounds. As the primary emergency shelter reaches capacity, public safety officials will direct displaced persons to alternate shelters. This figure also includes the location of public schools within the Planning Area as emergency shelters. The public schools will be utilized on an as needed basis, depending on the severity of the disaster.

Persons living or working in an area adversely affected by a disaster should report to the appropriate shelters, as directed by local public safety officials.

Persons injured or ill following a major disaster should be taken to a Casualty Collection Point to obtain triage medical services. Victor Valley College is designated as a Casualty Collection Point, a portion of City Hall will be utilized as an Emergency Operation Center, and the Emergency Command Center is located within Fire Station 311. The Department of Emergency Services operates a fully equipped mobile command and communications trailer for use at major emergencies. Additionally, the City maintains a mobile police station in a converted bus which would be dispatched in the vicinity of disaster sites. Emergency/public safety facilities include fire stations, police stations, hospitals, a Casualty Collection Point, Emergency Operations Center, and Emergency Command Center. Locations of these facilities are depicted on Figure 11 and in Table 10, Emergency/Public Safety Facilities.

[3] City of Victorville. 2021. “Local Hazard Mitigation Plan.” https://www.victorvilleca.gov/home/showdocument?id=9601&t=637862370648270000.

Table 9. Local Schools That are Available as Emergency Shelters

Local Schools That Are Available as Emergency Shelters		
Shelter	**Location**	**School District**
Irwin Academy School of Performing Arts	14907 South Mojave Drive	Victorville Elementary School District
Brentwood School of Environmental Studies	13962 Hook Boulevard	
West Palms Conservatory Visual and Performing Arts	14375 Del Gado Road	
Del Rey Elementary School	15332 Del Rey Drive	
Discovery School of the Arts	13247 Amethyst Road	
Dr. Ralph H. Baker 21st Century Learning Center	15456 El Evado Road	
Mountain View Montessori Charter School	17000 Silica Drive	
Sixth Street Prep STREAM	15476 Sixth Street	
Galileo Academy School of Gifted And Talented Education	15999 Warwick Street	
Green Tree East Leadership Academy	17246 Gibralter Drive	
Challenger School of Sports and Fitness	14777 Hopland Street	
Liberty School of Creativity and Innovation	12900 Amethyst Road	
Lomitas Elementary School	12571 1st Avenue	
Mojave Vista Elementary School	16100 Burwood Avenue	
Park View Preparatory School of 21st Century Learning	13427 Cahuenga Road	
Puesta Del Sol Elementary	15887 Academy Street	
Endeavour School of Exploration	12403 Ridgecrest Road	
Village STEAM School	14711 Mojave Drive	
Vista Verde Elementary School	13403 Vista Verde Street	Snowline Joint Unified School District
University Preparatory School	13853 Seneca Road	Victor Valley Union High School District
Cobalt Institute of Math and Science	14045 Topaz Road	
Excelsior Education Center	12217 Spring Valley Parkway	
Hook Junior High School	15000 Hook Boulevard	
Goodwill Education Center	16350 Mojave Drive	
Silverado High School	14048 Cobalt Road	
Victor Valley High School	16500 Mojave Drive	
Eagle Ranch Elementary School	12545 Eagle Ranch Pkwy	Adelanto School District
Harold George Visual and Performing Arts Magnet & Middle School	10650 Bartlett Avenue	
Mesa Linda Middle School	13001 Mesa Linda Ave.	
Morgan Kincaid Preparatory School	13257 Mesa Linda Ave.	
West Creek Elementary School	15763 Cobalt Road	
Hollyvale Innovation Academy	11645 Hollyvale Avenue	Hesperia Unified School District
Victor Valley College	18422 Bear Valley Road	Victor Valley College

Source: City of Victorville, 2008; Table incorporated as is from City of Victorville General Plan – Safety Element

Table 10. Emergency/Public Safety Facilities

Emergency/Public Safety Facilities	
Emergency/Public Safety Facilities	**Location**
City Fire Station 311 – Emergency Operations Center	16200 Desert Knoll Drive
City Fire Station 312	15182 El Evado Road
City Fire Station 313	13086 Amethyst Road
City Fire Station 314	17008 Silica Drive
City Fire Station 315	12802 Eucalyptus Street
City Fire Station 319	18500 Readiness Street
County Fire Station 16	11855 Anaconda Avenue
County Fire Station 22	12550 Jacaranda Ave
County Fire Station 37	13782 El Evado Road
Victorville Police	14200 Amargosa Road
Victorville Mobile Police Station Mobile-County Sheriff	14455 Civic Drive
Desert Valley Hospital	16850 Bear Valley Road
Victor Valley Community Hospital	15248 Eleventh Street
St. Mary Regional Medical Center	18300 Highway 18, Apple Valley
Casualty Collection Point	18422 Bear Valley Road
Emergency Operations Center	14343 Civic Drive
California Highway Patrol	14210 Amargosa Road

Source: City of Victorville, 2008; Table incorporated as is from City of Victorville General Plan – Safety Element

This page intentionally left blank.

Figure 11. Emergency/Public Safety Facilities Location Map

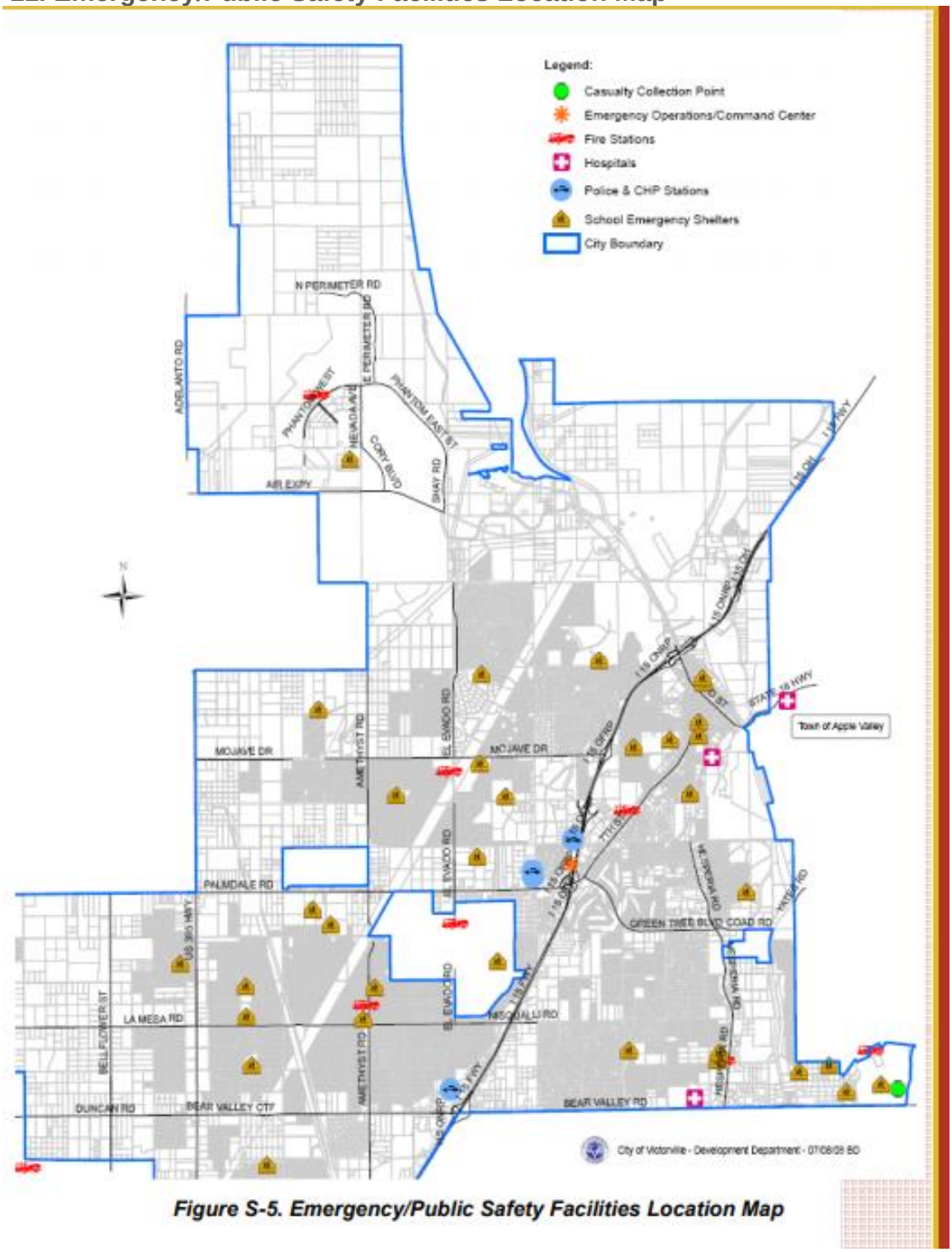


Figure S-5. Emergency/Public Safety Facilities Location Map

Source: City of Victorville, 2008; Map incorporated as is from City of Victorville General Plan – Safety Element; to be updated per Table 9 and Table 10 of the 2021-2029 Safety Element.

The degree of response required will depend largely upon the nature and magnitude of disaster. Some situations will call for emergency action within a limited area, while others may require city-wide response. In addition, facilities at Southern California Logistics Airport, such as the runway and adjacent aircraft hangers, may be available in the event of a disaster. This site has the potential to be designated as a Casualty Collection Point.

3.2 Fire Protection

The City re-established its own fire department in 2019 and has its own responsibility for fire response, with service delivery throughout the incorporated city limits from five fire stations. Fire protection was previously provided by San Bernardino County Fire Department (SBCFD), North Desert Division for ten years. The Department operates a fleet of four Medic Engines, one Medic Truck, and one Medic Squad. The Department is currently led by a Fire Chief and is staffed with an Operational Division Fire Chief, three Battalion Chiefs, and a field crew of over 50. As of 2021, the Department's current total response time is 11:11, according to FirstWatch.

The Fire Department must also ensure adequate flow of water for fire suppression needs. Minimum fire flow for commercial/ industrial land uses is based on many factors including type of building, systems installed, and occupancy, but must never be less than 1,500 gallons per minute at 20 PSI. Most flows are much higher at 3,500 gallons per minute at 20 PSI and may be as high as 6,000 gallons per minute at 20 PSI.

The Department does maintain a new automatic aid agreement with San Bernardino County Fire Department. Though the City maintains its own responsibility for fire response, there are times where services can be executed through mutual aid.

3.3 Police Services

Police service in Victorville is provided by the San Bernardino County Sheriff's Department, which has contracted with the City of Victorville since 1962 to provide police services to the City. Operations take place out of the Victorville Police Headquarters. The Victorville Police Department is responsible for providing public safety services to a geographical area of over 74 square miles and to a population of approximately 125,000 residents. There are currently over 120 positions. The average response time in 2021 is 49.41 minutes.

Police services are funded through the City's General Fund. The City currently supports capital facilities, including a police headquarters building, police vehicles, and equipment such as computers and radios. The City owns its headquarters on Amargosa Road. Other facilities are leased from private companies, including the regional facility located at the Victor Valley Sheriff station, which also services the CHP, Apple Valley, Adelanto, Hesperia, and the unincorporated communities of Helendale, Oro Grande, Sliver Lakes, El Mirage, and Spring Valley Lake. Police facilities are in good or excellent condition. The police vehicles are owned by the Sheriff's Department, which leases them to the City. The City also performs vehicle maintenance. There are plans for a new Police Station on City owned land near City Hall, which is currently in the initial design phase of development.

The Police Department currently serves area school districts with school resource officers through MOUs, including the Victor Valley Union High School District, the Adelanto School District, and the Victor Elementary School District. The Police Department also provides direct service to local retail merchants such as local malls for major retailers.

3.4 Emergency Medical Response

Medical services are provided to Planning Area residents by three local hospitals, as well as several urgent care centers and individual doctors' offices. The local hospitals include Desert Valley Hospital on Bear Valley Road in the East Bear Valley Planning Area, Saint Mary Regional Medical Center on Highway 18 in Apple Valley, and Victor Valley Community Hospital on Eleventh Street in the Central City Planning Area. Desert Valley Hospital is a 76-bed facility, Saint Mary Regional Medical Center is a 195-bed facility, and Victor Valley Community Hospital is a 119-bed facility. Additional hospitals, such as Barstow Community Hospital, Loma Linda University Medical Center, and Saint Bernardine Medical Center in San Bernardino, are within forty-five miles of the Victorville Planning Area, in the event the patient-load exceeds local hospital capacity.

3.5 Evacuation Routes

Assembly Bill (AB) 747 (2019) requires cities to update the Safety Element of their General Plan to identify evacuation routes and assess the capacity, safety, and viability of those routes under a range of emergency scenarios.

Senate Bill (SB) 99 (2019) requires the City to identify residential developments in hazard areas that do not have at least two emergency evacuation routes (i.e., neighborhoods or households within a hazard area that have limited accessibility).

The evacuation route analysis (“Evacuation Analysis”) evaluates the efficacy of existing evacuation routes under various hazard scenarios and identifies residential developments without sufficient evacuation routes in compliance with these two statutes (See Appendix B).

The Evacuation Analysis did not identify any residential parcels that lack two evacuation routes, according to a GIS and visual assessment that closely examined each residential parcel to identify whether or not there were fewer than two points of egress. The baseline scenario suggests that residents closest to the southwestern and northeastern regions of the City center are most vulnerable, given the distance they would need to travel to access an outbound road. The results for the hazard scenarios were as expected: residential parcels located near outbound roads that were assumed to be non-viable under the hazard scenario saw an increase in their evacuation route vulnerability score, reflecting the greater distance residents would need to travel to access the next nearest outbound evacuation route.

The Evacuation Analysis shows that the following routes are the most viable in the event of an emergency:

- In the event of a wildfire originating in the area west of the City, Hesperia Road, National Trails Highway, and Highway 395, as well as I-15 (North and South), are the outbound roads most likely to be utilized in this scenario.
- In the event of a wildfire originating in the area south of the City, Bear Valley Road, Yates Road/Yucca Loma Road, and Highway 18 (Palmdale Road), as well as I-15 North, are the outbound roads most likely to be utilized in this scenario.
- In the event of a flood, Hesperia Road and Highway 18 (Palmdale Road), as well as I-15 South, are the outbound roads most likely to be utilized in this scenario.
- In the event of an earthquake, residents in the northeastern region would be re-routed southbound along internal roadways to Hesperia Road, while residents in the southwestern region would be re-routed westbound to either Highway 18 (Palmdale Road) or Highway 395.

The Evacuation Analysis also suggests that emergency responders should be flexible in emergency scenarios, considering the location and extent of a hazard may disrupt established evacuation routes. Critical infrastructure, such as bridges, should be inspected and fortified to ensure the evacuation routes identified in this analysis remain viable. Disadvantaged communities in the City, which contain a greater percentage of socially vulnerable groups, may require a greater level of assistance during evacuation proceedings.

3.6 Minimum Road Widths and Clearances Around Structures

Clearances around structures are determined by the California Residential Code for one and two-family dwellings, and by the California Building Code for all other building types. The City's most recent adoption of the noted residential and building codes was completed in 2019. The code is updated triennially and is scheduled to be updated by 2023. Development codes are located in Title 16 of the Victorville Municipal Code; Chapter 5 of Title 16 includes building and fire regulations. Generally speaking, building setbacks are determined by a number of factors, such as fire rating and building occupancy, according to the different zones identified in the Zoning Code. Most buildings can be constructed up to the property line, assuming they are fire rated.

The Circulation Element identifies the seven different types of roadway classifications and the design standards and specifications for each classification, illustrated by their cross-sections. The roadway classifications are designated by their primary function and level of mobility. A summary of each classification and their design standard is included below, for more detailed information please refer to the Circulation Element:

- Super arterials transport large volumes of intercity, intra-city, and regional traffic at higher speeds and have a 128-foot right-of-way,
- Major arterials facilitate large volumes of intra-city traffic and can access freeways or super arterials. Major arterials have a 102-foot minimum right-of-way,
- Residential arterials transport large volumes of intracity traffic to and from residential areas and have a 100-foot minimum right-of-way,
- Arterials serve same function as major arterials, though serve relatively lower traffic demand. Arterials have a 98-foot right-of-way,
- Secondary arterials are in Old Town area with various width to provide wider sidewalks, on street parking, and two- to four-travel lanes. 7th Street between Forrest Avenue and D street is the only secondary arterial,
- Collectors provide circulation within a defined geographic area and connect this area to intra-city traffic routes. Collectors have a 68-foot right-of-way, and
- Local streets provide direct access to adjacent properties and transport local traffic from these properties to higher volume, higher speed facilities not intended to carry through traffic. Local streets have a 60-foot right-of-way.

The minimum widths of private roads are required by the City's Development Code to be 20-foot one-way, 26-foot for two-way roads, and 30-foot for roads with buildings four or more stories high.

3.7 Peak Load Water Supply Requirements

Prior to approval of a development project or issuance of a building permit, the City of Victorville Water District verifies that the peak load water supply requirement is not negatively affected. "Peak load water supply" refers to the sum total of the City's water supply required for fire flow, operational daily consumption, and emergency storage. The Victorville Water District is the single water purveyor in the Planning Area. It currently has a total water storage capacity of 74.36 million gallons and a daily water production capacity of 54.90 million gallons. As development occurs, peak load water supply reserves will need to be increased. Since increasing demands on groundwater basins can create deficiencies in local water supplies, it will be necessary for the water purveyors to obtain additional water in the future from sources such as the State Water Project to ensure peak load water supply demands are met.

This page intentionally left blank.

4 GOALS, OBJECTIVES, POLICIES, AND IMPLEMENTATION MEASURES

The goals, objectives, policies, and implementation measures of the Safety Element have been established to address the safety hazards in the City and to meet State safety law requirements.

This element is intended to reduce the potential short and long-term risk of death, injuries, property damage, and economic and social dislocation resulting from fires, floods, droughts, earthquakes, landslides, climate change, and other locally-relevant hazards, in compliance with California Government Code Section 65302 (g).

The City's overall objective is to reduce risk, prevent disasters, and increase preparedness, and to envision a City that has all of the following characteristics:

- Protects the community from natural and human-made hazards,
- Protects public health and safety,
- Maintains optimal emergency preparedness,
- Fosters interagency cooperation and coordination, and
- Increases resilience to the impacts of climate change.

The components of this section can be described as follows:

- **Goals** are the results that the City desires to achieve throughout the planning period. These goals are general expressions of values or preferred outcomes, and therefore, are abstract in nature and may not be fully attained. The goals are the basis for City policies and actions during this period.
- **Objectives** are specific, action-oriented statements that mark progress toward goals.
- **Policies** are specific statements that will guide decision-making. Policies serve as the directives to decision makers and others who will seek to provide safety-related services in the City. Some policies stand alone as directives, but others require that additional actions be taken. These additional actions are listed as "implementation measures."
- **Implementation Measures** are the core of the City's safety strategy. Implementation measures translate goals and policies into actions. These include ongoing programs, procedural changes, and other actions that implement the safety policies and help achieve safety goals.

The agencies, departments, and divisions that should be responsible for the implementation of these goals, objectives, policies, and implementation measures have been included in brackets after each of the following.

Goal 1: Protection from Hazards – Protect the Community against Natural and Human-Made Hazards

[Planning Department; Emergency Services Department; Public Works Department; Building Department; Engineering Department; Economic Development Department]

Objective 1.1: Restrict land uses in areas identified as susceptible to natural and human-made hazards. [Emergency Services Department; Planning Department]

Policies:

- **Policy 1.1.1:** Develop and maintain an accurate, up-to-date, and complete database that identifies the locations, scope and potential severity of natural and human-made hazards affecting the Planning Area. [Emergency Services Department]
- **Implementation Measure 1.1.1.1:** Establish and maintain a digital database to identify hazards throughout the Planning Area. [Emergency Services Department]
- **Implementation Measure 1.1.1.2:** Delineate the flood designations of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) on the General Plan Land Use Map as Open Space and on the Zoning Map as Flood Plain 1 (100-year flood) or Flood Plain 2 (500-year flood). [Planning Department; Emergency Services Department]
- **Implementation Measure 1.1.1.3:** Work with federal, state and county agencies to develop, acquire and expand data and mapping of hazards within the Planning Area. This shall occur as part of the annual general plan monitoring/reporting effort, or more frequently, as staffing and funding resources permit. [Planning Department; Emergency Services Department]
- **Implementation Measure 1.1.1.4:** Continue to locate critical facilities outside of hazard zones and/or equip existing critical facilities in hazard-prone areas with mitigation measures, such as elevation of structures and generators (with focus on renewable sources of back-up power). [Emergency Services Department]
- **Policy 1.1.2:** Develop and maintain strategies to restrict development in areas susceptible to flooding hazards. [Planning Department; Building Department; Engineering Department]
- **Implementation Measure 1.1.2.1:** Apply zoning regulations in those areas designated as Flood Plain which contain use restrictions such as prohibition of residential development and other improvements, or structures or developments which would

obstruct the natural flow of floodwaters or endanger life or property. [Planning Department]

- **Implementation Measure 1.1.2.2:** Prohibit improvements, structures, or developments within the 100-year flood plain which would obstruct the natural flow of floodwaters, or which would endanger life or property. [Planning Department; Building Department; Engineering Department]
- **Implementation Measure 1.1.2.3:** Maintain and update floodplain and flood hazard data when new information becomes available. [Public Works Department; Engineering Department]
- **Implementation Measure 1.1.2.4:** Increase public awareness of dam failure hazards and mitigation measures to address them (Victorville LHMP pg. 106). [Emergency Services Department]
- **Implementation Measure 1.1.2.5:** Continue to maintain storm drain system, particularly along major roadways that serve as evacuation routes, and address needed improvements. [Public Works Department]

Objective 1.2: Identify and mitigate geologic hazards in the land use and development project planning process. [Emergency Services Department; Planning Department; Building Department; Engineering Department]

Policies:

- **Policy 1.2.1:** Require an adequate assessment of site-specific geologic hazards and required mitigation measures prior to granting discretionary approval for a land use plan, development project or public infrastructure plan or project. [Emergency Services Department; Planning Department; Building Department; Engineering Department]
- **Implementation Measure 1.2.1.1:** Require complete geologic/geotechnical investigations as a standard procedure in the land use and project-level planning process. This applies to all projects subject to CEQA and other projects in areas where the City's Building Official determines there is a possible threat of liquefaction, subsidence, expansive soils, landslides, or mudslides. Mitigation of soils/geotechnical constraints shall be defined prior to approval of projects involving discretionary permits, or prior to issuance of grading permits for projects that do not require discretionary approvals. [Emergency Services Department; Planning Department; Building Department; Engineering Department]
- **Implementation Measure 1.2.1.2:** Apply the California Building Code slope regulations on all new developments located on slopes in excess of 15 percent. [Building Department]

- **Implementation Measure 1.2.1.3:** Apply the slope protection combining district zoning regulations to development projects proposed on areas with slopes in excess of 15 percent, to protect against erosion on slopes greater than five feet in height. [Planning Department; Building Department]
- **Implementation Measure 1.2.1.4:** Require seismic safety measures identified in the California Building Code to be incorporated into all new development. Examples of these measures include structural bracing, roof system bracing, and increased size of footings. [Building Department]
- **Implementation Measure 1.2.1.5:** Encourage seismic strength evaluations of critical facilities in the City to identify building integrity (Victorville LHMP pg. 104). [Emergency Services Department; Planning Department; Building Department; Engineering Department]

Objective 1.3: Prevent and Promptly Abate Accidental and Potentially Dangerous Releases of Hazardous Materials and Wastes. [Emergency Services Department, Fire Department, Planning Department; Code Enforcement Department]

Policies:

- **Policy 1.3.1:** Restrict and/or prohibit the siting of land uses that store, use, transport, dispose of or generate significant quantities of hazardous materials and wastes, through land use element policies, zoning and subdivision regulations, and site plan review procedures. [Planning Department; Fire Department]
- **Implementation Measure 1.3.1.1:** Continue Fire Department operation as the local Certified Unified Program Agency with respect to hazardous materials hazards concerns, throughout the Planning Area. This shall include a responsibility to comment on all proposed industrial, medical, research and development or other types of land uses that involve the generation, storage, use, transportation, disposal, or recycling of hazardous materials and/or hazardous wastes. [Code Enforcement Department; Fire Department]
- **Implementation Measure 1.3.1.2:** Continue to cooperate with state and federal agencies and the railroads, to ensure hazardous materials transported through the City do not present additional threats to life and property. [Emergency Services Department; Fire Department]
- **Implementation Measure 1.3.1.3:** Continue to coordinate with transit agencies/operators in order to prevent and prepare for hazardous events or emergencies that could occur on transportation routes and/or result in evacuations. [Emergency Services Department; Fire Department; Police Department; Code Enforcement Department; Public Works Department]

- **Implementation Measure 1.3.1.4:** Continue to coordinate with utilities/companies that (provide gas, fuel, energy) to safeguard critical infrastructure and prepare and prevent hazardous events. [Emergency Services Department; Public Works Department; Water Department]

Objective 1.4: Prevent loss of life, serious injury, and significant damage to structures critical facilities due to aircraft mishap at the Southern California Logistics Airport (SCLA). [Airport Department; Planning Department]

Policies:

- **Policy 1.4.1:** Fully implement the land use policies and regulatory provisions of the SCLA Specific Plan. [Airport Department; Planning Department]
- **Policy 1.4.2:** Avoid conflicts with the Comprehensive Land Use Compatibility Plan (CLUP) for SCLA. [Airport Department; Planning Department]
- **Implementation Measure 1.4.2.1:** Incorporate all relevant land use policies of the SCLA Specific Plan and the CLUP into the Land Use Element of this General Plan and incorporate all regulatory provisions of both documents into the City's Zoning Ordinance and subdivision regulations. [Airport Department; Planning Department]
- **Implementation Measure 1.4.2.2:** Continue to work with SCLA to ensure adequate emergency preparedness to protect the public health and safety from aircraft mishaps. Examples of measures to promote health and safety include, but are not limited to, ensuring aircraft operations comply with established flight patterns and procedures, improving on airport and near airport roadways to benefit public safety, and properly disposing of hazardous waste generated at the airport. [Airport Department; Planning Department; Fire Department]

Objective 1.5: Alleviate hazards associated with unreinforced masonry structures erected prior to development of modern building codes. [Building Department]

Policies:

- **Policy 1.5.1:** Pursue Community Development Block Grant (CDBG) or other public funding for structural retrofitting of unreinforced masonry structures. [Building Department; Planning Department]
- **Implementation Measure 1.5.1.1:** Apply CDBG and other funding sources to assist private property owners with structural retrofitting of their unreinforced masonry

structures, to meet current Building Code standards for seismic safety. [Building Department; Planning Department]

- **Implementation Measure 1.5.1.2:** Give preference for CDBG funding for structural retrofitting of unreinforced masonry structures to projects located on properties comprising all or part of a historic site, a historic building or other improvements recognized as historic, as defined in Section 15064.5(a) of the California Environmental Quality Act Guidelines. [Building Department; Planning Department]
- **Implementation Measure 1.5.1.3:** Continue Building Division inspections of buildings which are suspected of being constructed with unreinforced masonry. [Building Department]
- **Implementation Measure 1.5.1.4:** Encourage private property owners of un-reinforced masonry structures to complete seismic retrofits (Victorville LHMP pg. 104). [Building Department]

Goal 2: Protection of Public Health and Safety – Integrate Public Health and Safety Issues into Planning and Development Policies

[Emergency Services Department; Fire Department; Water Department; Police Department; Planning Department; Building Department]

Objective 2.1: Achieve Desired Fire Protection, Police and Emergency Medical Services Performance Standards [Emergency Services Department; Fire Department; Police Department]

Policies:

- **Policy 2.1.1:** Ensure that new private or public development has sufficient fire protection, police, and emergency medical services available. Such developments shall not strain capabilities to a level where service standards could not be met. [Building Department; Planning Department; Emergency Services Department]
- **Implementation Measure 2.1.1.1:** Define appropriate performance standards for fire protection, police protection, and emergency medical services, and update the standards as conditions in the community change, resources are added or eliminated, technological improvements occur, or other information becomes available that indicates a need for revisions to the standards. [Emergency Services Department; Fire Department; Police Department]
- **Implementation Measure 2.1.1.2:** Provide appropriate performance standards for fire protection, police protection, and emergency medical services to development applicants

to assist in the review of new development plans and projects. [Planning Department; Emergency Services Department; Fire Department; Police Department]

- **Implementation Measure 2.1.1.3:** Require the review of development proposals to determine impacts on emergency services and ensure developments meet appropriate safety standards. Examples of these standards include fire hydrant spacing, sprinkler requirements in certain types of construction, safe vehicular access for evacuation or response, and ensuring the development does not negatively impact response times. [Emergency Services Department; Building Department; Fire Department; Water Department]
- **Implementation Measure 2.1.1.4:** Ensure that new development is designed and constructed following the requirements of the California Fire Code and the fire safety measures of the Victorville Municipal Code, which includes safety measures such as smoke detector requirements and automatic fire extinguishing systems in certain types of construction. [Building Department; Fire Department]
- **Implementation Measure 2.1.1.5:** Continue to implement the weed abatement program to reduce brush fire hazards. [Fire Department; Code Enforcement Department; Public Works Department]

Objective 2.2: Maintain Optimal Emergency Preparedness [Emergency Services Department]

Policies:

- **Policy 2.2.1:** Continue to maintain, implement, and update as necessary, emergency preparedness procedures. [Emergency Services Department]
- **Implementation Measure 2.2.1.1:** Maintain and regularly update an emergency preparedness plan that sets forth the organizational framework, communications protocols, key facilities, shelters and evacuation routes, and response/action procedures to be taken in the event of a disaster. [Emergency Services Department]
- **Implementation Measure 2.2.1.2:** Maintain, implement, and update as necessary, a hazardous waste emergency response plan. [Emergency Service Department; Code Enforcement Department; Fire Department]
- **Implementation Measure 2.2.1.3:** Continue to encourage and support the neighborhood watch program. [Police Department]
- **Implementation Measure 2.2.1.4:** Ensure designation of an adequate number of appropriately sized and located facilities as Casualty Collection Points. [Emergency Services Department]

- **Implementation Measure 2.2.1.5:** Develop a disaster debris management plan (Victorville LHMP pg. 106). [Emergency Service Department; Building Department]
- **Implementation Measure 2.2.1.6:** Consider developing a community information system that informs residents of potential, developing, and current emergencies and provide a resource page that identifies evacuation shelters, emergency response procedures, and other community-accessible resources. The alert/warning system should be accessible to the community, in various languages relevant to the community and formats to accommodate all. [Emergency Services Department; Public Information Officer]

Objective 2.3: Maintain Sufficient Peak Load Water Supplies [Water Department; Public Works Department]

Policies:

- **Policy 2.3.1:** Ensure that new development proposals (private or public) do not over-consume the City's water supplies to the extent that the minimum volume of water storage required to meet the City's peak load water supply standard could not be met. [Water Department]
- **Implementation Measure 2.3.1.1:** Require a water assessment of all new major developments to ensure that sufficient peak load water supplies are available. [Water Department; Engineering Department]
- **Implementation Measure 2.3.1.2:** Prior to approval of any major development project, require water supply assessments in compliance with state law. [Water Department; Engineering Department]
- **Implementation Measure 2.3.1.3:** Require any project that will result in consumption of water in excess of available supplies to provide alternative water supply sources or to provide funding that will enable the City to secure adequate water supply prior to project development. [Water Department; Engineering Department]
- **Implementation Measure 2.3.1.4:** Coordinate with Victorville Water District, Victor Valley Water Reclamation Authority, Mojave Water Agency, the Industrial Wastewater Treatment Plant, and other water-related services to continue to ensure adequate supply as needed during and after a hazard event or emergency. [Water Department; Emergency Services Department; Public Works Department]

Objective 2.4: Foster Interagency Cooperation and Coordination [Emergency Services Department]

Policies:

- **Policy 2.4.1:** Continue to share public health and safety concerns with other public agencies: local, regional, state, and federal. [Emergency Services Department]

- **Implementation Measure 2.4.1.1:** Continue to pursue efforts to modify the political and administrative structure of the San Bernardino County Flood Control District, to ensure that funds collected in the High Desert area remain in the High Desert area and are used for appropriate flood control improvements. [Engineering Department; Public Works Department]
- **Implementation Measure 2.4.1.2:** Continue to maintain mutual aid agreements with neighboring jurisdictions, with respect to fire protection, law enforcement, and emergency medical services. [Emergency Services Department; Fire Department; Police Department; Water Department]
- **Implementation Measure 2.4.1.3:** Continue to participate in regional partnerships to provide emergency response services, such as the Regional Fire Protection Authority. [Emergency Services Department; Fire Department; Police Department;]
- **Implementation Measure 2.4.1.4:** Continue to coordinate with local, state and federal agencies to ensure that deposition in the Mojave River does not exacerbate flood damage potential. [Emergency Services Department; Public Works Department; Engineering Department]
- **Implementation Measures 2.4.1.5:** Continue to update its LHMP at least once every five years, in accordance with the Federal Disaster Mitigation Act of 2000 and California Government Code Sections 8685.9 and 65302.6. The completed LHMP is incorporated within the Safety Element/General Plan by reference, in accordance with Assembly Bill 2140. [Emergency Services Department]
- **Implementation Measure 2.4.1.6:** Continue coordination with the County to identify evacuation shelters and increase public awareness of the availability of the shelters. [Emergency Services Department]

Goal 3: Increase Resilience to the Impacts of Climate Change

[Emergency Services Department; Planning Department; Building Department; Engineering Department; Community Services Department; Water Department]

Objective 3.1. Identify adaptation strategies and increase awareness of climate change impacts. [Emergency Services Department; Planning Department; Building Department; Engineering Department; Community Services Department]

Policies:

- **Policy 3.1.1:** Incorporate climate change in planning efforts, development practices, and outreach. [Planning Department]
- **Implementation Measure 3.1.1.1:** Ensure future projects consider climate change impacts and climate adaptation solutions in planning, design, and construction requirements. [Planning Department; Building Department; Engineering Department]
- **Implementation Measure 3.1.1.2:** Continue to consider and integrate climate change recommendations from the LHMP and Vulnerability Assessment into future planning efforts and documents. [Planning Department]
- **Implementation Measure 3.1.1.3:** Increase coordination and collaboration with climate organizations, public health services, and organizations serving vulnerable populations (e.g., people experiencing homelessness, seniors, those with limited mobility) to increase resilience and share resources. Provide information to vulnerable populations about evacuations, shelters, cooling centers, public health resources, and other preparedness tips. [Planning Department; Public Information Officer]

Objective 3.2. Protect health and safety of the community and minimize the risk of loss of life, injury, and social and economic dislocations as a result of climate change. [Emergency Services Department]

Policies:

- **Policy 3.2.1:** Increase resilience and reduce risk to the impacts of extreme heat, with consideration given to critical facilities and vulnerable populations. [Emergency Services Department]
- **Implementation Measure 3.2.1.1:** Continue to identify opportunities to equip critical facilities, especially those serving the community, such as schools and community centers, with reliable cooling units. [Emergency Services Department; Building Department]
- **Implementation Measure 3.2.1.2:** Assess generator capabilities at City-owned facilities and equip facilities with generators or back up sources of power, with a focus on renewable sources of back-up power. [Emergency Services Department; Building Department]
- **Implementation Measure 3.2.1.3:** Promote programs that reduce energy demand and encourage residents and businesses to reduce their energy usage. [Emergency Services Department; Public Information Officer]
- **Implementation Measure 3.2.1.4:** Promote educational programs and other services available to vulnerable populations about extreme heat and resources to reduce

exposure. Identify tips and resources available to residents, such as cooling centers, public health department resources, tips for preventing heat-related illness, encouraging hydration, etc. [Emergency Services Department; Public Information Officer]

- **Policy 3.2.2:** Increase resilience to the impacts of urban fire and wildfire, with consideration given to critical facilities and vulnerable populations. [Emergency Services Department]
- **Implementation Measure 3.2.2.1:** Encourage residents and businesses to maintain their properties to reduce risk of building fire and wildfire. [Code Enforcement Department; Public Information Officer]
- **Implementation Measure 3.2.2.2:** Increase awareness among the public about primary and secondary impacts of wildfire, such as information regarding air quality, tips to reduce exposure, and health services and resources available to residents. [Emergency Services Department; Mojave Desert Air Quality Management District; Public Information Officer]
- **Implementation Measure 3.2.2.3:** Ensure critical facilities, particularly the community centers, schools, city facilities, and other buildings identified for public assembly during an emergency, are equipped to function as evacuation centers/emergency response. [Emergency Services Department; Building Department]
- **Policy 3.2.3:** Increase resilience to impacts of extreme precipitation, with consideration given to critical facilities and vulnerable populations. [Emergency Services Department; Public Works Department; Engineering Department]
- **Implementation Measure 3.2.3.1:** Encourage, where feasible, the use of existing natural features, such as low-impact development and ecosystem practices, to naturally manage stormwater. [Planning Department; Engineering Department]
- **Implementation Measure 3.2.3.2:** Continue to floodproof critical facilities and equip with generators (with emphasis on renewable sources of back-up power) and/or other mitigation measures, such as elevation of structures and sandbags. [Public Works Department; Building Department; Emergency Services Department]
- **Implementation Measure 3.2.3.3:** Continue to coordinate with the County and other service providers to ensure timely evacuation from the floodplain and availability of shelters for people experiencing homelessness. [Emergency Services Department; Planning Department]
- **Implementation Measure 3.2.3.4:** Improve existing storm drain infrastructure to have capacity to handle floodwater from extreme flood events and prevent flooding. [Public Works Department; Engineering Department]
- **Policy 3.2.4:** Increase resilience to impacts of drought, with consideration given to critical facilities and vulnerable populations. [Water Department]

- **Implementation Measure 3.2.4.1:** Identify water resources management and conservation opportunities (Victorville LHMP pg. 106). [Water Department; Emergency Services Department]
- **Implementation Measure 3.2.4.2:** Identify opportunities to create and/or expand water conservation programs. [Water Department]

This page intentionally left blank.

APPENDIX A. CRITICAL FACILITIES

This page intentionally left blank.

Critical Facilities

FACILITY NAME	CATEGORY	SITE PURPOSE
City Hall	City Operations	Seat of Government
City Hall and Various	City Operations	IT Servers and Equipment
City EOC (in City Hall)	City Operations	Emergency Operations Center
Southern California Logistics Airport FireStation 319	Public Safety	Fire Response
Fire Station 311	Public Safety	Fire Response
Fire Station 312	Public Safety	Fire Response
Fire Station 313	Public Safety	Fire Response
Fire Station 314	Public Safety	Fire Response
Fire Station 315	Public Safety	Fire Response
Desert Valley Hospital	Public Health	Hospital
Victor Valley Comm Hospital	Public Health	Hospital
San Bernardino County Sheriff – Victorville City Station	Public Safety	Law Enforcement
San Bernardino County Sheriff – Victor Valley Station and Courthouse	Public Safety	Law Enforcement/Civil Government
Public Works Yard	City Operations	City Property Maintenance
Victorville Activities Center	Community Center	Potential Shelter Site
Hook Park Community Center	Community Center	Potential Shelter Site
Sunset Ridge Park Community Center	Community Center	Potential Shelter Site
Westwind Sports Center	Community Center	Potential Shelter Site
Victorville Water District Office	Utility	Water Treatment and Distribution
Victorville Water District Arsenic Treatment Facility La Mesa Road	Utility	Water Treatment and Distribution
Victorville Water District Arsenic Treatment Facility Elevado Road	Utility	Water Treatment and Distribution
Victorville Water District Arsenic Treatment Facility Balsam Road	Utility	Water Treatment and Distribution
Water Reservoir	Utility	
Waste Water Treatment Plan	Utility	
Waste Water Lift Station	Utility	
Southern California Logistics Airport	Critical Transportation	
Well # 102	Utility	Water Source
Well # 105	Utility	Water Source
Well # 119	Utility	Water Source
Well # 123	Utility	Water Source
Well #126	Utility	Water Source
Well # 137	Utility	Water Source
Well # 138	Utility	Water Source
Well # 140	Utility	Water Source

Critical Facilities

FACILITY NAME	CATEGORY	SITE PURPOSE
Well # 141	Utility	Water Source
Well # 143	Utility	Water Source
Well # 144	Utility	Water Source
Well F	Utility	Water Source
Well G	Utility	Water Source
Well H	Utility	Water Source
Well K	Utility	Water Source
Well # 129	Utility	Water Source
Well # 201	Utility	Water Source
Well # 203	Utility	Water Source
Well # 204	Utility	Water Source
Well # 205	Utility	Water Source
Well # 206	Utility	Water Source
Well # 207	Utility	Water Source
Well # 208	Utility	Water Source
Well # 209	Utility	Water Source
Well # 212	Utility	Water Source
Well # 102	Utility	Water Source
Adelanto Sheppard School	School	Education/Potential Shelter
Aspen Christian	School	Education/Potential Shelter
Brentwood Christian	School	Education/Potential Shelter
Brentwood Elementary School	School	Education/Potential Shelter
Challenger Scholl	School	Education/Potential Shelter
Cobalt Middle School	School	Education/Potential Shelter
Del Rey Elementary School	School	Education/Potential Shelter
Discovery School of the Arts	School	Education/Potential Shelter
District Office	School	Education/Potential Shelter
District Office	School	Education/Potential Shelter
District Yard	School	Education/Potential Shelter
Eagle Ranch Elementary School	School	Education/Potential Shelter
Endeavour School of Exploration	School	Education/Potential Shelter
Faith Community Christian	School	Education/Potential Shelter
Galileo Academy 101	School	Education/Potential Shelter
Goodwill High School	School	Education/Potential Shelter
Green Tree East Elementary	School	Education/Potential Shelter
Green Tree Special Education	School	Education/Potential Shelter

Critical Facilities

FACILITY NAME	CATEGORY	SITE PURPOSE
Hollyvale School	School	Education/Potential Shelter
Hook Junior High School	School	Education/Potential Shelter
Irwin Elementary School	School	Education/Potential Shelter
Kids Discovery World, LLC	School	Education/Potential Shelter
Lakeside Academy	School	Education/Potential Shelter
Lakeview Junior High School	School	Education/Potential Shelter
Liberty Elementary School	School	Education/Potential Shelter
Lomitas Elementary School	School	Education/Potential Shelter
Maintenance Department	School	Education/Potential Shelter
Mesa Linda Middle School	School	Education/Potential Shelter
Mojave Vista Elementary School	School	Education/Potential Shelter
Morgan Kincaid School	School	Education/Potential Shelter
Nutrition Services	School	Education/Potential Shelter
Performance Academy	School	Education/Potential Shelter
Puesta Del Dol Elementary	School	Education/Potential Shelter
Red Cross Building	School	Education/Potential Shelter
Silverado High School	School	Education/Potential Shelter
Susie Mathews Academy	School	Education/Potential Shelter
Transportation Department	School	Education/Potential Shelter
University Preparatory	School	Education/Potential Shelter
Victor Primary School	School	Education/Potential Shelter
Victor Valley Christian Elementary	School	Education/Potential Shelter
Victor Valley Christian High School	School	Education/Potential Shelter
Victor Valley Desert Christian	School	Education/Potential Shelter
Victor Valley High School	School	Education/Potential Shelter
Victor Valley Junior High School	School	Education/Potential Shelter
Victor Valley SDA	School	Education/Potential Shelter
Village Elementary School	School	Education/Potential Shelter
Vista Verde Elementary School	School	Education/Potential Shelter
West Creek Elementary School	School	Education/Potential Shelter
Air Expressway 0.2 miles west of National Trails Highway	Critical Transportation	Bridge
Bear Valley Rd. BNSF Railroad	Critical Transportation	Bridge
Bear Valley Rd. Mojave River	Critical Transportation	Bridge
Green Tree Blvd. BNSF Railroad	Critical Transportation	Bridge
Mineral Rd. BNSF Railroad	Critical Transportation	Bridge
National Trails Highway Mojave River	Critical Transportation	Bridge
National Trails Highway 0.2 miles north of AirExpressway	Critical Transportation	Bridge

Critical Facilities

FACILITY NAME	CATEGORY	SITE PURPOSE
Yucca Loma Rd. Mojave River	Critical Transportation	Bridge
I-15 Bear Valley Rd.	Critical Transportation	Bridge
I-15 La Mesa Rd. / Nisqualli Rd.	Critical Transportation	Bridge
I-15 Palmdale Rd. (SR-18)	Critical Transportation	Bridge
I-15 Roy Rogers Dr.	Critical Transportation	Bridge
I-15 Mojave Dr.	Critical Transportation	Bridge
I-15 BNSF Railroad (between D St. (SR-18)and E St.)	Critical Transportation	Bridge
I-15 Mojave River	Critical Transportation	Bridge
I-15 Stoddard Wells Rd.	Critical Transportation	Bridge
D St. (SR-18) Mojave River & BNSF Railroad	Critical Transportation	Bridge
US-395 Aqueduct	Critical Transportation	Bridge

Critical Facilities by Potential Vulnerability

CRITICAL FACILITIES	IMPACTING HAZARDS												
	AIRCRAFT ACCIDENT 10%	CLIMATE CHANGE 5%	DAM INUNDATION 50%	DROUGHT 10%	EARTHQUAKE/SEISMIC 25%	EXCESS HEAT 5%	FIRE/ WILDLAND FIRE 5%	FLOOD / FLASH FLOOD 10%	HIGH WINDS/TORNADO/STORM 5%	PUBLIC HEALTH/PANDEMIC*	PIPELINE/TRANSPORTATION/HAZMAT 5%	POWER FAILURE/PSPS*	TERRORISM 5%
City Hall		X			X		X		X		X	X	X
Fire Station 311		X			X		X		X		X	X	X
Fire Station 312		X			X		X		X		X	X	X
Fire Station 313		X			X		X		X		X	X	X
Fire Station 314		X			X		X		X		X	X	X
Fire Station 315		X			X		X		X		X	X	X
Police Station		X			X		X		X		X	X	X
Public Works Facilities Yard/Office		X			X		X		X		X	X	X
Community Center 15615 Eighth St.		X			X	X	X		X		X	X	X
Victorville Activities Center		X			X		X		X		X	X	X
Hook Park Community Center		X			X	X	X		X		X	X	X
Avalon Park Restrooms/ Storage		X			X		X		X		X	X	
Doris Davies Park Racquetball Office		X			X		X		X		X	X	X
Doris Davies Park Restroom		X			X		X		X		X	X	
Doris Davies Park Bad News Bears Den #1		X			X		X		X		X	X	X
Doris Davies Park Bad News Bears Den #2		X			X		X		X		X	X	X
Doris Davies Park Storage		X			X		X		X		X	X	X
Doris Davis Park Rental Duplexes		X			X		X		X		X	X	X
Grady Trammel Park Restroom Storage		X			X		X		X		X	X	X
La Haciendas Park Restroom and Canopy		X			X		X		X		X	X	X
Mesa Linda Park Concession Stand		X			X		X		X		X	X	X
Mesa Linda Park Maintenance Building		X			X		X		X		X	X	X
Mojave Vista Park Concession Stand		X			X		X		X		X	X	X
Mojave Vista Park Maintenance Building		X			X		X		X		X	X	X
City Sign		X			X		X		X		X	X	X
Sunset Ridge Park Maintenance Building		X			X		X		X		X	X	X

Critical Facilities by Potential Vulnerability

CRITICAL FACILITIES	IMPACTING HAZARDS												
	AIRCRAFT ACCIDENT 10%	CLIMATE CHANGE 5%	DAM INUNDATION 50%	DROUGHT 10%	EARTHQUAKE/SEISMIC 25%	EXCESS HEAT 5%	FIRE/ WILDLAND FIRE 5%	FLOOD / FLASH FLOOD 10%	HIGH WINDS/TORNADO/STORM 5%	PUBLIC HEALTH/PANDEMIC*	PIPELINE/TRANSPORTATION/HAZMAT 5%	POWER FAILURE/PSPS*	TERRORISM 5%
Sunset Ridge Park Community Center		X			X	X	X		X		X	X	X
Sunset Ridge Park Concessions and Restrooms		X			X		X		X		X	X	X
Sunset Ridge Park Shade Pavilion		X			X		X		X		X	X	
Westwind Sports Center		X			X		X		X		X	X	X
Westwind Sports Center and Golf Course Maintenance Buildings (2)		X			X		X		X		X	X	X
Schmidt Park Restroom and Picnic Pavilion		X			X		X		X		X	X	X
Maintenance Building 999		X			X		X		X		X	X	X
Greentree Golf Course Clubhouse		X			X		X		X		X	X	X
Greentree Golf Course Maintenance Bldg.		X			X		X		X		X	X	X
Greentree Golf Course Maintenance Bldg. #2		X			X		X		X		X	X	X
Greentree Golf Course Pump House 1, 2 and 3		X			X		X		X		X	X	X
Greentree Golf Course Restrooms 1 and 2		X			X		X		X		X	X	X
Eva Dell Park Restrooms Storage		X			X		X		X		X	X	X
Center Street Park Restrooms Concession Stand		X			X		X		X		X	X	X
Liberty Park Restrooms Concession Stand		X			X		X		X		X	X	X
Nature Center Restrooms		X			X		X		X		X	X	X
Nature Center		X			X	X	X		X		X	X	X
Nature Center Gazebo		X			X		X		X		X	X	X
Nature Center Observation Shelter		X			X		X		X		X	X	X
VMUS Center		X			X		X		X		X	X	X
Old Victor School (Office)		X			X		X		X		X	X	X
Library		X			X		X		X		X	X	X
Library Books		X			X		X		X		X	X	X
Town Arch		X			X		X		X		X	X	X
Victor Valley Transportation Center		X			X		X		X		X	X	X
CNG Fueling Station		X			X		X		X		X	X	X

Critical Facilities by Potential Vulnerability

CRITICAL FACILITIES	IMPACTING HAZARDS												
	AIRCRAFT ACCIDENT 10%	CLIMATE CHANGE 5%	DAM INUNDATION 50%	DROUGHT 10%	EARTHQUAKE/SEISMIC 25%	EXCESS HEAT 5%	FIRE/ WILDLAND FIRE 5%	FLOOD / FLASH FLOOD 10%	HIGH WINDS/TORNADO/STORM 5%	PUBLIC HEALTH/PANDEMIC*	PIPELINE/TRANSPORTATION/HAZMAT 5%	POWER FAILURE/PSPS*	TERRORISM 5%
Victorville Water Admin Building		X			X		X		X		X	X	X
Victorville Water District Arsenic Treatment Facility Avenal		X		X	X		X		X		X	X	X
Arsenic Booster Station Elevado		X		X	X		X		X		X	X	X
Victorville Water District Arsenic Treatment Facility Balsam Road		X		X	X		X		X		X	X	X
Victorville Water District Arsenic Treatment Facility La Mesa Road		X		X	X		X		X		X	X	X
Victorville Water District Arsenic Treatment Facility Elevado Road		X		X	X		X		X		X	X	X
Victorville Water Pump and Pipeline Deluge System		X		X	X		X		X		X	X	X
Victorville Water Warehouse 6th St.		X		X	X		X		X		X	X	X
Victorville Water Warehouse Hesperia Rd.		X		X	X		X		X		X	X	X
Victorville Water Modular Unit Hesperia Rd.		X		X	X		X		X		X	X	X
Victorville Water Wastewater Treatment Plan Helendale Rd.		X		X	X		X	X	X		X	X	X
Victorville Water Well 109		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 116		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 118		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 119		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 120		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 121		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 122		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 123		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 126		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 127		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 128		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 129		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 130		X	X	X	X		X	X	X		X	X	X

Critical Facilities by Potential Vulnerability

CRITICAL FACILITIES	IMPACTING HAZARDS												
	AIRCRAFT ACCIDENT 10%	CLIMATE CHANGE 5%	DAM INUNDATION 50%	DROUGHT 10%	EARTHQUAKE/SEISMIC 25%	EXCESS HEAT 5%	FIRE/ WILDLAND FIRE 5%	FLOOD / FLASH FLOOD 10%	HIGH WINDS/TORNADO/STORM 5%	PUBLIC HEALTH/PANDEMIC*	PIPELINE/TRANSPORTATION/HAZMAT 5%	POWER FAILURE/PSPS*	TERRORISM 5%
Victorville Water Well 131		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 132		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 133		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 134		X	X	X	X		X	X	X		X	X	X
Victorville Water Well135		X	X	X	X		X	X	X		X	X	X
Victorville Water Well136		X	X	X	X		X	X	X		X	X	X
Victorville Water Well137		X	X	X	X		X	X	X		X	X	X
Victorville Water Well138		X	X	X	X		X	X	X		X	X	X
Victorville Water Well139		X	X	X	X		X	X	X		X	X	X
Victorville Water Well140		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 141		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 201		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 203		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 204		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 205		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 206		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 207		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 208		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 209		X	X	X	X		X	X	X		X	X	X
Victorville Water Well 212		X	X	X	X		X	X	X		X	X	X
Victorville Water Well Grady Trammel		X	X	X	X		X	X	X		X	X	X
Stoddard Wells Sewer Lift Station		X	X	X	X		X	X	X		X	X	X
Ground Water Production Well Peral St.		X	X	X	X		X	X	X		X	X	X
IT Equipment at multiple locations		X			X		X		X		X	X	X

APPENDIX B. EVACUATION ANALYSIS

This page intentionally left blank.

BACKGROUND

A variety of scenarios could require an evacuation in parts of the City. These emergency situations could be caused by either natural or human-made events, such as wildfires, floods, or geologic or seismic hazards. The results of this analysis are intended to identify evacuation capacity and network connectivity in the City, in addition to meeting the requirements associated with the following legislative updates:

- **Assembly Bill (AB) 747**[4] **(2019)** requires the City to update the Safety Element of its General Plan to identify evacuation routes and assess the capacity, safety, and viability of those routes under a range of emergency scenarios.
- **Senate Bill (SB) 99**[5] **(2019)** requires the City to identify residential developments in hazard areas that do not have at least two emergency evacuation routes (i.e., neighborhoods or households within a hazard area that have limited accessibility).

Authoritative state guidance has not yet been developed to determine the type and level of analysis that is mandated under AB 747 and SB 99. This analysis evaluates the efficacy of existing evacuation routes under various hazard scenarios, in compliance with AB 747. This analysis also utilizes a methodology described below to identify residential developments without sufficient evacuation routes, in compliance with SB 99.

HAZARD SCENARIOS

Evacuation route viability is largely determined by the location of the hazard. Because the City of Victorville is adjacent to moderate fire hazard severity zone to the west and near high fire hazard severity zone to the south and southwest, the City considered two wildfire scenarios (a fire originating in the west and a fire originating in the south) to evaluate the safety and capacity of evacuation routes for residents (see Figure 6, Fire Hazards). There are no very high fire hazard severity zone areas adjacent to the City. Because there are flood zones within the City, evacuation route viability is assessed for flood hazards (see Figure 4, Flood Hazards). Lastly, due to proximity of fault zones to the City, evacuation route viability is assessed for an earthquake event (see Figure 1, Seismic Hazards and Figure 2, Earthquake Shaking Potential). A total of five hazard scenarios are considered in this analysis:

1. Baseline (no hazard location specified)
2. Wildfire (originating in the area west of the City)
3. Wildfire (originating in the area south of the City)
4. Flood
5. Earthquake

[4] An act to add Section 65302.15 to California Government Code
[5] An act to amend Section 65302 of the California Government Code

DATA, ASSUMPTIONS, & DEFINITIONS

The evacuation route analysis utilizes updated data from UrbanFootprint and the OpenStreetMap Foundation (OSMF) that was published in 2021. OSMF data builds on and includes all roads in the U.S. Census Bureau's Topologically Integrated Geographic Encoding & Referencing (TIGER) database. The database includes primary roads, secondary roads, local neighborhood roads, rural roads, City streets, vehicular trails, ramps, service drivers, walkways, stairways, alleys, and private roads. Roads applicable to the City are evaluated for evacuation route viability.

To develop a methodology that effectively evaluates the safety and capacity of evacuation routes, and identifies residential areas that lack two evacuation routes, the following definitions and assumptions apply:

1. "Evacuation route vulnerability" refers to the reduced ability of people to evacuate under emergency conditions. Evacuation route vulnerability scores are calculated for each residential parcel. Lower values indicate lower levels of vulnerability, while higher values indicate greater evacuation route vulnerability.
2. "Capacity" is defined by the ability of a road to accommodate traffic volume. In this analysis, road type (local, collector, arterial, or highway/freeway) is used as an indicator of road capacity. "Local" roads are streets that are primarily used to gain access to property. Proximity to local roads was not considered a significant determinant of evacuation vulnerability. "Collector" roads are considered low-to-moderate capacity roads which serve to move traffic from local streets to arterial roads. An "arterial" road is a high-capacity urban road. The primary function of an arterial road is to deliver traffic from collector roads to highways/freeways, which are the highest capacity evacuation route.
3. Evacuation proceedings are primarily reliant on "outbound" roads: roads that transport drivers away from the city. Outbound roads are either freeways or arterials. Outbound roads begin at the intersection closest to the City boundary.
4. "Proximity" is defined by the distance from a residential parcel to nearest road (for collector roads) or "nodes": the nearest intersection on the following road types: arterial, out-bound, or highway/freeway.
5. All roads have a potential role in evacuations. Closer proximity to higher capacity roads and outbound roads reduces evacuation vulnerability.
6. Hazard scenarios influence the direction people evacuate (away from the hazard area).
7. Segments of roads with bridges under an earthquake scenario are not viable.

METHODOLOGY

Evacuation route vulnerability scores were assigned to each residential property based on several factors including proximity, capacity, and viability. The geospatial analysis included the following steps:

1. Map all residential parcels within the City, and all collector, arterial, outbound roads, and freeways.
2. Create nodes at the intersection of collector and local roads to arterial roads, and all intersections on out-bound roads, including on-ramps for highways/freeways.
3. Determine the proximity of each residential parcel to the nearest evacuation route (highway/freeway or outbound road) by:
    a. Calculate the distance from the parcel to the nearest collector road.
    b. Calculate the distance to the nearest arterial, outbound road, or highway/freeway node.[6]
    c. Each distance value is weighted (see step 4). Add weighted distance values together to calculate the "Evacuation Route Vulnerability Score." Lower values indicate lower levels of evacuation route vulnerability; higher values indicate greater vulnerability.
4. Apply the following weights to the road capacity (type) as follows to reflect the higher vulnerability of lower capacity roads and roads with bridges:

Road Type	Vulnerability Weight
Freeway	1
Outbound Road	2
Arterial Road	3
Collector Road	4
Road segment with bridge	10

5. Identify residential parcels whose evacuation route vulnerability has changed (increased or decreased) from the baseline, and determine if there are fewer than two evacuation routes for residential areas. A visual assessment of the evacuation routes that are available is performed to conclude whether or not all residential parcels have at least two evacuation routes.

[6] To account for the assumption that drivers would take the route that leads them out of the City most efficiently, if the distance from a parcel to a higher capacity road is less than the distance to a lower capacity road, the distance to the lower capacity road is assigned a value of 0.

RESULTS

1. Baseline

The baseline scenario evaluates the evacuation route vulnerability of residential parcels absent a hazard event. In the baseline scenario, all outbound roads are available to residents for evacuation. Key intersections within the City boundary are those roadways where arterial roads connect. These key intersections are labeled on the baseline map. Major intersections are necessary to efficiently route residents to outbound roads. Residential parcels with the highest evacuation route vulnerability score are highlighted in red. Assuming all evacuation routes are viable, residents in the south/southwestern regions of the City have the highest evacuation route vulnerability, as they have the furthest to travel to access outbound evacuation routes.

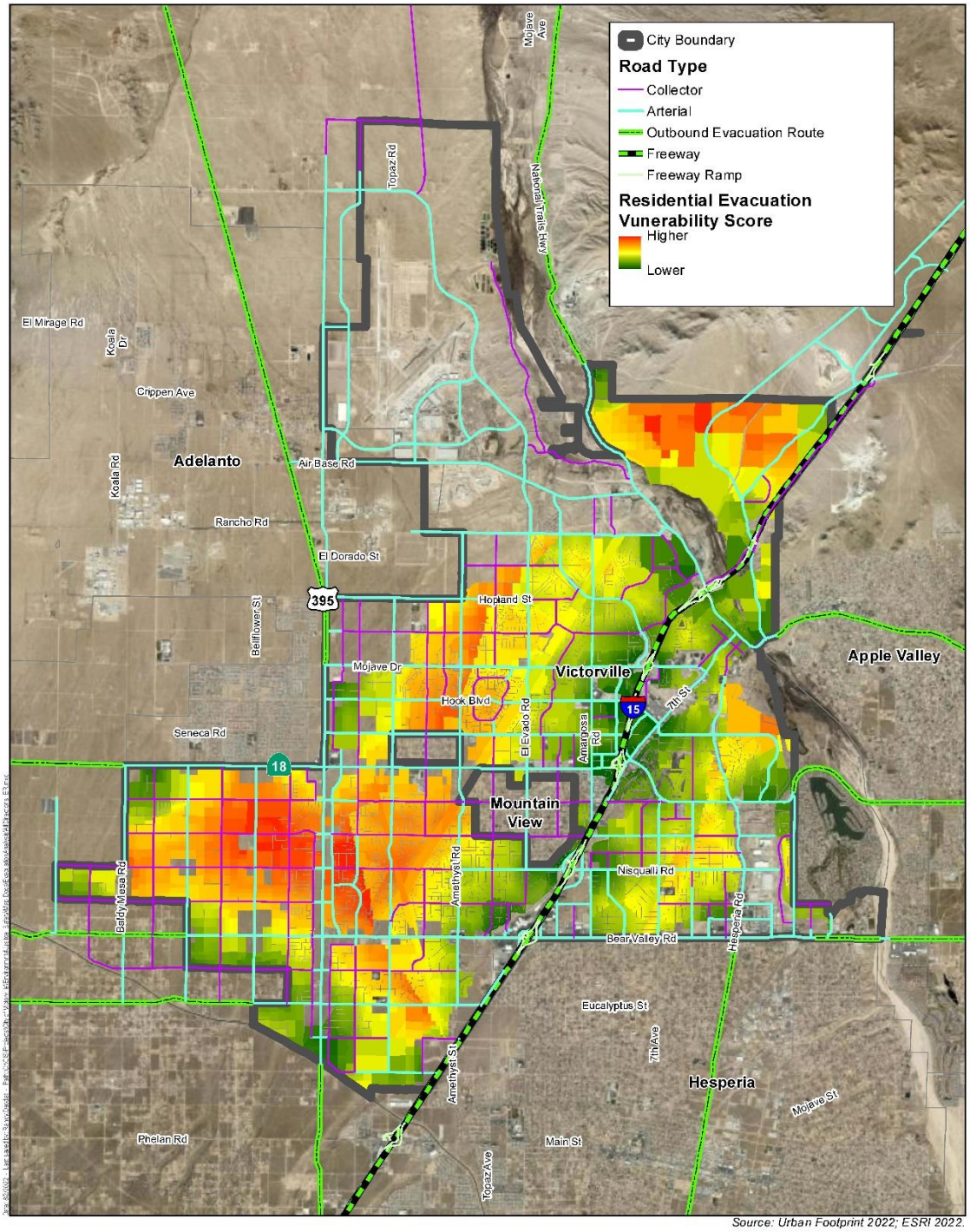
In addition to considering evacuation route vulnerability, the vulnerability of residents should be considered in determining which areas may need to be prioritized by first responders during an evacuation. The areas within the City with a greater percentage of elderly people, disabled people, and households that do not own a vehicle (i.e., transit dependent populations) require greater levels of support during an evacuation. Other vulnerable groups beyond those within these demographics should be examined relative to evacuation route vulnerability.

For example, the following areas are defined as disadvantaged communities (DACs) in the General Plan – Environmental Justice Element:

(a) The areas along the Interstate 15 (I-15) (i.e., the area directly east of I-15 and the area directly west of I-15)

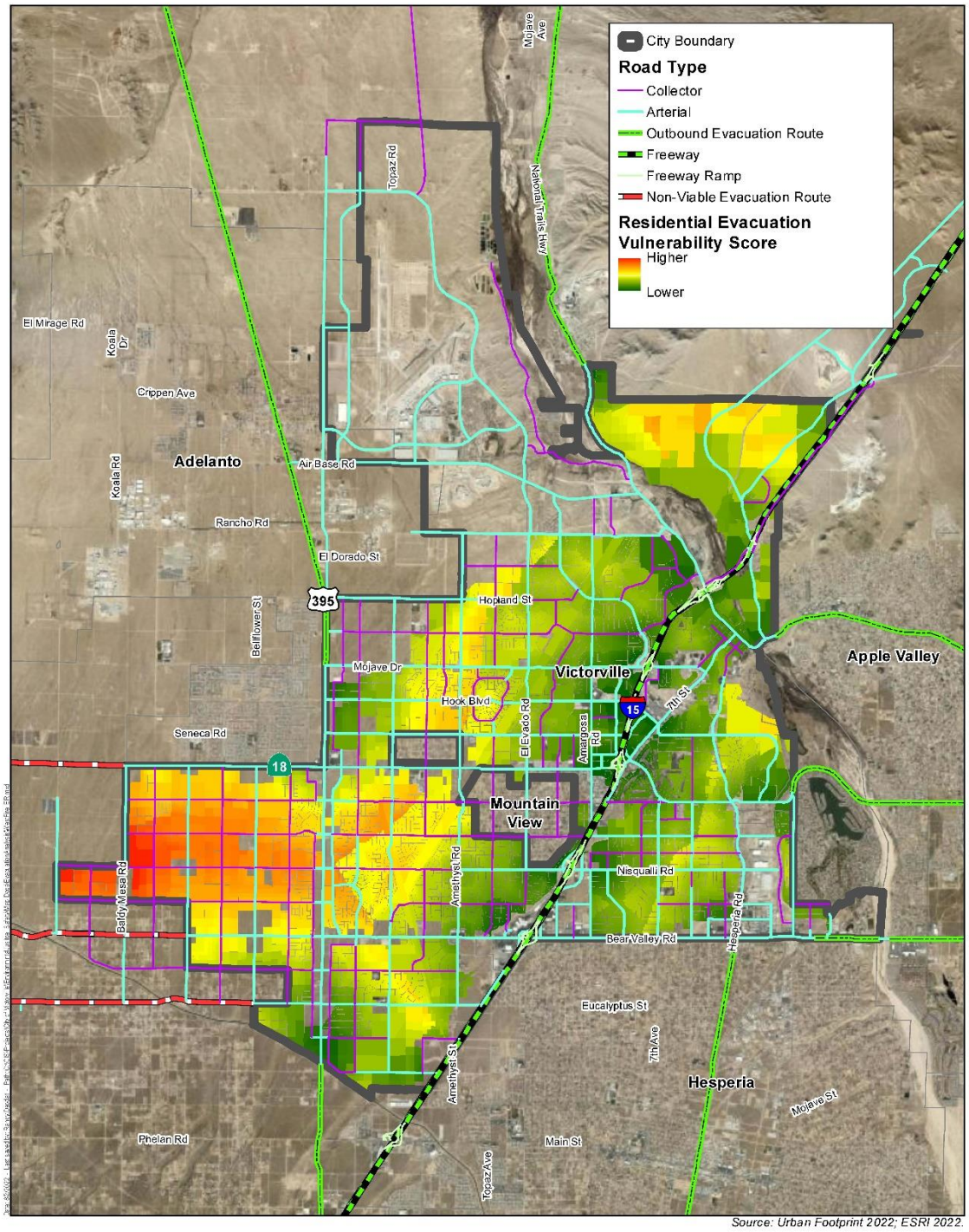
(b) The area in the northern region of the City nearby Topaz Road

(c) The area in the southern region of the City nearby Amethyst Street


City Boundary
Road Type
Collector
Arterial
Outbound Evacuation Route
Freeway
Freeway Ramp
Residential Evacuation Vunerability Score
Higher
Lower
Mojave Ave
Topaz Rd
National Trails Hwy
El Mirage Rd
Koala Dr
Crippen Ave
Adelanto
Air Base Rd
Koala Rd
Rancho Rd
El Dorado St
395
Hopland St
Bellflower St
Mojave Dr
Victorville
Apple Valley
Hook Blvd
7th St
15
El Evado Rd
Amargosa Rd
Seneca Rd
18
Mountain View
Nisqualli Rd
Amethyst Rd
Baldy Mesa Rd
Bear Valley Rd
Hesperia Rd
Eucalyptus St
7th Ave
Amethyst St
Hesperia
Mojave St
Phelan Rd
Main St
Topaz Ave
Source: Urban Footprint 2022; ESRI 2022.
Harris & Associates
N
0
1
2
Miles
Residential Evaucation Vunerability Score for All Directions
City of Victorville Safety Element

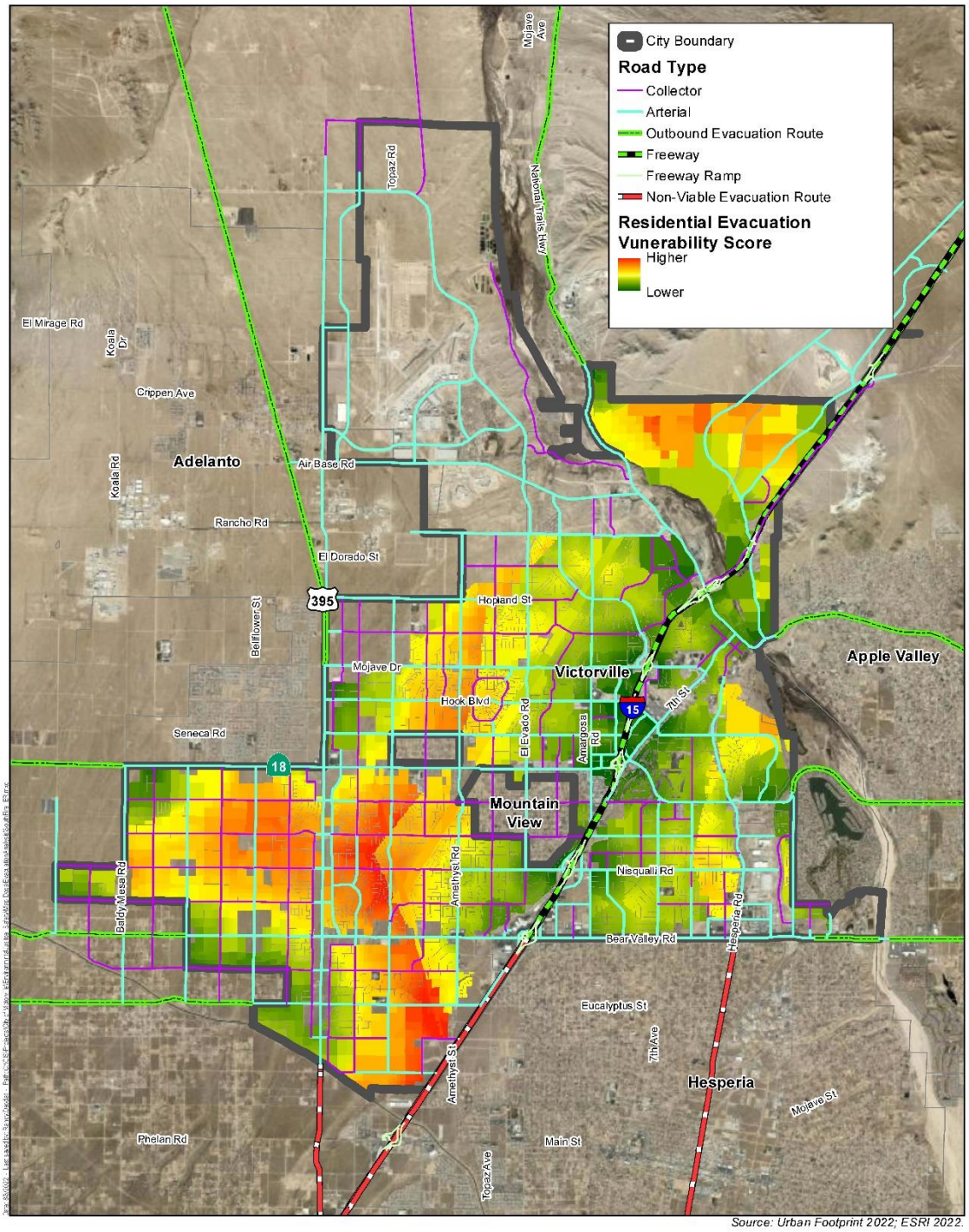
2. Wildfire (West)

This scenario assumes a wildfire to the west of the City. Outbound roads leading west are not viable, including Bear Valley Road, Eucalyptus Street, and Highway 18 (Palmdale Road). Evacuation scores are re-calculated to account for the increased distance to the next closest, viable outbound road. The map below highlights residential parcels with evacuation route vulnerability scores that increased as a result of the three westbound evacuation routes being closed. Hesperia Road, National Trails Highway, and Highway 395, as well as I-15, are the outbound roads most likely to be utilized in this scenario. Both directions of I-15 (North and South) are likely to be viable under this scenario, which increases overall evacuation capacity. However, the process may require more resources to evacuate those with the reduced mobility, such as those who do not have access to a vehicle of their own.


City Boundary
Road Type
Collector
Arterial
Outbound Evacuation Route
Freeway
Freeway Ramp
Non-Viable Evacuation Route
Residential Evacuation Vulnerability Score
Higher
Lower
Mojave Ave
Topaz Rd
National Trails Hwy
El Mirage Rd
Koala Dr
Crippen Ave
Adelanto
Air Base Rd
Koala Rd
Rancho Rd
El Dorado St
395
Hopland St
Bellflower St
Mojave Dr
Victorville
Apple Valley
Hook Blvd
7th St
15
Seneca Rd
18
El Evado Rd
Amargosa Rd
Mountain View
Nisqualli Rd
Baldy Mesa Rd
Amethyst Rd
Bear Valley Rd
Hesperia Rd
Eucalyptus St
7th Ave
Amethyst St
Hesperia
Mojave St
Phelan Rd
Main St
Topaz Ave
Source: Urban Footprint 2022; ESRI 2022.
Harris & Associates
N
0 1 2
Miles
Residential Evaucation Vunerability Score for Western Fire Scenario
City of Victorville Safety Element

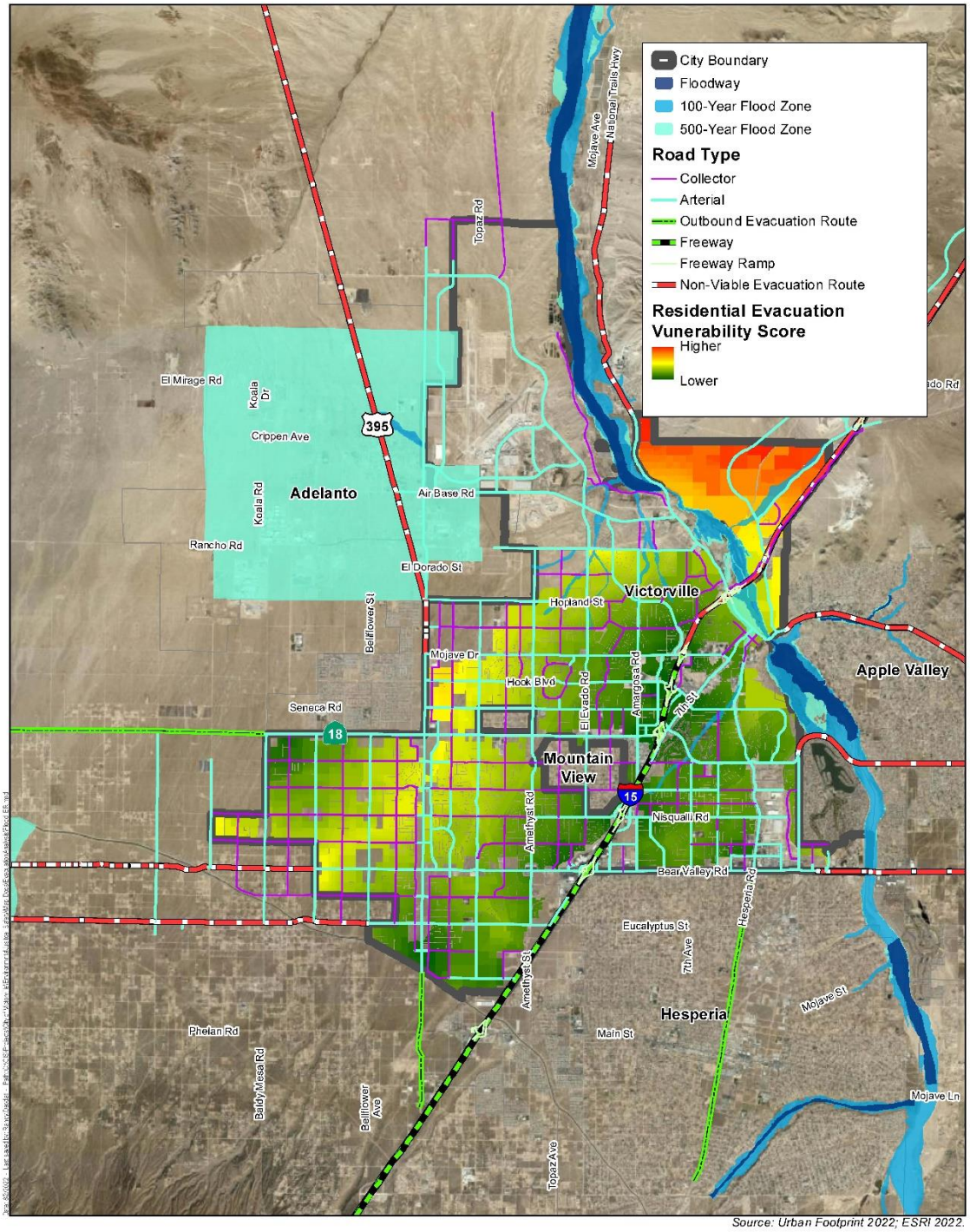
3. Wildfire (South)

This scenario assumes a wildfire to the south of the City. Outbound roads leading south are not viable, including Highway 395, I-15 South, and Hesperia Road. Evacuation scores are re-calculated to account for the increased distance to the next closest, viable outbound road. The map below highlights residential parcels with evacuation route vulnerability scores that increased as a result of the three southbound evacuation routes being closed. Bear Valley Road, Yates Road/Yucca Loma Road, and Highway 18 (Palmdale Road), as well as I-15 North, are the outbound roads most likely to be utilized in this scenario. Bear Valley Road/Hesperia Road, Highway 18 (Palmdale Road), and Highway 395 are subject to congestion as residents attempt to access Bear Valley Road and I-15 North. Emergency responders should consider activating evacuation traffic management at these intersections and as contra-flow lane reversal on the highway to allow both lanes to be used for northbound evacuation, although this requires extensive coordination and should be reserved for extreme wildfire threats.


City Boundary
Road Type
Collector
Arterial
Outbound Evacuation Route
Freeway
Freeway Ramp
Non-Viable Evacuation Route
Residential Evacuation Vunerability Score
Higher
Lower
Mojave Ave
Topaz Rd
National Trails Hwy
El Mirage Rd
Koala Dr
Crippen Ave
Adelanto
Air Base Rd
Koala Rd
Rancho Rd
El Dorado St
395
Bellflower St
Hopland St
Mojave Dr
Victorville
Hook Blvd
Seneca Rd
18
15
7th St
El Evado Rd
Amargosa Rd
Apple Valley
Mountain View
Nisqualli Rd
Bear Valley Rd
Hesperia Rd
Eucalyptus St
7th Ave
Hesperia
Mojave St
Amethyst Rd
Amethyst St
Baldy Mesa Rd
Phelan Rd
Main St
Topaz Ave
Source: Urban Footprint 2022; ESRI 2022.
Harris & Associates
N
0 1 2
Miles
Residential Evaucation Vunerability Score for Southern Fire Scenario
City of Victorville Safety Element

4. Flood

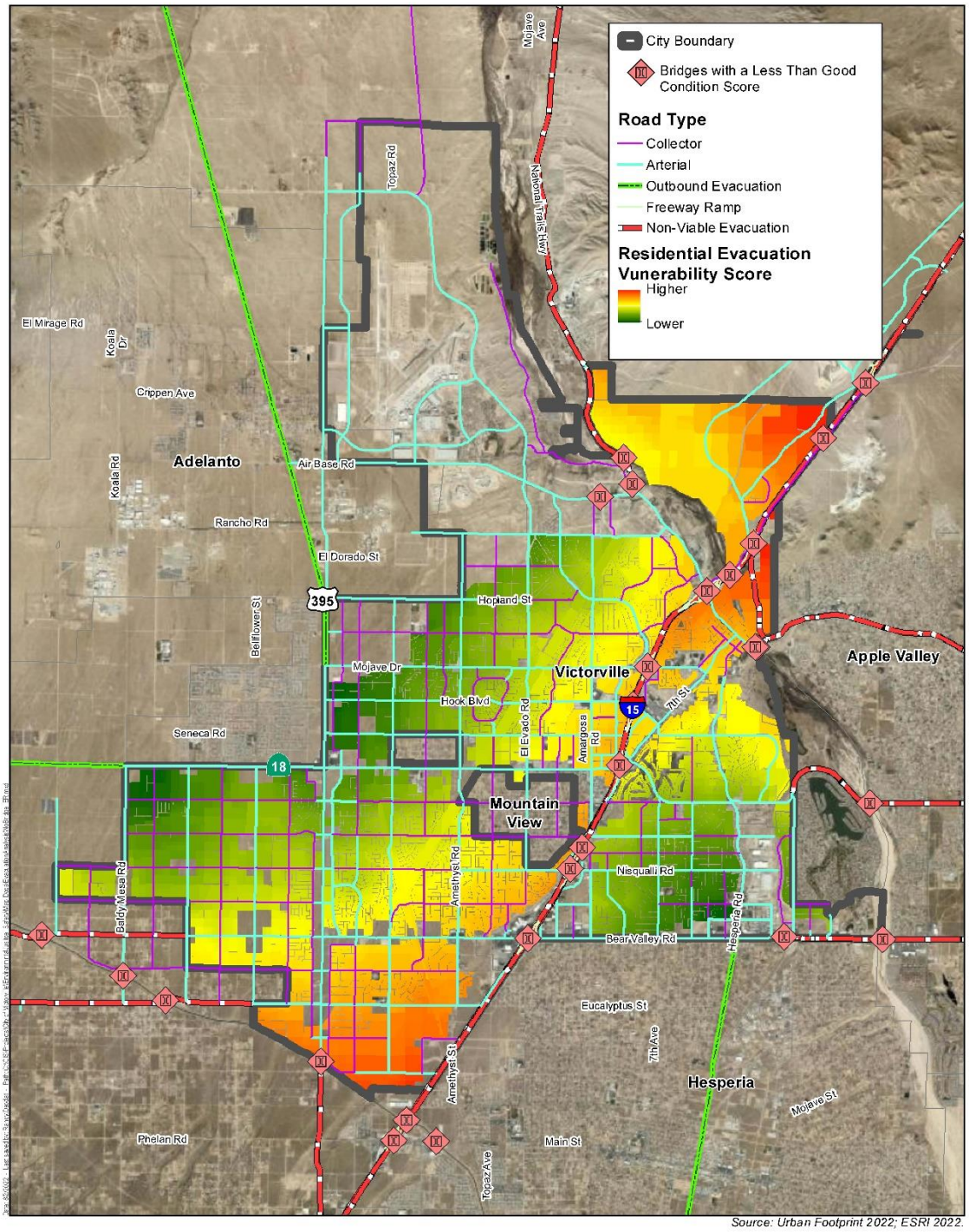
The flood scenario assumes that people will evacuate away from the flood zone. Because the flood zone is along the north/northeast side of the City along the Mojave River, the northbound evacuation routes are assumed to be non-viable. Evacuation scores are re-calculated to account for the increased distance to the next closest, viable outbound road. The map below highlights residential parcels with evacuation route vulnerability scores that increased as a result of the evacuation routes being closed. Hesperia Road and Highway 18 (Palmdale Road), as well as I-15 South, are the outbound roads most likely to be utilized in this scenario. The time it takes to evacuate is not as critical during a flooding event because a flood is a slower-onset hazard. However, it may be more precarious for first responders to access vulnerable populations that need to be evacuated once the water inundates the area. Roads may be inundated, further hampering evacuation. Residents may not need to evacuate out of the City, but only away from the flood zone. Therefore, there is likely to be less evacuation route congestion compared to other hazard scenarios.


City Boundary
Floodway
100-Year Flood Zone
500-Year Flood Zone
Road Type
Collector
Arterial
Outbound Evacuation Route
Freeway
Freeway Ramp
Non-Viable Evacuation Route
Residential Evacuation Vunerability Score
Higher
Lower
Adelanto
Victorville
Apple Valley
Hesperia
Mountain View
El Mirage Rd
Koala Dr
Koala Rd
Crippen Ave
Air Base Rd
Rancho Rd
El Dorado St
Hopland St
Bellflower St
Mojave Dr
Hook Blvd
Seneca Rd
El Evado Rd
Amargosa Rd
7th St
Nisqualli Rd
Bear Valley Rd
Eucalyptus St
Hesperia Rd
7th Ave
Amethyst St
Mojave St
Main St
Phelan Rd
Baldy Mesa Rd
Bellflower Ave
Topaz Ave
Mojave Ln
Topaz Rd
Mojave Ave
National Trails Hwy
395
18
15
Source: Urban Footprint 2022; ESRI 2022.
Harris & Associates
N
0 1 2
Miles
Residential Evaucation Vunerability Score for Flood Scenario
City of Victorville Safety Element

5. Earthquake

Because earthquakes can damage bridges, two assumptions were made: 1) residential parcels that require a bridge crossing to access their most efficient evacuation route are more vulnerable compared to those that do not need to cross a bridge, and 2) outbound roads that require a bridge crossing may not be viable evacuation routes after an earthquake. To account for the first assumption, residential parcels that require a bridge crossing to access their otherwise most efficient evacuation route have a higher weight assigned to the road segment with the bridge. The second assumption removes the majority of evacuation routes from the analysis. Vulnerable residential parcels are highlighted in red on the map below. Residents in the northeastern and southwestern regions of the City remain vulnerable due to the conditions of the bridges that are in those areas. Bridges with a less than "good" condition, as defined by the U.S. Department of Transportation, Federal Highway Administration, are assumed to be non-viable outbound roads.[7] Compared to the baseline, more parcels are vulnerable near bridges, including those in the northeast and southwest corners of the City. Residents in the northeastern region would be re-routed southbound along internal roadways to Hesperia Road, while residents in the southwestern region would be re-routed westbound to either Highway 18 (Palmdale Road) or Highway 395. Emergency responders should consider the possibility of bridge failure, and should also encourage residents to pre-determine routes without bridge crossings that lead out of the City.

[7] Bridge Condition describes the existing, in-place structure condition as compared to the as-built condition. A structure is rated as Good if all of its structural components are rated as 7 or better, whereas it is rated as Fair when all of its components are rated 5 or 6, and a structure is rated as Poor when all of its components are rated as 4 or below.
Source: U.S. Department of Transportation, Federal Highway Administration
https://infobridge.fhwa.dot.gov/Page/infobridge_documentation


City Boundary
Bridges with a Less Than Good Condition Score
Road Type
Collector
Arterial
Outbound Evacuation
Freeway Ramp
Non-Viable Evacuation
Residential Evacuation Vunerability Score
Higher
Lower
Mojave Ave
Topaz Rd
National Trails Hwy
El Mirage Rd
Koala Dr
Crippen Ave
Adelanto
Air Base Rd
Koala Rd
Rancho Rd
El Dorado St
395
Hopland St
Bellflower St
Mojave Dr
Victorville
Apple Valley
Hook Blvd
7th St
15
Seneca Rd
El Evado Rd
Amargosa Rd
18
Mountain View
Nisqualli Rd
Baldy Mesa Rd
Amethyst Rd
Hesperia Rd
Bear Valley Rd
Eucalyptus St
7th Ave
Hesperia
Amethyst St
Mojave St
Phelan Rd
Main St
Topaz Ave
Source: Urban Footprint 2022; ESRI 2022.
Harris & Associates
N
0 1 2
Miles
Residential Evaucation Vunerability Score for No Bridges Scenario
City of Victorville Safety Element

CONCLUSION

The evacuation route analysis did not identify any residential parcels that lack two evacuation routes, according to a GIS and visual assessment that analyzed each residential parcel to identify whether or not there were fewer than two points of egress. The baseline scenario suggests that residents closest to the southwestern and northeastern regions of the City center are most vulnerable, given the distance they would need to travel to access an outbound road. The results for the hazard scenarios were as expected: residential parcels located near outbound roads that were assumed to be non-viable under the hazard scenario saw an increase in their evacuation route vulnerability score, reflecting the greater distance residents would travel to access the next nearest outbound evacuation route.

The disadvantaged communities as defined in the Environmental Justice Element in the City, as well as the areas nearby the Southern California Logistics Airport (SCLA), contain a greater percentage of socially vulnerable groups that may require a greater level of assistance during evacuation proceedings.

RECOMMENDATIONS

The evacuation route analysis suggests that emergency responders should be flexible in emergency scenarios, considering the location and extent of a hazard may disrupt established evacuation routes. Given the potential for congestion when certain evacuation routes are closed, emergency responders should consider contraflow lane reversal as one strategy to efficiently evacuate residents. The majority of the outbound evacuation routes rely on a bridge. Bridges in less than “good” condition should be inspected and fortified to ensure the evacuation routes identified in this analysis remain viable. Social vulnerability indicators, including age, disability, and other mobility factors, should be further examined to determine other potential barriers to evacuation besides distance to and capacity of evacuation routes.