Annex D City of Plymouth

D.1 Introduction

This Annex details the hazard mitigation planning elements specific to the City of Plymouth, a previously participating jurisdiction to the 2020 Amador County Local Hazard Mitigation Plan (LHMP) Update. This Annex is not intended to be a standalone document but appends to and supplements the information contained in the Base Plan document. As such, all sections of the Base Plan, including the planning process and other procedural requirements apply to and were met by the City. This Annex provides additional information specific to the City of Plymouth, with a focus on providing additional details on the planning process, risk assessment, and mitigation strategy for this jurisdiction.

D.2 Planning Process

As described above, the City of Plymouth followed the planning process detailed in Chapter 3 of the Base Plan. In addition to providing representation on the Amador County Hazard Mitigation Planning Committee (HMPC), the City formulated their own internal planning team to support the broader planning process requirements. Internal planning participants, their positions, and how they participated in the planning process are shown in Table D-1. Additional details on Plan participation and City representatives are included in Appendix A.

Table D-1 City of Plymouth – Planning Team

Name	Position/Title	How Participated
Margaret Roberts	City Manager	Emailed information and mitigation action worksheets
Cathleen Johnson	Public Works Director	Emailed information and M mitigation action worksheets Attended meetings
Boone Davidson	Public Works	Conducted hazard research and provided data
Superintendent	Superintendent	Emailed information and handled correspondence
Cameron Begbie	City Manager	Attended meetings

Coordination with other community planning efforts is paramount to the successful implementation of this LHMP Update. This section provides information on how the City integrated the previously approved 2020 LHMP into existing planning mechanisms and programs. Specifically, the City incorporated into or implemented the 2020 LHMP through other plans and programs shown in Table D-2.

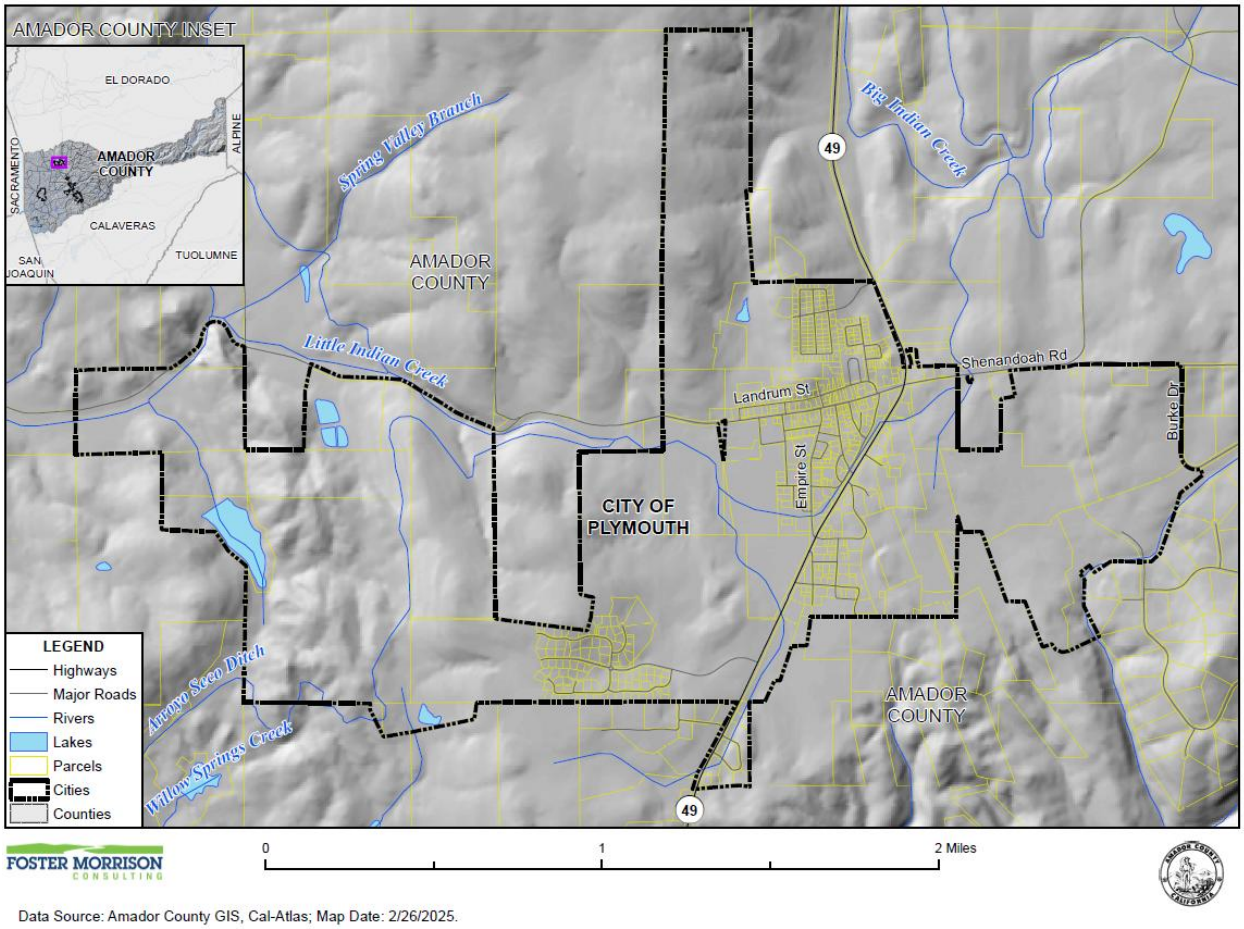
Table D-2 2020 LHMP Incorporation

Planning Mechanism 2020 LHMP Was Incorporated/Implemented In.	Details: How was it incorporated?
County hazardous materials plan	By County OES in collaboration with the City's LHMP
County long-term care facility evacuation plan	By County OES in collaboration with the City's LHMP

D.3 Community Profile

The community profile for the City of Plymouth is detailed in the following sections. Figure D-1 displays a City map and the location of City of Plymouth within Amador County.

Figure D-1 City of Plymouth



D.3.1. Geography and Climate

The City of Plymouth lies on flat to gently rolling terrain located at the lower elevations of the Western Slope of California's Sierra Nevada. The benchmark elevation at the City is 1,086 feet. Changes in elevation across town vary less than one hundred feet. The City is traversed by several seasonal streams.

They join together southwest of town and become the westward flowing Little Indian Creek. The climate is similar to the climate of other valley communities in Amador County, as discussed in the Base Plan.

D.3.2. History

Plymouth dates from 1852 when mining prospectors established a camp (Pokerville), before moving a mile to the permanent Puckerville in 1855. The name Plymouth was used for the first time a year later for a quartz mill, while the settlement itself became Plymouth in 1871, named after the Plymouth Mine Company, a gold mining concern. The last of the mines closed in the late 1940s, and today, Plymouth, the "Gateway to the Shenandoah Valley", is renowned for its wine production.

D.3.3. Economy and Tax Base

US Census estimates show economic characteristics for the City of Plymouth. These are shown in Table D-3 and Table D-4. Mean household income in the City was $95,211. Median household income in the City was $81,250.

Table D-3 City of Plymouth – Civilian Employed Population 16 years and Over

Industry	Estimated Employment	Percent
Agriculture, forestry, fishing and hunting, and mining	64	10.5%
Construction	88	14.4%
Manufacturing	72	11.8%
Wholesale trade	23	3.8%
Retail trade	105	17.2%
Transportation and warehousing, and utilities	23	3.8%
Information	0	0.0%
Finance and insurance, and real estate and rental and leasing	25	4.1%
Professional, scientific, and management, and administrative and waste management services	32	5.2%
Educational services, and health care and social assistance	72	11.9%
Arts, entertainment, and recreation, and accommodation and food services	45	7.4%
Other services, except public administration	38	6.2%
Public administration	23	3.8%

Source: US Census Bureau American Community Survey 2023 Estimates

Table D-4 City of Plymouth – Income and Benefits

Income Bracket	Percent
<$10,000	12.8%
$10,000 – $14,999	4.0%
$15,000 - $24,9999	2.5%
$25,000 – $34,999	4.7%

Income Bracket	Percent
$35,000 – $49,999	3.6%
$50,000 – $74,999	10.1%
$75,000 – $99,999	23.1%
$100,000 – $149,999	15.7%
$150,000 – $199,999	13.0%
$200,000 or more	10.5%

Source: US Census Bureau American Community Survey 2023 Estimates

Plymouth's largest employers are the 49 Village RV Resort, Pokerville Market and the numerous wineries located in the unincorporated area of Plymouth. Plymouth is home to a large senior/retired population, as well as winery agriculture workers. It is also the hub of Northwestern Amador County providing necessary essential services such as gas and groceries to the area. It relies heavily on the wine tourism market.

D.4 Risk Assessment

As defined by FEMA, risk is a combination of hazard, vulnerability, and exposure. "It is the impact that a hazard would have on people, services, facilities, and structures in a community and refers to the likelihood of a hazard event resulting in an adverse condition that causes injury or damage."

The City of Plymouth risk assessment identifies and profiles relevant hazards and assesses the exposure of lives, property, infrastructure, and the environment to these hazards. The process allows for a better understanding of the City's potential risk and vulnerability to hazards and provides a framework for developing and prioritizing mitigation actions to reduce risk from future hazard events.

Building on the Community Profile above, a risk assessment was performed for the City. This includes the following sections:

- D.4.1 Assets Inventory and Growth and Development Trends
- D.4.2 Hazard Identification
- D.4.3 Hazard Profiles and Vulnerability to Specific Hazards

D.4.1. Assets Inventory and Growth and Development Trends

This section provides an inventory of the City of Plymouth's total assets potentially at risk to hazards and an overview of growth and development trends. This section is broken into two parts:

- **Asset Inventory** – The assets inventory identifies the City of Plymouth's total assets, including the people and populations; structures; critical facilities and infrastructure; community lifelines; natural, historic, and cultural resources; and economic assets and community activities of value. This data is not hazard specific, but is representative of total assets within the City, potentially at risk to identified hazards as discussed in Section D.4.3 Hazard Profiles and Vulnerability to Specific Hazards.
- **Growth and Development Trends** – A discussion of growth and development trends in the City, both current and future, is presented.

Assets Inventory

The City's asset inventory is detailed in the following sections:

- People and Populations
- Structures
- Critical Facilities and Infrastructure
- Community Lifelines
- Natural, Historic, and Cultural Resources
- Economic Assets and Community Activities of Value

A discussion of each of these assets follows and serves as the template for the asset discussion for each hazard in Section D.4.3.

People and Populations

The most important asset within any community are the people and populations that reside in the community. This section includes an inventory of past and current populations of the City and also discusses vulnerable populations and underserved communities as a subsection of people and populations located within the City and potentially at risk to hazards. Information from the City, US Census Bureau, California Department of Finance, and other sources as detailed below form the basis of this discussion.

Historic Population Trends and Current Population

Population growth can increase the number of people living in hazard prone areas. The City of Plymouth has 1,122 residents, as of January 1, 2025. The City of Plymouth has seen growth rates as shown in Table D-5. As shown, the City has grown consistently since 1950, with growth slowing recently, since the 2020 LHMP.

Table D-5 City of Plymouth– Population Changes Since 1950

Year	Population	% Change
1950	382	–
1960	489	34.1%
1970	501	2.5%
1980	699	39.5%
1990	811	16%
2000	980	20.8%
2010	1,005	2.6%
2020	1,078	7.3%
2025	1,122	4.1%

Source: US Census Bureau, California Department of Finance (2025)

Underserved and Vulnerable Populations and Disadvantaged Communities

The City has a socially and economically diverse community, and many residents that are socially or economically disadvantaged or vulnerable due to varying reasons reside within the City. The City and surrounding County are no strangers to large natural disasters which have had a direct impact on the populations of the area. Thus, it is important to consider the potential effects of hazard events and disasters on these more vulnerable populations. Socially vulnerable and disadvantaged communities in the City are discussed by the following sources:

- CDC Social Vulnerability Index
- California Department of Water Resources (CA DWR) Special Populations and Disadvantaged Community Mapping
- FEMA Community Disaster Resilience Zones
- City Planning Team Input

CDC Social Vulnerability Index

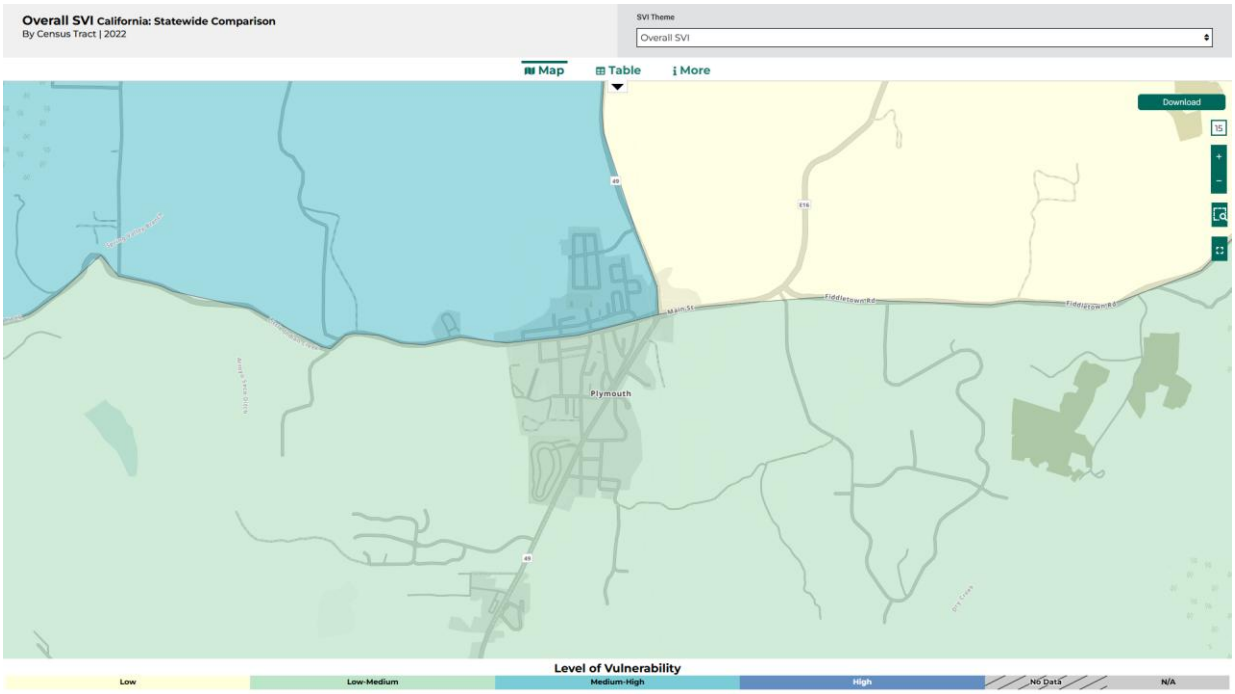
Every community must prepare for and respond to a hazard event, including the range of natural hazards addressed in this Plan, from severe weather extremes to large potentially catastrophic events such as wildfires or earthquakes. A number of factors, including poverty, lack of access to transportation, and crowded housing may weaken a community's ability to prevent human suffering and financial loss in a disaster. These factors are known as social vulnerability.

Social vulnerability refers to the potential negative effects on communities caused by external stresses on human health. Such stresses include natural or human-caused disasters, or disease outbreaks. Reducing social vulnerability can decrease both human suffering and economic loss. The Agency for Toxic Substances and Disease Registry (ATSDR) Geospatial Research, Analysis & Services Program (GRASP) created databases to help emergency response planners and public health officials identify and map communities that will most likely need support before, during, and after a hazardous event. The CDC used these databases to create the CDC Social Vulnerability Index (CDC SVI), which uses 15 U.S. census variables to help local officials identify communities that may need additional support before, during, or after disasters.

CDC SVI uses U.S. Census data to determine the social vulnerability of every census tract. Census tracts are subdivisions of counties for which the Census collects statistical data. The CDC SVI ranks each tract on 15 social factors, including poverty, lack of vehicle access, and crowded housing, and groups them into four related themes. Each tract receives a separate ranking for each of the four themes, as well as an overall ranking. Maps of the four themes for the City are shown in the figures below.

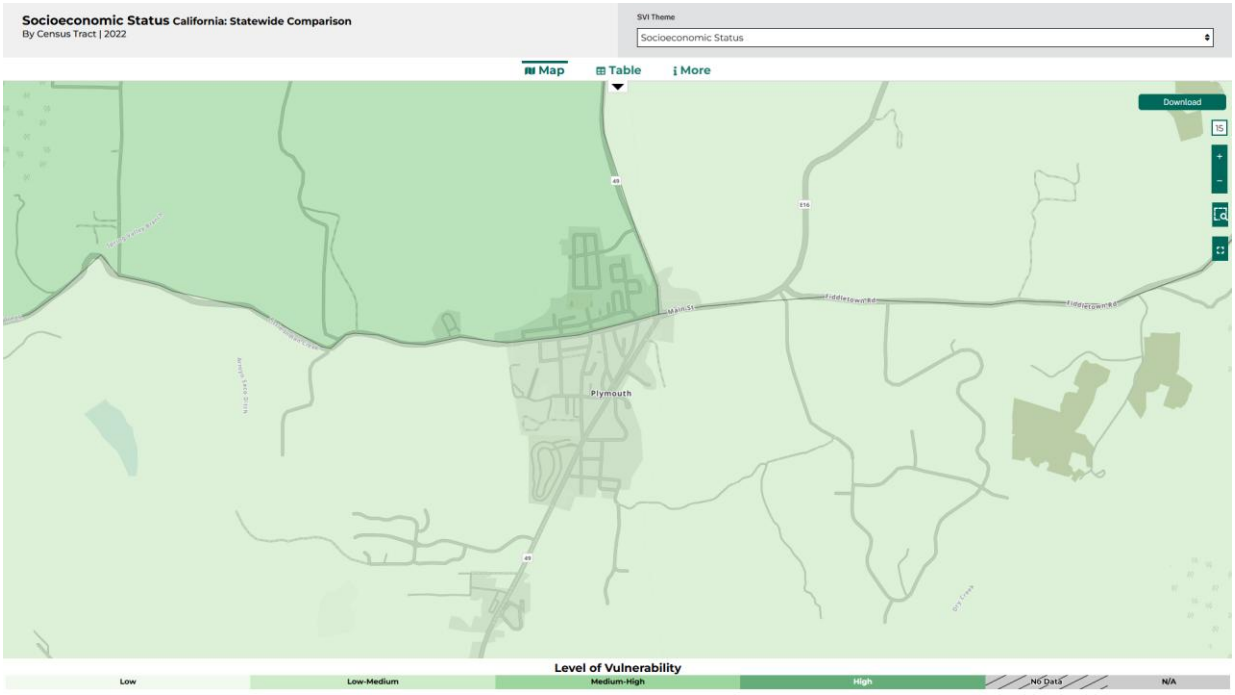
The overall SVI map is shown in Figure D-2; the socioeconomic SVI for the census tracts in and around the City are shown in Figure D-3; the household composition SVI is shown in Figure D-4; the minority and language SVI is shown in Figure D-5; and the housing and transportation SVI is shown in Figure D-6. Overall, the maps indicate that, in general, the City sees little change in social vulnerability regardless of location. As shown, there is very minimal change in the SVI across the City, with the northwestern part of the City typically seeing a slightly higher rating.

Figure D-2 City of Plymouth – Overall Social Vulnerability



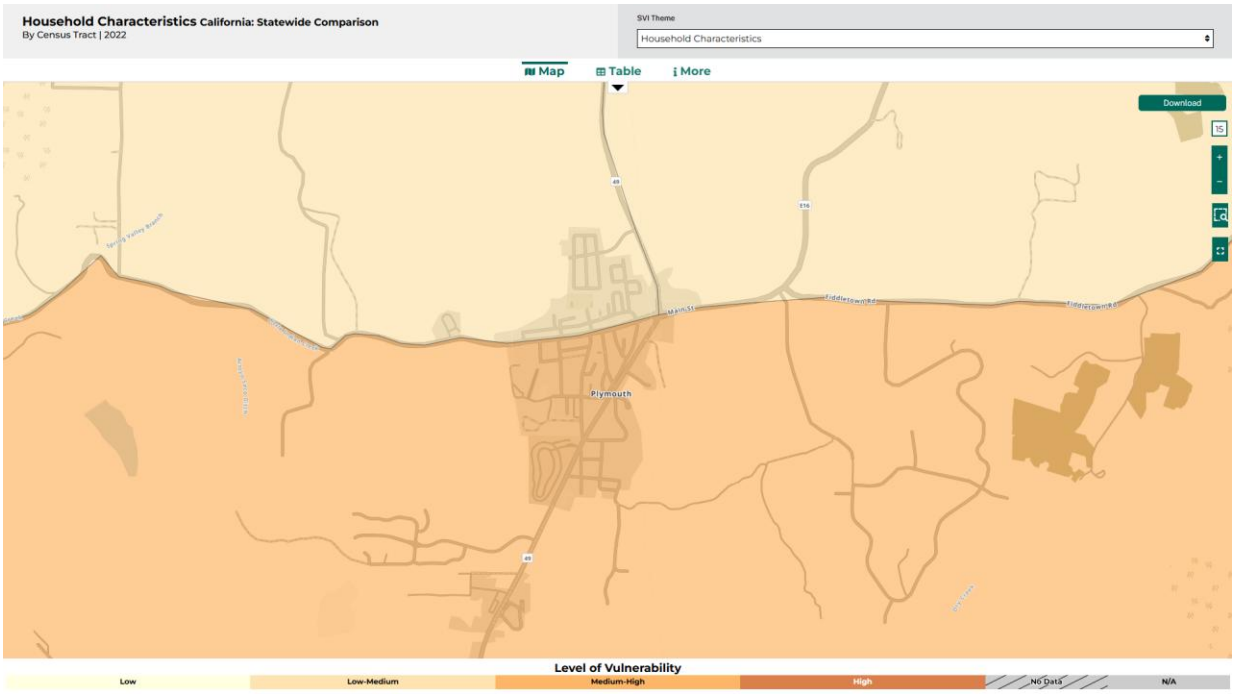
Source: CDC Social Vulnerability Index – map retrieved 12/16/2024
Level of Vulnerability Rating: **Yellow** – Low; **Green** – Low/Medium; **Aqua** – Medium/High; **Blue** – High; **Grey Hatched** – No Data; **Grey** – Not Available

Figure D-3 City of Plymouth – Socioeconomic Status Vulnerability



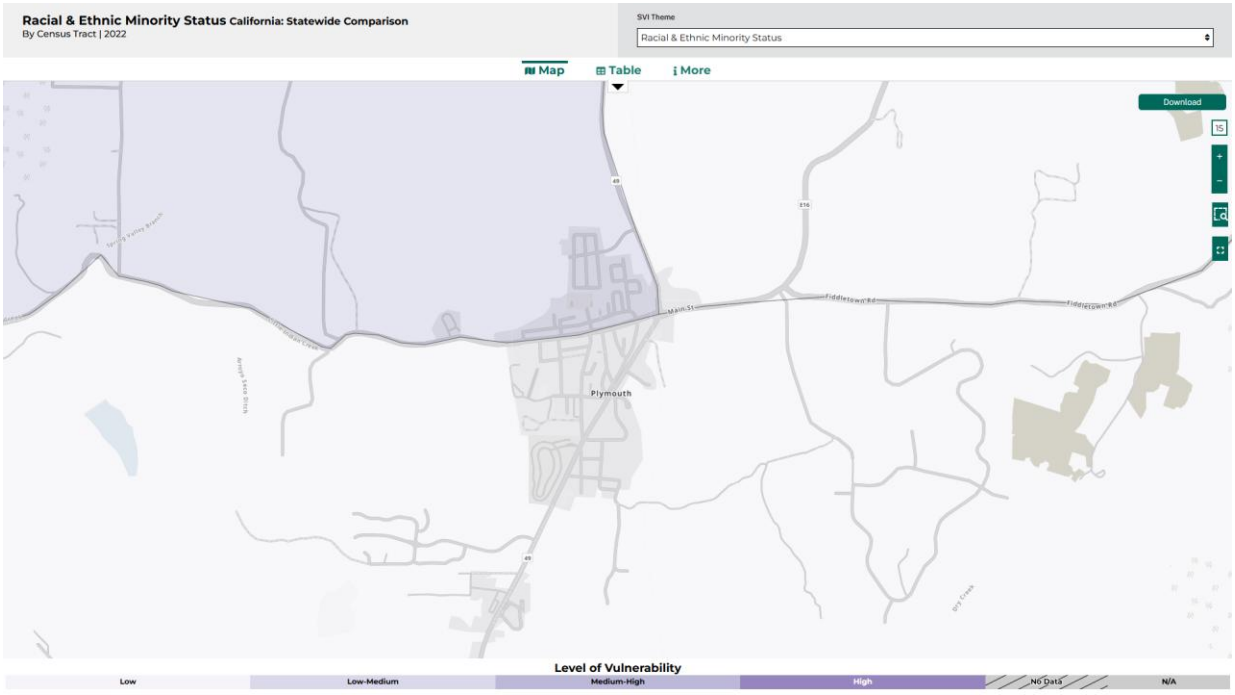
Source: CDC Social Vulnerability Index – map retrieved 12/16/2024
Level of Vulnerability Rating: **Faint Green** – Low; **Light Green** – Low/Medium; **Green** – Medium/High; **Dark Green** – High; **Grey Hatched** – No Data; **Grey** – Not Available

Figure D-4 City of Plymouth – Household Characteristics



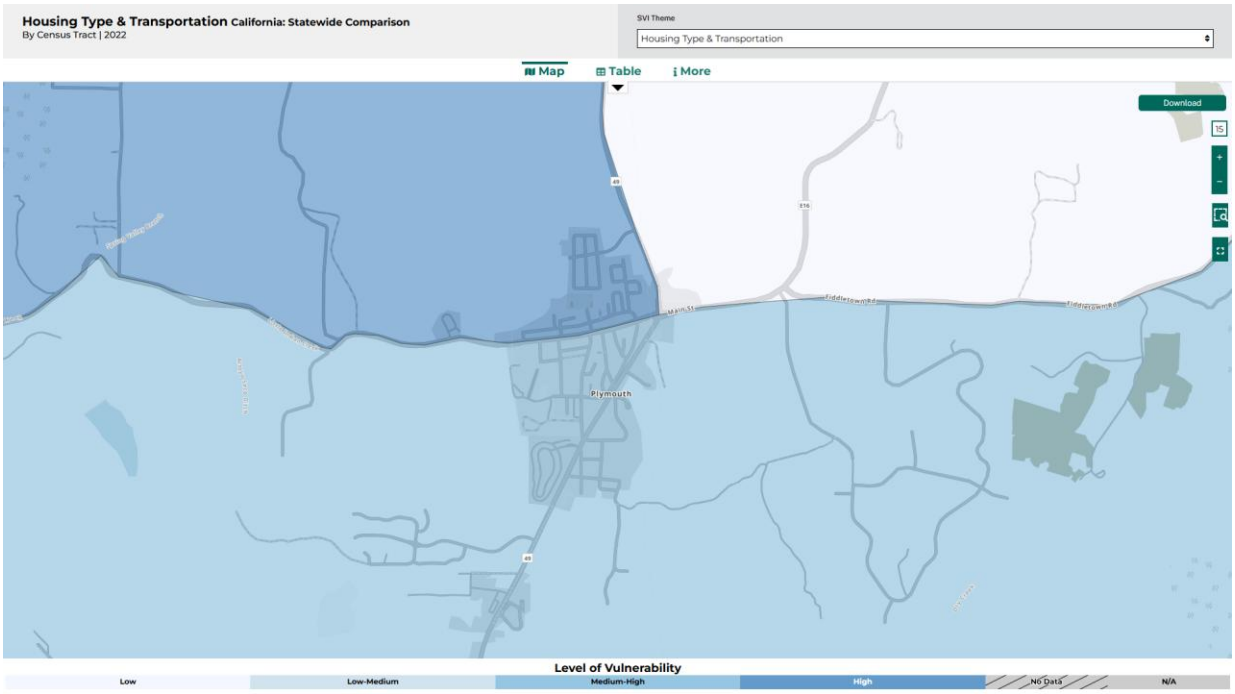
Source: CDC Social Vulnerability Index – map retrieved 12/16/2024
Level of Vulnerability Rating: **Faint Orange** – Low; **Light Orange**– Low/Medium; **Orange** – Medium/High; **Dark Orange** – High; **Grey Hatched** – No Data; **Grey** – Not Available

Figure D-5 City of Plymouth – Racial and Ethnic Minority Status



Source: CDC Social Vulnerability Index – map retrieved 12/16/2024
Level of Vulnerability Rating: **Faint Purple** – Low; **Light Purple** – Low/Medium; **Purple** – Medium/High; **Dark Purple** – High; **Grey Hatched** – No Data; **Grey** – Not Available

Figure D-6 City of Plymouth – Housing Type and Transportation

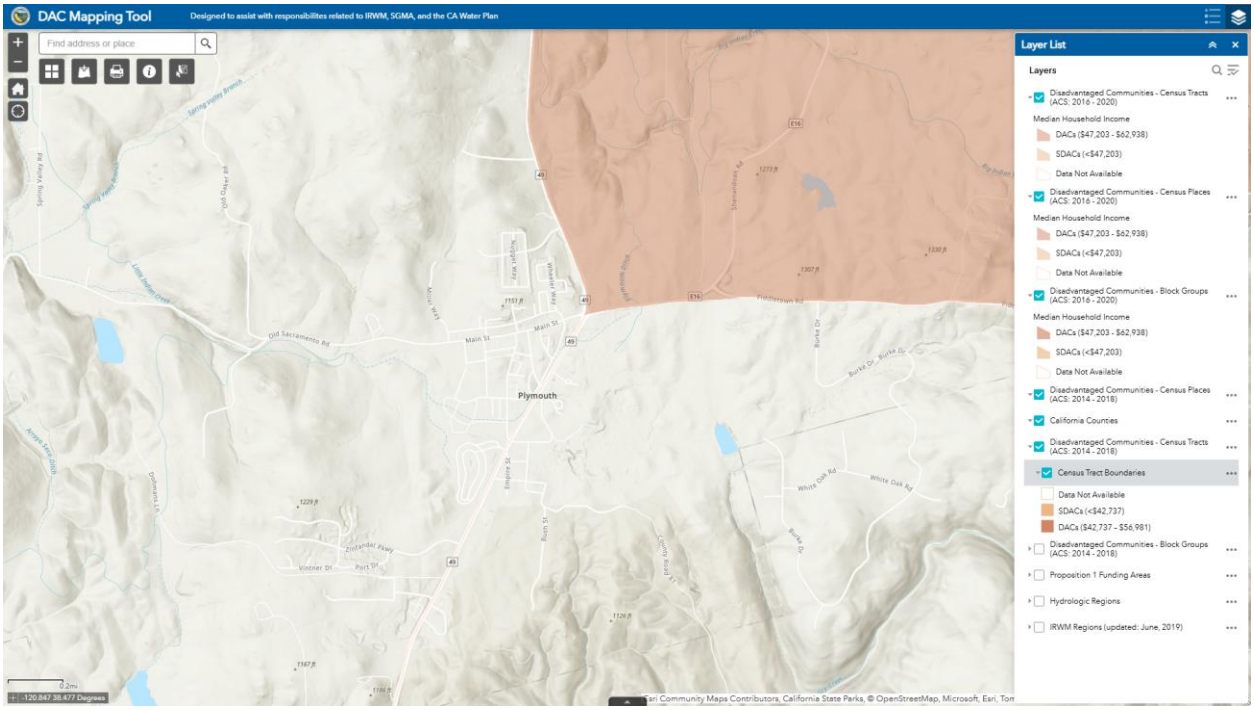


Source: CDC Social Vulnerability Index – map retrieved 12/16/2024
Level of Vulnerability Rating: **Faint Blue** – Low; **Light Blue** – Low/Medium; **Blue** – Medium/High; **Dark Blue** – High; **Grey Hatched** – No Data; **Grey** – Not Available

California DWR Disadvantaged Community Mapping Tool

The State of California's Proposition 1 Disadvantaged Community (DAC) Involvement Program is designated to ensure the involvement of DACs as well as Economically Distressed Areas and Underrepresented Communities, which DWR collectively refers to as DACs. The Cal DWR definition for a Disadvantaged Community is a community with an annual median household income (MHI) that is less than 80% of the Statewide annual MHI (PRC Section 75005(g)), and those census geographies with an annual MHI less than 60% of the Statewide annual MHI are considered "Severely Disadvantaged Communities". Those areas in the City considered disadvantaged are shown in Figure D-7. As shown, these areas fall adjacent to the northeastern part of the City.

Figure D-7 City of Plymouth – Disadvantaged Areas

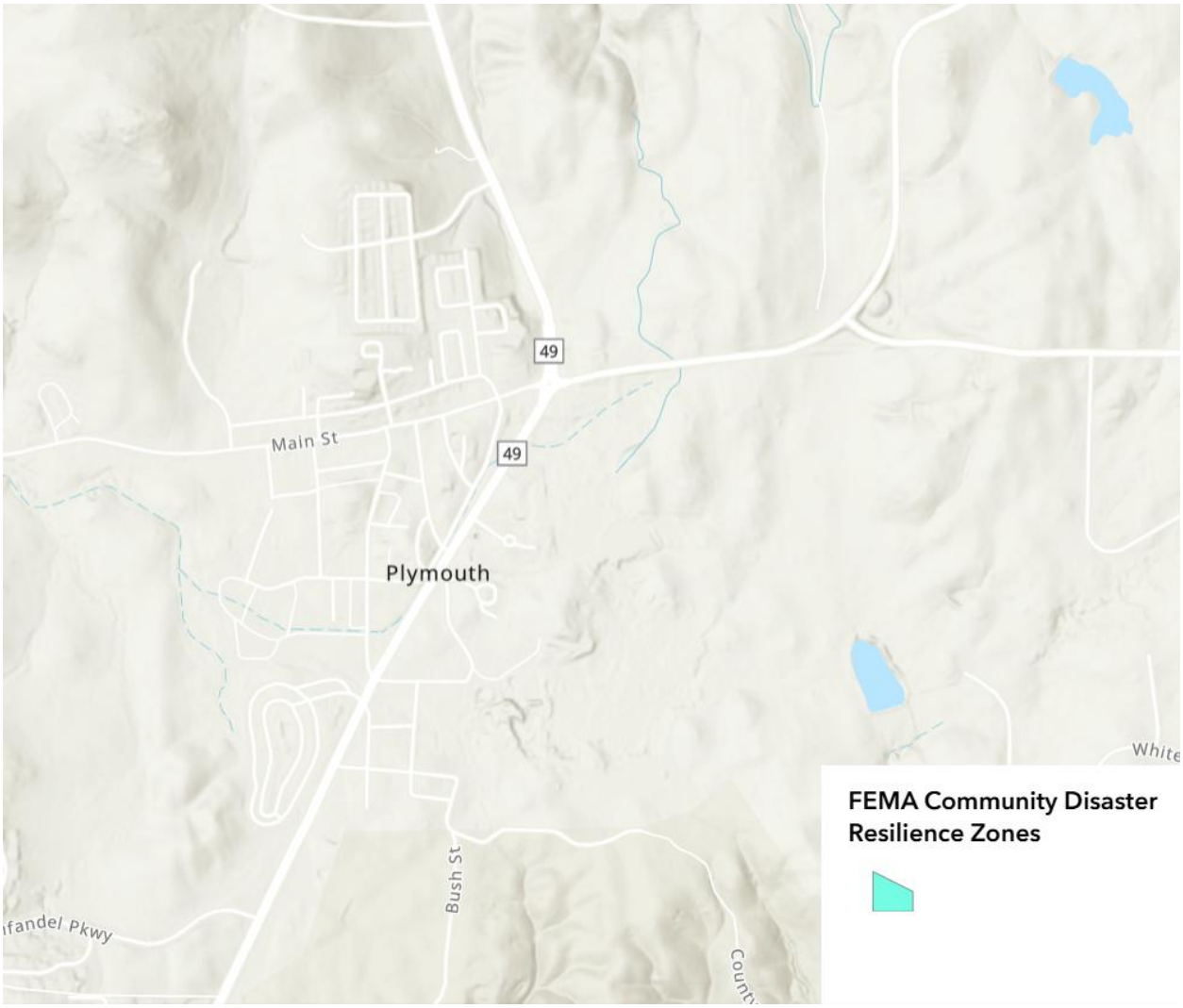


Source: Cal DWR DAC Mapping Tool – retrieved 12/16/2024

FEMA Community Disaster Resilience Zones

Community Disaster Resilience Zones aim to build and strengthen community resilience across the nation by driving federal, public, and private resources to the most at-risk and in-need communities. The Community Disaster Resilience Zones Act uses FEMA's National Risk Index to identify the most at-risk and in-need communities to identify resilience zones. Designated zones will be prioritized for targeted federal support, such as increased cost-share for resilience and mitigation projects, lessening the financial burden on communities to perform resilience-related activities. On September 6, 2023, FEMA announced the initial 483 designations in all 50 states and the District of Columbia. Figure D-8 shows these zones in teal green. As shown, there are no zones near the City limits.

Figure D-8 City of Plymouth – FEMA Community Disaster Resilience Zones



Source: FEMA. Map retrieved 12/16/2024

City Planning Team Input

There are certain populations in the City that are at greater risk to hazards, due to circumstances beyond their control. These populations in the City present a unique challenge when natural hazards arise. The City noted a few special populations that exist in the City:

- 21.3% of the population speaks Spanish. Many of these are agricultural workers. This language barrier presents unique challenges.
- 12.9% of adults are senior citizens. Some (but not all) lack mobility. This can cause issues during evacuations. This can also cause challenges during times of Public Safety Power Shutdowns (PSPS).

City of Plymouth Items from the Amador County 2021-2029 Housing Element

The City Planning Team noted that the Amador County 2021-2029 Housing Element discusses special populations in the City. While the Housing Element information can be found in the base plan, there are

unique elements to the City that are included here. Discussions for seniors, those with disabilities, developmental disabilities, people experiencing homelessness, large households, female headed households, extremely low-income households, and farmworkers were included. These are discussed below.

Seniors

The total population of seniors in Plymouth is 105 (10.7%) persons. 13.3% of this population are owners while 5.4% rent their residence.

Disabled Citizens

The total population of disabled citizens in the City is 9.5% of the population.

People with Developmental Disabilities

Due to the method of gathering data using zip codes, it is estimated that there are a total of >11 individuals with developmental disabilities residing in the City.

People Experiencing Homelessness

The Amador Tuolumne Community Action Agency was contacted for homeless data, but there is no collection of data at the individual jurisdiction level.

Large Households

Large households are defined as 5 or more persons residing in the same home, which only makes up 6.9% of the total households countywide. In the City, 12.5% of this population owned homes with 5 or more people, with 21.0% renting.

Female Headed Households

Female headed households make up 17.3% of the City's population. Of this percentage, 53.8% live below the poverty line.

Farmworkers

The City data shows that 75 persons (14.8%) of 506 employed residents work in the agriculture, (also including forestry, fishing, hunting, and mining) industry.

Extremely Low Income

The level of poverty in a jurisdiction often influences the need for housing to accommodate those persons and families in the Very Low and Low-income categories. The U.S. Census Bureau measures poverty by using a set of money income thresholds that vary by family size and composition of who is in poverty. If a family's total income is less than the family's threshold, then that family and every individual in it is considered in poverty. While the overall County experiences a poverty rate of 9.9%, the City has a

percentage of individuals and households likely to be living in poverty. In 2019, 10.6% of individuals and families living in the City were living below the poverty level.

Structures

This section inventories the parcels (and associated structures) that make up the built environment of the City. The 2024 Amador County Assessor's data and the associated parcel layer was used as the basis of this inventory. The methodology used to derive the number of total and improved parcels (i.e., those with an improved structure value) and land and improved property values (as well as content replacement values) follows the same methodology detailed in Section 4.2.1 of the Base Plan. This data should only be used as a guideline to overall values in the City, as the information has some limitations. The most significant limitations are created by Proposition 13. With respect to Proposition 13, instead of adjusting property values annually, the values are not adjusted or assessed at fair market value until a property transfer occurs. As a result, overall value information is most likely low and does not reflect current market value of properties within the City. It is also important to note, in the event of a disaster, it is often the value of the infrastructure or improvements to the land that is of concern or at risk. Generally, the land itself is not a loss. However, depending on the type of hazard and impact of any given hazard event, land values may be adversely affected; thus, land values are included as appropriate. Table D-6 shows the Amador County Parcel/Assessor Data land and structure values and content replacement values (e.g., the values at risk) broken down by property use for the City.

Table D-6 City of Plymouth – Total Value of Parcels and Structures by Property Use

Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value
Agricultural	12	6	$5,876,107	$1,031,502	$1,031,502	$7,939,111
Commercial	60	46	$15,510,755	$20,047,039	$20,047,039	$55,604,833
Industrial	0	0	$0	$0	$0	$0
Miscellaneous	33	0	$68,833	$0	$0	$68,833
Residential	512	433	$63,263,187	$96,367,200	$48,183,600	$207,813,987
Unknown	8	3	$424,481	$921,665	$0	$1,346,146
Plymouth Total	**625**	**488**	**$85,143,363**	**$118,367,406**	**$69,262,141**	**$272,772,910**

Source: 2024 Amador County Parcel/Assessor Data

Critical Facilities and Infrastructure

Beyond just the buildings and structures that comprise the built environment, it is important to identify the critical facilities and infrastructure that are critical for life safety and property protection. This is done for the City of Plymouth below.

For purposes of this plan, a critical facility is defined as:

> ***Any facility, including without limitation, a structure, infrastructure, property, equipment or service, that if adversely affected during a hazard event may result in***

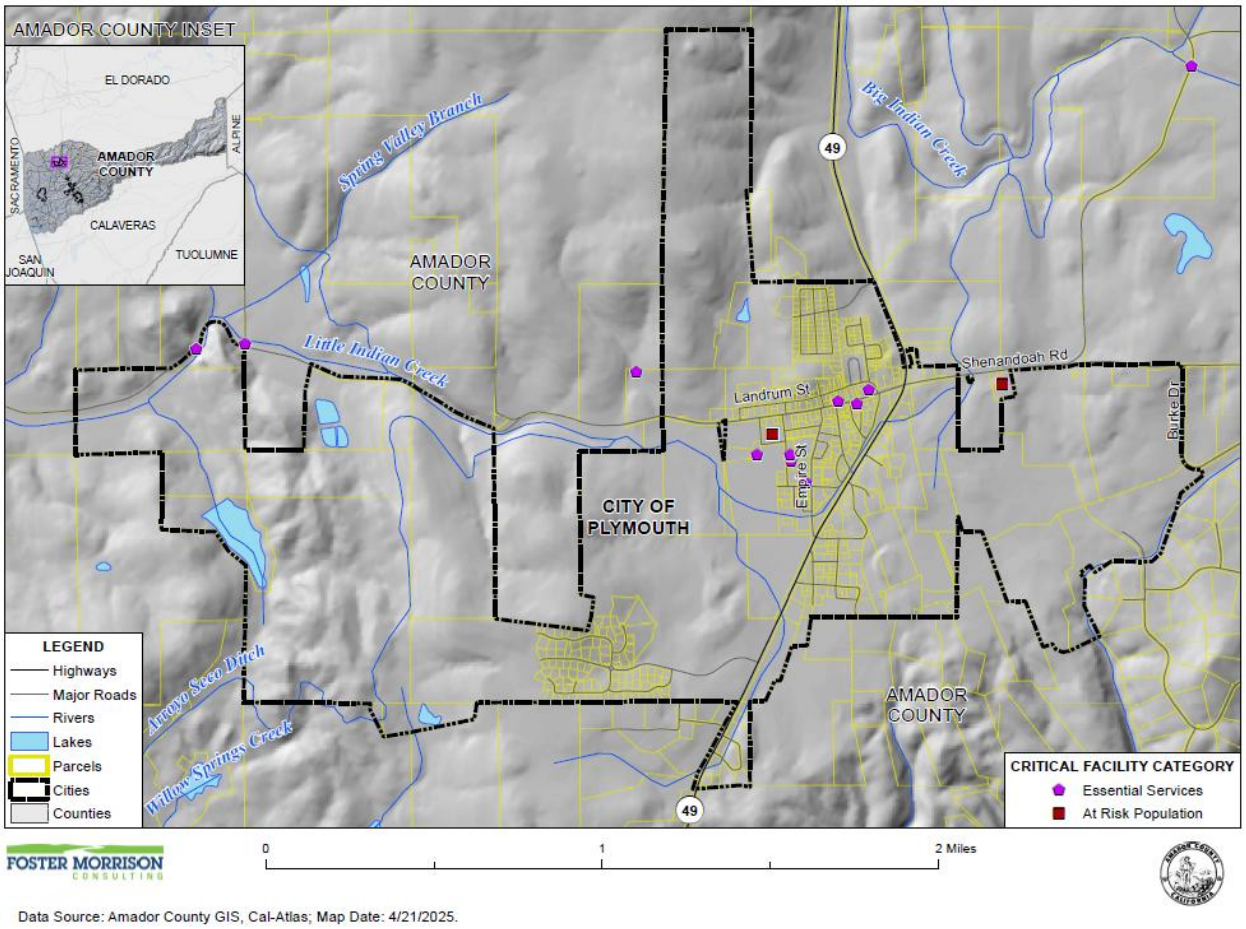
severe consequences to public health and safety or interrupt essential services and operations for the community at any time before, during and after the hazard event.

A critical facility is classified by the following categories: (1) Essential Services Facilities, (2) At-Risk Populations Facilities, and (3) Hazardous Materials Facilities, as discussed in Section 4.3.1 of the Base Plan.

Note: The Hazardous Materials Facilities, while considered critical facilities for purposes of this Plan Update, are not mapped in this Plan due to the lack of an available GIS layer. In addition to the mapped critical facilities, it should further be noted that additional critical facilities, including infrastructure, utilities, and others have been identified for the City of Plymouth and the larger Amador County Planning Area but are not included in the mapping and inventory due to privacy and security concerns.

An inventory of critical facilities in the City of Plymouth from Amador County GIS is shown on Figure D-9. Table D-7 gives summary information about the critical facilities in the City. Table D-8 details the facility categories and breaks them down by facility type. Details of critical facility definition, type, name, address, and jurisdiction by hazard zone are listed in Appendix F.

Figure D-9 City of Plymouth – Critical Facilities



Data Source: Amador County GIS, Cal-Atlas; Map Date: 4/21/2025.

Table D-7 City of Plymouth – Critical Facilities by Category

Critical Facility Category	Facility Count
Essential Services Facilities	8
At Risk Population Facilities	1
City of Plymouth Total	**9**

Source: Amador County GIS

Table D-8 City of Plymouth – Critical Facilities by Category and Type

Critical Facility Category	Critical Facility Type	Facility Count
Essential Services	Bridge	1
	Clinic	1
	EMS Station	1
	Evacuation Shelter	1
	Fire Station	1
	Library	1
	Post Office	1
	Public Administration Building	1
	Essential Services Total	8
At Risk Population	School	1
	At Risk Population Total	**1**
Plymouth Total		**9**

Source: Amador County GIS

Community Lifelines

Assessing the vulnerability of the City of Plymouth to natural hazards and disasters also involves reviewing and inventorying the community lifelines in place that could be affected. It is important to include these items in hazard discussions as the continuous operation of critical government and business functions is essential to human health and safety, property protection, and economic security. The importance of community lifelines is discussed below:

- Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function.
- FEMA has developed a method for objectives-based response that prioritizes the rapid stabilization of Community Lifelines after a disaster.
- The integrated network of assets, services, and capabilities that provide lifeline services are used day-to-day to support the recurring needs of the community and enable all other aspects of society to function.
- When disrupted, decisive intervention (e.g., rapid re-establishment or employment of contingency response solutions) is required to stabilize the incident.

Community lifelines, as defined by FEMA, include the following:

- **Safety and Security** – Law Enforcement/Security, Fire Service, Search and Rescue, Government Service, Community Safety
- **Food, Hydration, Shelter** – Food, Water, Shelter, Agriculture
- **Health and Medical –** Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management
- **Energy –** Power Grid, Fuel
- **Communications** – Infrastructure, Responder Communications, Alerts Warnings and Messages, Finance, 911 and Dispatch
- **Transportation** – Highway/Roadway/Motor Vehicle, Mass Transit, Railway, Aviation, Maritime
- **Hazardous Material –** Facilities, HAZMAT, Pollutants, Contaminants
- **Water Systems** – Potable Water Infrastructure, Wastewater Management

It should be noted that these community lifelines are all in place and functional as part of regular government operations in the Amador County Planning Area serving as a partnership between the cities, local special districts and agencies, and Amador County. Due to its more rural nature, there is an interplay in community lifelines between all jurisdictions in the County. Most all of the City's community lifelines overlap with the Planning Area's s. It should also be noted that these lifelines collectively include many of the critical facilities and infrastructure assets inventoried for this LHMP. As such, specific information on these community lifelines in the City and how they may be affected by a hazard event or disaster are discussed collectively for all jurisdictions in the Base Plan.

Natural, Historic, and Cultural Resources

Assessing the vulnerability of the City of Plymouth to natural hazards and disasters also involves inventorying the natural, historic, and cultural assets of the area. This step is important for the following reasons:

- Environmental and natural resources add to a community's identity and quality of life. They also help the local economy through agriculture, tourism, and recreation. They support ecosystem services, such as clean air and water.
- Conserving the environment may help people mitigate risk. It can also protect sensitive habitats, develop parks and trails, and build the economy.
- The community may decide that these types of resources warrant a greater degree of protection due to their unique and irreplaceable nature and contribution to the overall economy.
- If these resources are impacted by a disaster, knowing so ahead of time allows for more prudent care in the immediate aftermath, when the potential for additional impacts are higher.
- The rules for reconstruction, restoration, rehabilitation, and/or replacement are often different for these types of designated resources.
- Natural resources can have beneficial functions that reduce the impacts of natural hazards, such as wetlands and riparian habitat, which help absorb and attenuate floodwaters.

Natural Resources

The City contains a variety of natural resources. Natural resources are unique to each area, often provide an important function, and are difficult to replace. Should a natural disaster occur, these species, resources, and locations are at risk.

Plymouth is located in the Foothill Belt or Upper Sonoran Zone. It is a region that runs north and south along the foothills of the Sierra Nevada that is characterized by digger pine, interior live oak, blue oak, and various types of chaparral. A diverse group of wildlife species occur within the City and immediate area, due primarily to the variety of habitat types. Many of the wildlife species found are year-round residents, while others are migratory. Examples of wildlife found in the area include:

- Reptiles and amphibians. Garter snake, king snake, rattle snake, gopher snake, racers, western fence lizard, alligator lizard, western skink, slender salamander, arboreal salamander, western toad, California newt, and California tree frog.
- Birds. Scrub jay, Stellar's jay, rufous-sided towhee, sparrows, vireos, warblers, wrens, bluebird, western tanager, varied thrush, whitebreasted nuthatch, plain titmouse, acorn woodpecker, northern flicker, great horned owl, northern oriole, red-tailed hawk, American kestrel, wild turkey, and quail.
- Mammals. Mule deer, jack rabbit, bobcat, red fox, grey fox, mountain lion, black bear, deer mouse, California vole, Botta's pocket gopher, ground squirrel, western grey squirrel, striped skunk, raccoon, opossum, and porcupine.

Special status species are those plants and animals listed as rare, threatened, or endangered by the state or Federal governments, species designated as candidates for inclusion in those listings, and species categorized as California Species of Special Concern.

Recently, the Western Burrowing Owl, Sierra Nevada Red Fox and Bearlake Buckwheat shrub were all granted protection under the 2024 California Endangered Species Act (CESA). These are all present in areas surrounding the City.

Wetlands and their Natural and Beneficial Functions

Wetlands are habitats in which soils are intermittently or permanently saturated or inundated. Wetland habitats vary from rivers to seasonal ponding of alkaline flats and include swamps, bogs, marshes, vernal pools, and riparian woodlands. Wetlands are considered to be waters of the United States and are subject to the jurisdiction of the U.S. Army Corps of Engineers as well as the California Department of Fish and Wildlife (CDFW). Where the waters provide habitat for federally endangered species, the U.S. Fish and Wildlife Service may also have authority.

Wetlands are a valuable natural resource for communities providing beneficial impact to water quality, wildlife protection, recreation, and education, and play an important role in hazard mitigation. Wetlands provide drought relief in water-scarce areas where the relationship between water storage and streamflow regulation is vital and reduce flood peaks and slowly release floodwaters to downstream areas. When surface runoff is dampened, the erosive powers of the water are greatly diminished. Furthermore, the reduction in the velocity of inflowing water as it passes through a wetland helps remove sediment being transported by the water.

Wetlands are often found in floodplains and depressional areas of a watershed. Many wetlands receive and store floodwaters, thus slowing and reducing downstream flow. Wetlands perform a variety of ecosystem functions including food web support, habitat for insects and other invertebrates, fish and wildlife habitat, filtering of waterborne and dry-deposited anthropogenic pollutants, carbon storage, water flow regulation (e.g., flood abatement), groundwater recharge, and other human and economic benefits.

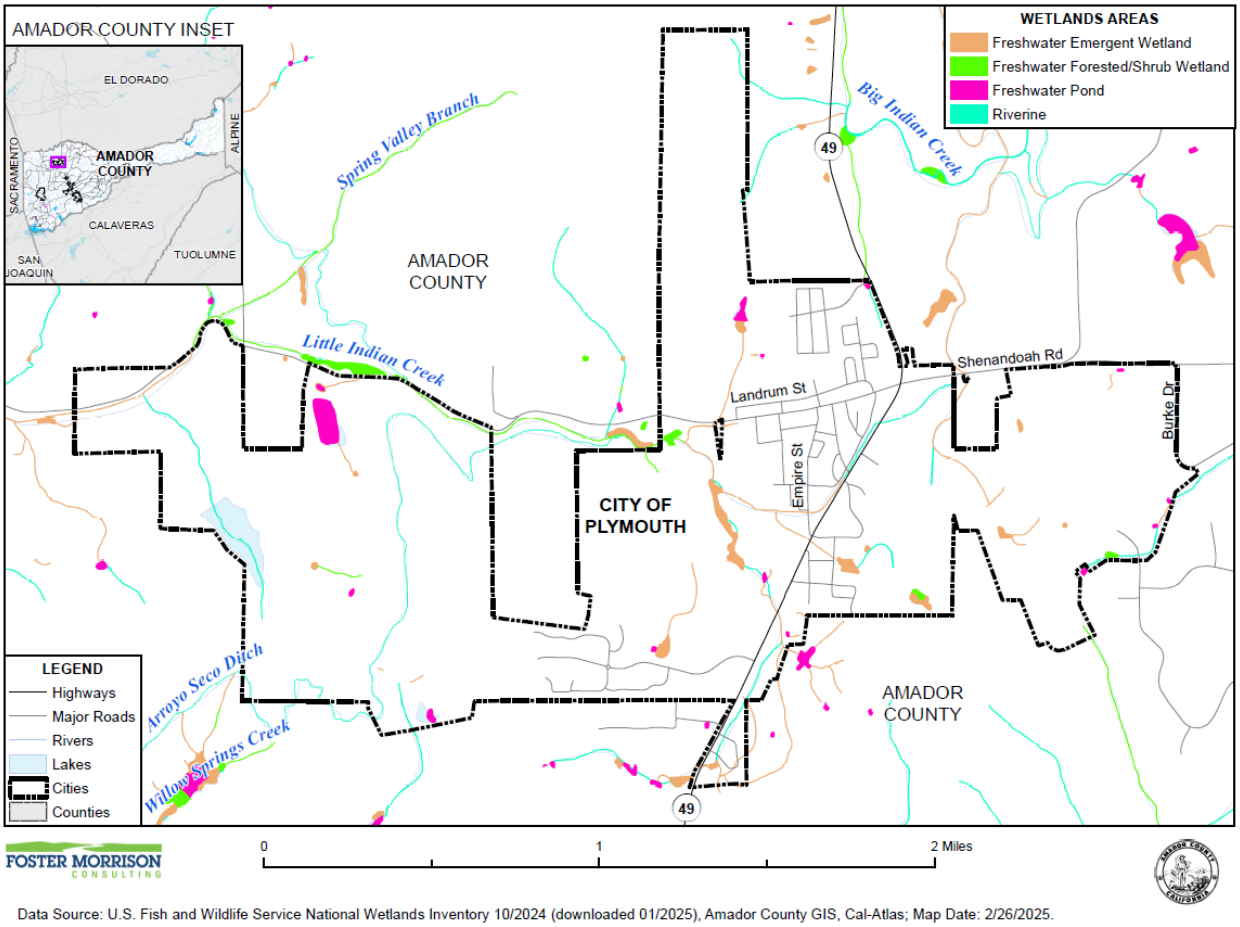
Wetlands, and other riparian and sensitive areas, provide habitat for insects and other invertebrates that are critical food sources to a variety of wildlife species, particularly birds. There are species that depend on these areas during all parts of their lifecycle for food, overwintering, and reproductive habitat. Other species use wetlands and riparian areas for one or two specific functions or parts of the lifecycle, most commonly for food resources. In addition, these areas produce substantial plant growth that serves as a food source to herbivores (wild and domesticated) and a secondary food source to carnivores.

Wetlands slow the flow of water through the vegetation and soil, and pollutants are often held in the soil. In addition, because the water is slowed, sediments tend to fall out, thus improving water quality and reducing turbidity downstream.

These natural floodplain functions associated with the natural or relatively undisturbed floodplain that moderates flooding, such as wetland areas, are critical for maintaining water quality, recharging groundwater, reducing erosion, redistributing sand and sediment, and providing fish and wildlife habitat. Preserving and protecting these areas and associated functions are a vital component of sound floodplain management practices for the City.

Wetlands in the City are shown in Figure D-10 and detailed in Table D-9.

Figure D-10 City of Plymouth – Wetlands Areas



Data Source: U.S. Fish and Wildlife Service National Wetlands Inventory 10/2024 (downloaded 01/2025), Amador County GIS, Cal-Atlas; Map Date: 2/26/2025.

Table D-9 City of Plymouth – Wetland Types and Acreages

Wetlands Area Type	Wetlands Count	Wetlands Area (in Acres)
Freshwater Emergent Wetland	35	19.89
Freshwater Forested/Shrub Wetland	6	3.23
Freshwater Pond	19	8.40
Lake		
Riverine	19	9.75
Plymouth Total	**79**	**41.27**

Source: US Fish and Wildlife Service

Historic and Cultural Resources

Historic and cultural resources are difficult to replace. Should a natural disaster occur, these properties and locations can be at risk. The City of Plymouth has a stock of historically significant homes, public buildings, and landmarks. The California Department of Parks and Recreation Office of Historic Preservation (OHP) was the primary source of information. OHP administers the National Register of Historic Places, the California Register of Historical Resources, California Historical Landmarks, and the California Points of Historical Interest programs. Each program has different eligibility criteria and procedural requirements. These requirements are detailed in Section 4.2.1 of the Base Plan. Table D-10 shows 2 historic buildings in the City in the OHP Database.

Table D-10 City of Plymouth – Historic Resources

Resource Name (Plaque Number)	National Register	State Landmark	Point of Interest	Date Listed	City/ Community
Plymouth Trading Post (470)		X		8/30/1950	Plymouth
D'Agostini Winery (762)		X		4/28/1961	Plymouth

Source: California Department of Parks and Recreation Office of Historic Preservation. Retrieved 12/3/2024.

It should be noted that these lists may not be complete, as they may not include those currently in the nomination process and not yet listed. Additionally, as defined by the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA), any property over 50 years of age is considered a historic resource and is potentially eligible for the National Register. Thus, in the event that the property is to be altered, or has been altered, as the result of a major federal action, the property must be evaluated under the guidelines set forth by CEQA and NEPA. Structural mitigation projects are considered alterations for the purpose of this regulation.

Economic Assets and Community Activities of Value

Assessing the vulnerability of the City of Plymouth to natural hazards and disasters also involves inventorying the economic assets and community activities of value in the City.

Economic Assets

After a disaster, economic resiliency is one of the major drivers of a speedy recovery. Each community has specific economic drivers. These include:

- Primary Economic Sectors
- Major employers
- Commercial Centers

In the City of Plymouth, this includes the following:

- 49er Village RV Resort, Pokerville Market and numerous wineries throughout the unincorporated area of Plymouth

Note: This inventory of economic assets is only included in this overall asset inventory for the City. To limit redundancy, it is not discussed further in the hazard profiles and vulnerability assessments in Section D.4.3 below. However, depending on the type, location, magnitude and extent of future hazard events and disasters, these City's economic assets may be vulnerable.

Community Activities of Value

Inventorying economic assets in the City and their vulnerability to natural hazards and disasters also involves inventorying activities that have value to the community. This includes activities that are important to a community, like long-standing traditions such as a festival or fair. Some areas rely on seasonal industries to sustain them throughout the year. Many of these activities also provide economic benefits to the City. A hazard event that cancels or shortens these can affect a community's livelihood and can make disaster recovery more difficult or prolonged. This includes activities such as:

- Festivals and Fairs
- Sporting Events
- Tourism
- Local Pools
- Local Splash Pools

The City noted the following community activities of value:

- The Amador County Fair
- The Berry Festival (Fairgrounds)
- Annual Farmer's Market (only in the month of August)
- Sounds of September (live music and food trucks in Mcgee Park)
- 4th of July parade and fireworks event on Main Street

Note: This inventory of community activities of value only occurs in this overall asset inventory for the City. To limit redundancy, it is not discussed further in the hazard profiles and vulnerability assessments in Section D.4.3 below. However, depending on the type, location, magnitude and extent of future hazard events and disasters, the City's community activities of value may be vulnerable.

Growth and Development Trends

As part of the planning process, the City looked at changes in growth and development, both current and future, and examined these changes in the context of hazard-prone areas, and how the changes in growth and development affect loss estimates and vulnerability over time.

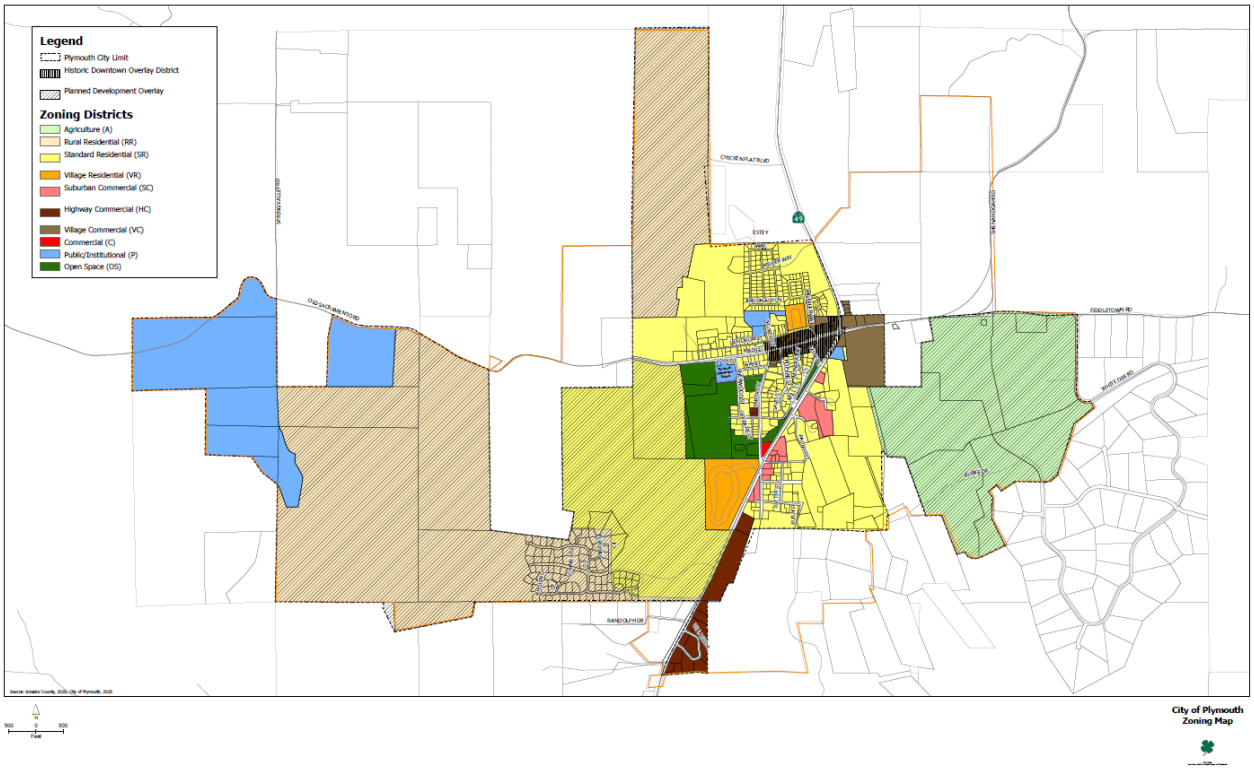
Land Use

State planning law requires that a land use element of a general plan includes a statement of the standard population density, building intensity, and allowed uses for the various land use designations in the plan (Government Code Section 65302(a)). The City's land use designations are generally described below and mapped on the Land Use Diagram (Figure D-11). The City of Plymouth Municipal Code provides detailed land use and development standards for development.

The Municipal Code works hand in hand with the City's General Plan Land Use Element (last completed in 2009). The purpose of the Land Use Element is to provide goals, policies, actions diagrams and standards to guide future land use decisions in the City of Plymouth. While all elements of the General Plan have equal weight under California law, in some respects this Element is the most far-reaching. It informs all other elements of the General Plan, shaping the future transportation network and the location of future housing sites, and influencing public facility requirements and park and recreation needs. It defines the City's future open space system and responds to natural resource conservation issues and safety hazards. It establishes the basic pattern of development in the City for the next 20-25 years, including land uses and densities, and presents the policies and actions to ensure that future development will enhance the quality of life for all City of Plymouth residents.

The City Zoning Map (based on the 2009 Land Use Element but updated in 2025) is shown on Figure D-11.

Figure D-11 City of Plymouth – Land Use Diagram



Source: City of Plymouth Planning Department. Retrieved 7/23/2025.

Population Trends and Projections

There are no future City population projections. Amador County as a whole is expected to slowly continue to increase in population. As such, it is assumed that the City may see slow population growth as well.

Development since 2020 Plan

Development has occurred in the City since the last plan. Some of this has occurred in hazard prone areas. The City Planning Department tracked total building permits issued since 2020 for the City. These are tracked by total development, property use type, and hazard risk area. These are shown in Table D-11 and Table D-12.

Table D-11 City of Plymouth – Total Development Since 2020

Property Use	2020	2021	2022	2023	2024
Residential	76	52	96	49	59
Commercial	4	12	14	9	9
Industrial	0	1	0	0	1
Other	1	0	1	3	2
Total	**81**	**65**	**111**	**61**	**71**

Source: City of Plymouth Planning Department

Table D-12 City of Plymouth – Development in Hazard Areas since 2020

Property Use	1% Annual Chance Flood	Levee Protected Area	Wildfire Risk Area[1]	Other
Total	**1**	**0**	**1**	**0**

Source: City of Plymouth Planning Department
[1]Moderate or higher wildfire risk area

Development has occurred in the identified hazard areas, including the 1% annual chance floodplains and high wildfire risk areas. It was completed in accordance with all current and applicable development codes, including floodplain ordinances, wildfire codes, and other applicable standards and should be adequately protected. Thus, with the exception of more people living in the area potentially exposed to natural hazards, this growth should not cause a significant change in vulnerability of the City to identified priority hazards.

Future Development Areas

It is important to review future development plans for the City. Future development should be sited in areas that are away from known hazard risks. If this is not possible, mitigation should be done to ensure that future development is protected against future hazards.

GIS Analysis

The City of Plymouth provided six areas in the City expected to see future development. These areas are described in Table D-13, then shown in Figure D-12 and detailed by parcels and acres in Table D-14.

Table D-13 City of Plymouth – Future Development Area Descriptions

Site / Map ID	Site/Location Name	Future Development Type	Units	Future Development Status	Comments / Description	Comments
A	ARCO Gas Station	Commercial	1	In Progress	New gas station with car wash and small market.	Planning Commission review noticed for June 19th with City Council to follow. Applicant plans on submitting immediately after Council hearing.
B	Hilton Hotel	Commercial	1	Under Review	88 Hotel rooms currently in planning review.	4.21 acres of an 17.47 acre site. Hotel parcel will be split from larger site.
C	Arroyo Woods	Residential	1	Proposed	Single family residential development	

Site / Map ID	Site/Location Name	Future Development Type	Units	Future Development Status	Comments / Description	Comments
D	Greilich Ranch	Residential	234	Under Review	234 Single family dwellings plus ADUs. CEQA work is underway.	008-060-044 (6/24/25 verified APN is not 008-060-039)
E	Shenendoah Ridge	Residential	137	TMAP Approved	Tentative Map has been approved, Final Map has not been recorded.	
F	Zinfandel Ridge	Residential	65	Approved	Phases 1-3 are built. Phase 4 is last remaining phase with 65 units	See map attached for location on Phase 4

Figure D-12 City of Plymouth – Future Development Areas

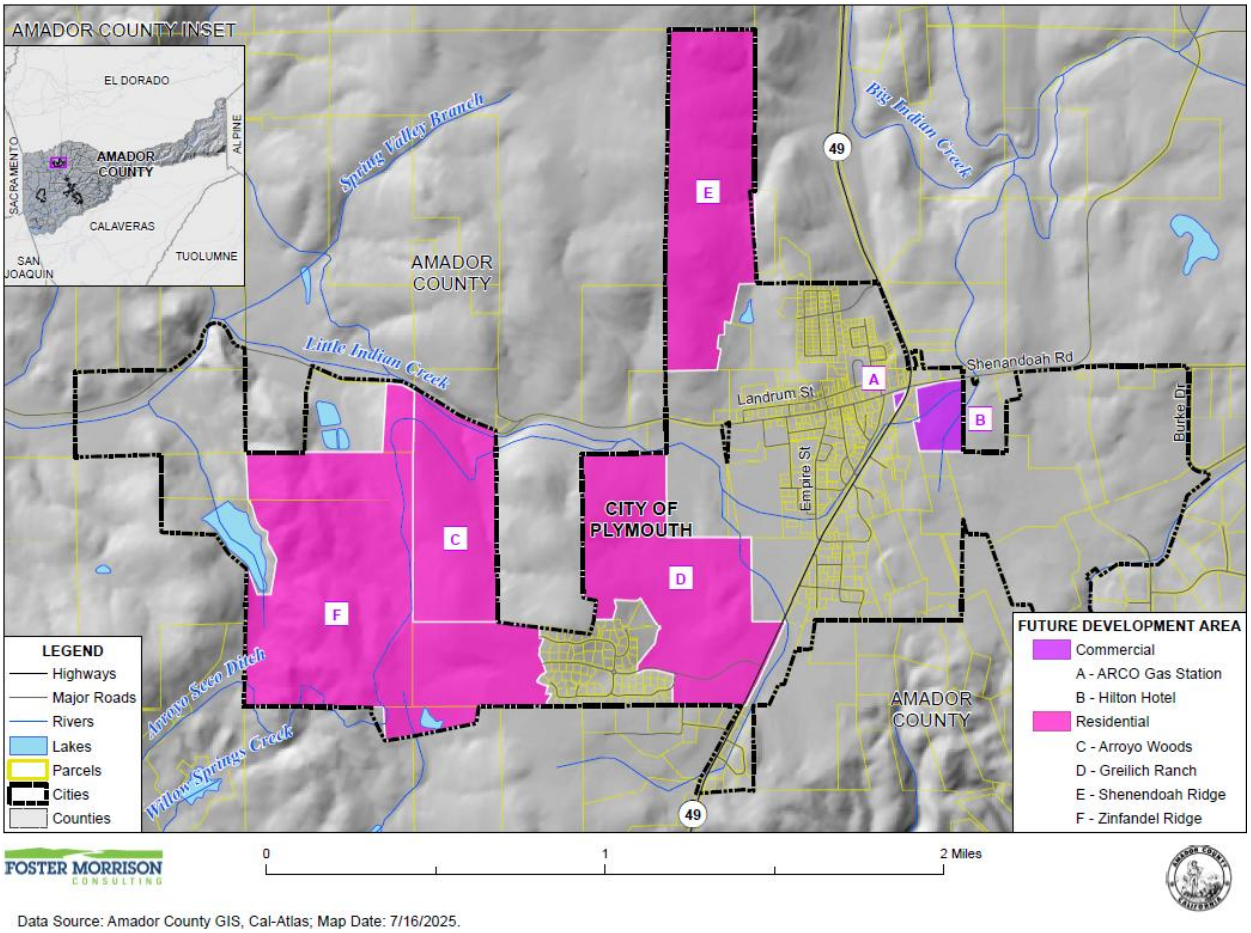


Table D-14 City of Plymouth – Parcels and Acres in Future Development Areas

Property Use /Site/Map ID - Future Development"	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
Commercial						
A - ARCO Gas Station	1	1	0	1.91	1.91	0
B - Hilton Hotel	1	0	1	4.21	0	4.21
Commercial Total	**2**	**1**	**1**	**6.12**	**1.91**	**4.21**
Residential						
C - Arroyo Woods	1	0	1	0	0	0
D - Greilich Ranch	1	1	0	161	161	0
E - Shenendoah Ridge	1	0	1	147	0	147
F - Zinfandel Ridge	5	0	5	365	0	365
Residential Total	**8**	**1**	**7**	**673**	**161**	**512**
Grand Total	**10**	**2**	**8**	**679.12**	**162.91**	**516.21**

Source: City of Plymouth

D.4.2. Hazard Identification

The City of Plymouth identified the hazards that affect the City and summarized their location, extent, likelihood of future occurrence, potential magnitude, and significance specific to the City (see Table D-15). Those hazards identified as a high or medium significance in Table D-15 are considered City of Plymouth priority hazards for mitigation planning. Those hazards that occur infrequently or have little or no impact in the City were determined to be of low significance and not considered a priority hazard. Significance was determined based on the hazard profile, focusing on key criteria such as frequency, extent, and resulting damage, including deaths/injuries and property, natural and cultural resources, and economic damage. The ability of a jurisdiction to reduce losses through implementation of existing and new mitigation measures was also considered as to the significance of a hazard. This assessment was used to prioritize those hazards of greatest significance, enabling the City to focus resources where they are most needed.

Table D-15 City of Plymouth—Hazard Identification Assessment

Hazard	Geographic Extent	Likelihood of Future Occurrences	Magnitude/ Severity	Significance	Climate Change Influence
Agricultural Hazards (severe weather/pests/invasive species)	Limited	Unlikely	Negligible	Low	Medium
Avalanche	Limited	Unlikely	Negligible	Low	Medium
Climate Change	Extensive	Likely	Limited	Medium	--
Dam Failure	Limited	Occasional	Limited	Low	Medium
Drought & Water shortage (w/ tree mortality)	Extensive	Likely	Limited	High	High
Earthquake (w/subhazards)	Limited	Unlikely	Negligible	Low	Low
Floods: 1%/0.2% annual chance (w/ levee failure)	Limited	Occasional	Limited	Medium	Medium
Floods: Localized Stormwater	Limited	Occasional	Limited	Medium	Medium
Landslide, Mudslide, Debris Flow	Limited	Occasional	Limited	Low	Medium
Severe Weather: Extreme Cold, Freeze, and Snow	Limited	Occasional	Negligible	Low	Medium
Severe Weather: Extreme Heat	Extensive	Highly Likely	Limited	Medium	High
Severe Weather: Heavy Rains and Storms (Hail, Lightning)	Extensive	Likely	Limited	Medium	Medium
Severe Weather: High Winds and Tornadoes	Limited	Unlikely	Negligible	Low	Medium
Wildfire (w/smoke and air quality)	Extensive	Likely	Catastrophic	High	Medium

Geographic Extent

Limited: Less than 10% of planning area

Significant: 10-50% of planning area

Extensive: 50-100% of planning area

Likelihood of Future Occurrences

Highly Likely: Near 100% chance of occurrence in next year, or happens every year.

Likely: Between 10 and 100% chance of occurrence in next year, or has a recurrence interval of 10 years or less.

Occasional: Between 1 and 10% chance of occurrence in the next year, or has a recurrence interval of 11 to 100 years.

Unlikely: Less than 1% chance of occurrence in next 100 years, or has a recurrence interval of greater than every 100 years.

Magnitude/Severity

Catastrophic: More than 50 percent of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths

Critical: 25-50 percent of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability

Limited: 10-25 percent of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable do not result in permanent disability

Negligible: Less than 10 percent of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid

Significance

Low: Minimal potential impact

Medium: Moderate potential impact

High: Widespread potential impact

Climate Change Influence

Low: Minimal potential impact

Medium: Moderate potential impact

High: Widespread potential impact

D.4.3. Hazard Profiles and Vulnerability to Specific Hazards

This section includes the hazard profiles and vulnerability assessment for hazards ranked of medium or high significance specific to the City of Plymouth (as identified in the Significance column of Table D-15) and also includes a hazard profile and vulnerability assessment to the four primary hazards to the State of California: dam failure, earthquake, flood, and wildfire, regardless of the significance ranking by the City. Chapter 4 of the Base Plan provides more detailed information about these hazards and their impacts on the Amador County Planning Area. Methodologies for evaluating vulnerabilities and calculating loss estimates are the same as those described in Section 4.2 of the Base Plan.

Hazard Profiles and Vulnerability Assessment

Each hazard is profiled in the following format:

- **Hazard Profile** – A hazard profile is included for each hazard. This includes information on:
  - ✓ **Hazard Overview** – A general discussion of the hazard and related issues is detailed here.
  - ✓ **Location** and **Extent** – Location is the geographic area within the City that is affected by the hazard. Extent is the expected range of intensity for each hazard. These are discussed in specific detail for mapped hazards, and in more general detail for those hazards that do not have discrete mapped hazard areas.
  - ✓ **Past Occurrences** – Past occurrences are discussed for each hazard. A discussion of disaster declarations is included in each hazard section. NCDC events are also discussed. Other past occurrences data specific to the City follow the disaster declarations and NCDC events for each hazard.
  - ✓ **Climate Change** – This section contains the effects of climate change (as applicable). The possible influence of climate change on the hazard is discussed.

After the hazard profile, a vulnerability assessment is presented. As part of the vulnerability assessment, an estimate of the vulnerability of the City to each identified hazard, in addition to the estimate of risk of future occurrence, is provided in each of the hazard-specific sections. Vulnerability is measured in general, qualitative terms and is a summary of the potential impact based on past occurrences, spatial extent, and damage and casualty potential. It is categorized into the following classifications:

- **Extremely Low**—The occurrence and potential cost of damage to life and property is very minimal to nonexistent.
- **Low**—Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal.
- **Medium**—Moderate potential impact. This ranking carries a moderate threat level to the general population and/or built environment. Here the potential damage is more isolated and less costly than a more widespread disaster.
- **High**—Widespread potential impact. This ranking carries a high threat to the general population and/or built environment. The potential for damage is widespread. Hazards in this category may have occurred in the past.
- **Extremely High**—Very widespread with catastrophic impact.

After this classification, a general discussion of hazard vulnerabilities occurs. This is done in the following format:

- **Local Concerns** – This includes City provided information on how the City is uniquely affected by or vulnerable to each hazard.
- **Assets at Risk** – A discussion of the assets at risk follows, presented in the same order as in Section D.4.1 above, with a few exceptions. This includes sections on: People and Populations; Structures; Critical Facilities and Infrastructure, and Natural, Historic, and Cultural Resources. These are discussed in specific terms for mapped hazards, and in more general terms for those hazards that are unmapped. Sections on Community Lifelines and Economic Assets and Community Activities of Value are not included in the Sections below, as they are fully covered in Section D.4.1 above and in Chapter 4 of the Base Plan.
- **Impacts** – A discussion on hazard impacts follows. Impacts describe how each hazard can affect the City and its assets. The type and severity of impacts reflect both the potential magnitude of the hazard and the vulnerability of the asset.
- **Future Conditions/Future Development** – A discussion of how future conditions and future development may affect the hazard is also included. This is addressed specifically for mapped hazards, and in more general terms for those hazards that are unmapped.

Power Interruption/Power Failure: A Common Vulnerability of all Hazards

An impact of almost all hazards evaluated as part of this LHMP Update relates to power shortage and/or power failures. The US power grid crisscrosses the country, bringing electricity to homes, offices, factories, warehouses, farms, traffic lights and even campgrounds. According to statistics gathered by the U.S. Department of Energy, major blackouts are on the upswing. Incredibly, over the past two decades, blackouts impacting at least 50,000 customers have increased 124 percent. The electric power industry does not have a universal agreement for classifying disruptions. Nevertheless, it is important to recognize that different types of outages are possible so that plans may be made to handle them effectively. In addition to blackouts, brownouts can occur. A brownout is an intentional or unintentional drop in voltage in an electrical power supply system. Intentional brownouts are used for load reduction in an emergency. Electric power disruptions can be generally grouped into two categories: intentional and unintentional. More information on types of power disruptions can be found in Section 4.3 of the Base Plan.

Public Safety Power Shutoff (PSPS)

An intentional disruption type of power shortage/failure event has been recently implemented in California as a result of wildfires starting as a result of downed power lines or electrical equipment. This was the case for the Camp Fire in 2018. As a result, California's three largest energy companies (including PG&E), at the direction of the California Public Utilities Commission (CPUC), are preparing all Californians for the threat of wildfires and power outages during times of extreme (fire) weather. To help protect customers and communities during extreme fire weather events, electric power may be shut off for public safety in an effort to proactively prevent wildfire. This is called a PSPS. More information on PSPS criteria can be found in Section 4.3 of the Base Plan.

In addition to PSPSs, to help prevent wildfires, electric utilities have begun to evolve safety efforts. This includes installing safety settings on powerlines in and around high fire-risk areas. These are known as

Enhanced Powerline Safety Settings (EPSS), and they help prevent falling tree branches, animals and other hazards from starting a wildfire. By stopping ignitions, it helps prevent wildfires from starting and spreading. According to PG&E, if ignitions occur, the size of fires are much smaller due to EPSS. In 2022, there was a 99% decrease in acres impacted by ignitions (as measured by fire size from electric distribution equipment (compared to the 2018-2020 average). This decrease occurred despite dry conditions.

Local Concerns

The City noted that there have been no PSPS events that have affected them.

Climate Change

Likelihood of Future Occurrence–Likely
Vulnerability–Medium

Hazard Profile

Climate change adaptation is a key priority of the State of California. The 2023 State of California Multi-Hazard Mitigation Plan noted that climate change is already affecting California. Sea levels have risen by as much as seven inches along the California coast over the last century, increasing erosion and pressure on the State's infrastructure, water supplies, and natural resources. The State has also seen increased average temperatures, more extreme hot days, fewer cold nights, a lengthening of the growing season, shifts in the water cycle with less winter precipitation falling as snow, and earlier runoff of both snowmelt and rainwater in the year. In addition to changes in average temperatures, sea level, and precipitation patterns, the intensity of extreme weather events is also changing.

California's Adaptation Planning Guide: Understanding Regional Characteristics (from 2017) has divided California into 11 different regions based on political boundaries, projected climate impacts, existing environmental setting, socioeconomic factors and regional designations. The City falls in the North Sierra Region. A map and climate projections for this region are shown in Section 4.3.7 of the Base Plan and include an increase in temperatures, moderate changes in rainfall, and increased risk to wildfire.

Location and Extent

Climate change is a global phenomenon. It is expected to affect the whole of the City of Plymouth, the Amador County Planning Area, surrounding counties, and State of California. There is no scale to measure the extent of climate change. Climate change exacerbates other hazards, such as drought, extreme heat, flooding, wildfire, and others. The speed of onset of climate change is very slow. The duration of climate change is not yet known but is feared to be tens to hundreds of years.

Past Occurrences

Disaster Declaration History

Climate change has never been directly linked to any declared disasters.

NCDC Events

NCDC does not track climate change events.

City of Plymouth Events

Climate change has never been directly linked to any declared disasters. While the City noted that climate change is of concern, no specific impacts of climate change could be recalled. The City and HMPC members noted that the strength of storms does seem to be increasing and the temperatures seem to be getting hotter.

Vulnerability to Climate Change

The whole of the City is at some measure of vulnerability to climate change. The City Planning Team has concerns that the vulnerability of the City to climate change will continue to increase in the future. An assessment of a community's vulnerability to climate change begins with an understanding of local exposure to climate change. This is included in the Local Concerns section below followed by a discussion of the City's assets at risk, and impacts to this hazard.

Local Concerns

The City has specific concerns and unique vulnerabilities regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce risk and vulnerability to this hazard.

The City is concerned that climate change could drive additional wildfires in the City and surrounding County.

Assets at Risk

Assets at risk from climate change include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections.

People and Populations

Climate change affects people and populations within a community, especially those climate change issues related to increases in temperature over time. While all populations can be affected by temperature extremes, populations particularly vulnerable include the very old and very young, medically fragile people, people without means of shelter (and air conditioning or heat) or transportation, people who are socially isolated and other vulnerable or underserved populations (as shown in the discussion in Section D.4.1). Acclimatization to extreme temperatures and other weather extremes may help reduce impacts from these extreme events, such as from heat waves, in the healthy general population but may not be sufficient to protect those with underlying medical conditions.

Structures

Climate change, on its own, does not generally impact structures. However, structures in areas of increased wildfire, flood, or other areas exacerbated by the effects of climate change would be at increased risk, as described throughout this LHMP. More information on how structures may be affected by climate change can be found in Section 4.3.7 of the Base Plan.

Critical Facilities and Infrastructure

As with structures, critical facilities and infrastructure in areas of increased wildfire, flood, or other areas due to the effects of climate change would be at increased risk. Climate change is expected to increase the vulnerability of critical facilities and infrastructure to many natural hazards.

Natural, Historic, and Cultural Resources

The rivers, streams, agricultural areas, and open space areas of the City supports rich biodiversity, including many special-status species and habitat areas. These are all at risk from the effects of climate change. In addition, if heat continues to contribute to changes in wildfire patterns, all areas (on land) of the City are at increased risk from fire – including natural, historic, and cultural resources. Furthermore, as climate change exacerbates the drought hazard, areas of wetlands in the City may be reduced or dry up temporarily, which could damage habitat areas for waterfowl and other species that depend on these areas.

Impacts from Climate Change

The California APG: Understanding Regional Characteristics identified the following impacts specific to the North Sierra Region in which the City is part of:

- Increased temperatures
- Reduced precipitation
- Public health – heat and air pollution
- Reduced agricultural productivity (e.g., wine grapes)
- Reduced tourism

In addition to these sources, the 2023 State of California Hazard Mitigation Plan noted that according to California's Fourth Climate Change Assessment, the state will experience the following climate impacts:

- Annual average daily high temperatures are expected to rise by 2.7° F by 2040, 5.8°F by 2070, and 8.8°F by 2100 compared to observed and modeled historical conditions. These changes are statewide averages.
- Heat waves are projected to become longer, more intense, and more frequent.
- Warming temperatures are expected to increase soil moisture loss and lead to drier conditions. Summer dryness may become prolonged, with soil drying beginning earlier in the spring and lasting longer into the fall and winter.
- Droughts are likely to become more frequent and persistent through 2100.
- The strength of the most intense precipitation and storm events affecting California is expected to increase.

- Snowpack levels are projected to decline significantly by 2100 due to reduced snowfall and faster snowmelt.
- Marine layer clouds are projected to decrease.
- Extreme wildfires (i.e., fires larger than 24,710 acres) would occur 50 percent more frequently. The maximum area burned statewide may increase 178 percent by the end of the century.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the County may be affected in the future by climate change (which was discussed in the hazard profile section above), changes in population patterns, and changes in land use and development. The influencing effects of these factors on this hazard are discussed further in the Future Conditions/Future Development discussion below.

Future Conditions/Future Development

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for the City include the following:

- As climate change continues to accelerate over time, climate related impacts to the City will continue to increase.
- Climate change can influence population growth in the City over time. While the City is expected to see slow and steady growth, the City could see population fluctuations as a result of climate impacts relative to those experienced in other regions, and these fluctuations are expected to impact demand for housing and other development. While there are currently no formal studies of specific migration patterns expected to impact the City and larger Amador County region, climate-induced migration was recognized within the UNFCCC Conference of Parties Paris Agreement of 2015 and is expected to be the focus of future studies. As such, climate change may influence future population growth in the City which may leave more people vulnerable in the effects of climate change. In addition, given the future development plans for the City that includes a new Hilton Hotel and 437 single and multifamily units, new development could add an additional 1223 residents and additional hotel occupants to the City. This would likely increase the vulnerability of the City to this hazard.
- Land use planning should be proactive to address future hazard conditions. The increasing severity and frequency of storms and other weather events and natural hazards due to the changing climate should be taken into account while considering land use planning for the City. Future development occurring in the City consists of 2 commercial developments, with one being a new hotel and 4 residential developments comprised of 437 new units of both single and multifamily uses. Collectively this new construction adds an additional 679 acres of developed land within the City and an additional 1223 residents and additional hotel occupants to the City. Ensuring that regulatory requirements, such as building codes, are updated and followed will help reduce future impacts to this hazard. However, given the number of new units and land associated with these developments, it is likely that this new development will increase the impacts and vulnerability of the City to this hazard.

Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements, such as building codes, are followed, and varying needs for different demographic groups with intersecting identities that reside within the County are considered can help to make for a more disaster resilient community.

Dam Failure

Note: though a low significance hazard in the City, due to its importance in the County and in the State of California, this hazard is profiled here. It is not considered a priority for mitigation planning purposes.

Likelihood of Future Occurrence–Occasional
Vulnerability–Low

Hazard Profile

Dams are manmade structures built for a variety of uses including flood protection, power generation, agriculture, water supply, and recreation. When dams are constructed for flood protection, they are usually engineered to withstand a flood with a computed risk of occurrence. For example, a dam may be designed to contain a flood at a location on a stream that has a certain probability of occurring in any given year. If prolonged periods of rainfall and flooding occur that exceed the design requirements, that structure may be overtopped or fail. Overtopping is the primary cause of earthen dam failure in the United States.

Dam failure is a natural disaster from two perspectives. First, the inundation from released waters resulting from dam failure is related to naturally occurring floodwaters. Second, a total dam failure would most probably happen as a consequence of the natural disaster triggering the event, such as an earthquake.

Location and Extent

An inventory map of dams located within Amador County was shown in Section 4.3.9 in the Base Plan. Dams with an inundation area within the City of Plymouth are not shown as there are no inundation areas that intersect with the City.

There is no scale with which to measure dam failure. However, FEMA and CA DWR Division of Safety of Dams (DSOD) assign hazard potential classifications to dams within the State that provides information on the potential impact should a dam fail. The following two factors are considered when assigning hazard ratings: existing land use and land use controls (zoning) downstream of the dam. FEMA categorizes the downstream hazard potential into three categories in increasing severity: Low, Significant, and High. DSOD adds a fourth category of Extremely High. Dams are classified in these four categories that identify the potential hazard to life and property. These were discussed in more detail in Section 4.3.9 of the Base Plan.

While a dam may fill slowly with runoff from winter storms, a dam break has a very quick speed of onset. The duration of dam failure is generally not long – only as long as it takes to empty the reservoir of water the dam held back. For dam overtopping, the speed of onset is somewhat slower than that of a dam break, and the duration is longer (as evidenced in the 2017 Oroville Dam spillway event). The City would be affected for as long as the flood waters from the dam failure took to drain downstream.

Geographic flood extent from the DSOD dam inundation areas is not shown as they do not intersect with the City.

Drought & Water Shortage

Likelihood of Future Occurrence–Likely
Vulnerability–High

Hazard Profile

Drought and water shortage are complex issues involving many factors—it occurs when a normal amount of precipitation and snow is not available to satisfy an area's usual water-consuming activities. Drought can often be defined regionally based on its effects. Drought is different than many of the other natural hazards in that it is not a distinct event and usually has a slow onset. Drought can severely impact a region both physically and economically. Drought affects different sectors in different ways and with varying intensities. Adequate water supply is the most significant issue and is critical for agriculture, manufacturing, tourism, recreation, and commercial and domestic use. Drought has also affected tree mortality in the area in the past. As the population in the area continues to grow, so will the demand for water.

Tree Mortality and Drought

One of the specific impacts of drought in the City of Plymouth and the Amador County Planning Area is the increased risk to trees from beetle kill and other insects, pathogens and parasites, and other tree mortality and die back issues. Drought weakens trees and makes them more susceptible to insect infestation and other pathogens. Insects, such as bark beetles and others, frequently attack trees weakened by drought, disease, injuries, or other factors that may stress the tree. These insects and other pathogens can contribute to the decline and eventual death of trees throughout the City. The tree mortality and dieback problems are a high priority because of the issue of hazardous trees and an increased wildfire hazard. In addition to an increase in wildfire fuels, hazardous trees can fall onto structures causing damage and a result in a reduction on the tree canopy within the City that provides relief during extreme heat days.

Location and Extent

Drought and water shortage are regional phenomenon. The whole of the City and County is at risk. The US Drought Monitor categorizes drought conditions with the following scale:

- None
- D0 – Abnormally dry
- D1 – Moderate Drought
- D2 – Severe Drought
- D3 – Extreme Drought
- D4 – Exceptional Drought

The Amador County Planning Area, including the City of Plymouth, has been in and out of drought since 2014. Over the last five years since the 2020 LHMP, drought conditions have ranged from none to exceptional. Drought conditions are expected to continue to be cyclical in nature depending on the year." Current drought conditions in the City are shown in Section 4.3.10 of the Base Plan.

Drought has a slow speed of onset and a variable duration. Drought can last for a short period of time (which does not usually affect water shortages) or for longer periods (which may challenge water supplies). Should a drought last for a long period of time, water shortage becomes a larger issue.

According to the Amador Water Agency (AWA) 2024-2025 Annual Water Supply & Demand Assessment Shortage Report, the Agency has a significant surplus of water supply above current and projected demands. The Amador Water System (AWS) water supply is a pre-1914 water right that has never been curtailed in the most severe single-year or a multiple-year drought. In addition, while the water supply associated with the Central Amador Water Project (CAWP) was temporarily curtailed during recent drought years, the significant storage volume in the Lower Bear Reservoir has allowed previous water supply demands to be met, and are expected to be met in the future, even in dry years. In addition, the total well capacity for the portion of both systems reliant on groundwater are larger than current and projected demands.

Past Occurrences

Disaster Declaration History

There have been 2 state and 1 federal disaster declarations for Amador County. This can be seen in Table D-16. Additionally, there have been 16 USDA Secretarial Disaster Declarations from drought in the County.

Table D-16 Amador County –State and Federal Drought Disaster Declarations 1950-2025

Disaster Type	State Declarations		Federal Declarations	
	Count	Years	Count	Years
Drought	2	1976, 2015	1	1977

Source: Cal OES, FEMA

NCDC Events

There have been 249 NCDC drought events in Amador County since 1993. These most likely had some impact on the City.

City of Plymouth Events

Based on historical information, the occurrence of drought in California, including the City of Plymouth, is cyclical, driven by weather patterns. Section 4.3.10 of the Base Plan notes that five droughts have occurred in the past 86 years. Drought has occurred in the past and will occur in the future.

The HMPC did note that the drought of 2014 revealed several issues within the City. First, there was an increase in grass fires throughout the City. Second, a lower flow level for the City's Arroyo Ditch which distributes agriculture water throughout the area. And thirdly, instituting water restriction policies, education, and enforcement on the community the City serves.

Additionally, there have been four drought events that have affected the City since 2020:

- 5/10/21: 41 CA counties issued drought emergency declarations (Plymouth was partially affected).

- 10/19/21: Statewide drought emergency issued by Gov Newsom.
- 3/24/23: Some restrictions from the statewide declaration were rolled back (Plymouth positively affected).
- 12/21/23: Some regulations from the statewide declaration expired (Plymouth positively affected).

Climate Change and Drought and Water Shortage

It is likely that climate change will increase the chance of future occurrence as well as future impacts associated with drought and water shortage. More information on future impacts to the City can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Climate scientists studying California find that drought conditions are likely to become more frequent and persistent over the 21st century due to climate change. The experiences of California during recent years underscore the need to examine more closely the state's water storage, distribution, management, conservation, and use policies. The 2021 Climate Adaptation Study (as well as the 2024 Draft CAS) stresses the need for public policy development addressing long term climate change impacts on water supplies. The CAS notes that climate change is likely to significantly diminish California's future water supply, stating that: California must change its water management and uses because climate change will likely create greater competition for limited water supplies needed by the environment, agriculture, and cities.

A 2018 report from the Public Policy Institute of California noted that thousands of Californians – mostly in rural, small, disadvantaged communities – already face acute water scarcity, contaminated groundwater, or complete water loss. Climate change would make these effects worse.

Cal Adapt scenarios for modeled future drought scenarios were shown in Section 4.3.10 of the Base Plan.

Vulnerability to Drought and Water Shortage

Based on historical information, the occurrence of drought and water shortage in California, including the City, is cyclical, driven by weather patterns. Drought has occurred in the past and will occur in the future. Periods of actual drought with adverse impacts can vary in duration, and the period between droughts can be extended. Although an area may be under an extended dry period, determining when it becomes a drought is based on impacts to individual water users. The vulnerability of the City of Plymouth to drought may vary and include reduction in water supply, turf losses, impacts to natural resources, and an increase in dry fuels and tree dieback.

The whole of the City is at some measure of vulnerability to drought and water shortage. An assessment of a community's vulnerability to drought and water shortage begins with an understanding of local exposure to drought. This is included in the Local Concerns section below followed by a discussion of the City's Assets at Risk to this hazard.

Local Concerns

The City has specific concerns and unique vulnerabilities regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce risk and vulnerability to this hazard.

The City's current water storage tank is in urgent need of renovation (est. 2 years before potential tank failure). In order for the renovation to be completed, the City will need a 500,000 to 1,000,000 gallon tank in addition to the existing tank to ensure water supply during said tank renovation. This is a mitigation action for the City, as shown in Section D.6.3.

In addition, the City is concerned with droughts that affect local wine growing areas. The City has tourism that depends on the wine industry.

Assets at Risk

Assets at risk from drought and water shortage include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections.

People and Populations

The people and populations of the City are not directly affected by drought; although, their turfed areas, trees, and other water dependent resources can all be affected. In extreme drought conditions, however, residents and other populations within the City may be vulnerability to drought and water shortage issues. Water quality can be impacted causing health problems, especially to vulnerable populations. Drought and water shortage can lead to an increase in wildfires threatening City residents. Water shortages can have an effect on all of the population in the City, but often have a greater effect on the unhoused and other vulnerable populations that may be unable to access clean drinking water during shortages. During periods of drought as the costs of water usage may increase, especially during mandated conservation times, those who are economically disadvantaged may be unable to afford the increased costs of potable water.

Structures

Structures have a limited vulnerability to drought and water shortage. It is the secondary hazard of drought (wildfire) which causes risks to structures. Drought can also stress trees, causing die off. These trees may fall on structures adjacent to them.

Critical Facilities and Infrastructure

Most critical facilities and infrastructure have a limited vulnerability to drought and water shortage. Should drought conditions be severe enough to cause water shortage reliability issues, some facilities and infrastructure may be affected. Water and wastewater systems may be impacted during times of reduced water supply and need to employ contingencies to remain functional and fully operational. Other water dependent systems may also be adversely affected. Further, the secondary hazard of drought (increased potential for spread of urban fires and wildfire) can pose a significant risk to critical facilities and

infrastructure. Sufficient water supply for firefighting can also be an issue. Drought can also stress trees, causing die off. These trees may fall on critical infrastructure adjacent to them and impact power lines and other utilities.

Natural, Historic, and Cultural Resources

Drought and water shortage can have a significant impact on natural resources. Water levels in reservoirs and lakes may be reduced and a loss of wetlands and coastal marsh areas may occur. Severe drought conditions can contribute to an increase in erosion of soils and lead to poor soil quality. Further, all of the trees in the City are at risk to drought impacts and a reduction in water supply. These trees provide a wealth of social and environmental benefits to City residents and visitors, from shade and beauty to air quality, carbon reduction and stormwater management. Drought can devastate crops and dry out pastures, dry out forests and critical habitat areas, and reduce food and water available for wildlife and livestock. Additionally, drought conditions can also cause soil to compact and not absorb water well, potentially making an area more susceptible to flooding. It is unlikely that drought and water shortage would have a significant impact on historic and cultural resources in the City.

Impacts from Drought and Water Shortage

The vulnerability of the City to drought is City-wide, but impacts may vary and include reduction in water supply and an increase in dry fuels. The potential for a reduction in water supply during drought conditions generally leads to both mandated and voluntary conservations measures during extended droughts. During these times, the costs of water can also increase. Also of concern, the increased dry fuels, fuel loads, and tree mortality events associated with drought conditions can result in an increased fire danger. In areas of extremely dry fuels, the intensity and speed of fires can be significant. Water supply and flows for fire suppression can also be an issue during extended droughts. Drought can also lead to turf losses and cause tree die off within the City. In addition, adequate and reliable water supply is an important resource for the City's grape and wine industry.

Other qualitative impacts associated with drought in the City are those related to water intensive activities such as municipal usage, commerce, tourism, and recreation use. With more precipitation likely falling as rain instead of snow in the Sierra's, and warmer temperatures causing decreased snowfall to melt faster and earlier, water supply is likely to become more unreliable. In addition, drought and water shortage is predicted to become more common. This means less water available for use over the long run, and additional challenges for water supply reliability, especially during periods of extended drought.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the City may be affected in the future by climate change (which was discussed in the hazard profile discussion above), changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. These are discussed below.

Future Conditions/Future Development

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for the City of Plymouth include the following:

- Climate change is likely to exacerbate future drought conditions and associated impacts and vulnerability of the City to drought and water shortage.
- Future population growth should be considered as having more or less people in a community affects the overall hazard vulnerability to the City. Population growth in the City has seen a slow yet steady increase. According to the HMPC, the City and Amador County has access to large quantities of water through its groundwater as well as surface water. However, any future population growth in the City will add additional pressure to water companies during periods of drought and water shortage. Water companies will need to continue to plan for and add infrastructure capacity for population growth. As the population grows, the nature and makeup of populations will shift and change along with it. Vulnerable and underserved populations, such as those with low incomes and the unhoused that might not always have access to clean water, will need to be considered as future development continues, since they may experience a disproportionate impact from drought and water shortage. Potential population growth will be a challenge not only with regard to the City's water access for agricultural production, but state- and nation-wide with regard to food production. Should the City see a growth in population, it will increase the vulnerability and impacts to the County from this hazard. Given the future development plans for the City that includes a new Hilton Hotel and 437 single and multifamily units, new development could add an additional 1223 residents and additional hotel occupants to the City. This would likely increase the vulnerability of the City to this hazard.
- Land use planning should be proactive to address future hazard conditions. As the City continues to grow, more cropland may be taken out of production to provide housing to accommodate for population growth. As the areas adjacent to the City's agricultural lands are reduced, it seems likely that there would be less of a competing demand for water. However, with the wine industry being a key economic industry, the City may prioritize maintaining their agricultural lands for grape growing and production. Future development occurring in the City consists of 2 commercial developments, with one being a new hotel and 4 residential developments comprised of 437 new units of both single and multifamily uses. Collectively this new construction adds an additional 679 acres of developed land within the City. Ensuring that regulatory requirements, such as building codes, are updated and followed will help reduce future impacts to this hazard. However, given the number of new units and land associated with these developments, it is likely that this new development will increase the impacts and vulnerability of the City to this hazard.

As the population in the area continues to grow, so will the demand for water. The AWA provides water to the City through reliable surface water sources. However, population growth in the City will continue to increase the demand for water. Ongoing planning will be needed by the City and AWA to account for population growth and increased water demands, both for future populations and to support their wine industry.

Earthquake

Note: though a low significance hazard in the City, due to its importance in the County and in the State of California, this hazard is profiled here. It is not considered a priority for mitigation planning purposes.

Likelihood of Future Occurrence–Unlikely
Vulnerability–High

Hazard Profile

An earthquake is caused by a sudden slip on a fault. Stresses in the earth's outer layer push the sides of the fault together. Stress builds up, and the rocks slip suddenly, releasing energy in waves that travel through the earth's crust and cause the shaking that is felt during an earthquake. Earthquakes can cause structural damage, injury, and loss of life, as well as damage to infrastructure networks, such as water, power, gas, communication, and transportation. Earthquakes may also cause collateral emergencies including dam and levee failures, seiches, hazmat incidents, fires, avalanches, and landslides. The degree of damage depends on many interrelated factors. Among these are: the magnitude, focal depth, distance from the causative fault, source mechanism, duration of shaking, high rock accelerations, type of surface deposits or bedrock, degree of consolidation of surface deposits, presence of high groundwater, topography, and the design, type, and quality of building construction.

Location and Extent

Since earthquakes are regional events, the whole of the City is at risk to earthquake. The City of Plymouth, Amador County, and surrounding areas have some level of risk from seismic and geologic hazards. Faults in and around the City were shown in Section 4.3.11 of the Base Plan. These include the Carson Range, Great Valley, and Rogers-Hayward Creek faults. A significant seismic event on any of these major faults could cause damage in the City of Plymouth.

The amount of energy released during an earthquake is usually expressed as a magnitude and is measured directly from the earthquake as recorded on seismographs. An earthquake's magnitude is expressed in whole numbers and decimals (e.g., 6.8). Seismologists have developed several magnitude scales, as discussed in Section 4.3.11 of the Base Plan.

Another measure of earthquake severity is intensity. Intensity is an expression of the amount of shaking at any given location on the ground surface. Seismic shaking is typically the greatest cause of losses to structures during earthquakes. The City is located in an area where earthquakes of some magnitude occur, so both magnitude and intensity of earthquakes are expected to remain moderate. Seismic shaking maps for the area in Section 4.3.11 of the Base Plan show Amador County and the City fall within a low to moderate shake risk.

Flood: 1%/0.2% Annual Chance

Likelihood of Future Occurrence–Occasional (1%)/Unlikely (0.2%)
Vulnerability–Medium

Hazard Profile

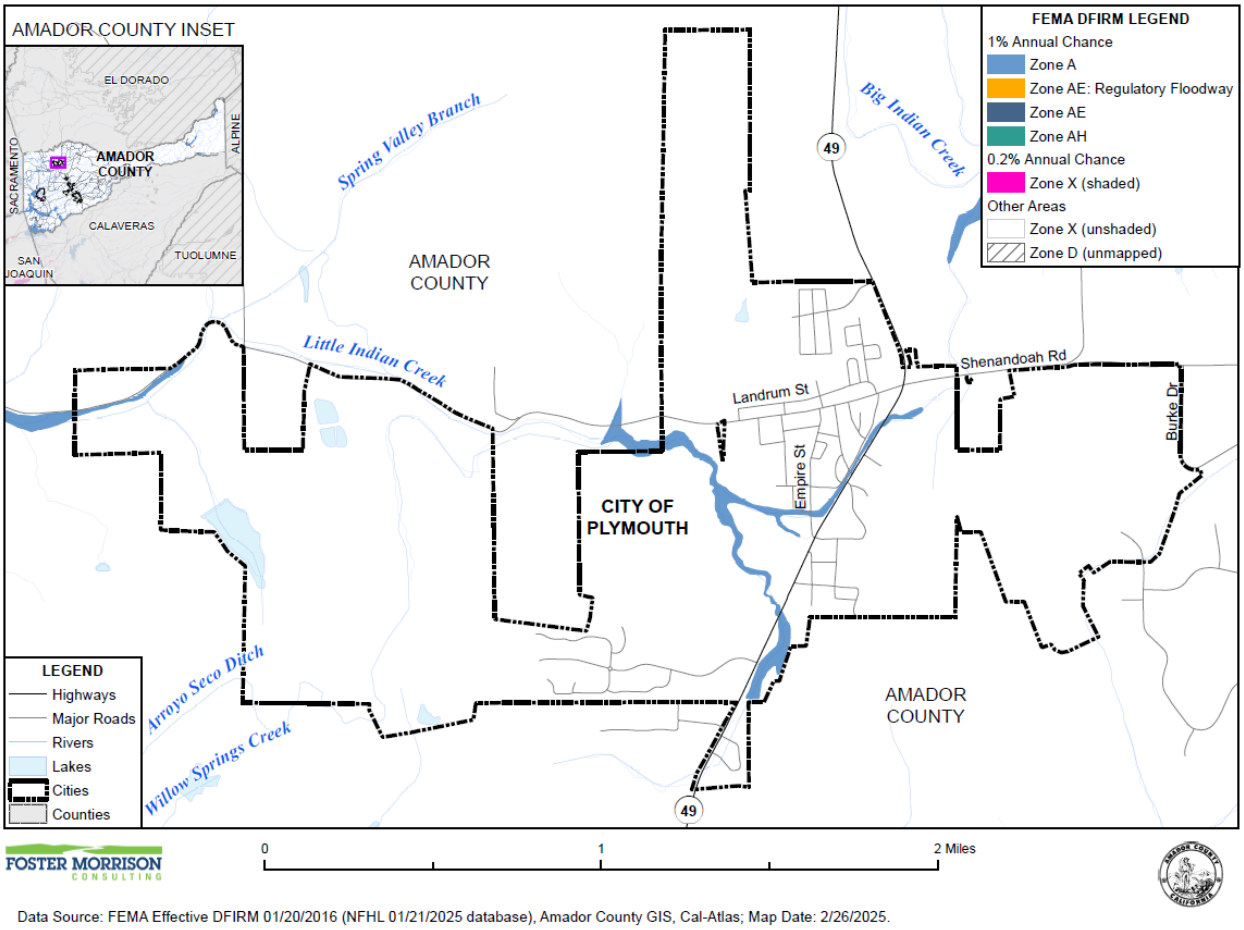
This hazard analyzes the FEMA DFIRM 1% and 0.2% annual chance floods. These tend to be the larger floods that can occur in the City and have caused damage in the past. Flooding can be a problem in the City. Historically, the City has been at risk to flooding primarily during the winter and spring months when

river systems in the City swell with heavy rainfall and snowmelt runoff. The City has also been at risk during atmospheric river flood events. Normally, storm floodwaters are kept within defined limits by a variety of storm drainage and flood control measures located throughout the Amador County Planning Area and the City of Plymouth. Occasionally, extended heavy rains result in floodwaters that exceed normal high-water boundaries and cause damage. Minor flooding has occurred within the 1% and in other localized areas in the City.

Location and Extent

The City of Plymouth has areas located in the 1% annual chance flood zones. This is seen in Figure D-13.

Figure D-13 City of Plymouth – FEMA DFIRM Flood Zones



Data Source: FEMA Effective DFIRM 01/20/2016 (NFHL 01/21/2025 database), Amador County GIS, Cal-Atlas; Map Date: 2/26/2025.

Table D-17 details the DFIRM mapped flood zones located within the City.

Table D-17 City of Plymouth– DFIRM Flood Hazard Zones

Flood Zone	Description	Present in City of Plymouth
A	1% annual chance flooding: No base flood elevations provided	X
AE	1% annual chance flooding: Base flood elevations provided	

Flood Zone	Description	Present in City of Plymouth
AE Regulatory Floodway	1% annual chance flood: Regulatory floodway; Base flood elevations provided	
AH	1% annual chance flood areas of shallow flooding between one to three feet deep. Regulatory floodway; Base flood elevations provided	
Shaded X	0.2% annual chance flooding: The areas between the limits of the 1% annual chance flood and the 0.2-percent-annual-chance (or 500-year) flood	
X (unshaded)	No flood hazard	X

Source: FEMA DFIRM 1/20/2016

Additionally, flood extents can generally be measured in volume, velocity, and depths of flooding. Expected flood depths in the City vary, depending on the nature and extent of a flood event; specific depths are unknown. Flood durations in the City tend to be short to medium term, or until either the storm drainage system can catch up or flood waters move downstream. Flooding in the City tends to have a shorter speed of onset, due to the amount of water that flows through the City.

Geographical flood extents for the City from the FEMA DFIRMs are shown in Table D-18.

Table D-18 City of Plymouth – Geographical DFIRM Flood Zone Extents

Flood Zone/Property Use	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
1% Annual Chance Flood Hazard						
Zone A						
Agricultural	8	0.5%	2	0.4%	6	0.5%
Commercial	2.2	0.1%	1.7	0.3%	0.5	0.05%
Industrial	0	0.0%	0	0.0%	0	0.0%
Miscellaneous	9	0.5%	0	0.0%	9	0.8%
Residential	10	0.6%	0.8	0.1%	9.6	0.9%
Unknown	0	0.0%	0	0.0%	0	0.0%
Zone A Total	**30**	**1.7%**	**5**	**0.8%**	**25**	**2.3%**
1% Annual Chance Flood Hazard Total	**30**	**1.7%**	**5**	**0.8%**	**25**	**2.3%**
Other Areas						
Zone X (unshaded)	0	0.0%	0	0.0%	0	0.0%
Agricultural	959	56%	387	64%	572	52%
Commercial	91	5%	62	10%	29	3%
Industrial	0	0.0%	0	0.0%	0	0.0%
Miscellaneous	221	13%	0	0.0%	221	20%
Residential	392	23%	145	24%	247	23%

Unknown	4	0.3%	1.3	0.2%	3	0.3%
Zone X (unshaded) Total	**1,668**	**98%**	**595**	**99%**	**1,073**	**98%**
Other Areas Total	**1,668**	**98%**	**595**	**99%**	**1,073**	**98%**
Plymouth Total	**1,698**	**100%**	**600**	**100%**	**1,098**	**100%**

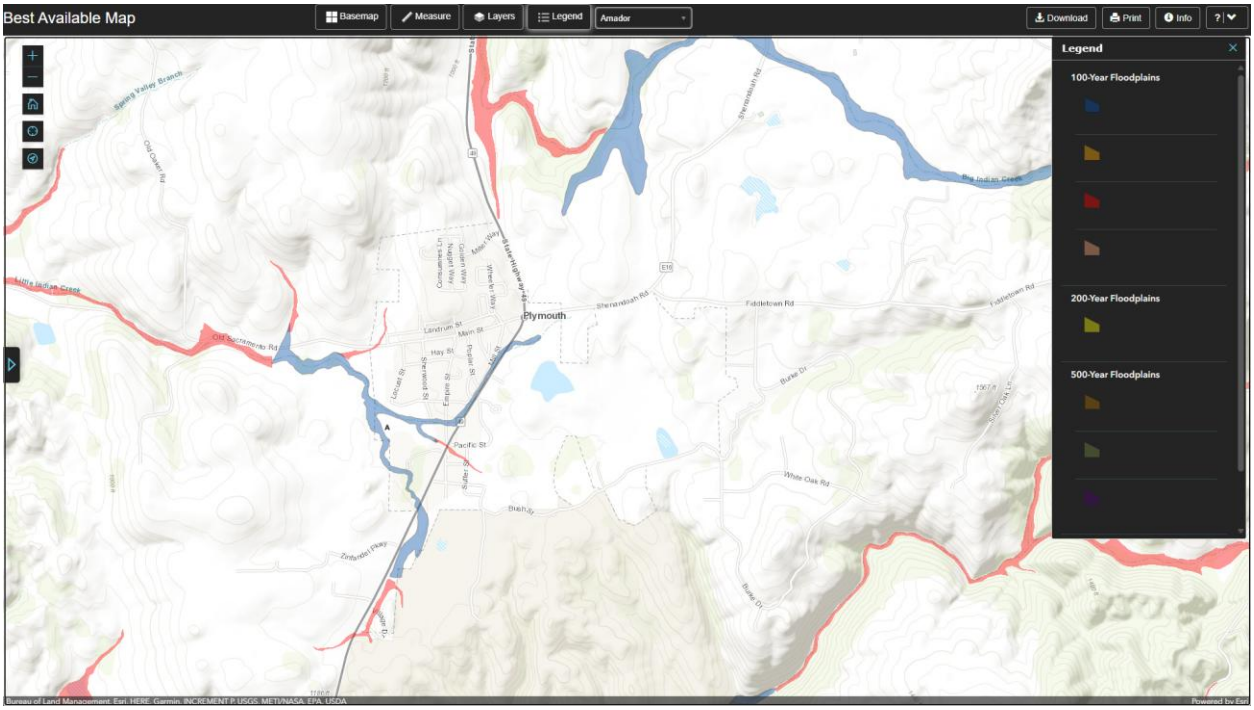
Source: FEMA DFIRM 1/20/2016

California Department of Water Resources Best Available Maps (BAM)

The FEMA regulatory maps provide just one perspective on flood risks in the City. Senate Bill 5 (SB 5), enacted in 2007, authorized the California DWR to develop the Best Available Maps (BAM) displaying 100- and 200-year floodplains for areas located within the Nevada-San Joaquin (SAC-SJ) Valley watershed. This effort was completed by DWR in 2008. DWR has expanded the BAM to cover all counties in the State and to include 500-year floodplains.

Different than the FEMA DFIRMs which have been prepared to support the NFIP and reflect only the 100-year event risk, the BAMs are provided for informational purposes and are intended to reflect current 100-, 200-(as applicable), and 500-year event risks using the best available data. The 100-year floodplain limits on the BAM are a composite of multiple 100-year floodplain mapping sources. It is intended to show all currently identified areas at risk for a 100-year flood event, including FEMA's 100-year floodplains. The BAM are comprised of different engineering studies performed by FEMA, Corps, and DWR for assessment of potential 100-, 200-, and 500-year floodplain areas. These studies are used for different planning and/or regulatory applications, and for each flood frequency may use varied analytical and quality control criteria depending on the study type requirements. The value in the BAMs is that they provide a bigger picture view of potential flood risk to the City than that provided in the FEMA DFIRMs. The BAM map for the City of Plymouth is shown in Figure D-14.

Figure D-14 City of Plymouth – Best Available Map



Source: California DWR

Legend explanation: **Blue** - FEMA 100-Year, **Orange** – Local 100-Year (developed from local agencies), **Red** – DWR 100-year (Awareness floodplains identify the 100-year flood hazard areas using approximate assessment procedures.), **Pink** – USACE 100-Year (2002 Sac and San Joaquin River Basins Comp Study), **Yellow** – USACE 200-Year (2002 Sac and San Joaquin River Basins Comp Study), **Tan** – FEMA 500-Year, Grey – Local 500-Year (developed from local agencies), **Purple** – USACE 500-Year (2002 Sac and San Joaquin River Basins Comp Study).

Past Occurrences

Disaster Declaration History

A list of state and federal disaster declarations for Amador County from flooding is shown on Table D-19. These events also likely affected the City to some degree.

Table D-19 Amador County – State and Federal Disaster Declarations from Flood 1950-2025

Disaster Type	State Declarations		Federal Declarations	
	Count	Years	Count	Years
Flood (including heavy rains and storms)	22	1950, 1955, 1958 (twice), 1959, 1963, 1964, 1969, 1980, 1982, 1986, 1995 (twice), 1997, 2006 (twice), 2017 (twice), 2019, 2021, 2023 (twice)	20	1950, 1955, 1958, 1962, 1963, 1964, 1969, 1986, 1995 (twice), 1997, 1998, 2006 (twice), 2017 (twice), 2019, 2023 (three)

Source: Cal OES, FEMA

NCDC Events

The NCDC tracks flooding events for the County. Events have been tracked for flooding since 1993. Amador County has seen 43 events. These events most likely had some impact on the City.

City of Plymouth Events

The City noted that major flooding did not occur in recent flood events (those since 2020). The Arroyo Ditch does seasonally flood near the crossing of Highway 16 on the eastern side of town.

Climate Change and Flood

It is likely that climate change will increase the chance of future occurrence as well as future impacts associated with flood. More information on future impacts to the City can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

According to the 2021 CAS (as well as the 2024 Draft CAS), climate change may affect flooding in California, the Amador County Planning Area, and the City of Plymouth. While average annual rainfall may increase or decrease slightly, the intensity of individual rainfall events is likely to increase during the 21st century. It is possible that average soil moisture and runoff could decline, however, due to increasing temperature, evapotranspiration rates, and spacing between rainfall events. Reduced snowpack and increased number of intense rainfall events are likely to put additional pressure on water infrastructure which could increase the chance of flooding associated with breaches or failures of flood control structures such as levees and dams. Cal Adapt future precipitation projections were shown in Section 4.3.4.

Vulnerability to Flood: 1% and 0.2% Annual Chance

Floods have been a part of the City's historical past and will continue to be so in the future. During winter months, long periods of precipitation and the timing of that precipitation are critical in determining the threat of flood, and these characteristics further dictate the potential for widespread structural and property damage. Predominantly, the effects of 1% and 0.2% annual chance flooding are generally confined to areas near the waterways of the City. As waterways grow in size from local drainages, so grows the threat of flood and dimensions of the threat.

The whole of the City is at some measure of vulnerability to floods. An assessment of a community's vulnerability to flood begins with an understanding of local exposure to flood. This is included in the Local Concerns section below followed by a discussion of the City's Assets at Risk to this hazard.

Local Concerns

The City has specific concerns and unique vulnerabilities regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce risk and vulnerability to this hazard.

The 2009 General Plan Safety Element noted that flooding is an issue in the Foothills of the Sierra Nevada Mountains. With several months of rain and snow each year, the possibility of a flood warrants preparation

by the City. The City has adopted the FEMA floodplain boundaries, which identify areas that present a risk of flooding every 100 years (1% chance of flooding each year). These boundaries are used to avoid a potential flood disaster.

The City also noted that the City is affected by flooding outside the City limits. Old Sacramento Road is a County Road that has had flooding issues in the past. Sacramento Road provides access to the City of Plymouth sewer plant. If it is unpassable, there is great difficulty reaching the sewer plant. The clearing of obstructions/re-grading of the ditches/creeks in City limits and on Old Sacramento Rd would greatly improve/mitigate the issue of flooding.

Assets at Risk

Assets at risk from flood include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections.

People and Populations

All people and populations located in the 1% and 0.2% annual chance floodplains are at some risk to flooding. Certain vulnerable populations located within areas prone to flooding may be at increased risk to this hazard, especially during a large event with minimal advance notice. These vulnerable populations include: the unsheltered, those with limited mobility, and those that lack the resources to leave the area.

City residents that live in the 1% and 0.2% annual chance floodplains are often the most vulnerable. Not only are the residents at risk, but their homes and contents are all at risk, compounding the impacts associated with significant hazard events. To further evaluate the impact to the City of Plymouth's residential population residing within these hazard areas, the DFIRM flood zones were overlayed on the parcel layer. Those residential parcels that intersect the flood zones were counted and multiplied by the 2023 Census Bureau average household factors for the City of Plymouth – 2.80. According to this analysis, there is a total population of 12 and 0 residents of the City at risk to flooding in the 1% and 0.2% annual chance floodplains, respectively. This is shown in Table D-20.

Table D-20 City of Plymouth – Improved Residential Parcels and Population by Summary FEMA DFIRM Flood Zone

Jurisdiction	1% Annual Chance		0.2% Annual Chance	
	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk
Plymouth	4	12	0	0

Source: FEMA DFIRM 1/20/2016, Amador County 2024 Parcel/Assessor Data, US Census Bureau American Community Survey 2023 Household Size Estimates.

The City noted that the Critical Facilities and Infrastructure section below includes the facilities used by At-Risk populations that are threatened by this hazard. While this is not specific to what special populations reside in the City, it does speak to facilities that area used to serve (portions) of this population.

Structures

Certain structures in the City are at risk of DFIRM flooding and primarily include those structures located within the 1% and 0.2% annual chance floodplains. GIS was used to determine the possible impacts of flooding on parcels and structures within the City of Plymouth. The methodology described in Section 4.3.11 of the Base Plan was followed in determining structures and values at risk to the 1% (100-year) and 0.2% (500-year) annual chance flood event. Table D-21 is a summary table for the City of Plymouth. Parcel counts, land and improved values (i.e., those with a structure improvement on the parcel), estimated content replacement values, and total values in the City are shown for the 1% and 0.2% annual chance flood zones, as well as for those properties that fall outside of the mapped FEMA DFIRM flood zones. Table D-22 breaks down Table D-21 and shows the same analysis further broken out by detailed FEMA flood zone and property use.

Table D-21 City of Plymouth – Count and Value of Parcels and Structures in Summary DFIRM Flood Zone

Flood Zone	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value
1% Annual Chance Flood Hazard	25	7	$8,477,615	$9,727,971	$9,582,027	$27,787,613
0.2% Annual Chance Flood Hazard	0	0	$0	$0	$0	$0
Other Areas	600	481	$76,665,748	$108,639,435	$59,680,115	$244,985,298
Plymouth Total	**625**	**488**	**$85,143,363**	**$118,367,406**	**$69,262,141**	**$272,772,910**

Source: FEMA DFIRM 1/20/2016, Amador County 2024 Parcel/Assessor Data

*With respect to improve parcels within the floodplain, the actual structures on the parcels may not be located within the actual floodplain, may be elevated and or otherwise outside of the identified flood zone

**This parcel count only includes those parcels in the 0.2% annual chance flood zone, exclusive of the 1% annual chance flood zone. The 0.2% annual chance flood, in actuality, also includes all parcels in the 1% annual chance flood zone.

Table D-22 City of Plymouth – Count and Values of Parcels and Structures by Detailed DFIRM Flood Zone and Property Use

Flood Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value
1% Annual Chance Flood Hazard						
Agricultural	2	1	$394,650	$3,583	$3,583	$401,816
Commercial	4	2	$7,035,867	$9,432,499	$9,432,499	$25,900,865
Industrial	0	0	$0	$0	$0	$0
Miscellaneous	10	0	$67,380	$0	$0	$67,380
Residential	9	4	$979,718	$291,889	$145,945	$1,417,552
Unknown	0	0	$0	$0	$0	$0

Flood Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value
1% Annual Chance Flood Hazard Total	**25**	**7**	**$8,477,615**	**$9,727,971**	**$9,582,027**	**$27,787,613**
0.2% Annual Chance Flood Hazard						
Agricultural	0	0	$0	$0	$0	$0
Commercial	0	0	$0	$0	$0	$0
Industrial	0	0	$0	$0	$0	$0
Miscellaneous	0	0	$0	$0	$0	$0
Residential	0	0	$0	$0	$0	$0
Unknown	0	0	$0	$0	$0	$0
0.2% Annual Chance Flood Hazard Total	0	0	**$0**	**$0**	**$0**	**$0**
Other Areas						
Agricultural	10	5	$5,481,457	$1,027,919	$1,027,919	$7,537,295
Commercial	56	44	$8,474,888	$10,614,540	$10,614,540	$29,703,968
Industrial	0	0	$0	$0	$0	$0
Miscellaneous	23	0	$1,453	$0	$0	$1,453
Residential	503	429	$62,283,469	$96,075,311	$48,037,656	$206,396,436
Unknown	8	3	$424,481	$921,665	$0	$1,346,146
Other Areas Total	**600**	**481**	**$76,665,748**	**$108,639,435**	**$59,680,115**	**$244,985,298**
Plymouth Total	**625**	**488**	**$85,143,363**	**$118,367,406**	**$69,262,141**	**$272,772,910**

Source: FEMA DFIRM 1/20/2016, Amador County 2024 Parcel/Assessor Data

*With respect to improve parcels within the floodplain, the actual structures on the parcels may not be located within the actual floodplain, may be elevated and or otherwise outside of the identified flood zone

**This parcel count only includes those parcels in the 0.2% annual chance flood zone, exclusive of the 1% annual chance flood zone. The 0.2% annual chance flood, in actuality, also includes all parcels in the 1% annual chance flood zone.

Table D-23 summarizes Table D-22 and shows City of Plymouth loss estimates and improved values at risk by FEMA 1% and 0.2% annual chance flood zones. According to Table D-22 and Table D-23, the City of Plymouth has 32 parcels and $27.7 million of structure and contents values or values in the 1% annual chance flood zone, and 0 improved parcels and $0 million of structure and contents values in the 0.2% annual chance flood zone. These values can be refined a step further. Applying the 20 percent damage factor as previously described in Section 4.3.11 of the Base Plan, there is a 1% chance in any given year of a flood event causing $3.9 million in damage and a 0.2% chance in any given year of a flood event causing $0 in damage in the City of Plymouth. The loss ratio of 0.056% indicates that flood losses for 1% annual chance flooding would be minor, but the City would be able recover quickly. No losses are expected from the 0.2% annual chance flood as this flood zone is not present in the City.

Table D-23 City of Plymouth – Flood Loss Estimates

Flood Zone	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value	Loss Estimate	Loss Ratio
1% Annual Chance Flood Hazard	25	7	$8,477,615	$9,727,971	$9,582,027	$19,309,998	$3,862,000	0.056%
0.2% Annual Chance Flood Hazard	0	0	$0	$0	$0	$0	$0	0.00%
Total	**25**	**7**	**$8,477,615**	**$9,727,971**	**$9,582,027**	**$19,309,998**	**$3,862,000**	**0.056%**

Source: FEMA DFIRM 1/20/2016, Amador County 2024 Parcel/Assessor Data

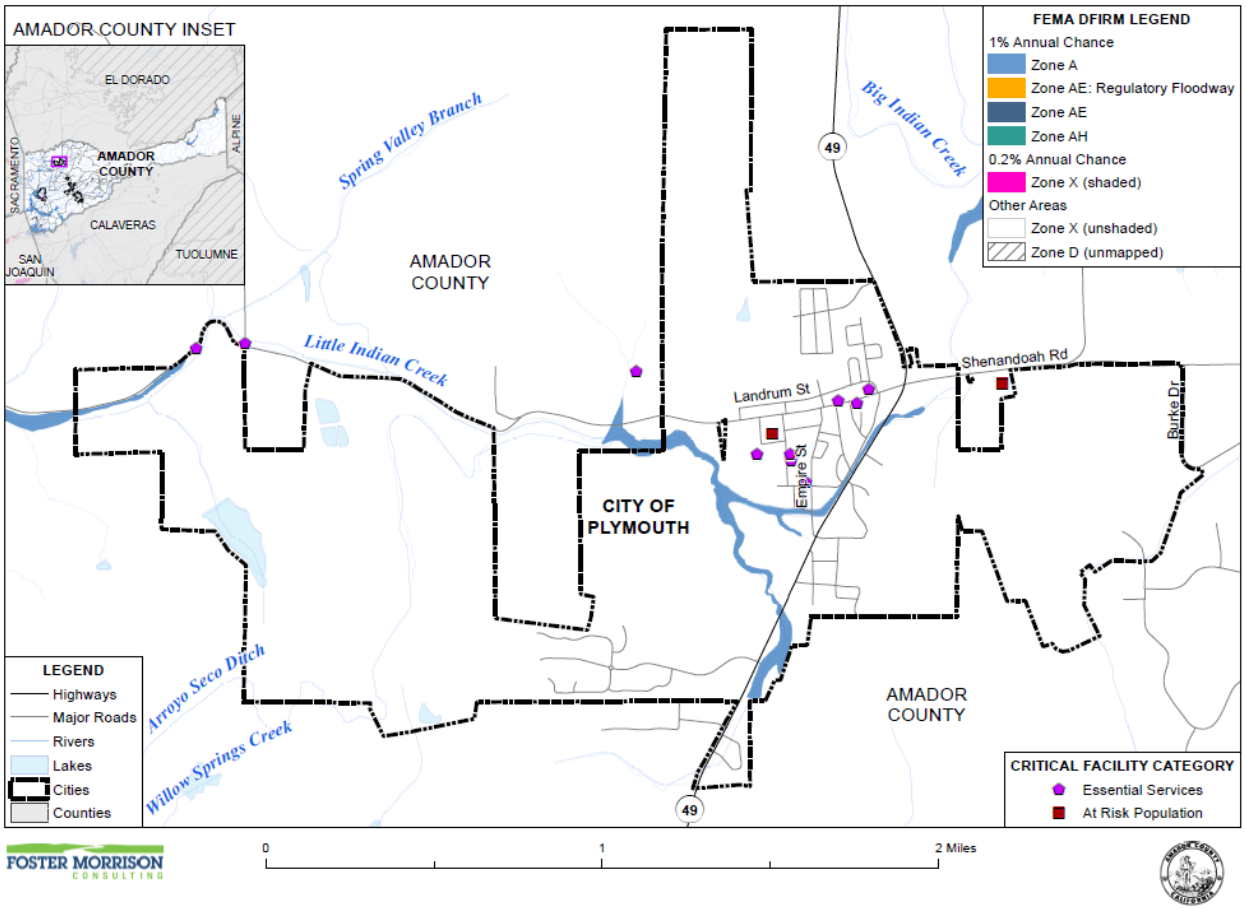
*With respect to improve parcels within the floodplain, the actual structures on the parcels may not be located within the actual floodplain, may be elevated and or otherwise outside of the identified flood zone

**This parcel count only includes those parcels in the 0.2% annual chance flood zone, exclusive of the 1% annual chance flood zone. The 0.2% annual chance flood, in actuality, also includes all parcels in the 1% annual chance flood zone.

Critical Facilities and Infrastructure

1% annual chance flooding present a threat to critical facilities and infrastructure. The following analysis discusses critical facilities and infrastructure. A separate analysis was performed on the critical facility inventory in the City to determine which critical facilities fall into each FEMA DFIRM flood zone. Using GIS, the FEMA DFIRM flood zones were overlayed on the critical facility GIS layer. This is shown on Figure D-15 for the FEMA DFIRM flood zones. Table D-36 details which critical facilities fall in which FEMA DFIRM flood zones. None of the facilities fall within the 1% or 0.2% chance annual floodplain. Details of critical facility categories, type, name, and address by FEMA DFIRM flood zones are listed in Appendix F.

Figure D-15 City of Plymouth – Critical Facilities in FEMA DFIRM Flood Zones



Data Source: FEMA Effective DFIRM 01/20/2016 (NFHL 01/21/2025 database), Amador County GIS, Cal-Atlas; Map Date: 4/21/2025.

Table D-24 City of Plymouth – Critical Facilities by Category and Facility Type in FEMA DFIRM Flood Zones

Flood Zone	Critical Facility Category / Critical Facility Type	Facility Count
Other Areas		
Zone X (unshaded)	**Essential Services**	
	Bridge	1
	Clinic	1
	EMS Station	1
	Evacuation Shelter	1
	Fire Station	1
	Library	1
	Post Office	1
	Public Administration Building	1
	Essential Services Total	**8**
	At Risk Population	

Flood Zone	Critical Facility Category / Critical Facility Type	Facility Count
	School	1
	At Risk Population Total	**1**
	Zone X (unshaded) Total	**9**
Other Areas Total		**9**
Plymouth Total		**9**

Source: FEMA DFIRM 1/20/2016, City of Plymouth

Natural, Historic, and Cultural Resources

Large flood events can affect natural, historic, and cultural resources. There are a number of ways floodwaters can impact natural resources and the environment. Wildlife habitats can be destroyed by floodwaters. Contaminated floodwater can pollute rivers and habitats. Silt and sediment can destroy natural areas. Riverbanks and natural levees can be eliminated as rivers reach bankfull capacity. Rivers can be widened, and deposition can increase downstream. Trees can be uprooted by high-velocity water flow. Plants that survive the initial flood may die due to being inundated with water. Historic and cultural resources may also be affected. Generally, the impacts are associated with damage to structures within the flooded areas, but other cultural resources such as those associated with Native Americans and old tribal areas can also be disturbed, damaged and lost during extreme flood events. Any of these that fall in the flood zones shown on Figure D-13 would be vulnerable.

Impacts from Flood: 1% and 0.2% Annual Chance

Floods are among the costliest natural disasters in terms of human hardship and economic loss nationwide. Large flood events, including those associated with 1% and 0.2% annual chance floods, can cause substantial damage to structures, landscapes, and utilities as well as life safety issues. People may be swept away in floodwaters, causing injuries or deaths. Floods can be extremely dangerous, and even six inches of moving water can knock over a person given a strong current. During a flood, people can also suffer heart attacks or electrocution due to electrical equipment short outs. Direct impacts, such as drowning, can be limited with adequate warning and public education about what to do during floods. Floodwaters can transport large objects downstream which can damage or remove stationary structures. Structures can be damaged directly from floodwaters and can also be damaged from trees falling as a result of water-saturated soils. Ground saturation can result in instability, collapse, or other damage. Objects can also be buried or destroyed through sediment deposition. Floodwaters can also break utility lines and interrupt services causing power outages. The interruption of power causes major problems and can result in the closure of governmental offices and community businesses. Public schools may also be required to close or be placed on a delayed start schedule. Roads can be damaged and closed, causing safety and evacuation issues.

Standing water can cause damage to crops, roads, foundations, and electrical circuits. Other problems connected with flooding and stormwater runoff include erosion, sedimentation, degradation of water quality, loss of environmental resources, and economic impacts.

Impacts that are not quantified, but can be anticipated in large future events, include:

- Injury and loss of life;

- Commercial and residential structural and property damage;
- Disruption of and damage to public infrastructure, utilities, and services;
- Damage to roads/bridges resulting in loss of mobility;
- Significant economic impact (jobs, sales, tax revenue) to the community; and
- Negative impact on commercial and residential property values

Impacts to identified assets at risk to this hazard and the overall vulnerability of the City may be affected in the future by climate change (which was discussed in the hazard profile discussion above), changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. These are discussed below.

Insurance Coverage, Claims Paid, and Repetitive Losses

Standard property insurance does not include flood coverage because of the relatively high risk. The National Flood Insurance Program (NFIP) provides flood insurance to residents in those communities that participate in the NFIP. Federal financial assistance requires the purchase of flood insurance for structures located within a 100-year floodplain – a requirement that affects nearly all mortgages financed through commercial lending institutions. Flood insurance is also recommended for all structures protected by levees, even if not mapped within a floodplain.

The City of Plymouth joined the National Flood Insurance Program (NFIP) on December 1, 1990. The City does not participate in the CRS program. NFIP data indicates that as of March 2, 2020, there were no flood insurance policies in force in the City with $0 of coverage. There have been no historical claims for flood losses. NFIP data further indicates that there are no repetitive loss (RL) and no severe repetitive loss buildings in the City.

Based on this analysis of insurance coverage, the City has values at risk to the 1% annual chance and greater floods. Of the 7 improved parcels within the 1% annual chance flood zone, none of those parcels maintain flood insurance. This can be seen on Table D-25.

Table D-25 City of Plymouth – Percentage of Policy Holders to Improved Parcels in the 1% Annual Chance Floodplain

Jurisdiction	Improved Parcels in SFHA (1% Annual Chance) Floodplain*	Insurance Policies in the SFHA (1% Annual Chance) Floodplain	Percentage of 1% Annual Chance Floodplain Parcels Currently Insured
City of Plymouth	7	0	0.0%

Source: FEMA DFIRM 1/20/2016, Amador County 2024 Parcel/Assessor Data, NFIP CIS data.

Future Conditions/Future Development

This section provides a discussion of how future conditions will influence or affect the hazard over time and also discusses future development relative to each hazard.

Future Conditions

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for the City of Plymouth include the following:

- Climate change is likely to exacerbate future flood conditions and associated impacts and vulnerability of the County to 1% and 0.2% annual chance flooding.
- Future population growth should be considered, as having more or less people in a community affects the overall hazard vulnerability to the City. Population growth in the City of Plymouth has continued to slowly increase; however, additional growth within 1% and 0.2% annual chance floodplains would place additional populations at risk to flood. Additional population growth would likely bring continued diversity to the Ciy. Vulnerable population groups could face disproportionate effects from flooding and should be planned for. Changes in population and population patterns may or may not increase the impacts and vulnerability of the City to this hazard depending on the location and nature of growth and continued planning for future hazard conditions and the location and severity of future flood events. Given the future development plans for the City that includes a new Hilton Hotel and 234 single family units with ADUs, both with portions being built in the 1% annual chance floodplains; new development could add an additional 655 residents and additional hotel occupants to the 1% annual chance floodplain. This would generally increase the vulnerability of the City to this hazard; although any increases should be limited as only a portion of the new development areas actually fall within the 1% annual chance floodplain.
- Land use planning should be proactive to address future hazard conditions. Locating new development, structures and critical facilities and infrastructure within or near areas of flood risk may put additional development at risk. As shown on Figure D-166, future development occurring within a portion of the City's 1% annual chance floodplain consists of one commercial development, a Hilton Hotel, and one residential development comprised of 234 new units of single family residents with ADUs. Collectively this new construction adds an additional 165 acres of developed land within the City within the 1% annual chance flood zone. Ensuring that regulatory requirements, such as building codes, are updated and followed will help reduce future impacts to this hazard. This new development would generally increase the vulnerability of the City to this hazard; although any increases should be limited as only a portion of the new development areas actually fall within the 1% annual chance floodplain as shown in Figure D-16 as a result of the size of parcels and the hazard analysis methodology.

Future Development

The potential for flooding may increase as floodwaters are channeled due to land development. Such changes can exacerbate flooding problems inside and outside of natural floodplains by altering or confining natural drainage channels. Floodplain modeling and master planning should be based on built out property use to ensure that all new development remains safe from future flooding. While local floodplain management, stormwater management, and water quality regulations and policies address these changes on a site-by-site basis, their cumulative effects can have a negative impact on the overall floodplain.

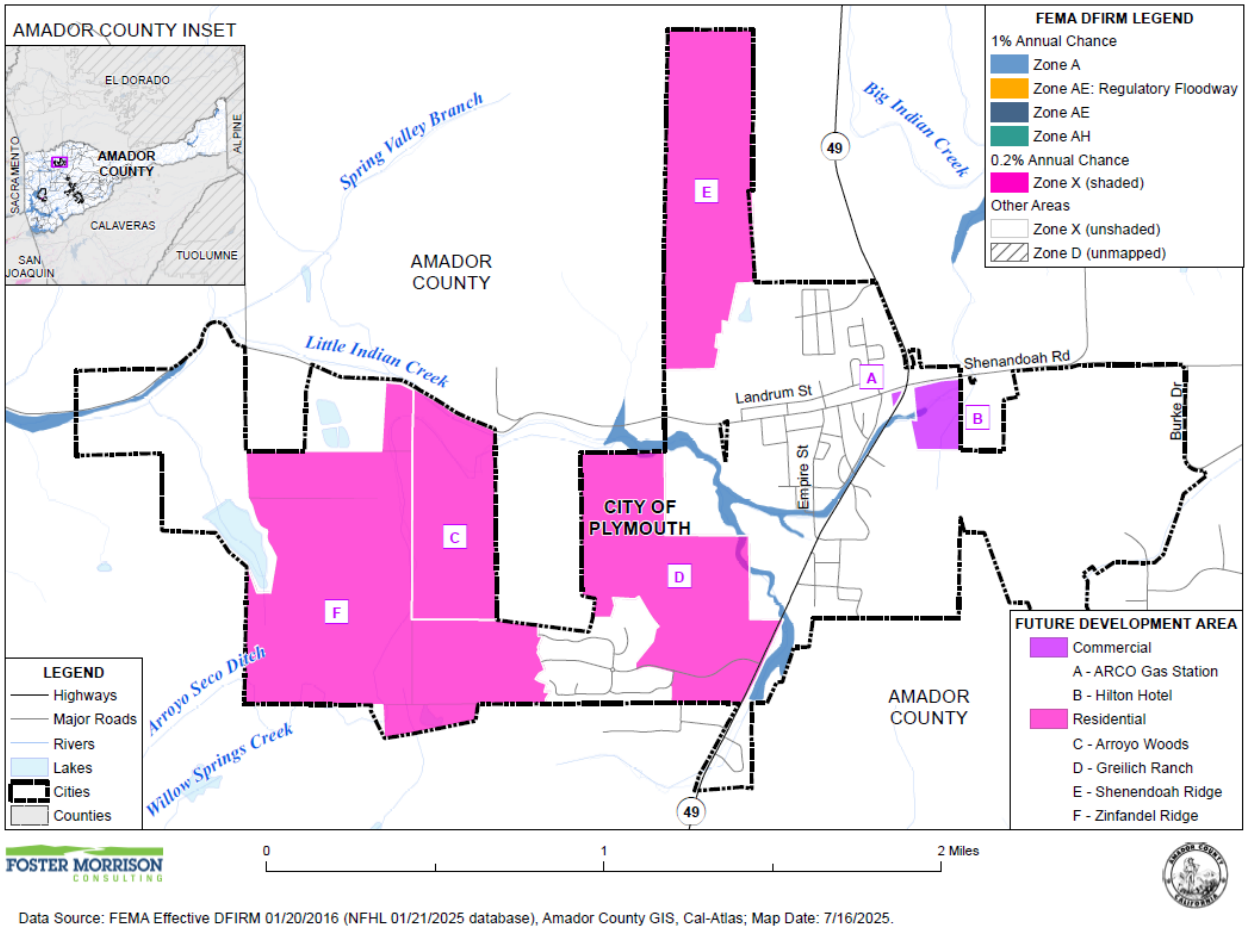
The City enforces its floodplain management ordinance. The City's floodplain ordinance should be updated to ensure new development within floodplains is adequately protected. More detail on the specifics of the floodplain ordinance can be found in the Capability section below.

Future development areas and their vulnerability to 1% and 0.2% annual chance flood are discussed further in the below GIS analysis.

GIS Analysis

The City provided six future development areas which were used as the basis for the inventory of future development for the City. This area were mapped in GIS. Utilizing the future development area spatial layer, the parcel polygon data was intersected to determine the future development areas within each DFIRM flood zone. Figure D-16 shows the locations of the future development area overlayed on the DFIRM flood zones. Some of these sites lie inside of the mapped DFIRM 1% annual chance flood zone; as shown on Table D-26.

Figure D-16 City of Plymouth – Future Development Areas in FEMA DFIRM Flood Zones



Data Source: FEMA Effective DFIRM 01/20/2016 (NFHL 01/21/2025 database), Amador County GIS, Cal-Atlas; Map Date: 7/16/2025.

Table D-26 City of Plymouth – Future Development Parcels and Acres in FEMA DFIRM Flood Zones

Flood Zone /Site/Map ID - Future Development"	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
1% Annual Chance Flood Hazard						
Zone A						
B - Hilton Hotel	1	0	1	4.21	0	4.21
D - Greilich Ranch	1	1	0	161	161	0
Zone A Total	**2**	**1**	**1**	**165.21**	**161**	**4.21**
1% Annual Chance Flood Hazard Total	**2**	**1**	**1**	**165.21**	**161**	**4.21**
Other Areas						
Zone X (unshaded)						
A - ARCO Gas Station	1	1		1.91	1.91	0
C - Arroyo Woods	1	0	1	0	0	0
E - Shenendoah Ridge	1	0	1	147	0	147
F - Zinfandel Ridge	5	0	5	365	0	365
Zone X (unshaded) Total	8	1	7	513.91	1.91	512
Other Areas Total	**8**	**1**	**7**	**513.91**	**1.91**	**512**
Grand Total	**10**	**2**	**8**	**679.12**	**162.91**	**516.21**

Source: FEMA DFIRM 1/20/2016, City of Plymouth

Flood: Localized Stormwater Flooding

Likelihood of Future Occurrence–Occasional
Vulnerability–Medium

Hazard Profile

Flooding occurs in areas other than the FEMA mapped 1% and 0.2% annual chance floodplains. Flooding may be from drainages not studied by FEMA, lack of or inadequate drainage infrastructure, or inadequate maintenance. Localized, stormwater flooding occurs throughout the City during the rainy season from

November through April. Prolonged heavy rainfall (including that from atmospheric river events) contributes to a large volume of runoff resulting in high peak flows of moderate duration.

Location and Extent

The City of Plymouth is subject to localized flooding throughout the City. Areas prone to localized flooding are included in Table D-27 below. Flood extents are usually measured in areas affected, velocity of flooding, and depths of flooding. Expected flood depths in the City vary by location. Flood durations in the City tend to be short to medium term, or until either the storm drainage system can catch up or flood waters move downstream. Localized flooding in the City tends to have a shorter speed of onset, especially when antecedent rainfall has soaked the ground and reduced its capacity to absorb additional moisture.

Past Occurrences

Disaster Declaration History

There have been no state or federal disaster declarations from localized floods. There would most likely have been localized flood events during the disaster declarations from flood as shown in the previous 1%/0.2% annual chance flood section.

NCDC Events

The NCDC occurrences of localized flooding are included in the 1% and 0.2% annual chance flood hazard profile above where past flood events were noted.

City of Plymouth Events

In January 2023, there were road closures due to extreme rainfall on parts of HWY 49 and Old Sacramento Rd between Spring Valley Rd and Latrobe Rd.

Climate Change and Localized Flood

It is likely that climate change will increase the chance of future occurrence as well as future impacts from localized flood. More information on future impacts to the City can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Even if average annual rainfall may decrease slightly, the intensity of individual rainfall events is likely to increase during the 21st century, increasing the likelihood of overwhelming stormwater systems built to historical rainfall averages. This makes localized flooding more likely.

Vulnerability to Localized Flood

Flood vulnerability and their impacts vary by location and severity of any given flood event and will likely only affect certain areas of the City during specific times. Based on the risk assessment, it is evident that floods will continue to have potentially significant impacts to certain areas of the City. However, while flooding can cause significant impacts, depending on the duration and volume of precipitation and the

drainage in any given area, many of the floods in the City are minor, localized flood events that are more of a nuisance than a disaster.

Many areas of the City are at some measure of vulnerability to localized flooding. An assessment of a community's vulnerability to localized flooding begins with an understanding of local exposure to localized flooding. This is included in the Local Concerns section below followed by a discussion of the City's Assets at Risk to this hazard.

Local Concerns

The City has specific concerns and unique vulnerabilities regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce risk and vulnerability to this hazard.

Historically, the City has been affected by flooding of streams and creeks occurring during heavy rain and storm (including atmospheric river) events. Additional development in the City and in the watersheds of these streams affects both the frequency and duration of damaging floods through an increase in stormwater runoff and contributes to localized flooding occurring in areas throughout the City. Atmospheric river events have further compounded this issue. The lack of or inadequate drainage infrastructure in the City contributes to localized flooding issues.

The City tracks localized flooding areas. Affected localized flood areas identified by the City of Plymouth are summarized in Table D-27.

Table D-27 City of Plymouth – List of Localized Flooding Problem Areas

Road Name	Flooding	Pavement Deterioration	Washouts	High Water/ Creek Crossing	Landslides/ Mudslides	Debris	Downed Trees
Old Sac Rd	Yes	Yes	No	Yes	No	Yes	Yes
Hwy 49/49er Park	Yes	No	No	No	No	No	No
Empire St/Hwy 49	Yes	No	No	No	No	No	No

Source: City of Plymouth

Assets at Risk

Assets at risk from localized flood include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections.

People and Populations

People and populations (including vulnerable populations) are traditionally not highly vulnerable to localized flooding, but their structures and contents can be at risk. Localized flooding may also cause transportation issues as roads and lanes are impacted or closed and affect the ability for people to travel throughout the City.

Structures

Structures in areas with localized flooding can be affected if floodwaters intrude into the structure. Structures in low lying areas, or those with basements can be at greater risk. Buildings with older foundations that are prone to water intrusion are also at greater risk. Once water finds its way into a structure, it tends to continue to do so until the path that brings water into a structure is mitigated. Structures can also be damaged by trees that have become uprooted and fall during rain and storm events. Large trees falling onto structures can cause significant damage.

Critical Facilities and Infrastructure

Localized flooding, while often more of a nuisance, can cause damage to critical facilities and infrastructure during a heavy rain and storm event. Any facility that experiences localized flooding can be impacted. Utilities and other critical infrastructure can all be affected, causing interruptions in service until repairs can be made. For example, water and wastewater systems can be vulnerable to heavy rains and flood events. Rainfall creates a high water table, surging streams and creeks, and saturates soil. Infiltration of stormwater into water and wastewater systems may occur and presents a threat to public health and safety, when the infrastructure is no longer able to meet operational needs and local demands. Other critical facilities such as roads, bridges and other transportation facilities can also experience localized flooding causing road closures and other impacts until storm waters recede. This can result in extended road closures requiring alternate routes.

Natural, Historic, and Cultural Resources

Natural resource assets may have some vulnerabilities to localized flood during major storm events, but can benefit from floodwaters, often by design. Many parks and green spaces are designed to take overflow water and release it into the underlying soils and natural areas. Wetlands areas in the City actually help reduce the risk of flooding, as they can absorb excess rainfall that would have to be drained away from impervious surfaces. Flooding can provide many benefits to the natural environment, including recharging wetlands and groundwater, increasing fish production, creating wildlife habitat, and rejuvenating soil fertility. These smaller localized flooding events often provide more benefits to the environment in comparison to negative impacts associated with large flood events. Historic and cultural resources may be at some measure of vulnerability if they are located in areas subject to repeated localized flooding.

Impacts from Localized Flood

Primary concerns associated with stormwater flooding include impacts to infrastructure that provide a means of ingress and egress throughout the community. Ground saturation can result in instability, collapse, or other damage to trees, structures, roadways and other critical infrastructure. Objects can also be buried or destroyed through sediment deposition. Floodwaters can break utility lines and interrupt services. Standing water can cause damage to crops, roads, and foundations. Other problems connected with flooding and stormwater runoff include erosion, sedimentation, degradation of water quality, losses of environmental resources, and certain health hazards.

Life safety issues from localized flooding would be more limited. The amount and type of damage or flooding that occurs varies from year to year and from storm to storm, depending on the quantity of precipitation and runoff.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the City may be affected in the future by climate change (which was discussed in the Likelihood of Future Occurrence discussion above), changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. These are discussed below.

Future Conditions/Future Development

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for the City of Plymouth include the following:

- Climate change is likely to exacerbate future heavy rain conditions and associated impacts and vulnerability of the City to localized flood.
- Population growth in the City of Plymouth has continued to slowly increase. Additional population growth would likely bring continued diversity to the City. This can also impact the vulnerable populations, like low-income individuals and households living in areas that are typically more hazardous. Vulnerable population groups such as low-income individuals and households living in flood prone areas could face disproportionate effects from localized flood and should be planned for. Changes in population and population patterns may or may not increase the impacts and vulnerability of the City to this hazard depending on the location and nature of growth and continued planning for future hazard conditions and location of future hazard events. Given the future development plans for the City that include a new Hilton Hotel and 437 single and multifamily units, new development could add an additional 1223 residents and additional hotel occupants to the City. This would likely increase the vulnerability of the City to this hazard.
- Land use planning should be proactive to address future hazard conditions. Development in more urban areas causes an increase in peak flow and stormwater runoff. The City has large areas identified for developed in the next five years. Such growth will consume previously undeveloped acres, and the impacts may overwhelm existing drainage and flood control facilities. Locating new development, structures and critical facilities and infrastructure within or near areas of localized flooding risk may put additional development at risk. However, City building codes are in effect to reduce this risk and should be updated as necessary to continue to address future localized flood conditions. Depending on the location of new development and adherence to protective building codes, changes in land use and development may or may not increase the impacts and associated vulnerabilities of the City to this hazard. However, future development occurring in the City consists of 2 commercial developments, with one being a new hotel and 4 residential developments comprised of 437 new units of both single and multifamily uses. Collectively this new construction adds an additional 679 acres of developed land within the City. Given the number of new units and land associated with these developments, it is likely that this new development will increase the impacts and vulnerability of the City to this hazard.

The City will need to be proactive to ensure that increased development has proper siting and drainage for stormwaters. The risk of localized flooding to future development can also be minimized by accurate

recordkeeping of repetitive localized storm activity. Mitigating the root causes of the localized stormwater flooding will reduce future risks of losses.

Severe Weather: Extreme Heat

Likelihood of Future Occurrence–Highly Likely
Vulnerability–High

Hazard Profile

According to FEMA, extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and lasts for several weeks. Heat kills by taxing the human body beyond its abilities. In extreme heat and high humidity, evaporation is slowed, and the body must work extra hard to maintain a normal temperature." Most heat disorders occur because the victim has been overexposed to heat or has over-exercised for his or her age and physical condition. Older adults, young children, those who are sick or overweight, and those that work or recreate outdoors are more likely to experience heat exhaustion or succumb to extreme heat.

In addition to the risks faced by citizens of the City, there are risks to the built environment from extreme heat. While extreme heat on its own does not usually affect structures, extreme heat during times of drought can cause wildfire risk to heighten. Extreme heat can lead to interruptions in power, power outages, and when combined with high winds, to PSPS events, creating significant issues in the City. Plymouth has numerous old structures and unmaintained structures within the City limits which are more susceptible to fire than the average structure.

Location and Extent

Heat is a regional phenomenon and affects the whole of the City. Heat emergencies are often slower to develop, taking several days of continuous, oppressive heat before a significant or quantifiable impact is seen. Heat waves do not strike victims immediately, but rather their cumulative effects slowly affect general and vulnerable populations and communities. Heat waves do not generally cause damage or elicit the immediate response of floods, fires, earthquakes, or other more "typical" disaster scenarios. The City experiences temperatures in excess of 100°F during the summer and fall months. The temperature moves to 105-110°F in rather extreme situations.

The NWS has in place a system to initiate alert procedures (advisories or warnings) when extreme heat is expected to have a significant impact on public safety. The expected severity of the heat determines whether advisories or warnings are issued. The NWS HeatRisk forecast provides a quick view of heat risk potential over the upcoming seven days. The heat risk is portrayed in a numeric (0-4) and color (green/yellow/orange/red/magenta) scale which is similar in approach to the Air Quality Index (AQI) or the UV Index. This can be seen in Section 4.3.3 of the Base Plan.

Past Occurrences

Disaster Declaration History

There have been no federal or state disaster declarations from extreme heat.

NCDC Events

The NCDC data shows 124 extreme heat incidents for Amador County since 1993, some of which likely affected the City.

City of Plymouth Events

The City Planning Team note that since extreme heat is a regional phenomenon, events that affected the County also affected the City. Those past occurrences were shown in the Base Plan in Section 4.2.2.

Climate Change and Extreme Heat

The 2021 CAS (as well as the 2024 Draft CAS), citing a California Energy Commission study, states that "over the past 15 years, heat waves have claimed more lives in California than all other declared disaster events combined." This study shows that California is getting warmer, leading to an increased frequency, magnitude, and duration of heat waves. These factors may lead to increased mortality from excessive heat.

As temperatures increase, California and Amador County will face increased risk of death from dehydration, heat stroke, heat exhaustion, heart attack, stroke and respiratory distress caused by extreme heat. According to the 2021 CAS (as well as the 2024 Draft CAS) report and the 2023 State of California Hazard Mitigation Plan, by 2100, hotter temperatures are expected throughout the state, with projected increases of 3-5.5°F (under a lower emissions scenario) to 8-10.5°F (under a higher emissions scenario). These changes could lead to an increase in deaths related to extreme heat in Amador County.

Vulnerability to Severe Weather: Extreme Heat

Extreme heat is becoming more frequent, intense, longer lasting and geographically widespread. Extreme heat occurs on an annual basis in the County and the City. In recent years, compounded by climate change conditions, summer months continue to get a bit hotter. The whole of the City is at some measure of vulnerability to extreme heat. An assessment of a community's vulnerability to extreme heat begins with an understanding of local exposure to extreme heat. This is included in the Local Concerns section below followed by a discussion of the City's Assets at Risk to this hazard.

Local Concerns

The City has specific concerns and unique vulnerabilities regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce risk and vulnerability to this hazard.

The City is concerned that extreme heat will drive the wildfire hazard. In addition, individuals below the poverty level may be at increased risk to extreme heat if use of air conditioning is not available or affordable. This is especially true of homeless people and the transient population.

Assets at Risk

Assets at risk from extreme heat include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections.

People and Populations

All populations within the City are vulnerable to extreme heat, but it generally affects people spending large amounts of time outside or without means of cooling indoor structures. During extended periods of high temperatures, extreme heat may overload the demands for electricity to run air conditioners and can present health concerns to individuals. When interruptions in power occur during extreme heat, the risk of heat related illnesses and deaths increases. Extreme heat is a significant concern to vulnerable populations. The unhoused; individuals who exercise or train outdoors; outdoor workers; individuals that lack the resources to afford heat; and the young, old, or medically fragile individuals that are more susceptible to heat related impacts. In addition to vulnerable populations, pets and livestock are at risk to extreme heat conditions.

Structures

Extreme heat normally does not generally impact structures, but individuals working in structures may be affected during periods of extended heat, especially in structures that might not be equipped with air conditioning or other means of cooling. The City noted that extreme heat has caused interruptions to power in the past. Also depending on the structure, sensitive contents such as IT equipment can be impacted, especially if a power outage occurs.

Critical Facilities and Infrastructure

Depending on their type and function, critical facilities and infrastructure can also be affected by extreme heat. Interruptions in power caused by extreme heat can lead to system failures. Schools without air conditioning may have to close or operate on a reduced schedule.

Natural, Historic, and Cultural Resources

Natural resource assets, including those located in City park areas, may be vulnerable during periods of extreme heat. These include turfed areas; landscapes, City trees, wildlife and habitat areas, and wetlands and marsh lands. Recently, trees were lost in areas of the City that were weakened by drought and extreme heat. Extreme heat may also cause drought-like conditions, contributing to other issues. For example, several weeks of extreme heat increases evapotranspiration and reduces moisture content in vegetation, leading to higher wildfire vulnerability in the region for that time period, even if the rest of the season is relatively moist. Historic and cultural resources are not expected to be affected by extreme heat.

Impacts from Severe Weather: Extreme Heat

The City experiences temperatures in excess of 100°F during the summer and fall months. The temperature moves to 105-110°F in rather extreme situations. During these times, drought conditions may worsen, and the City may see an increase in dry fuels. Also, power outage and PSPS events may occur during these times as well. Health issues are a primary concern with this hazard, especially to vulnerable populations, although economic impacts can also be an issue.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the County may be affected in the future by climate change (which was discussed in the hazard profile section above), changes in population patterns, and changes in land use and development. The influencing effects of these factors on this hazard are discussed further in the Future Conditions/Future Development discussion below.

Future Conditions/Future Development

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for City include the following:

- Climate change is likely to exacerbate future extreme heat conditions and associated impacts and vulnerability of the City.
- Future population growth should be considered, as having more or less people in a community affects the overall hazard vulnerability to the City. Population is expected to continue to increase for the City and, as such, the vulnerability to this hazard may increase, specifically affecting growing vulnerable populations as the senior citizen population continues to reside in and age within the communities of the City. Along with this, low income and the unhoused population are at risk to extreme heat which can put strain on emergency services and shelters. Changes in population and population patterns may or may not increase the impacts and vulnerability of the City to this hazard depending on the location and nature of growth and continued planning for future hazard conditions. Given the future development plans for the City that include a new Hilton Hotel and 437 single and multifamily units, new development could add an additional 1223 residents and additional hotel occupants to the City. This would likely increase the vulnerability of the City to this hazard.
- Land use planning should be proactive to address future hazard conditions. The City has large areas that may be built out in the next five years. However, City building codes are in effect to reduce this risk and should be updated as necessary to continue to address future extreme heat conditions. Due to adherence to protective building codes, changes in land use and development may or may not increase the impacts and associated vulnerabilities of the City to this hazard. However, future development occurring in the City consists of 2 commercial developments, with one being a new hotel and 4 residential developments comprised of 437 new units of both single and multifamily uses. Collectively this new construction adds an additional 679 acres of developed land within the City. Given the number of new units and land associated with these developments, it is likely that this new development will increase the impacts and vulnerability of the City to this hazard.

Future development of new buildings in the City will likely not be affected by extreme heat. Extreme heat is more likely to affect vulnerable populations. Vulnerability to extreme heat will increase as the average age of the population shifts. It is encouraged that nursing homes and elder care facilities have emergency

plans or backup power to address power failure during times of extreme heat and in the event of a PSPS. Low-income residents and unhoused populations are also more vulnerable and should be considered in future growth plans for the City. Cooling centers for these populations should be utilized when necessary. Plymouth City Hall is the area's cooling center.

Severe Weather: Heavy Rains and Storms

Likelihood of Future Occurrence–Likely
Vulnerability–Medium

Hazard Profile

Storms in the City occur annually and are generally characterized by heavy rain often accompanied by strong winds and sometimes lightning and hail. Approximately 10 percent of the thunderstorms that occur each year in the United States are classified as severe. A thunderstorm is classified as severe when it contains one or more of the following phenomena: hail that is three-quarters of an inch or greater, winds in excess of 50 knots (57.5 mph), or a tornado. Heavy precipitation in the City falls mainly in the fall, winter, and spring months. Wind often accompanies these storms; hail and lightning are rare in the City.

Location and Extent

Heavy rain events occur on a regional basis. Rains and storms can occur in any location of the City. All portions of the City are at risk to heavy rains and storms. Most of the severe rains occur during the fall, winter, and spring months in the City as discussed below (with problem flooding areas associated with heavy rains and storms shown in Table D-27 in the Flood: Localized Stormwater section). There is no scale by which heavy rains and severe storms are measured. Magnitude of storms is measured often in rainfall and damages. The speed of onset of heavy rains can be short, but accurate weather prediction mechanisms often let the public know of upcoming events. Hail and lightning are rarer in the City and Amador County. Duration of severe storms in the City can range from minutes to hours to days. Information on precipitation extremes can be found in Section 4.3.4 of the Base Plan.

Past Occurrences

Disaster Declaration History

According to historical hazard data, severe weather, including heavy rains and storms, is an annual occurrence in the City. This contributes to many of the federal disaster declarations related to flooding. Disaster declarations from flooding are shown on Table D-28.

Table D-28 Amador County – State and Federal Disaster Declarations from Flood (Heavy Rain and Storms) 1950-2025

Disaster Type	State Declarations		Federal Declarations	
	Count	Years	Count	Years
Flood (including heavy rains and storms)	22	1950, 1955, 1958 (twice), 1959, 1963, 1964, 1969, 1980, 1982, 1986, 1995 (twice), 1997, 2006 (twice), 2017 (twice), 2019, 2021, 2023 (twice)	20	1950, 1955, 1958, 1962, 1963, 1964, 1969, 1986, 1995 (twice), 1997, 1998, 2006 (twice), 2017 (twice), 2019, 2023 (three)

Source: Cal OES, FEMA

NCDC Events

The NCDC data recorded 114 hail, heavy rain, and winter weather incidents for Amador County since 1950. Winter weather events tend to be rain in the lower elevations of the County, while snow falls in the upper elevations.

City of Plymouth Events

The City noted the following events:

December 27, 2022 – A severe storm impacted the City of Plymouth, causing a declaration to be made on January 14, 2023. This event caused issues for the wastewater treatment plant including pumps and sprinklers costing the City $53,611 to repair the damage. Along with this, debris removal was necessary and cost the City $12,939.

Climate Change and Heavy Rains and Storms

It is likely that climate change will increase the chance of future occurrence as well as future impacts from heavy rains and storms. More information on future impacts to the City can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

According to the 2021 CAS (as well as the 2024 Draft CAS), while average annual rainfall may increase or decrease slightly, the intensity of individual rainfall events is likely to increase during the 21st century. It is unlikely that hail will become more common in Amador County and the City of Plymouth. The amount of lightning is not projected to change.

Cal-Adapt noted that, on average, the projections show little change in total annual precipitation in California. Furthermore, among several models, precipitation projections do not show a consistent trend during the next century. Cal-Adapt modeled scenarios are shown in Section 4.3.4 of the Base Plan.

Vulnerability to Heavy Rain and Storms

Heavy rain and severe storms are the most frequent type of severe weather occurrences in the City. These events can cause both significant and localized flooding. Flooding can be worse during times where the

ground is already saturated. Wind often accompanies these storms and has caused damage in the past. Hail and lightning are rare in the City, but also can cause damage, with lightning occasionally igniting wildfires.

The whole of the City is at some measure of vulnerability to heavy rain and storms. An assessment of a community's vulnerability to heavy rains and storms begins with an understanding of local exposure to heavy rain and storms. This is included in the Local Concerns section below followed by a discussion of the City's Assets at Risk to this hazard.

Local Concerns

The City has specific concerns and unique vulnerabilities regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce risk and vulnerability to this hazard.

The City noted that heavy rains and storms are a common occurrence in the City, with most storm events causing temporary issues within the City such as impacts to roads, tree damage, and the occasional power outage. The City also noted that heavy rains and storms cause localized flooding in the City. The problem areas area shown on Table D-27 above.

Assets at Risk

Assets at risk from heavy rain and storms include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections.

People and Populations

All populations (including vulnerable populations) in the City have some measure of risk to heavy rains and storms. Those populations that work or recreate outside and unhoused individuals are more vulnerable to impacts from heavy storm events. Heavy rains and storms occur every year and do not generally cause significant adverse impacts to individuals; it is the secondary hazard, flooding, which poses the biggest impact to people. Populations at risk to flooding resulting from heavy rains and storm events include those who live in floodplains (discussed in further detail in the Flood: 1%/0.2% Annual Chance section above) and those who live in and near localized flooding areas (discussed in further detail in the Flood: Localized Stormwater Flooding section above).

Structures

Structures in the City have some risk to heavy rains and storms. Structures built to modern building codes are built to withstand heavy rains and storms (including high winds and lightning). During a heavy storm, localized flooding may cause water intrusion into buildings from the outside. Trees can be downed causing impacts to structures. Older homes and buildings may be at increased risk to heavy rains and storms. Power outages during severe storm events can occur, impacting the use of structures until the power is back online.

Critical Facilities and Infrastructure,

Heavy rain and storms can affect critical facilities and infrastructure during large events. Power outages may occur taking facilities offline. High winds can down power lines and trees impacting facilities. Water intrusion into facilities and infrastructure can impact operations. City roads, streets, and bridges can be impacted resulting in closures restricting traffic flow in the City. In certain areas, large storms can cause erosion and localized landslides which can impact facilities. Many critical facilities are built to modern design standards that take heavy rains and storms into account when siting and building these structures, and others may need to be retrofitted to better withstand these events.

Natural, Historic, and Cultural Resources

Large rain and storm events and associated flooding can affect natural, historic, and cultural resources. Silt and sediment can damage natural areas. Trees can be uprooted and downed by high winds. Extended periods of rainfall can erode natural banks along waterways and degrade soil stability for terrestrial species. While some natural systems can be adversely impacted during these large storms, heavy rain events can also provide benefits. Groundwater and wetland areas can be recharged and water supplies replenished. Historic and cultural resources may also be affected. Generally, the impacts are associated with damage to structures affected by large storm events, but other cultural resources such as those associated with Native Americans and old tribal areas can also be disturbed, damaged, and lost during extreme rain and storm and events.

Impacts from Heavy Rain and Storms

Impacts from heavy rains and storms include damage to property, critical facilities and infrastructure, and the natural landscape. This includes: erosion; downed trees; damaged utility structures and infrastructure; power outages; road damage and blockages; and even lightning strikes to critical infrastructure and people. Lightning can also cause wildfires and urban fires to occur. Landsliding and erosion occur when the soil on slopes becomes oversaturated and fails. Climate change may cause these impacts to worsen.

Actual damage associated with the primary effects of severe storms and heavy rains has been somewhat limited. It is the secondary hazards caused by these severe weather events, such as floods and erosion that would likely have the greatest impact.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the County may be affected in the future by climate change (which was discussed in the hazard profile section above), changes in population patterns, and changes in land use and development. The influencing effects of these factors on this hazard are discussed further in the Future Conditions/Future Development discussion below.

Future Conditions/Future Development

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for the City include the following:

- Climate change is likely to exacerbate future heavy rain and storm conditions and associated impacts and vulnerability of the City to flooding.
- Population is expected to maintain its slow increase for the City of Plymouth; however, the vulnerability may change depending on changes to the makeup of more vulnerable populations. Certain vulnerable populations, such as the unhoused, could experience disproportional effects from this hazard. and should be addressed as the City continues to grow. Thus, changes in population and population patterns may or may not increase the impacts and vulnerability of the City to this hazard depending on the location and nature of growth and continued planning for future hazard conditions and the location of future rain and flood events. Given the future development plans for the City that include a new Hilton Hotel and 437 single and multifamily units, new development could add an additional 1223 residents and additional hotel occupants to the City. This would likely increase the vulnerability of the City to this hazard.
- Land use planning should be proactive to address future hazard conditions. The City has six developments that may occur in the next five years that would cover sizable portions of the City. Changes in land use may also amplify the impacts of heavy rains and storms, as additional impervious surfaces can cause additional runoff and localized flooding throughout the City. Building codes in the City ensure that new development is built to current building standards, which should reduce the risk to future development in the City from heavy rains and storms. However, future development occurring in the City consists of 2 commercial developments, with one being a new hotel and 4 residential developments comprised of 437 new units of both single and multifamily uses. Collectively this new construction adds an additional 679 acres of developed land within the City. Given the number of new units and land associated with these developments, it is likely that this new development will increase the impacts and vulnerability of the City to this hazard.

Building codes in the City ensure that new development is built to current building standards, which should reduce the risk to future development in the City from heavy rains and storms. New critical facilities such as communications towers and others should be built to withstand hail damage, lightning, and thunderstorm winds. With adherence to development standards, future losses to new development should be minimal. Changes in land use may also amplify the impacts of heavy rains and storms, as additional impervious surfaces can cause additional runoff and localized flooding throughout the City.

Wildfire (with smoke and air quality)

Likelihood of Future Occurrence–Likely
Vulnerability–Extremely High

Hazard Profile

Wildland fire and the risk of a conflagration is an ongoing concern for the City of Plymouth. Throughout California, communities are increasingly concerned about wildfire safety as increased development in the foothills and mountain areas and subsequent fire control practices have affected the natural cycle of fire regimes. Wildland fires affect grass, forest, and brushlands, as well as structures. Where there is human access to wildland areas the risk of fire increases due to a greater chance for human carelessness and historical fire management practices. Historically, the fire season extends from early spring through late fall each year during the hotter, dryer months; however, in recent years, the risk of wildfire has become a year around concern.

Fire conditions arise from a combination of high temperatures, low moisture content in the air and fuel, accumulation of vegetation, and high winds. These weather conditions can result in red flag (e.g., fire weather) days and can result in PSPS events in the City. While wildfire risk has predominantly been associated with more remote forested areas and wildland urban interface (WUI) areas, significant wildfires can also occur in more populated, urban areas. There is also the concern of wildfires occurring in these more remote, forested areas that, under certain weather conditions, can extend into areas not generally considered at a high risk to wildfire. Smoke and air quality also become an issue, both from fires occurring inside and outside of the Amador County Planning Area and the City.

Wildfire Smoke and Air Quality

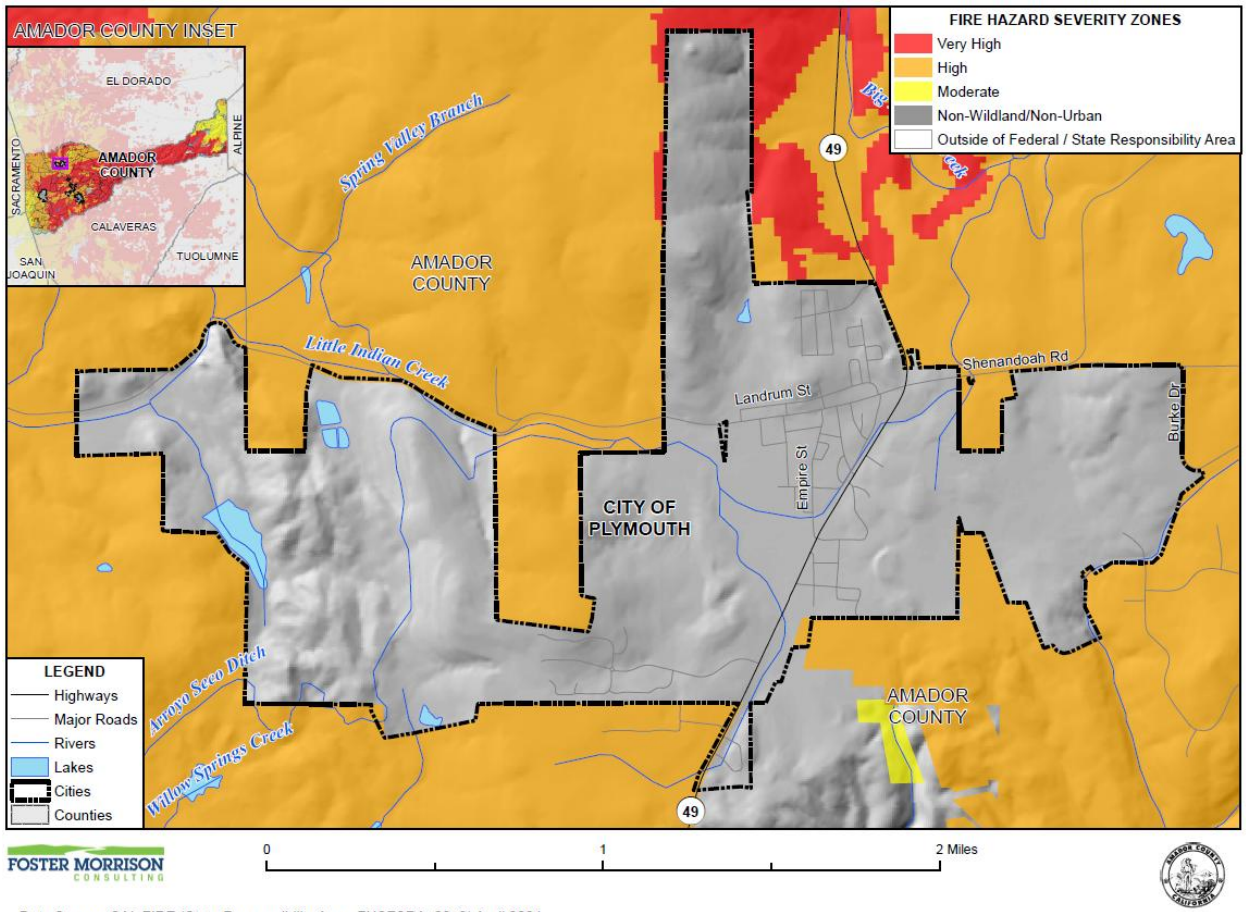
Smoke from wildfires is made up of gas and particulate matter, which can be easily observed in the air. Air quality standards have been established to protect human health with the pollutant referred to as PM2.5 which consists of particles 2.5 microns or less in diameter. These smaller sizes of particles are responsible for adverse health effects because of their ability to reach the lower regions of the respiratory tract.

Wildfire smoke can have negative effects to those who live in or near a fire burn area. Smoke and air pollution from wildfires can be a severe health hazard. Significant wildfires occurring in both Amador County and nearby northern California communities since the 2020 LHMP Update have created significant air pollution affecting area residents. This was the case during the 2021 Caldor Fire, as well as others that affected the nearby areas.

Location and Extent

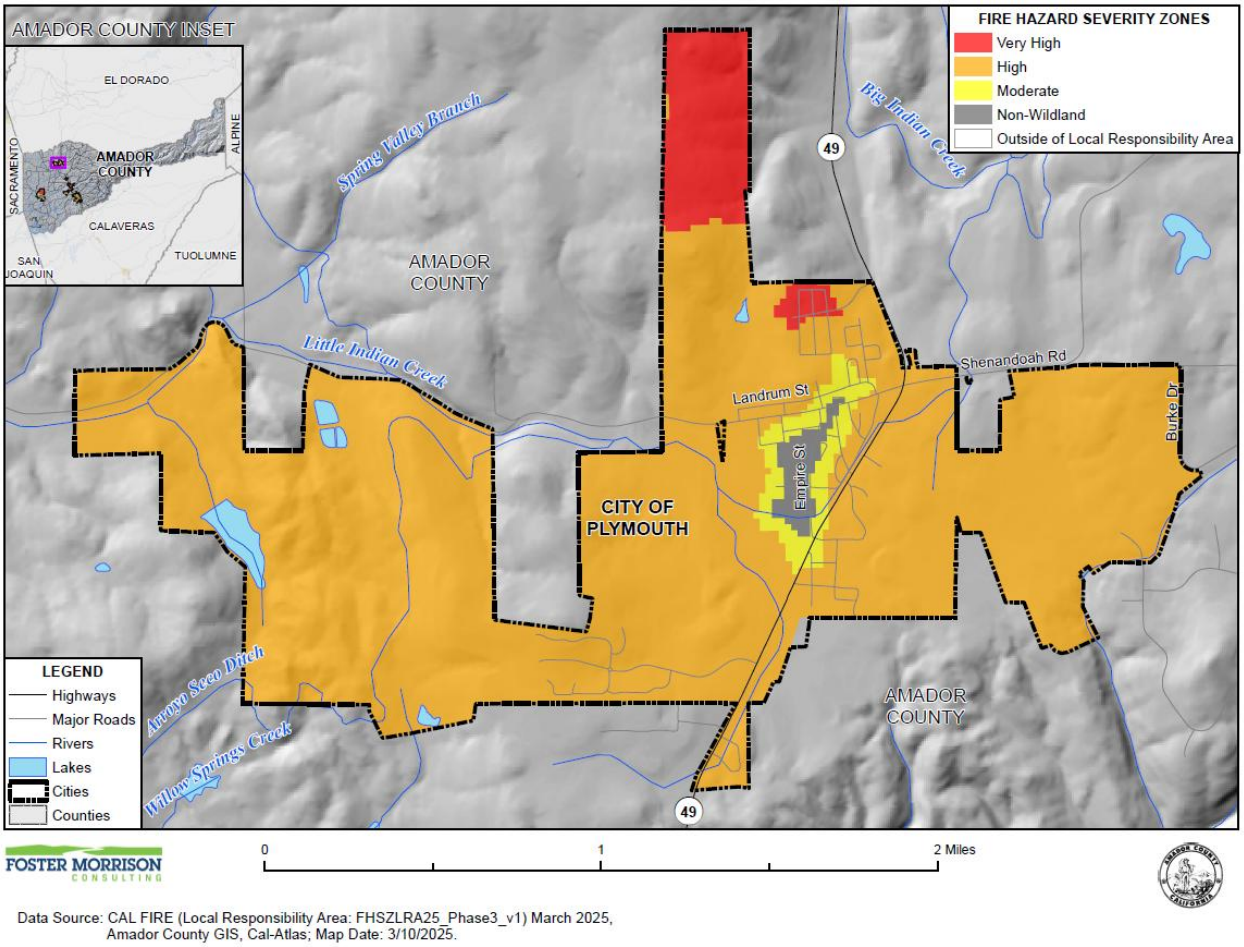
Wildfire can affect all areas of the City. CAL FIRE has estimated that the risk varies across the City and has created maps showing risk variance. Following the methodology described in Section 4.3.15 of the Base Plan, wildfire maps for the City of Plymouth were created. Figure D-17 shows the CAL FIRE Federal Responsibility Areas (FRA) and State Responsibility Areas (SRA) and their associated Fire Hazard Severity Zones (FHSZ) in the City. Figure D-18 shows the CAL FIRE Local Responsibility Areas (LRA) and their associated Fire Hazard Severity Zones (FHSZ) in the City. As shown on the maps, FHSZs within the City range from Non-Wildland to Very High, with most of the City mapped into the High and Very High FHZSx as shown in the new LRA mapping.

Figure D-17 City of Plymouth – CAL FIRE SRA/FRA Fire Hazard Severity Zones



Data Source: CAL FIRE (State Responsibility Area: FHSZSRA_23_3) April 2024,
CAL FIRE (Federal Responsibility Area: Draft c3fhszl06_1) September 2007,
Amador County GIS, Cal-Atlas; Map Date: 3/12/2025.

Figure D-18 City of Plymouth – CAL FIRE LRA Fire Hazard Severity Zones



Data Source: CAL FIRE (Local Responsibility Area: FHSZLRA25_Phase3_v1) March 2025, Amador County GIS, Cal-Atlas; Map Date: 3/10/2025.

Wildfires tend to be measured in structure damages, injuries, and loss of life as well as on acres burned. Fires can have a quick speed of onset, especially during periods of drought or during hot dry summer months. Fires can burn for a short period of time or may have durations lasting for a week or more. Geographical FHSZ extents in the SRA/FRA are shown in Table D-29, while extents in the LRA are shown on Table D-30.

Table D-29 City of Plymouth – CAL FIRE SRA/FRA Fire Hazard Severity Zone Geographical Extents

Fire Responsibility Area/ Fire Hazard Severity Zones	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
SRA						
Very High	0.3	0.02%	0.02	0.003%	0.3	0.03%
High	9	0.5%	2	0.3%	7	0.6%
SRA Total	**9**	**0.5%**	**2**	**0.3%**	**7**	**0.7%**

Fire Responsibility Area/ Fire Hazard Severity Zones	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Plymouth Total	**9**	**0.5%**	**2**	**0.3%**	**7**	**0.7%**

Source: CAL FIRE

Table D-30 City of Plymouth – CAL FIRE LRA Fire Hazard Severity Zone Geographical Extents

Fire Hazard Severity Zones	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Very High	105	6%	8	1%	98	9%
High	1,519	89%	558	93%	961	87%
Moderate	46	3%				
Non-Wildland	22	1%	9	1%	13	1%
Outside of LRA Responsibility Area	5.7	0.3%	1.1	0.2%	4.6	0.4%
Plymouth Total	**1,698**	**100%**	**600**	**100%**	**1,098**	**100%**

Source: CAL FIRE

Past Occurrences

Disaster Declaration History

There has been three state and two federal disaster declarations due to fire, as shown in Table D-31.

Table D-31 Amador County – State and Federal Wildfire Disaster Declarations 1950-2025

Disaster Type	State Declarations		Federal Declarations	
	Count	Years	Count	Years
Fire	3	1961 (unnamed), 2015 (Summer 2015 Fires), 2021 (Caldor Fire)	2	2016 (Butte Fire), 2021 (Caldor Fire)

Source: Cal OES, FEMA

NCDC Events

The NCDC has tracked 50 wildfire events in the County dating back to 1993.

City of Plymouth Events

Fire is a significant concern to the City of Plymouth. Historic fires have occurred in and around the County for decades. Significant historical fires in the Plymouth area include:

- The **1961 Fire** was actually 2 fires which started on the same day. The second fire started on Dry Creek on September 2nd. Strong winds carried it past Plymouth in the surrounding unincorporated area. Four injuries were recorded and large agricultural losses. At that time, the wine tourism aspect of Plymouth did not exist, and Plymouth fortunately did not have the extensive losses that many other areas of the county suffered from this fire.
- The **2014 Sand Fire** affected the City. The fire burned from July 25, 2014 to August 2, 2014. The fire burned 67 structures outside the City Limits. 20 of these were residences and 47 were outbuildings. 1,200 residences (not all located in the City) were evacuated. The Arroyo Ditch suffered extensive damage. The waterway is still not functional since the wildfires. Air quality suffered, and tourism declined during this time.
- The **2021 Caldor Fire**, while starting in El Dorado County, impacted the City in various ways. This was the second largest fire in El Dorado County, other than the Dixie fire. Due to the direction of the wind, Plymouth was under a Red Flag Warning as well as decreased air quality from the smoke. Along with that, in August, portions of the City were placed under an Evacuation Warning since the fire was so large including impacts to business activity. The event caused water pulls for fire during a period of drought for the County. The Amador County Fairgrounds activated as firefighter basecamp & animal relocation station. Ongoing evacuation watch for alerts-the small community of Grizzly Flats was devastated by the fire and only 30 miles away, at one point fire was moving towards Plymouth.
- The **2022 Electra Fire** did not affect the City in terms of its burned area, but it greatly impacted the City due to hazardous air quality.

Climate Change and Wildfire

It is likely that climate change will increase the chance of future occurrence as well as future impacts from wildfire. More information on future impacts to the City can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Warmer temperatures can exacerbate drought conditions. Drought often kills plants and trees, which serve as fuel for wildfires. Warmer temperatures could increase the number of wildfires and pest outbreaks, such as the western pine beetle. Cal-Adapt's wildfire tool predicts the potential increase in the amount of burned areas for the year 2090-2099, as compared to recent (2010) conditions. This is shown in Section 4.3.15 of the Base Plan. Based on this model, Cal-Adapt predicts that wildfire risk in Amador County will increase moderately at the end of the century. However, wildfire models can vary depending on the parameters used. Cal-Adapt does not take landscape and fuel sources into account in their model. In all likelihood, in the Amador County Planning Area, precipitation patterns, high levels of heat, topography, and fuel load will determine the frequency and intensity of future wildfire.

Vulnerability to Wildfire

Risk and vulnerability to the City from wildfire is of significant concern. Wildfires that occur in the City occur from a variety of both natural and manmade causes. The City can be affected both by fires that start on or near City lands as well as those that start elsewhere and move into the City. In addition to burning large areas of land, air quality can be affected in the City by smoke from fires occurring inside the City as well as those from many miles away. As growth continues and populations increase in the City, the potential for wildfires will also increase.

The whole of the City is at some measure of vulnerability to wildfire. An assessment of a community's vulnerability to wildfire begins with an understanding of local exposure to wildfire. This is included in the Local Concerns section below. After that section, assets at risk are discussed.

Local Concerns

The City has specific concerns and unique vulnerabilities regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce risk and vulnerability to this hazard.

The City 2009 General Plan Safety Element noted that as a foothills community, Plymouth's rural setting presents a constant threat of wildfire. The fuel load, made up of annual grasses, oaks, and other surface vegetation, is classified as a moderate risk for wild-land urban fires. In addition, the City has a significant threat to fire loss along Main Street due to shared common walls between businesses and the building materials used in construction. Hazardous air quality due to wildfire smoke, acreage containing dead/dry grass and old/dilapidated structures all pose potential risks to the City and surrounding environment.

Assets at Risk

Assets at risk from wildfire include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections.

People and Populations

All populations are at vulnerable to wildfire. Certain vulnerable populations are at greater risk to the effects of wildfire as well as smoke and air quality issues that wildfires bring. Vulnerable populations include:

- Unhoused
- Infants and children under age five and their caregivers
- Elderly (65 and older)
- Individuals with disabilities
- Individuals' dependent on medical equipment
- Individuals who exercise, recreate, or work outdoors
- Individuals with impaired mobility

To further evaluate the impact to the residential population within the City, the CAL FIRE FHSZ dataset was overlayed on the parcel layer. Those residential parcels that intersect the FHSZs were counted and multiplied by the 2023 Census Bureau average household factors for the City of Plymouth – 2.80. According to this analysis, there is a total population of 0 residents of the City of Plymouth falling within the moderate or higher SRA/FRA FHSZs. This is shown in Table D-32. There is a total population of 1,171 residents of the City of Plymouth falling within the moderate or higher LRA FHSZs, as shown on Table D-33.

Table D-32 City of Plymouth – Improved Residential Parcels and Population by CAL FIRE SRA/FRA Fire Hazard Severity Zone

Jurisdiction	Very High		High		Moderate	
	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk
Plymouth	0	0	0	0	0	0

Source: CAL FIRE, Amador County 2024 Parcel/Assessor Data, US Census Bureau American Community Survey 2023 Household Size Estimates.

Table D-33 City of Plymouth – Improved Residential Parcels and Population by CAL FIRE LRA Fire Hazard Severity Zone

Jurisdiction	Very High		High		Moderate	
	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk
Plymouth	40	112	331	927	47	132

Source: CAL FIRE, 2024 Amador County Parcel/Assessor's Data, US Census Bureau American Community Survey 2023 Household Size Estimates.

The City noted that the Critical Facilities and Infrastructure section below includes the facilities used by At-Risk populations that are threatened by this hazard. While this is not specific to what special populations reside in the City, it does speak to facilities that area used to serve (portions) of this population.

Structures

All structures in the City have some risk to wildfire. GIS was used to determine the possible impacts of wildfire within the City of Plymouth. The methodology described in Section 4.3.15 of the Base Plan was followed in determining structures and values at risk in both the CAL FIRE's SRA/FRA and LRA Fire Hazard Severity Zone layer. Analysis results for the SRA/FRA in the City of Plymouth are shown in Table D-34, which summarizes total parcel counts, improved parcel counts and their structure values by SRA/FRA FHSZs. Analysis results for the LRA in the City of Plymouth are shown in Table D-35, which summarizes total parcel counts, improved parcel counts and their structure values by SRA/FRA FHSZs.

Table D-34 City of Plymouth – Count and Value of Parcels and Structures by CAL FIRE SRA/FRA Fire Hazard Severity Zone

Fire Hazard Severity Zone/ Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Values	Total Value
SRA						
High						
Agricultural	0	0	$0	$0	$0	$0
Commercial	0	0	$0	$0	$0	$0
Industrial	0	0	$0	$0	$0	$0

Fire Hazard Severity Zone/ Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Values	Total Value
Miscellaneous	1	0	$0	$0	$0	$0
Residential	1	0	$106,120	$0	$0	$106,120
Unknown	0	0	$0	$0	$0	$0
High Total	**2**	**0**	**$106,120**	$0	$0	**$106,120**
SRA Total	**2**	**0**	**$106,120**	$0	$0	**$106,120**
Plymouth Total	**2**	**0**	**$106,120**	$0	$0	**$106,120**

Source: CAL FIRE, Amador County 2024 Parcel/Assessor Data

Table D-35 City of Plymouth – Count and Value of Parcels and Structures by CAL FIRE LRA Fire Hazard Severity Zone

Fire Hazard Severity Zone/ Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Values	Total Value
Very High						
Agricultural	1	0	$1,150,000	$0	$0	$1,150,000
Commercial	0	0	$0	$0	$0	$0
Industrial	0	0	$0	$0	$0	$0
Miscellaneous	0	0	$0	$0	$0	$0
Residential	45	40	$4,789,568	$6,628,450	$3,314,225	$14,732,243
Unknown	0	0	$0	$0	$0	$0
Very High Total	**46**	**40**	**$5,939,568**	**$6,628,450**	**$3,314,225**	**$15,882,243**
High						
Agricultural	11	6	$4,726,107	$1,031,502	$1,031,502	$6,789,111
Commercial	41	32	$14,098,905	$17,272,439	$17,272,439	$48,643,783
Industrial	0	0	$0	$0	$0	$0
Miscellaneous	25	0	$68,342	$0	$0	$68,342
Residential	399	331	$53,784,407	$82,842,182	$41,421,091	$178,047,680
Unknown	6	3	$424,481	$921,665	$0	$1,346,146
High Total	**482**	**372**	**$73,102,242**	**$102,067,788**	**$59,725,032**	**$234,895,062**
Moderate						
Agricultural	0	0	$0	$0	$0	$0
Commercial	16	11	$1,239,614	$2,295,970	$2,295,970	$5,831,554
Industrial	0	0	$0	$0	$0	$0
Miscellaneous	6	0	$491	$0	$0	$491
Residential	53	47	$3,262,052	$4,673,118	$2,336,559	$10,271,729
Unknown	2	0	$0	$0	$0	$0
Moderate Total	**77**	**58**	**$4,502,157**	**$6,969,088**	**$4,632,529**	**$16,103,774**

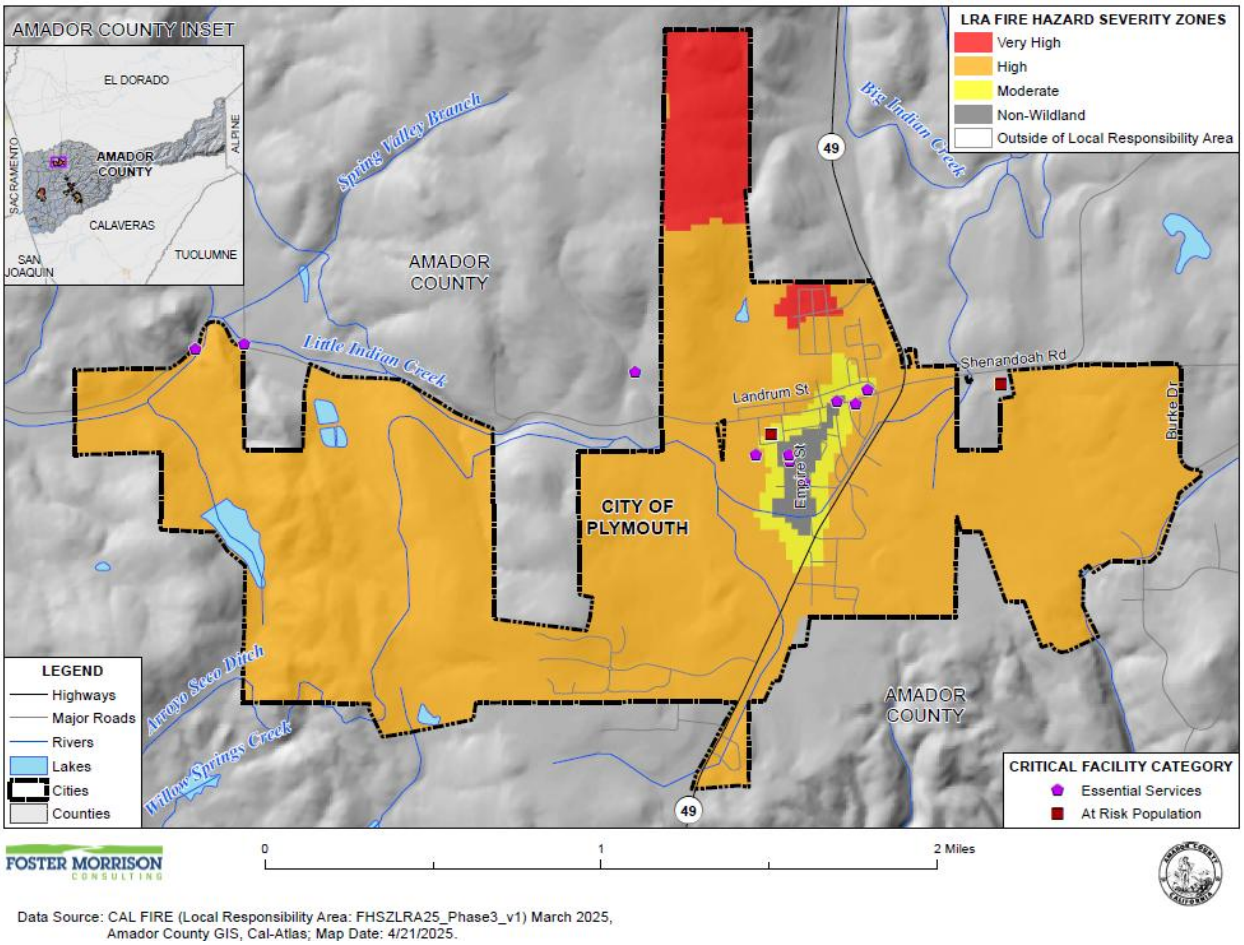
Fire Hazard Severity Zone/ Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Values	Total Value
Non-Wildland						
Agricultural	0	0	$0	$0	$0	$0
Commercial	3	3	$172,236	$478,630	$478,630	$1,129,496
Industrial	0	0	$0	$0	$0	$0
Miscellaneous	2	0	$0	$0	$0	$0
Residential	15	15	$1,427,160	$2,223,450	$1,111,725	$4,762,335
Unknown	0	0	$0	$0	$0	$0
Non-Wildland Total	**20**	**18**	**$1,599,396**	**$2,702,080**	$1,590,355	$5,891,831
Plymouth Total	**625**	**488**	**$85,143,363**	**$118,367,406**	**$69,262,141**	**$272,772,910**

Source: CAL FIRE, Amador County 2024 Parcel/Assessor Data

Critical Facilities and Infrastructure

Wildfire present a threat to critical facilities and infrastructure. The following analysis discusses critical facilities and infrastructure. A separate analysis was performed on the critical facility inventory in the City to determine which critical facilities fall into each fire hazard severity zone. Using GIS, the SRA/FRA and LRA fire hazard severity zones were overlayed on the critical facility GIS layer. Only LRA fire hazard severity zones intersect the City; as such no SRA/FRA analysis is presented here. Only LRA analysis is presented. This is shown on Figure D-19 for the LRA fire hazard severity zones. Table D-36 details which critical facilities fall in which LRA fire hazard severity zone. Details of critical facility categories, type, name, and address by SRA/FRA and LRA fire hazard severity zones are listed in Appendix F.

Figure D-19 City of Plymouth – Critical Facilities in LRA Fire Hazard Severity Zones



Data Source: CAL FIRE (Local Responsibility Area: FHSZLRA25_Phase3_v1) March 2025, Amador County GIS, Cal-Atlas; Map Date: 4/21/2025.

Table D-36 City of Plymouth – Critical Facilities by Category in LRA Fire Hazard Severity Zones

Fire Hazard Severity Zone	Critical Facility Category	Facility Type	Facility Count
High	Essential Services Facilities	Bridge	1
		Evacuation Shelter	1
		Essential Services Total	**2**
	High Total		**2**
Moderate	Essential Services Facilities	Post Office	1
		Public Administration Building	1
		Essential Services Total	**2**
	At Risk Population	School	1
		At Risk Population Total	**1**
	Moderate Total		**3**
Non-Wildland	Essential Services Facilities	Clinic	1

Fire Hazard Severity Zone	Critical Facility Category	Facility Type	Facility Count
		EMS Station	1
		Fire Station	1
		Library	1
		Essential Services Total	**4**
	Non-Wildland Total		**4**
Plymouth Total			**9**

Source: CGS, City of Plymouth

Natural, Historic, and Cultural Resources

Natural, historic, and cultural resources located within areas at risk to wildfire would be vulnerable. Should a wildfire occur in the City, the impacts to natural, historic and cultural resources could be extensive and include air pollution, contamination from water runoff containing toxic products, and other environmental discharges or releases from burned materials affecting soils, habitat areas, wildlife, and aquatic resources. Historic and cultural resources can be damaged or destroyed and are often more vulnerable due to their older age, construction type, and lack of fire prevention infrastructure such as sprinklers.

Impacts from Wildfire

Potential impacts from wildfire include loss of life and injuries; damage to structures and other improvements, natural and cultural resources, croplands, and timber; and loss of recreational opportunities. Out of control wildfires can have catastrophic impacts. Wildfires can cause short-term and long-term disruption to the City. Fires can have devastating effects on watersheds through loss of vegetation and soil erosion, which may impact the City by changing runoff patterns, increasing sedimentation, reducing natural and reservoir water storage capacity, and degrading water quality. Fires can also affect air quality in the City; smoke and air pollution from wildfires can be a severe health hazard. Smoke impacts may come from wildfires outside the City, as well as from within.

Although the physical damages and casualties arising from wildland-urban interface or conflagration fires may be severe, it is important to recognize that they also cause significant economic impacts by resulting in a loss of function of buildings and infrastructure. Economic impacts of loss of transportation and utility services may include traffic delays/detours from road and bridge closures and loss of electric power, potable water, and wastewater services. Schools and businesses can be forced to close for extended periods of time. Recently, the threat of wildfire, combined with the potential for high winds, heat, and low humidity, has caused PG&E to initiate a PSPS which can also significantly impact a community through loss of services, business closures, and other impacts associated with loss of power for an extended period. In addition, catastrophic wildfire can create favorable conditions for other hazards such as flooding, landslides, and erosion during the rainy season.

The impacts of a fire are felt long after the fire is extinguished. In addition to the loss of property in fires, the loss in vegetation and changes in surface soils alters the environment. When supporting vegetation is burned, hillsides become destabilized and prone to erosion. The burnt surface soils are harder and absorb less water. When winter rains come, this leads to increased runoff, erosion, and landslides in hilly areas.

Impacts that are not quantified, but can be anticipated in large future events, include:

- Injury and loss of life;
- Commercial and residential structural and property damage;
- Disruption of and damage to public infrastructure, utilities, and services;
- Damage to roads/bridges resulting in loss of mobility;
- Significant economic impact (jobs, sales, tax revenue) to the community; and
- Negative impact on commercial and residential property values

Impacts to identified assets at risk to this hazard and the overall vulnerability of the City may be affected in the future by climate change (which was discussed in the hazard profile above), changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. These are discussed in the Future Conditions/Future Development discussion below.

Future Conditions/Future Development

This section provides a discussion of how future conditions will influence or affect the hazard over time and also discusses future development relative to each hazard.

Future Conditions

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for the City of Plymouth include the following:

- Climate change is likely to exacerbate future wildfire conditions and associated impacts and vulnerability of the City to wildfire.
- Population growth in the City of Plymouth continues to grow slowly. Additional population growth would likely bring continued diversity to the City. Vulnerable population groups could face disproportionate effects from wildfire and should be planned for. Changes in population and population patterns may or may not increase the impacts and vulnerability of the City to this hazard depending on the location and nature of growth and continued planning for future hazard conditions and future wildfire events. Given the future development plans for the City that includes a new gas station and Hilton Hotel, and 437 single and multi family units, all being developed in High and Very High LRA FHSZs; new development could add an additional 1233 residents and additional hotel occupants to the FHSZs. In fact, this would more than double the existing residential population currently residing in High and Very High FHSZs. This would significantly increase the vulnerability of the City to this hazard.
- Land use planning should be proactive to address future hazard conditions. Locating new development, structures and critical facilities and infrastructure within or near areas of wildfire risk may put additional development at risk. The City has six future commercial and residential development areas planned for the next five years that are located in the High and Very High FHSZs. However, City building codes are in effect to reduce this risk and should be updated as necessary to continue to address future wildfire conditions. Specifically, with the release of the new 2025 LRA mapping for Amador County, wildfire building codes should be updated as required to include enhanced measures to reduce wildfire impacts on new construction, especially in the Very High FHSZ, and including the formal adoption of the new LRA maps. As shown Figure D-21, all six future development areas are occurring within the

new LRA mapping in the High and Very High FHSZs. This new development consists of two commercial developments, a gas station and Hilton Hotel, and four residential developments, comprised of 437 new units of single and multi family residents. Collectively this new construction adds an additional 679 acres of developed land within the City, all located within High to Very High LRA FHSZs. Ensuring that regulatory requirements, such as building codes, are updated and followed will help reduce future impacts to this hazard. However, this new development would significantly increase the vulnerability of the City to this hazard.

Future Development

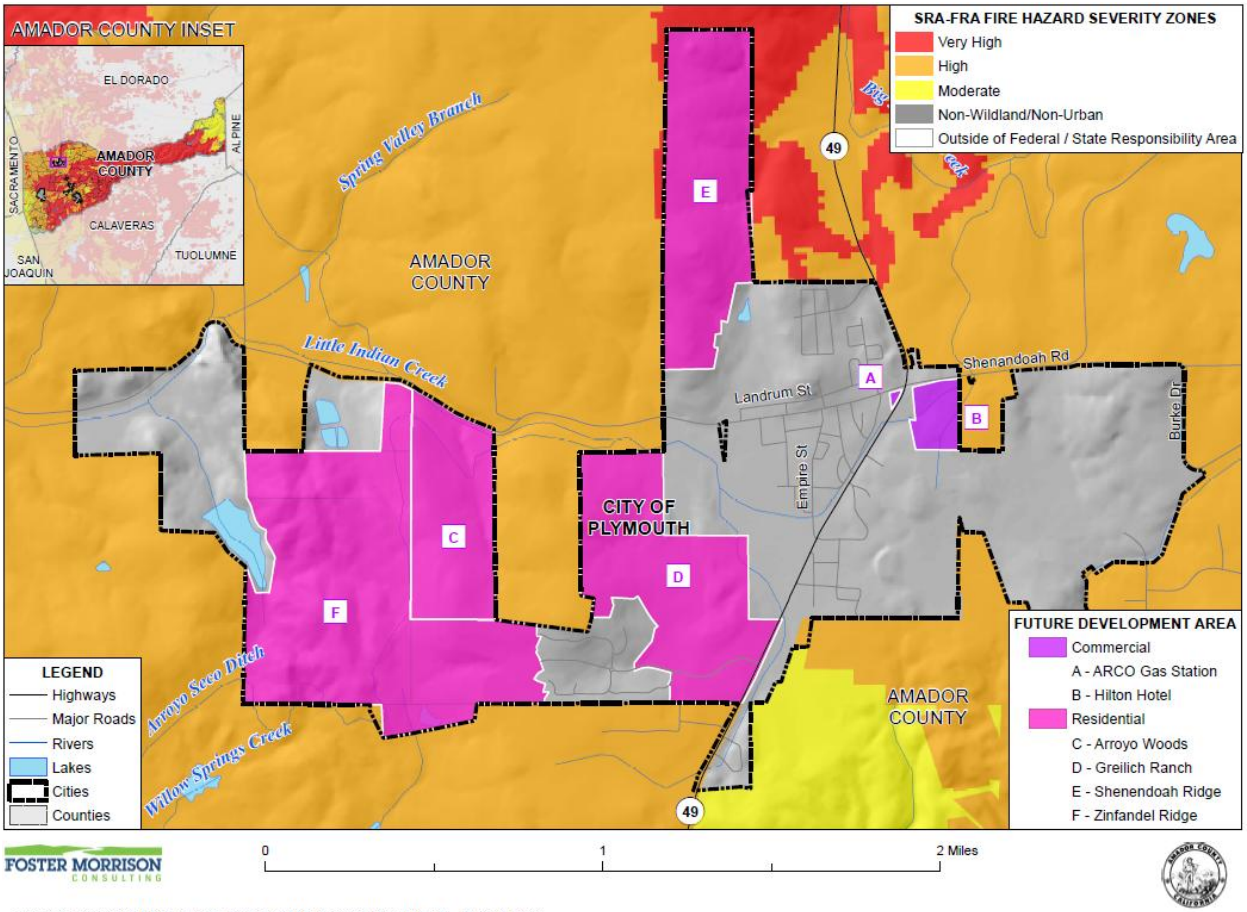
Additional growth and development within moderate or higher fire hazard severity zones in the City would place additional values at risk to wildfire. More vulnerable populations may experience a disproportionate impact from wildfire, and this should be considered as development continues. However, City building codes are in effect and should continue to be updated as appropriate to reduce future impacts. Most all of the City is located in areas of moderate or higher FHSZs; any building in these areas would place additional risk to wildfire.

Future development areas and their vulnerability to wildfire are discussed further in the below GIS analysis.

GIS Analysis

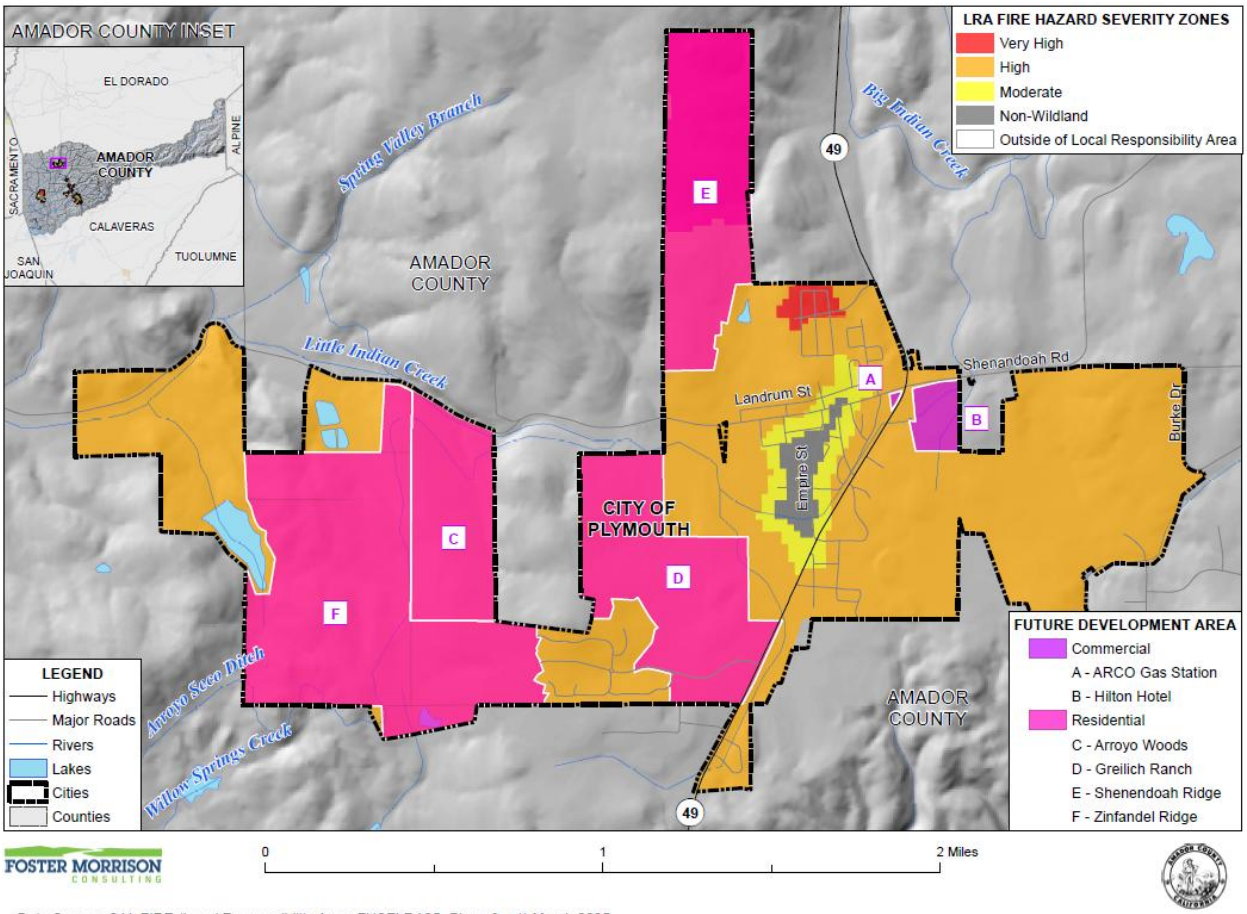
The City provided six future development areas which were used as the basis for the inventory of future development for the City. This area were mapped in GIS. Utilizing the future development area spatial layer, the parcel polygon data was intersected to determine the future development areas within each SRA/FRA and LRA fire hazard severity zone. No facilities fell in the SRA/FRA fire hazard severity zones (as shown on Figure D-20); as such, no tabular analysis is presented. Figure D-21 shows the locations of the future development area overlayed on the LRA fire hazard severity zones. As shown in Table D-37, the future development area falls in the Very High and High LRA fire hazard severity zones.

Figure D-20 City of Plymouth – Future Development Areas in CAL FIRE LRA FHSZs



Data Source: CAL FIRE (State Responsibility Area: FHSZSRA_23_3) April 2024,
CAL FIRE (Federal Responsibility Area: Draft c3fhszl06_1) September 2007,
Amador County GIS, Cal-Atlas; Map Date: 7/16/2025.

Figure D-21 City of Plymouth – Future Development Areas in CAL FIRE LRA FHSZs



Data Source: CAL FIRE (Local Responsibility Area: FHSZLRA25_Phase3_v1) March 2025, Amador County GIS, Cal-Atlas; Map Date: 7/16/2025.

Table D-37 City of Plymouth – Future Development Parcels and Acres in LRA FHSZs

Fire Hazard Severity Zone /Site/Map ID - Future Development"	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
Very High						
E - Shenendoah Ridge	1	0	1	147	0	147
Very High Total	**1**	**0**	**1**	**147**	**0**	**147**
High						
A - ARCO Gas Station	1	1	0	1.91	1.91	0
B - Hilton Hotel	1	0	1	4.21	0	4.21
C - Arroyo Woods	1	0	1	0	0	0

Fire Hazard Severity Zone /Site/Map ID - Future Development"	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
D - Greilich Ranch	1	1	0	161	161	0
F - Zinfandel Ridge	5	0	5	365	0	365
High Total	**9**	**2**	**7**	**532.12**	**162.91**	**369.21**
Grand Total	**10**	**2**	**8**	**679.12**	**162.91**	**516.21**

Source: CAL FIRE, City of Plymouth

D.5 Capability Assessment

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment is divided into five sections: regulatory mitigation capabilities, administrative and technical mitigation capabilities, fiscal mitigation capabilities, mitigation education, outreach, and partnerships, and other mitigation efforts.

D.5.1. Regulatory Mitigation Capabilities

Table D-38 lists regulatory mitigation capabilities, including planning and land management tools, typically used by local jurisdictions to implement hazard mitigation activities and indicates those that are in place in the City of Plymouth.

Table D-38 City of Plymouth's Regulatory Mitigation Capabilities

Plans	In Place Y/N	Does the plan address hazards? Can the plan be used to carry out mitigation actions? When was it last updated??
Capital Improvements Plan	Y	Plan addresses hazards and ways to mitigate them. (2019)
Climate Change Adaptation Plan	N	There is no need for a CCAP to be implemented currently
Community Wildfire Protection Plan	Y	Plan addresses hazards and ways to mitigate them (2025)
Comprehensive/Master Plan	Y	Plan addresses hazards and ways to mitigate them. (2014)
Continuity of Operations Plan	N	
Economic Development Plan	Y	Plan addresses hazards and ways to mitigate them (2018)
Land Use Plan	Y	Plan addresses hazards and ways to mitigate them (2018)
Local Emergency Operations Plan	Y	Plan addresses hazards and ways to mitigate them (2016)
Stormwater Management Plan	N	
Transportation Plan	Y	Plan addressed hazards and ways to mitigate them (2021)
Other		

Land Use Planning and Ordinances	Y/N	Is the ordinance an effective way to reduce hazard impacts? Is the ordinance adequately administered and enforced?
Acquisition of land for open space and public recreation use	N	
Building code	Y	2013 CBC
Flood insurance rate maps	N	
Floodplain ordinance	Y	Ordinance is effective, administered, and enforced.
Natural hazard-specific ordinance (stormwater, steep slope, wildfire)	N	
Subdivision ordinance	Y	Ordinance is effective, administered, and enforced.
Zoning ordinance	Y	Ordinance is effective, administered, and enforced.
Other		
How can these capabilities be expanded and improved to reduce risk?		
A CWPP is currently being completed by the Amador Fire District/Fire Safe Council that will include the City of Plymouth. This will reduce risk in the City as the actions of the CWPP are carried out.		

Source: City of Plymouth

City of Plymouth General Plan (2009)

The City of Plymouth General Plan Program serves as the blueprint for future growth and development and provides comprehensive planning for the future. It encompasses what the City is now, and what it intends to be, and provides the overall framework of how to achieve this future condition (see the discussion in Section 4.3.1 Growth and Development Trends).

California Law requires that every City and County in the state have a General Plan. The 2030 City of Plymouth General Plan was adopted in 2009. The General Plan is the most important policy and planning document in the city, and is used by virtually every department. The General Plan is the City's statement of its vision for the future. It contains broad community values and goals, giving a picture of the desired character and quality of development in the County and policies which outline the steps to accomplish those goals.

The General Plan includes a Safety Element that focuses on safety issues to be considered in planning for the present and future development of the City Planning Area. Identified hazards include wildfire, geologic/seismic, flooding, and other natural and man-made hazards (such as hazardous materials). Mitigation-related goals are as follows:

- 9A Use established laws and guidelines to effectively mitigate the impacts of new development and, when appropriate, assess fees to fund mitigation measures.
- 9B Provide appropriate training to adequately manage emergency and disaster situations.
- 9C Provide guidance to citizens regarding their suitable preparation for and response to emergencies.
- 9D Provide for citizen response teams to aid the City and other agencies in providing emergency response services.
- 9E Reduce the loss of life, injury, and property damage due to geological and seismic hazards.

- 9F Discourage development from occurring in areas with increased risk of geological and seismic hazards.
- 9G Maintain an updated emergency response plan to reflect the most current information available regarding the potential risks to persons and property from flooding within the City.
- 9H Provide guidance to citizens regarding their preparation for and response to floods.
- 9I Coordinate with the Fire Chief and the City Engineer to ensure adequate fire protection throughout the community.

Emergency Operations Plan, 2016

The plan is designed to provide a comprehensive, multi-use, emergency management program for the City of Plymouth, in an effort to: lessen the effects of hazards, enhance response during emergencies, provide necessary assistance to citizens, prepare for measures to be taken which will preserve life and minimize damage, and establish a recovery system in order to return the City to normal operations as soon as feasible.

Mitigation Related Ordinances

Emergency Organization and Functions (Chapter 8.07)

The declared purposes of this chapter are to provide for the preparation and carrying out of plans for the protection of persons and property within this City in the event of an emergency; the direction of the emergency functions of this City with all other public agencies, corporations, organizations, and affected private persons.

The Plymouth Disaster Council is hereby created and shall consist of the following:

- The Mayor, who shall be Director.
- A member of the City Council who shall be appointed by the City Council, who shall be Vice-Director.
- Such representative of civic, business, labor, veterans, professional or other organizations having an official emergency responsibility, as may be appointed by the Director with the advice and consent of the City Council.

It shall be the duty of the Plymouth Disaster Council, and it is hereby empowered, to develop and recommend for adoption by the City Council, emergency and mutual aid plans and agreements and such ordinances and resolutions and rules and regulations as are necessary to implement such plans and agreements. The Disaster Council shall meet upon call of the Director or, in his absence from the City or inability to call such meeting, upon call of the Vice-Director.

The Plymouth Disaster Council shall be responsible for the implementation of all parts of the Amador County Emergency Plan which are applicable to this City of Plymouth, which plan shall provide for the effective mobilization of all of the resources of this City, both public and private, to meet any condition constituting a local emergency, state of emergency or state of war emergency; and shall provide for the organization, powers and duties, services, and staff of the emergency organization.

Building and Construction (Title 15)

In accordance with California Government Code Section 50022.2, the following publications are hereby adopted by reference:

Subdivisions (Title 16)

This title is adopted to:

- Establish minimum permissible regulations and standards for the division and subdivision of land, for the design, improvement, and survey data related thereto, and for the physical alteration of the land involved therein, and;
- Provide a guide for owners in the proper division of their land, and to provide for orderly development of the City consistent with the General Plan.

Zoning (Title 19)

The purpose of this chapter is to establish standard procedures necessary for the clear and consistent processing of land use and planning permits and entitlements, as well as to establish procedures necessary for the efficient processing of planning and development applications and requests.

- The 2022 California Building Code based on the 2018 International Building Code, set forth in Title 24, Part 2, Volume 1 and 2 of the California Code of Regulations, as adopted and amended by the California Building Standards Commission, together with the following Appendices: Appendix A (Employee Qualifications), Appendix B (Board of Appeals), Appendix C (Group-U Agricultural Buildings), Appendix D (Fire Districts), Appendix F (Rodent Proofing), Appendix G (Flood-Resistant Construction), Appendix H (Signs), Appendix I (Patio Covers), Appendix J (Grading), Appendix K (Group R3 and R3.1 Occupancies Protected by the Facilities of the Central Valley Flood Protection Program), Appendix L (Earthquake Recording Instrumentation).
- The 2022 California Electrical Code based on the 2020 National Electrical Code, as published by the National Fire Protection Association, and adopted and amended by the California Building Standards Commission in Title 24, Part 3, of the California Code of Regulations.
- The 2022 California Mechanical Code based on the 2021 Uniform Mechanical Code as published by the International Association of Plumbing and Mechanical Officials, and as adopted and amended by the California Building Standards Commission in Title 24, Part 4, of the California Code of Regulations.
- The 2022 California Plumbing Code based on the 2021 Uniform Plumbing Code as published by the International Association of Plumbing and Mechanical Officials, and as adopted and amended by the California Building Standards Commission in Title 24, Part 5, of the California Code of Regulations.
- The 2019 California Administrative Code as adopted and amended by the California Building Standards Commission in the California Building Standards Code. Title 24, Part 1, of the California Code of Regulations.
- The 2019 California Existing Building Code as published by the International Code Council (ICC) and as adopted and amended by the California Building Standards Commission in Title 24, Part 10, of the California Code of Regulations.
- The 2019 California Fire Code as published by the International Code Council (ICC) and as adopted and amended by the California Building Standards Commission in Title 24, Part 9, of the California Code of Regulations.
- The 2019 California Energy Code as published by the International Code Council (ICC) and as adopted and amended by the California Building Standards Commission in Title 24, Part 6, of the California Code of Regulations.

- The 2019 California Referenced Standards Code as published by International Code Council (ICC) and as adopted and amended by the California Building Standards Commission in Title 24, Part 12, of the California Code of Regulations.
- The 2019 California Historical Building Code as published by the International Code Council (ICC) and as adopted and amended by the California Building Standards Commission in Title 24, Part 8, of the California Code of Regulations.
- The 2019 California Residential Code based on the 2018 International Residential Code adopted and amended by the California Building Standards Commission in the California Building Standards Code, Title 24, Part 2.5, of the California Code of Regulations together with the following Appendices: Appendix F (Passive Radon Gas Controls), Appendix H (Patio Covers), Appendix J (Existing Buildings and Structures), Appendix K (Sound Transmission), Appendix O (Automatic Vehicular Gates), Appendix R (Light Straw Clay Construction), Appendix S (Straw Bale Construction), Appendix V (Swimming Pool Safety Act), Appendix W (Areas Protected by the Facilities of the Central Valley Flood Protection Plan), Appendix X (Emergency Housing).
- The 2019 California Green Building Standards Code as published by the International Code Council (ICC) and as adopted and amended by the California Building Standards Commission in Title 24, Part 11, of the California Code of Regulations. (Ord. 2022-07 § 1)

City of Plymouth Flood Damage Prevention Ordinance (Chapter 8.11)

The flood hazard areas of the City are subject to periodic inundation which results in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety and general welfare. These flood losses are caused by the cumulative effect of obstructions in areas of special flood hazards which increase flood heights and velocities, and when inadequately anchored, damage uses in other areas. Uses that are inadequately floodproofed, elevated or otherwise protected from flood damage also contribute to the flood loss.

It is the purpose of this chapter to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed:

- To protect human life and health;
- To minimize expenditure of public money for costly flood control projects;
- To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- To minimize prolonged business interruptions;
- To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges located in areas of special flood hazard;
- To help maintain a stable tax base by providing for the second use and development of areas of special flood hazard so as to minimize future flood blight areas;
- To ensure that potential buyers are notified that property is in an area of special flood hazard; and
- To ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.
- In order to accomplish its purposes, this chapter includes methods and provisions for:
- 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, be protected against flood damage at the time of initial construction;

- Controlling the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel floodwaters;
- Controlling filling, grading, dredging, and other development which may increase flood damage; and
- Preventing or regulating the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards in other areas.

This chapter shall apply to all areas of special flood hazards, areas of flood-related erosion hazards and areas of mudslide (i.e., mudflow) hazards within the jurisdiction of the City. A development permit shall be obtained before construction or development begins within any area of special flood hazards, areas of flood-related erosion hazards, or areas of mudslide.

Lands which are located within areas of special flood hazard are areas designated as floodways. Since the floodway is an extremely hazardous area due to the velocity of floodwaters which carry debris, potential projectiles and erosion potential, the following provisions apply:

- Encroachments, including fill, new construction, substantial improvements, and other development are prohibited unless certification by a registered professional engineer or architect is provided demonstrating that the encroachments will not result in any increase in flood levels during the occurrence of the base flood discharge.
- If the previous is satisfied, all new construction and substantial improvements shall comply with all other applicable flood hazard reduction provisions.

This chapter also establishes the base flood elevation and requires new construction or substantial improvements to be located one foot above the base flood elevation.

D.5.2. Administrative/Technical Mitigation Capabilities

Table D-39 identifies the City department(s) responsible for activities related to mitigation and loss prevention in the City of Plymouth.

Table D-39 City of Plymouth's Administrative and Technical Mitigation Capabilities

Administration	In Place Y/N	Describe capability Is coordination effective?
Staff		Is staffing adequate to enforce regulations? Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective?
Chief Building Official	Y	Contract/Staffing is adequate, trained and coordination is effective
Civil Engineer, including dam and levee safety	Y	Contract/Staffing is adequate, trained and coordination is effective
Community Planner	Y	Contract/Staffing is adequate, trained and coordination is effectiv
Emergency Manager	Y	Mayor
Floodplain Administrator	Y	City Engineer/Matt Ospital from WGA

GIS Coordinator	N	Depend on County for GIS support
Planning Commission	Y	Staffing is adequate, trained and coordination is effective
Other		
Technical	**Y/N**	**Has capability been used to assess/mitigate risk in the past?**
Grant writing	Y	City Manager/ Yes
Hazard data and information	Y	CIRA/City insurance provider/Yes
GIS analysis	Y	Public Works now does GIS marking/analysis in-house
Mutual aid agreements	N	
Other		
How can these capabilities be expanded and improved to reduce risk?		
Training of additional/new staff is currently implemented for capability improvements as well as risk prevention.		

Source: City of Plymouth

D.5.3. Fiscal Mitigation Capabilities

Table D-40 identifies financial tools or resources that the City could potentially use to help fund mitigation activities.

Table D-40 City of Plymouth's Fiscal Mitigation Capabilities

Funding Resource	In Place Y/N	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Capital improvements project funding	N	Funding resource unavailable at this time
Community Development Block Grant	Y	Voter approval required.
Federal funding programs (non-FEMA)	N	Funding resource unavailable at this time
Fees for water, sewer, gas, or electric services	N	Resource is not capable of funding additional activities/actions at this time
Impact fees for new development	N	Funding resource will depend on approval of future business developments
State funding programs	N	
Stormwater utility fee	N	
Other		
How can these capabilities be expanded and improved to reduce risk?		
Many options are being explored by the City Finance Director to obtain funding for various issues through state and federal grants.		

Source: City of Plymouth

D.5.4. Mitigation Education, Outreach, and Partnerships

Table D-41 identifies education and outreach programs and methods already in place that could be/or are used to implement mitigation activities and communicate hazard-related information.

Table D-41 City of Plymouth's Mitigation Education, Outreach, and Partnerships

Program/Organization	In Place Y/N	How widespread are each of these in your community?
Community newsletters	Y	Responsible water use, fire safety, and household preparedness information available to the public and provided in newsletters.
Hazard awareness campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, school programs, public events)	Y	Foothill conservancy (environmental protection)
Local news	Y	Widespread
Organizations that interact with underserved and vulnerable communities	N	
Social media	Y	Widespread
How can these capabilities be expanded and improved to reduce risk?		
Amador Fire District/Fire Safe Council is implementing a new CWPP that will include/greatly benefit the City.		

Source: City of Plymouth

D.5.5. Other Mitigation Efforts

The City has many other completed or ongoing mitigation projects/efforts that include the following:

- Plymouth has partnered with the County to identify and mitigate dead and dying trees that pose a hazard to public infrastructure. The services provided are offered at no cost and are covered in part by a grant to Amador County from the State office of Emergency Services.
- The City has worked to provide evacuation routes for each area of the City. In an emergency, response personnel will give directions and instructions for individuals and households to follow. Updates can be received via radio on both an FM and AM channel. Maps of these routes are shown in Figure D-22 and Figure D-23.

Figure D-22 City of Plymouth – Evacuation Routes for the City

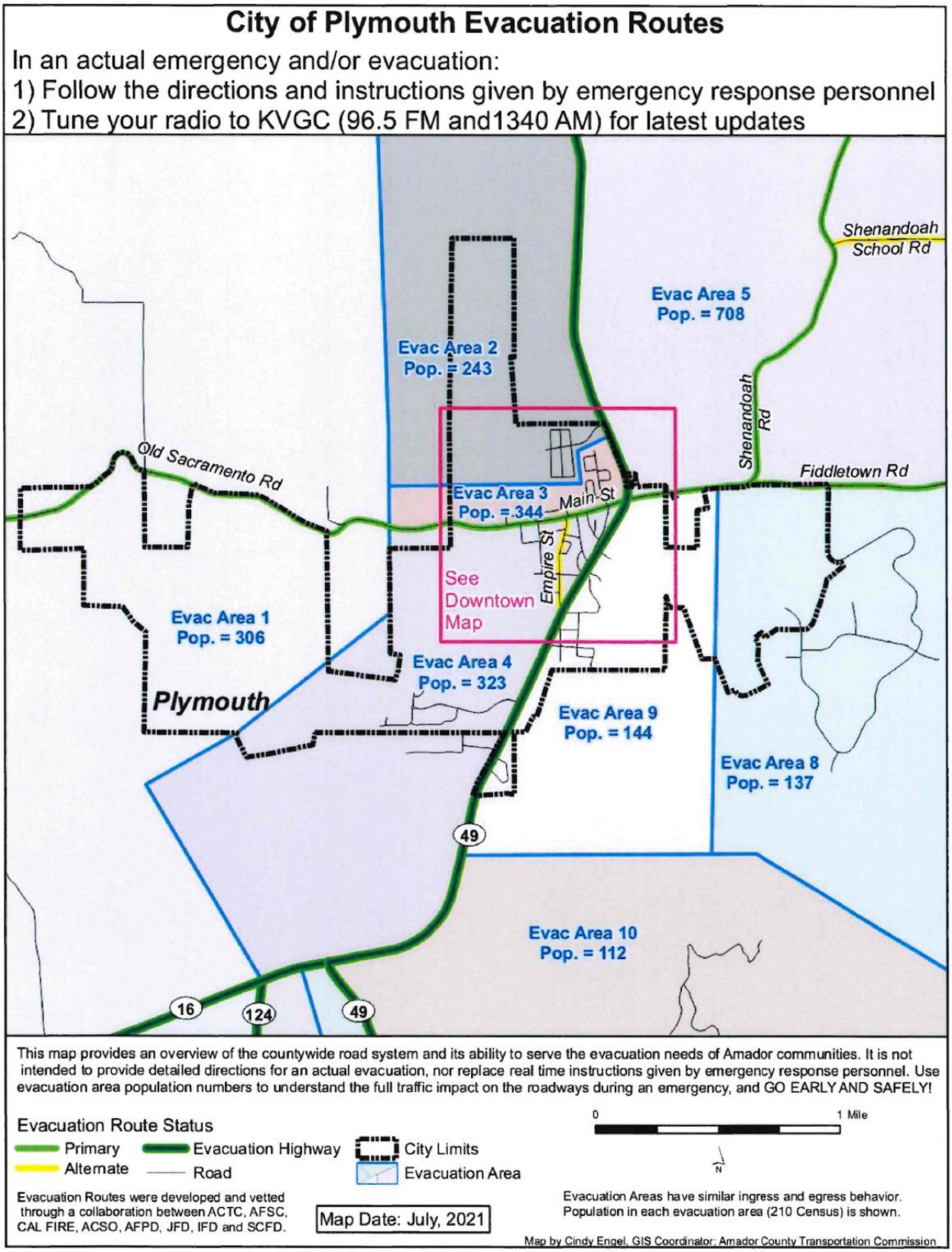
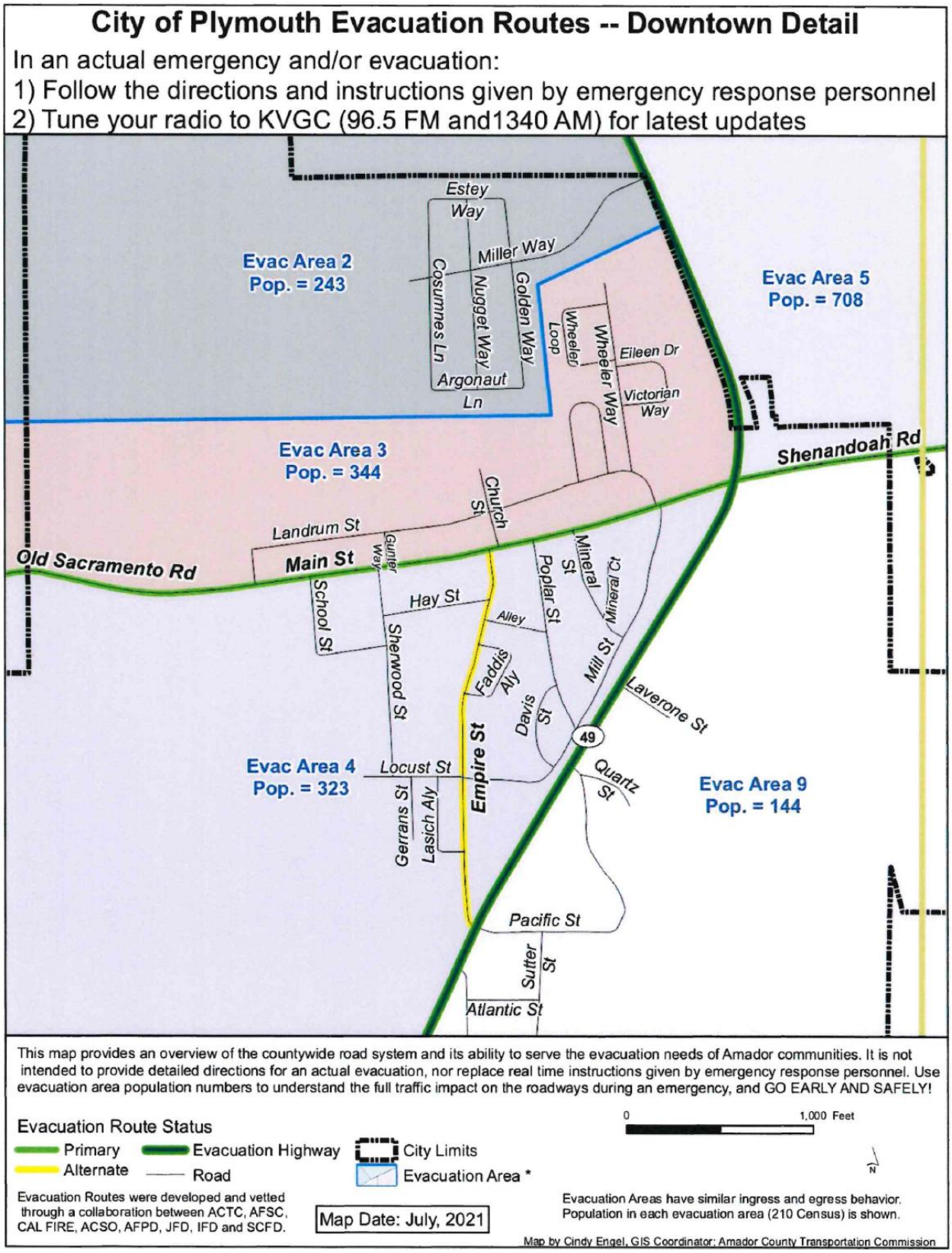


Figure D-23 City of Plymouth – Evacuation Routes for Downtown



A Community Wildfire Emergency Plan is currently being implemented by Amador Fire District/Fire Safe Council that will include the City of Plymouth.

D.6 Mitigation Strategy

D.6.1. Mitigation Goals and Objectives

The City of Plymouth adopts the hazard mitigation goals and objectives developed by the HMPC and described in Chapter 5 Mitigation Strategy.

D.6.2. NFIP Mitigation Strategy

The City of Plymouth joined the National Flood Insurance Program (NFIP) on December 1, 1990. As a participant of the NFIP, the City of Plymouth has administered floodplain management regulations that meet the minimum requirements of the NFIP. The management program objective is to protect people and property within the City. The City of Plymouth will continue to comply with the requirements of the NFIP in the future.

In addition, the City of Plymouth actively participates with Amador County to address local NFIP issues through a regional approach. Many of the program activities are the same for the City of Plymouth as for Amador County since participation at the County level includes all local jurisdictions.

The City of Plymouth Public Works (in conjunction with the City's contract engineer) Department provides public outreach activities which include map information services, public awareness, public hazard disclosure, and flood protection information. This information is readily available to the public and consists of current and accurate flood mapping. In addition, the Planning and Engineering Department provides information about our stormwater management program and up-to-date information related to the maintenance of our drainage system.

The NFIP's Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS which are to reduce flood losses, facilitate accurate insurance rating, and promote the awareness of flood insurance. The City of Plymouth is not a current participant in the CRS program.

More information about the floodplain administration in the City of Plymouth can be found in Table D-42.

Table D-42 City of Plymouth Compliance with NFIP

NFIP Topic	Comments
Staff Resources	
Who is responsible for floodplain management in your community? Provide Department/Title. Do they serve any roles other than Community Floodplain Administrator (FPA)?	Matt Ospital/City Engineer and Floodplain Administrator

NFIP Topic	Comments
Is the Community FPA or NFIP Coordinator a Certified Floodplain Manager?	Yes
Is floodplain management an auxiliary function?	Yes
Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability)	Permit review. Inspections. Engineering capabilities.
What are the barriers to running an effective NFIP program in the community, if any?	No barriers currently exist that limits the effectiveness of the NFIP program.
Insurance Summary	
How many NFIP policies are in the community? What is the total premium and coverage?	0 policies in force $0 in premiums $0 in coverage
How many claims have been paid in the community? What is the total amount of paid claims? How many of the claims were for substantial damage?	1 paid loss $0.00 in paid losses 0 substantial damage claims
How many structures (residential and non-residential) are exposed to flood risk within the community?	7 structures in 1% annual chance 0 structures in 0.2% annual chance
Are there Repetitive Loss (RL) and Severe Repetitive Loss Properties (SRL) structures in the community?	0 RL properties 0 SRL properties
Describe any areas of flood risk with limited NFIP policy coverage	Zero areas to report
How does the community teach property owners or other stakeholders about the importance flood insurance?	Social Media, local news outlets
What digital sources (like the FEMA Map Service Center, National Flood Hazard Layer) or non-regulatory tools does the community use?	Amador County Sheriff's Office disaster/emergency website/mobile app
Compliance History	
Is the community in good standing with the NFIP?	Y
Are there any outstanding compliance issues (i.e., current violations)?	N
Who is responsible (Department, Title) for making substantial damage/improvement determinations? How does the community identify substantially damaged/improved structures? What is the process to make sure these structures are brought into compliance?	City Building Official/Code Enforcement Officer. The identification/compliance process is completed via inspections/determination of City code compliance.
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?	12/17/2013 (CAC) 3/24/2005 (CAV)
Is a CAV or CAC scheduled or needed?	No
Regulation	
When did the community enter the NFIP?	12/1/1990
Are the FIRMs digital or paper?	Digital
Has the community adopted the NFIP minimum floodplain management criteria via local regulation? Date of current local regulation?	Yes, via the City Municipal Code (1/1997)

NFIP Topic	Comments
Has the community adopted the latest effective FIRM? Date adopted?	The latest FIRM adopted by the City was 2/18/2011.
How does the community enforce local floodplain regulations and monitor compliance?	Via permits issued by Floodplain Administrator as well as safety inspections, technical standard enforcement and coordination with the City Building Official to ensure code compliance.
Do floodplain development regulations meet or exceed FEMA or State minimum requirements? If so, in what ways?	Meet. All positions/certifications are filled and met.
How are Letters of Map Change (LOMCs) tracked and compiled?	New DFIRMs are downloaded regularly which include the latest LOMCs, LOMRs, and CLOMRs
Provide an explanation of the permitting process.	City engineer review permit, performs inspection, and ensures floodplain ordinance is enforced.
Community Rating System	
Does the community participate in CRS? If so, what is the community's CRS Class Ranking?	No
What categories and activities provide CRS points and how can the class be improved?	N/A
Does the plan include CRS planning requirements?	N/A

Source: City of Plymouth

D.6.3. Mitigation Actions

The Planning Team for the City of Plymouth identified and prioritized the following mitigation actions based on the risk assessment. Background information and information on how each action will be implemented and administered, such as ideas for implementation, responsible office, potential funding, estimated cost, and timeline are also included. The following hazards were considered a priority for purposes of mitigation action planning:

- Climate Change
- Drought & Water shortage (w/ tree mortality)
- Floods: 1%/0.2% annual chance (w/ levee failure)
- Floods: Localized Stormwater
- Severe Weather: Extreme Heat
- Severe Weather: Heavy Rain and Storms (Hail, Lightning)
- Wildfire (w/smoke and air quality)

Low priority hazards for mitigation planning include:

- Agricultural Hazards (severe weather/pests/invasive species)
- Avalanche
- Dam Failure
- Earthquake (w/subhazards)
- Landslide, Mudslide, and Debris Flow
- Severe Weather: Extreme Cold, Freeze, and Snow
- Severe Weather: High Winds and Tornados

It should be noted that many of the projects submitted by each jurisdiction in Table 5-4 in the Base Plan benefit all jurisdictions whether or not they are the lead agency. Further, many of these mitigation efforts are collaborative efforts among multiple local, state, and federal agencies. In addition, the countywide public outreach action, as well as many of the emergency services actions, apply to all hazards regardless of hazard priority. Collectively, this multi-jurisdictional mitigation strategy includes only those actions and projects which reflect the actual priorities and capacity of each jurisdiction to implement over the next 5-years covered by this plan. It should further be noted, that although a jurisdiction may not have specific projects identified for each priority hazard for the five year coverage of this planning process, each jurisdiction has focused on identifying those projects which are realistic and reasonable for them to implement and would like to preserve their hazard priorities should future projects be identified where the implementing jurisdiction has the future capacity to implement.

Mitigation Actions

The City has put forward the actions as shown in Table D-43. Details of the actions can be found below the table.

Table D-43 City of Plymouth Mitigation Actions

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
City of Plymouth					
Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	Previous Action	X	X		Prevention
Action 2. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness	Previous Action	X	X	X	Prevention Public Education
Action 3. Develop a Community Wildfire Prevention Plan	New Action	X	X		Prevention Public Education
Action 4. Repairs of Old Sacramento Road to Reduce Flooding and Road Blockage	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 5. Additional Water Tank Storage	Previous Action	X	X		Structural

Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan

Hazards Addressed: Multi-hazard (Climate Change, Drought & Water shortage (w/ tree mortality), Floods: 1%/0.2% annual chance (w/ levee failure), Floods: Localized Stormwater, Severe Weather: Extreme Heat, Severe Weather: Heavy Rain and Storms (Hail, Lightning), Wildfire (w/smoke and air quality))

Goals Addressed: 1, 2, 3, 4, 5, 6

Issue/Background (Problem Statement): Local jurisdictional reimbursement for mitigation projects and cost recovery after a disaster is guided by Government Code Section 8685.9 (AB 2140). Specifically, this section requires that each jurisdiction adopt a local hazard mitigation plan (LHMP) in accordance with the federal Disaster Mitigation Act of 2000 as part of the Safety Element of its General Plan. Adoption of the LHMP into the Safety Element of the General Plan may be by reference or incorporation.

Other Alternatives: No action

Existing Planning Mechanisms through which Action will be Implemented: Safety Element of General Plan

Responsible Office/Partners: City of Plymouth Planning Department

Benefits (Losses Avoided): Incorporation of an adopted LHMP into the Safety Element of the General Plan will help jurisdictions maximize the cost recovery potential following a disaster.

Potential Funding (Local Budgets, Grant Funds, etc.): City General Fund

Timeline: Within 5 years.

Priority (H, M, L): High

Action 2. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness

Hazards Addressed: Multi-hazard (Climate Change, Drought & Water shortage (w/ tree mortality), Floods: 1%/0.2% annual chance (w/ levee failure), Floods: Localized Stormwater, Severe Weather: Extreme Heat, Severe Weather: Heavy Rain and Storms (Hail, Lightning), Wildfire (w/smoke and air quality))

Goals Addressed: 1, 2, 3, 4, 5, 6

Issue/Background (Problem Statement): The City and County play a key role in public outreach/education efforts to communicate the potential risk and vulnerability of their community to the effects of natural hazards. A comprehensive multi-hazard public education program will better inform the community of natural hazards of concern and actions the public can take to be better prepared for the next natural disaster event.

Project Description: A comprehensive multi-hazard outreach program will ascertain both broad and targeted educational needs throughout the community. The City will work with the County and other agencies as appropriate to develop timely and consistent annual outreach messages in order to communicate the risk and vulnerability of natural hazards of concern to the community. This includes measures the public can take to be better prepared and to reduce the damages and other impacts from a hazard event. The public outreach effort will leverage and build upon existing mechanisms, and will consider:

- Using a variety of information outlets, including websites, local radio stations, news media, schools, and local, public sponsored events;
- Creating and distributing (where applicable) brochures, leaflets, water bill inserts, websites, and public service announcements;
- Displaying public outreach information in County office buildings, libraries, and other public places and events;
- Developing public-private partnerships and incentives to support public education activities.

Other Alternatives: Continue public information activities currently in place.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Existing City and County outreach programs will be reviewed for effectiveness and leveraged and expanded upon to reach the broader region.

Responsible Office/Partners: City of Plymouth Planning Department in partnership with the County

Benefits (Losses Avoided): Increase residents' knowledge of potential hazards and activities required to mitigate hazards and be better prepared. Protect lives and reduce damages, relatively low cost to implement.

Potential Funding (Local Budgets, Grant Funds, etc.): City General Fund, grant funds (like CA DWR, Cal OESPDM, HMGP, FMA, BRIC, or other sources).

Timeline: Ongoing/Annual public awareness campaign

Project Priority (High, Medium, Low): High

Action 3. Develop a Community Wildfire Prevention Plan

Hazards Addressed: Wildfire, Drought and Water Shortage, Severe Weather: High Winds, and Severe Weather: Extreme Heat

Goals Addressed: 1, 2, 3, 4, 5, 6

Issues/Background: Plymouth is surrounded by unincorporated area, which for the most part is WUI (Wildland Urban Interface). In 2014, the Sand Fire started in this type of area when a vehicle drove "off road" into dry grasses. This fire destroyed 20 residences, 47 outbuildings, burned 4,240 acres and contributed to 2 deaths. Less than 5 miles outside City limits, a big factor that saved the City of approximately 1,000 residents was the direction of the wind. This small City was still greatly impacted, as firefighters made basecamp at the Amador County Fairgrounds and trucks pulled water non-stop from the City hydrants. The population faced unsafe air quality, fear and economic shutdown. Plymouth's businesses rely on tourism brought by the Shenandoah Valley wine industry. This event made it clear that planning and preparation for the next fire was essential to the City's survival.

Project Description:

- Develop and implement a Public Awareness Education Program including defensible space, best practice guidelines, self-preparedness and evacuation knowledge.
- Revise building requirements to ensure new development is using fire resistant materials and strategies and incentivize renovation projects on older buildings to do the same.
- Revise weed abatement code to require 100' defensible space and other responsibility updates.
- Increase Fuel Management efforts focusing on undeveloped parcels, non-resident property owners whose land or property is neglected and WUI areas.

Other Alternatives: None

Existing Planning Mechanisms through which Action Will Be Implemented: N/A

Responsible Office/Partners: Building Department, Code Enforcement, Public Works, Fire Department

Benefits/Losses Avoided): Mitigating future wildfire destruction and damages to both property and lives.

Potential Funding: FEMA Hazard Mitigation Grant Program

Timeline: 2 years

Project Priority: High

Action 4. Repairs of Old Sacramento Road to Reduce Flooding and Road Blockage

Hazards Addressed: Climate Change, Flood: 1% and 0.2% Annual Chance, Floods: Localized Stormwater, Severe Weather Heavy Rains and Storms, Wildfire

Goals Addressed: 1, 2, 3, 4, 6

Issues/Background: Under the LAFCO agreement formed with Amador County to accommodate the Zinfandel Ridge Development, the city now has shared responsibility for Old Sacramento Road. Old Sacramento Road is the only route available to access the city wastewater treatment plant. This road floods during large rainstorms and blocks access to the wastewater treatment plant and the operators cannot get to the plant to maintain it. During wildfire season the road is riddled with potholes and brush. This road is a major exodus for the community and is critical during emergency evacuations such as those created by wildfire.

Project Description:

- Repair or replace road surface
- Modify bridge over Little Indian Creek to allow for fluid and larger flows from storms and widen for better two-way traffic.
- Work on creek to clean out debris so that it does not overflow onto the road.

Other Alternatives: None

Existing Planning Mechanisms through which Action Will Be Implemented: Developer's Agreements

Responsible Office/Partners: Engineering, Public Works, Wastewater/AWA

Benefits/Losses Avoided): Reliable access to the wastewater treatment plant during storms and a clear evacuation route for the community. / Potential loss of wastewater function, equipment failure, and violations would be averted.

Potential Funding: FEMA Hazard Mitigation Grant Program, Developer's Agreements

Timeline: 3 years

Project Priority: High

Action 5. Additional Water Tank Storage

Hazards Addressed: Climate Change, Drought and Water Shortage, Severe Weather Extreme Heat, Wildfire

Goals Addressed: 1, 2, 4, 5, 6

Issues/Background: Plymouth only has room to store 500,000 gallons of potable water and the AWA Pipeline that supplies the tank does not have the treatment capacity to send us more water in real time. In maximum demand summer, seasonal activities, and risks of wildfires; there is not enough water in the system to sustain the community's needs. The City of Plymouth is the crucial point of fire protection for the several smaller communities on this side of Amador County and assists El Dorado County being near the county line and the only water system in the general rural area. Also, being the home to the Amador County Fair which is a firefighters emergency post and animal relocation station during wildfires, adds extra demand to our limited water system. The fairgrounds is used to house the firefighter community and fill the fire trucks during these emergencies.

Recent wildfire incidents in the area have been:

- Caldor Fire 2021
- Sand Fire 2014
- Gold Fire 2004

Project Description: Acquire another 500,000-1,000,000-gallon capacity tank for water storage and emergency backup. Reline the aging tank on site to extend its lifetime.

Other Alternatives: None

Existing Planning Mechanisms through which Action Will Be Implemented: N/A

Responsible Office/Partners: Engineering, Building Department, Public Works, Drinking Water/AWA

Benefits/Losses Avoided): Sufficient water supplies during heatwaves, large events, and wildfires. Potential extensive destruction of property and loss of human life in wildfire situations.

Potential Funding: FEMA Hazard Mitigation Grant Program, Developer's Agreements

Timeline: 3 years

Project Priority: High