



## ANNEX A CITY OF AVENAL

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### A.1 PURPOSE

This Annex summarizes the hazard mitigation elements specific to the City of Avenal. This Annex supplements the Kings County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP); therefore, the Annex is not a stand-alone plan but intended to supplement the hazard information provided in the Base Plan document. All other sections of the Kings County MJHMP, or Base Plan, including the sections on the planning process, countywide risk assessment, and procedural requirements related to plan implementation and maintenance apply to the City of Avenal. This Annex provides additional information specific to the City of Avenal, including details on the City's profile, planning process, risk assessment, and mitigation strategy for the community.

### A.2 COMMUNITY PROFILE

#### Mitigation Planning History and 2022-2023 Process

This Annex was created during the development of the 2023-2028 Kings County MJHMP update. The City of Avenal participated in Kings County's 2012 Multi-Jurisdictional Local Hazard Mitigation Plan process; however, the 2012 MJHMP did not include supplemental annexes for each of the participating jurisdictions. Instead, the 2012 MJHMP included a Community Profile that summarized the hazard profiles for the City and included a vulnerability assessment. Information on the participating jurisdictions vulnerability to hazards and their specific mitigation actions were included in the main plan.

During the current update process, the City of Avenal followed the planning process detailed in Chapter 3 of the Base Plan. This planning process consisted of participation in the Hazard Mitigation Planning Committee (HMPC) and the formation of a smaller internal planning team referred to as the City's Local Planning Committee (LPT). The LPT was organized to support the broader planning process, coordinate with the City departmental staff, and develop customized mitigation actions and projects specific to the City of Avenal. The City's LPT is also responsible for the update, implementation, and maintenance of the plan. LPT members are listed in Appendix A.

#### Geography and Climate

Avenal is situated 180 miles north of Los Angeles and 200 miles south of San Francisco and Sacramento—“Half the way from the Bay to L.A.” It is located in the southwestern portion of Kings County between State Route (SR) 33 and Interstate 5. Most of the developed part of the City is located in the Kettleman Plain between the Kettleman Hills to the northeast and the Kreyenhagen Hills to the southwest. The amount of land area in Avenal is approximately 20 square miles and the City's elevation is 800 feet above sea level. Annual precipitation is about 10 inches with most of the rain falling between November and April. Average high temperature in the winter is 62°F and in the summer is 103°F.

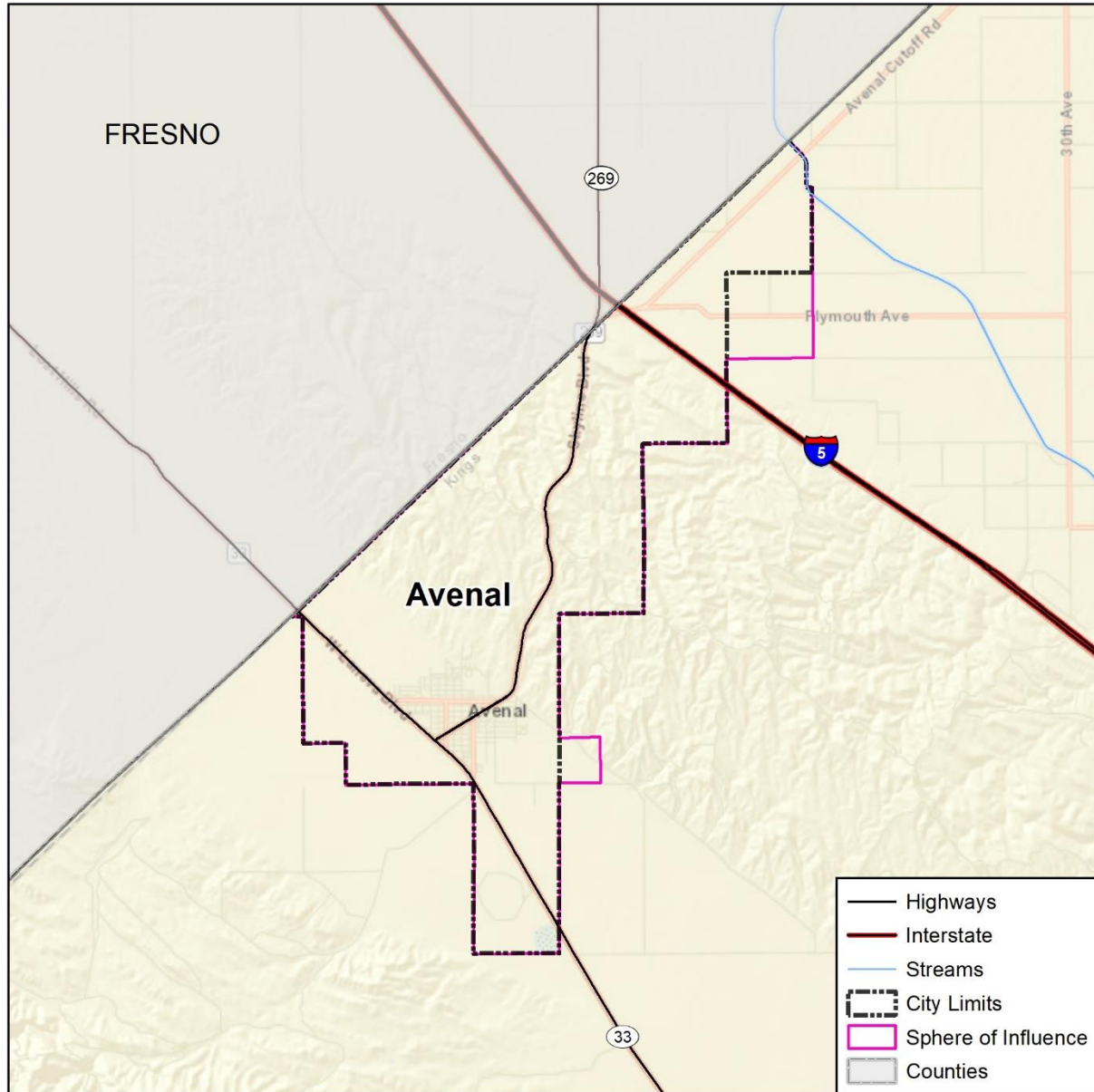
Three major freeways go through the City of Avenal, including Interstate 5, State Highway 269 and SR 33. No major waterway or waterbody exists within the City's limits. Figure A-1 below shows the City limits and the sphere of influence boundary (SOI) for Avenal. The City limits, or the area where the City has authority to make land use decisions, is the City's planning area and consists of 13,243 acres, or 20.69 square miles.

The City is located in the western portion of the County of Kings (the “County”), approximately 35 miles southwest of the county seat of Hanford. The City was incorporated in 1979 but is a



community which dates back to 1929. The present population of the City is approximately 16,200, which includes approximately 4,600 inmates incarcerated at the Avenal State Prison (the “Prison”). The City’s population has increased from approximately 6,466 in 1990.

Figure A-1 City of Avenal



Map compiled 7/2023;  
Intended for planning purposes only.  
Data Source: Kings County, DWR

0 2 4 Miles



### History

The City of Avenal was named by Spanish explorers “Avena,” which means oats or oat field in Spanish. The City was originally covered with “waist high” wild oats that looked like golden silk that covered the surrounding Kettleman Plains. Early American settlers arrived in the Kettleman Hills area during the 1850’s with the dream of raising cattle and farming. Oil, however, would bring fame, fortune and people to the area. On March 27, 1927, the Milham Exploration Company



began work on Elliott No. 1. The crew toiled for 19 months, drilling past the 7,000-foot mark. On October 5, 1928, the well blew out with a roar, which was heard over 30 miles away, spewing forth oil so fine and white in color that the gasoline could be used unrefined in automobiles.

The discovery of oil transformed Avenal into a boomtown. In 1929, Standard Oil surveyed the current site of Avenal to build a town. Makeshift houses were hauled from Taft to take the place of tents. Water lines were installed and later a sewer plant was constructed, a post office replaced a cigar box in the general store, a fire department was organized and the community grew.

Standard Oil Company built, among many other things, a 600-seat air-conditioned theater and a new hospital to meet the growing needs of the community. By 1940, Avenal was the second largest town in Kings County with a population of over 4,000 and was known to have some of the best services and schools in the state.

The collapse of oil and gas production came with the intrusion of salt water into the oil reservoir leaving 65 to 70 percent of the Kettleman Hills North Dome still undisturbed. In 1953, oil companies with holdings in the area fields unitized, selecting Standard Oil to operate the fields. Avenal's economy and population declined steadily as the oil money dwindled. Along with it, many stores, buildings, and houses were vacated until the 1960's when an influx of agricultural workers made a major impact on Avenal and the surrounding area. The Lemoore Naval Air Station also brought some growth to the area in the 1960's, but it was short-lived.

The 1970's saw two substantial projects that significantly changed Avenal and the surrounding areas: 1) completion of the California Aqueduct, which brought needed water to the west side; and, 2) opening of Interstate 5. After a few failed attempts over several years, the citizens of Avenal supported incorporation of the community in September 1979. While still a very young City, the citizens pursued and were successful in bringing a state prison facility to Avenal. With construction underway, improvements and activities could be seen in every corner of the community. Since the early 1990's, many significant projects have followed such as: the reconstruction and beautification of Skyline Boulevard; construction of 52 miles of new curbs, gutters and sidewalks; a new Post Office; two (2) new schools; many new homes and apartment complexes; significant street, underground infrastructure and water storage improvements; park improvements; the Oasis Child Development Center as well as the Paramount Child Development Center (a "green" construction facility); and an 18-acre Sports Complex which is located adjacent to the Avenal Sand Drags Track (home of numerous World Records). Additional new projected consisted of the construction of a new state-of-the-art Animal Shelter; Downtown Kings Street Improvement Project; renovation of a significant historical building which is now home to the City of Avenal Police Department, established in 2010; and, the most recently completed project is renovation of the Avenal Recreation Center (Avenal's first schoolhouse, established 1929) located at Rice Park.

The City of Avenal is also very proud to be home of the Central Valley Soaring Club. In November of 2003, the Avenal Theater, historic cornerstone of the downtown area, was destroyed by fire. The fire affected all surrounding buildings, which were part of a complex constructed by Standard Oil in 1935. Construction commenced on the new facility in late 2008 and completed in the spring of 2010. The Avenal Theater, with its renewed beauty and splendor, again, reigns as the downtown cornerstone and continues to capture the attention, as it did in 1935 when the theater first opened.

Part of the Avenal's proud agricultural heritage comes from the bountiful pistachio crop that grows in and around Avenal. The largest pistachio grower and processor, Wonderful Pistachios, employs a majority of Avenal's agricultural labor force (both seasonally and full-time). Given how much of Wonderful's labor force comes from Avenal, the company has invested millions of philanthropic dollars over the years in the community, including the construction of Wonderful Preschool.



## Economy

As described on the City of Avenal website, Avenal is a thriving city with potential and local charm, which offers developers various growth and redevelopment opportunities. Avenal is home to many young and growing families, whose population has gradually increased, despite some population loss discussed in the next section. As noted in the City's 2017 Economic Development Plan, Avenal State Prison is the dominant employer in Avenal (one of California's State Prisons), accounting for almost half of all jobs. Accommodation and food services businesses, especially lodging, also provide economic development opportunities. The Economic Development Plan also states that manufacturing is a relatively important part of the Kings County economy, but it is underrepresented in the local economy. Avenal is also underserved by retail businesses. Most of the City's efforts to increase retail spending should provide services to support the expansion of existing businesses and to support local residents to start new retail businesses.

Estimates of select economic characteristics for the City of Avenal are shown in Table A-1.

**Table A-1 City of Avenal Economic Characteristics, 2017-2021**

CHARACTERISTIC	CITY OF AVENAL
Families below Poverty Level (%)	23%
All People below Poverty Level (%)	25.6%
Median Family Income	\$51,304
Median Household Income	\$52,080
Per Capita Income	\$12,636
Population in Labor Force	40%
Population Employed*	34.9%
Unemployment Rate	12.8%

Source: U.S. Census Bureau, California Department of Finance, 2017-2021 American Community Survey (ACS), 5-year estimates, [www.census.gov/](http://www.census.gov/)  
\*Excludes armed forces.

The most common industry within a five-mile radius of Avenal is agriculture, forestry, fishing and hunting, and mining (45.8 percent of workers). Education services, and health care and social assistance is another major industry (18.2 percent of workers) of the City. Table A-2 and Table A-3 below show the labor force breakdown by occupations and industry based on estimates from the 2017-2021 five-year American Community Survey (ACS).

**Table A-2 City of Avenal Employment by Industry, 2017-2021**

OCCUPATION	# EMPLOYED	% EMPLOYED
Agriculture, forestry, fishing and hunting, and mining	1,609	45.79%
Construction	168	4.78%
Manufacturing	164	4.67%
Wholesale trade	224	6.38%
Retail trade	197	5.61%
Transportation and warehousing, and utilities	104	2.96%
Information	0	0%
Finance and insurance, and real estate and rental and leasing	10	0.28%
Professional, scientific, and management, and administrative and waste management services	151	4.3%
Educational services, and health care and social assistance	640	18.22%



OCCUPATION	# EMPLOYED	% EMPLOYED
Arts, entertainment, and recreation, and accommodation and food services	85	2.42%
Other services, except public administration	16	0.46%
Public administration	144	4.1%
<b>Total</b>	<b>3,512</b>	<b>100%</b>

Source: U.S. Census Bureau, California Department of Finance, 2017-2021 American Community Survey (ACS), 5-year estimates, [www.census.gov/](http://www.census.gov/)

\*Excludes armed forces

**Table A-3 City of Avenal Employment by Occupation, 2017-2021**

OCCUPATION	# EMPLOYED	% EMPLOYED
Management, business, science, and arts occupations	587	16.7%
Service occupations	513	14.6%
Sales and office occupations	176	5.0%
Natural resources, construction, and maintenance occupations	1,749	49.8%
Production, transportation, and material moving occupations	488	13.9%
<b>Total</b>	<b>3,512</b>	<b>100%</b>

Source: U.S. Census Bureau, California Department of Finance, 2017-2021 American Community Survey (ACS), 5-year estimates, [www.census.gov/](http://www.census.gov/)

\*Excludes armed forces

## Population

According to ACS, the City of Avenal had a total population of 15,749 in 2010, while the City had a total population of 13,881 in 2021, which includes the prison population. The City’s population reduced by 12% during the 12-year period.

Select demographic and social characteristics for the City of Avenal from the 2017-2021 ACS and the California Department of Finance (DOF), are shown in Table A-4. As shown in the tables, the City has a strong Latino population representing approximately 85% of Avenal’s community. Also, approximately 79% of the population speaks a language other than English at home. As noted in the 2012 MJHMP, this population has a strong connection to farm labor and the agriculture industry, and the many other industries directly or indirectly dependent on agriculture, such as construction, manufacturing, transportation, wholesale, and retail.

**Table A-4 City of Avenal Demographic and Social Characteristics, 2015-2019**

CHARACTERISTIC	CITY OF AVENAL
<b>Gender/Age</b>	
Male	60.3%
Female	39.7%
Median age (years)	29.6
Under 5 years	6.9%
Under 18 years	30.0%
65 years and over	4.8%
<b>Race/Ethnicity</b>	
White	8.5%
Asian	1.4%
Black or African American	4.0%





CHARACTERISTIC	CITY OF AVENAL
American Indian/Alaska Native	0.3%
Hispanic or Latino (of any race)	85.0%
Native Hawaiian and Other Pacific Islander	0.2%
Some other race	0.0%
Two or more races	0.7%
<b>Education*</b>	
% High school graduate or higher	46.3%
% with bachelor's degree or higher	5.5%
<b>Social Vulnerability</b>	
% with Disability	7.9%
% Language other than English spoken at home	79.4%
% Speak English less than "Very Well"	33.9%
% of households with a computer	95.5%
% of households with an Internet subscription	88.0%
% of households with no vehicle available	5.8%

Source: U.S. Census Bureau, California DOF, 2017-2021 American Community Survey (ACS), 5-year estimates, www.census.gov/

\* Population 25 years and over

Table A-5 summarizes information from the ACS 5-year estimates (2017-2021) related to housing occupancy in the City of Avenal.

**Table A-5 City of Avenal Housing Occupancy and Units, 2017-2021**

HOUSING CHARACTERISTIC	ESTIMATE	PERCENTAGE
Housing Occupancy		
Total Housing Units	3,168	100%
Units Occupied	3,036	95.8%
Vacant	132	4.2%
Housing Units		
1-unit detached	2,150	67.9%
1-unit attached	140	4.4%
2 units	66	2.1%
3 or 4 units	154	4.9%
5-9 units	297	9.4%
10-19 units	222	7.0%
20 or more units	65	2.1%
Mobile Home	74	2.3%
Boat, RV, van etc.	0	0.0
Housing Tenure		
Owner Occupied	1,431	47.1
Renter Occupied	1,605	52.9

Source: U.S. Census Bureau, California DOF, 2017-2021 American Community Survey (ACS), 5-year estimates, www.census.gov/



## Disadvantaged Communities

Disadvantaged communities (DACs) are identified by the California Environmental Protection Agency (Cal EPA) based on geographic, socioeconomic, public health, and environmental hazard criteria, and may include, but not be limited to: areas disproportionately affected by environmental pollution or other hazards and areas with concentrations of people that are low income, high unemployment, low levels of home ownership, high rent burden, sensitive populations, or low levels of education attainment (California Health and Safety Code Section 39711). One of the ways the Cal EPA’s Office of Environmental Health Hazard Assessment (OEHHA) identifies DACs is using the CalEnviroScreen tool.

Employing a comprehensive approach, the OEHHA CalEnviroScreen tool applies a formula to generate a combined ranking score that considers 21 indicators for each census tract. These indicators span pollution measures like diesel emissions and concentrations of toxic sites, alongside demographic factors such as poverty and unemployment rates. Census tracts exhibiting CalEnviroScreen rankings ranging from 75 to 100 percent (i.e., within the top 25% of all tracts statewide) are designated as DACs. Census tracts are also defined as disadvantaged based on the highest 5% cumulative pollution burden scores, as well as those tracts identified in the 2017 DAC designations, and lands under control of federally recognized Tribes.<sup>1</sup>

The City is situated within three census tracts – 6031001701, 6031001601, and 6031981800. As shown in Table A-6, which is based on data derived from the OEHHA CalEnviroScreen tool, two of these census tracts are designated as DACs based on their CalEnviroScreen Ranking. Census tract 6031001601, which is a small census tract surrounding the Avenal State Prison, does not have an overall CalEnviroScreen score due to unreliable socioeconomic and/or health data.

**Table A-6 Disadvantaged Communities Statistics**

CENSUS TRACT	% HOUSING BURDENED AND LOW-INCOME	# HOUSING UNITS	# LOW-INCOME HOUSING UNITS	# LOW INCOME & HOUSING BURDENED HOUSING UNITS	CALENVIROSCREEN RANKING
6031001701	22%	2,225	1,445	480	77
6031001601	18%	1,100	530	195	92

Source: OEHHA 2023, <https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40>

These census tracts are also composed of housing-burdened low-income households. This means these households are both economically disadvantaged (making less than 80% of the County’s median family income) and substantially burdened by housing costs (paying greater than 50% of their income on housing costs). This situation renders these households more susceptible to negative impacts during hazard events, and less likely to recover after a disaster. California has very high housing costs relative to the rest of the country, which can make it hard for households to afford housing (OEHHA 2021). As a result, households in the City with lower incomes may spend a larger proportion of their income on housing and may suffer from housing-induced poverty (OEHHA 2021).

Of the 13,881 people that live in the City, according to the U.S. Census, approximately 5,946 people are potentially exposed to hazards based on the vulnerability assessment in Section A.3. Among this population, those who reside in the DACs in the City are considered more socially vulnerable to hazards. Outreach, engagement, and hazard mitigation efforts should therefore address the needs of the City’s low-income and housing burdened residents. The City can utilize the CalEnviroScreen information to conduct targeted outreach and engage community members to consider what other hazards and mitigation strategies or programs should be

<sup>1</sup> For more information on how DACs are designated refer to the final designations of DACs from May 2022 on the OEHHA CalEnviroScreen tool here: <https://oehha.ca.gov/calenviroscreen/sb53>



considered to meet community needs. The City can also engage these communities to proactively prioritize hazard mitigation projects that benefit DACs.

## Development Trends

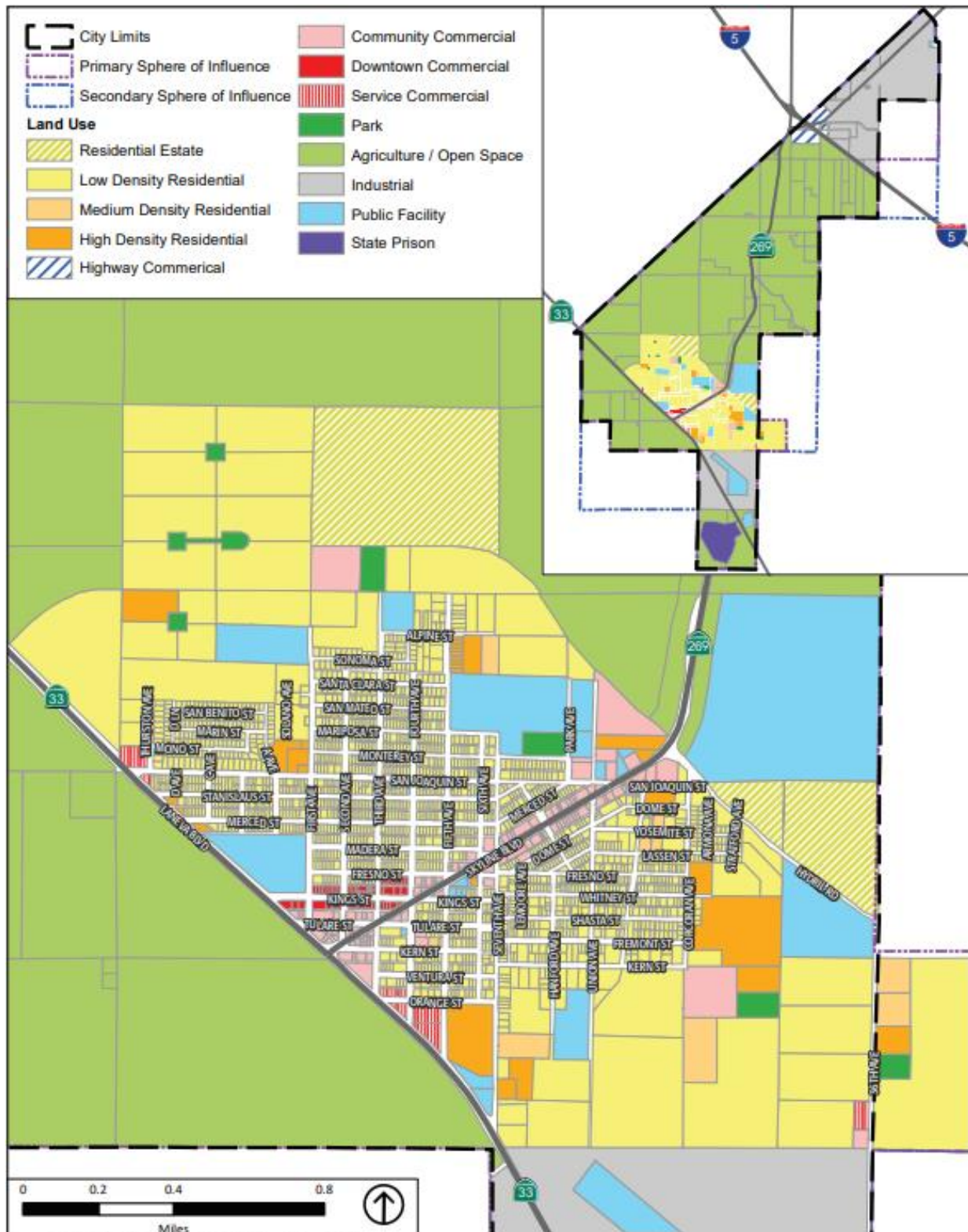
Included in the City's 2018 General Plan Land Use Element, the General Plan Land Use Map designates the general distribution of land uses, including housing, business, industrial, open space, and public facilities within the City's SOI as shown on Figure A-2. The Land Use Element contains goals, policies and actions on the City's framework for future land use planning and decision making on accommodating population growth. Below are some outlined goals that are closely related to future development:

- Preserve and enhance Avenal's unique and small-town character.
- Minimize urban sprawl and leapfrog development
- Achieve an optimal balance of residential, commercial, industrial, and open space land uses.
- Provide adequate land for future housing needs.
- Provide sites for adequate public facilities to serve projected growth.
- Create and preserve open space in the Avenal area to meet the needs of the community now and in the future.





Figure A-2 City of Avenal General Plan Land Use Designations



Source: ESRI, 2017; City of Avenal, 2017; PlaceWorks, 2017.



From 2006 to 2012, the City did not experience much population growth and urban development; during this time the City averaged about 1.9 percent growth per year (Kings County 2012). Because overall population growth declined since the approval of the 2012 MJHMP, there has been little new development in hazard prone areas. Some housing allocations have occurred to the area south of the City, where flooding during certain periods following storms has occurred, as noted in the 2012 MJHMP (Kings County 2012). However, the City now requires new developments to address potential flooding problems by enforcing the Flood Damage Prevention Ordinance.

According to the 2016 - 2024 Kings County Housing Element, the Regional Housing Needs Allocation (RHNA) for the City of Avenal is 639 housing units in total, including 73 for extremely low income, 72 for very low income, 108 for low income, 115 for moderate income, and 271 for above moderate income. Between 2021-2023, the El Camino del Mar development added 120 new affordable homes at the south end of Corcoran Street. Phases 1 and 2 of the Cielito Lindo development added 65 affordable homes between 2015-2020 near First Avenue, next to Reef-Sunset Middle School. Other infill developments have added 32 new homes between 2017 and 2023. As much of the development that did occur since 2012 was focused in downtown Avenal and the area south of the City, overall vulnerability has remained the same.

## Future Development

The areas located in the SOI shown in Figure A-1 are areas each City plans to grow into that are potentially slated for future development. The City also plans for future growth through the goals and policies set forth in the General Plan. Understanding the potential hazard exposure in the area can help to mitigate the impacts of events before development occurs in those areas. During this plan update process, a parcel analysis was conducted using the SOI and overlaid with available hazard risk layers to determine where future development may be at risk of natural hazard events. The results of the analysis have been integrated into the applicable hazard sections: flood. Table A-7 is the summary of the SOI total exposure for the City of Avenal, which includes improved parcel count and building count.

**Table A-7 Sphere of Influence Total Exposure Summary**

Property Type	Improved Parcel Count	Building Count	Improved Value	Estimated Content Value	Total Value
Exempt	2	2	\$340,269	\$340,269	\$680,538
Total	2	2	\$340,269	\$340,269	\$680,538

Source: Kings County Assessor, WSP analysis

## A.3 HAZARD IDENTIFICATION AND SUMMARY

The City of Avenal LPT identified the hazards that affect the City and summarized their frequency of occurrence, spatial extent, potential magnitude, and significance specific to their community (see Table A-8). There are no hazards that are unique to Avenal, although the hazard risk in the City varies and is distinct from the hazard risk in the County's planning area. The purpose of this section is to profile the City of Avenal' hazards where different from the County and assess the City's unique vulnerabilities.

The hazards profiled in the County MJHMP Base Plan discuss the overall impacts to the County's planning area. This information is summarized in the hazard description, geographic extent, magnitude/severity, previous occurrences, and probability of future occurrences sections of the risk assessment. The information in the City of Avenal' risk assessment summarizes only those hazards that vary from the County's planning area and that have a potential to affect the City of Avenal. The hazard profile information is organized in a similar format here as a way to identify priority hazards for mitigation purposes.



Table A-8 summarizes the hazards profiled in the County’s planning area and risk assessment to provide a way for the City’s LPT to evaluate which hazards are addressed in their General Plan Safety Element and which hazards are relevant and priority hazards for the City. The City’s General Plan Safety Element addresses emergency planning, fire hazards, flooding, and public safety. Among the hazards addressed in the City’s General Plan Safety Element, fire hazards and flooding are addressed in this Annex as well as the Base Plan. General public safety considerations are also addressed in the Base Plan.

**Table A-8 City of Avenal –Hazard Profiles**

HAZARD	GEOGRAPHIC AREA	PROBABILITY OF FUTURE OCCURRENCE	MAGNITUDE/ SEVERITY (EXTENT)	OVERALL SIGNIFICANCE	PRIORITY HAZARD?
Agriculture Pest and Disease	Extensive	Likely	Critical	Medium	No
Cyber Attack	Significant	Occasional	Critical	Medium	Yes
Dam Incidents	Limited	Unlikely	Negligible	Low	No
Drought	Extensive	Likely	Critical	High	Yes
Earthquake	Significant	Occasional	Catastrophic	High	Yes
Extreme Temperatures	Extensive	Highly Likely	Limited	High	Yes
Flood	Extensive	Highly Likely	Critical	High	Yes
Land Subsidence	Extensive	Likely	Limited	Medium	Yes
Landslide	Significant	Occasional	Negligible	Low	No
Public Health Hazards	Extensive	Highly Likely	Critical	Medium	Yes
Severe Weather: Dense Fog	Extensive	Highly Likely	Moderate	Low	No
Severe Weather: Heavy Rain, Thunderstorms, Hail, Lightning	Extensive	Highly Likely	Critical	Medium	Yes
Severe Weather: High Wind/Tornado	Extensive	Highly Likely	Critical	Medium	Yes
Wildfire	Limited	Occasional	Negligible	Medium	Yes
<b>Geographic Area</b> Limited: Less than 10% of planning area Significant: 10-50% of planning area Extensive: 50-100% of planning area  <b>Probability of Future Occurrences</b> 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.		<b>Magnitude/Severity (Extent)</b> 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  <b>Significance</b> Low: minimal potential impact Medium: moderate potential impact High: widespread potential impact			



## Vulnerability Assessment

The intent of this section is to assess Avenal's vulnerability that is separate from that of the planning area as a whole, which has already been assessed in Section 4 Hazard Identification and Risk Assessment of the Base Plan. This vulnerability assessment analyzes the population, property, and other assets at risk of hazards ranked as a priority.

The information to support the hazard identification and risk assessment was based on a combination of the previous 2012 LHMP for the City and County and jurisdiction-specific information collected during the 2022-2023 update. A Plan Update Guide and associated worksheets were distributed to each participating municipality or special district to complete during the 2022-2023 update process. Information collected was analyzed and summarized in order to identify and rank all the hazards that could impact anywhere within the County, as well as to rank the hazards and identify the related vulnerabilities unique to each jurisdiction.

Each participating jurisdiction was in support of the main hazard summary identified in the Base Plan (see Table 4-3). However, the hazard summary rankings for each jurisdictional annex may vary due to specific hazard risks and vulnerabilities unique to that jurisdiction. The information in this Annex helps differentiate the jurisdiction's risk and vulnerabilities from that of the overall County, where applicable.

**Note:** The hazard "Significance" reflects the overall ranking for each hazard and is based on a combination of the City of Avenal LPT's input from the Plan Update Guide, the risk assessment developed during the planning process (see Section 4 of the Base Plan), and the set of problem statements developed by the City LPT. The hazard significance summaries in Table A-8 above reflect the hazards that could potentially affect the City. The discussion of vulnerability for each of the following hazards is located in Section 2.3 Estimating Potential Losses, which includes an overview on the local issues and areas of concern associated with the hazard, a problem statement for the priority hazard, and a quantitative risk assessment, where spatial data is available. Based on this analysis, the priority hazards for mitigation purposes for the City of Avenal are identified below.

- Cyber Attack
- Drought
- Earthquake
- Extreme Temperatures
- Flood
- Land Subsidence
- Public Health Hazards
- Severe Weather
- Wildfire

Public Health Hazards were ranked significant hazards but are not addressed further in this vulnerability assessment as the risk and exposure are similar to the overall County risk and exposure, and the potential for losses are difficult to quantify specific to the City of Avenal. Additionally, hazards assigned a significance rating of Low and which do not differ significantly from the County ranking (e.g., Low vs. High) are not addressed further and are not assessed individually for specific vulnerabilities in this Annex. In the City of Avenal, those hazards include Agriculture Pests and Disease, Dam Incidents, Landslide, and Severe Weather: Fog.

### A.1.1.1 Assets

This section considers Avenal's assets at risk, including values at risk, critical facilities and infrastructure, historic assets, economic assets and growth and development trends.



### A.1.1.2 Property Exposure

The following data on property exposure is derived from the Kings County 2023 Assessor's parcel and address point data. This data should only be used as a guideline to overall values in the City as the information has some limitations. It is also important to note that in the event of a disaster, it is generally 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 and is not included in the values below. Table A-9 shows the exposure of properties (e.g., the values at risk) broken down by property type for the City of Avenal.

**Table A-9 City of Avenal Property Exposure by Type**

PROPERTY TYPE	IMPROVED PARCEL COUNT	BUILDING COUNT	IMPROVED VALUE	CONTENT VALUE	TOTAL VALUE
Agricultural	6	6	\$964,105	\$964,105	\$1,928,210
Commercial	112	134	\$18,337,766	\$18,337,766	\$36,675,532
Exempt	27	33	\$3,072,688	\$3,072,688	\$6,145,376
Industrial	9	10	\$849,591	\$1,274,387	\$2,123,978
Multi-Family Residential	51	564	\$42,930,514	\$21,465,257	\$64,395,771
Multi-Use	9	12	\$965,833	\$965,833	\$1,931,666
Residential	1,683	1,755	\$145,608,108	\$72,804,054	\$218,412,162
<b>Total</b>	<b>1,897</b>	<b>2,514</b>	<b>\$212,728,605</b>	<b>\$118,884,090</b>	<b>\$331,612,695</b>

Source: Kings County Assessor, WSP analysis

### A.1.1.3 Critical Facilities and Infrastructure

For the purposes of this plan, a critical facility is defined as one that is essential in providing utility or direction either during the response to an emergency or during the recovery operation. FEMA sorts critical facilities into seven lifeline categories as shown in Figure 4-1 in the Base Plan.





**Figure A-3 Critical Facilities within the City of Avenal**

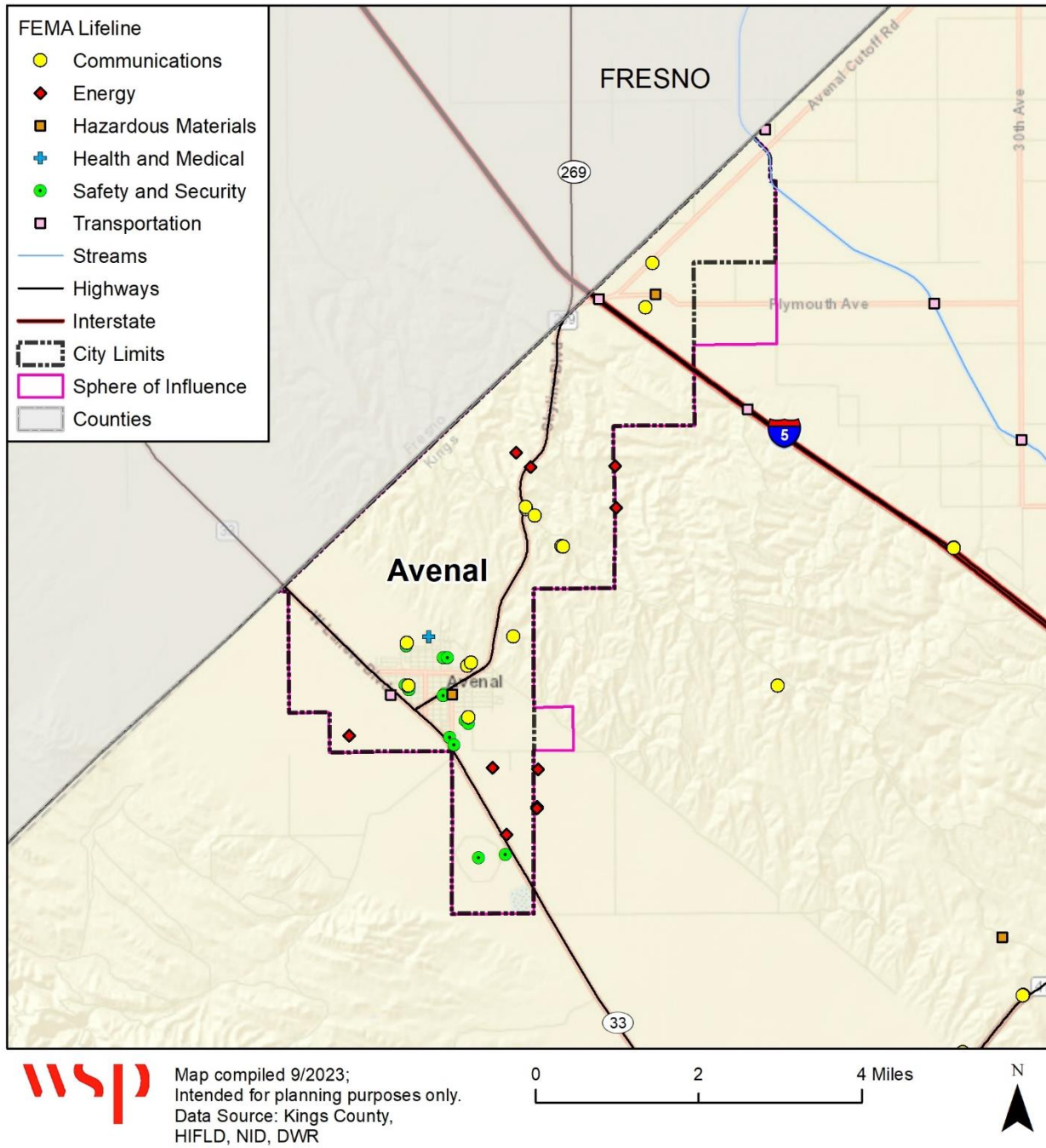


Table A-10 shows a summary of the critical facilities within the City of Avenal. Critical facilities and other community assets are important to protect in the event of a disaster.

**Table A-10 Critical Facilities within the City of Avenal**

LIFELINE	# OF CRITICAL FACILITIES
Communication	16
Energy	5





LIFELINE	# OF CRITICAL FACILITIES
Food, Water, Shelter	0
Hazardous Materials	2
Health and Medical	1
Safety and Security	17
Transportation	2
<b>Total</b>	<b>43</b>

Source: Kings County, HIFLD, NID, DWR, WSP analysis

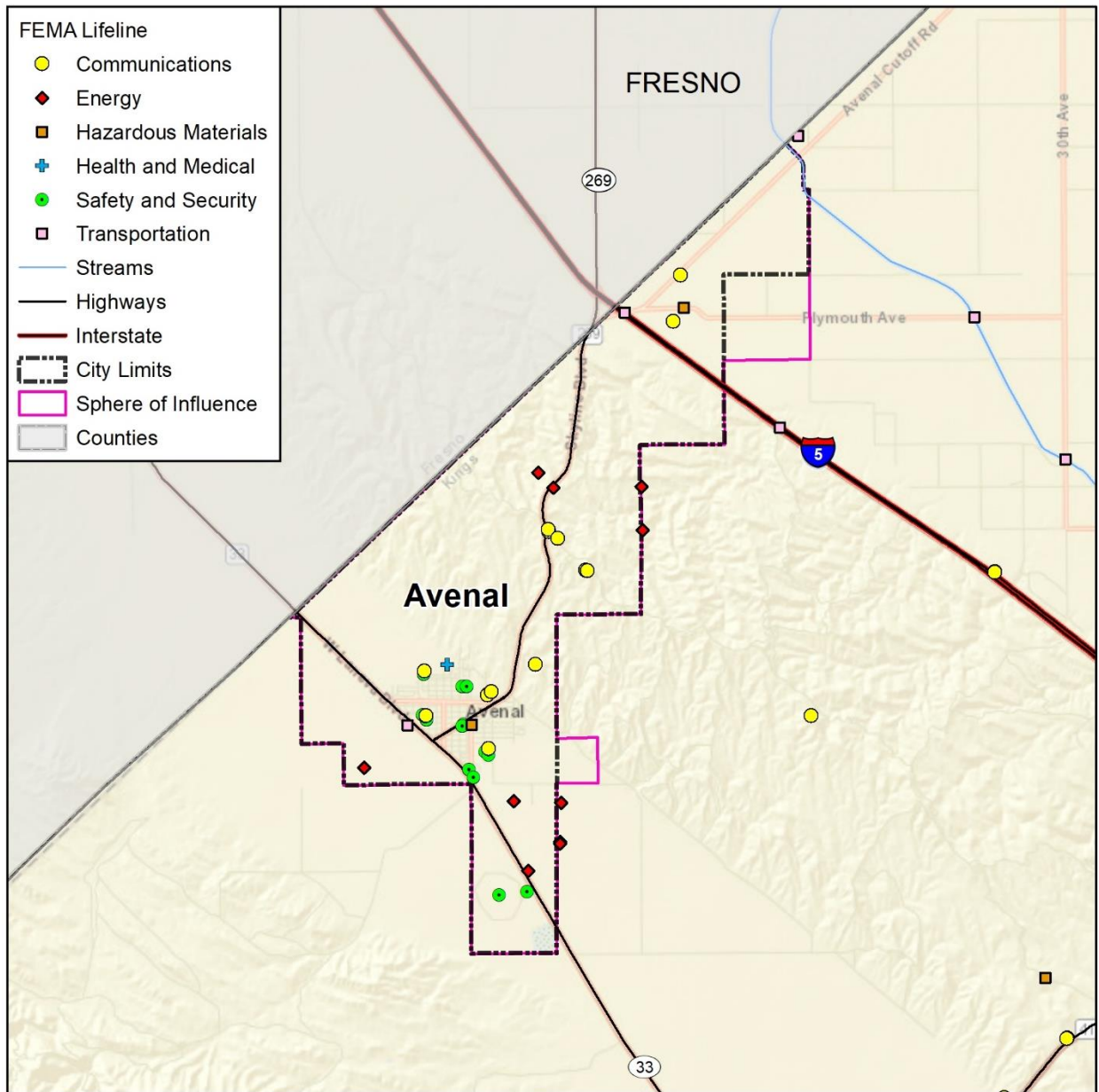
Within the City of Avenal, the following are considered critical facilities:

- Avenal County Sheriff's Department - Avenal Substation
- Avenal State Prison
- Avenal State Prison Fire Department
- Kings County Fire Department Station #12
- Major communication lines and microwave transmission facilities
- Major electrical transmission lines and substations
- Major public and private schools
- Public Library
- Wastewater treatment plant, pumping stations, and trunk lines
- Water supply lines and wells

Figure A-4 shows the location of the critical facilities in the City. The critical facility database only includes point locations; therefore linear facilities like major water supply and wastewater trunk lines were not included in the City's critical facility database. The City library and pump stations were also not included in the critical facility database and not analyzed spatially; these are however, key critical facilities in Avenal.



Figure A-4 Critical Facilities in the City of Lemoore



Map compiled 9/2023;  
Intended for planning purposes only.  
Data Source: Kings County,  
HIFLD, NID, DWR

0 2 4 Miles





#### *A.1.1.4 Historic, Cultural and Natural Resources*

The National Registry of Historic Preservation database does not show any historical resource properties within the City of Avenal.

Natural resources are important to include in benefit-cost analyses for future projects and may be used to leverage additional funding for projects that also contribute to community goals for protecting sensitive natural resources. According to the City's General Plan, the City's Planning Area has a variety of natural and altered habitats supporting a diverse assemblage of plant and animal species. The California Natural Diversity Database (CNDDB) lists the following special-status species that have been known to occur within and around the Planning Area:

- American badger
- Blunt-nosed leopard lizard
- Lemmon's jewelflower
- Nelson's antelope squirrel
- Prairie falcon
- Pale yellow layia
- San Joaquin kit fox
- San Joaquin pocket mouse
- San Joaquin whipsnake
- San Joaquin woollythreads
- Tricolored blackbird
- Tylare grasshopper mouse

Moreover, awareness of natural assets can lead to opportunities for meeting multiple objectives. For instance, protecting wetlands areas protects sensitive habitat as well as attenuates and stores floodwaters.

### **Estimating Potential Losses**

#### *A.1.1.5 Cyber-Attack*

All servers, networks, and users are vulnerable to cyber-attacks. While there have been no recorded cyber-attack events occurring in the City of Avenal, minor cyber-attacks such as phishing emails often go unreported. Cyber-attack is ranked an overall medium significance hazard for the City of Avenal and all jurisdictions within Kings County. However, jurisdictions with greater populations and therefore more people exposed to a cyber-attack event are at a higher risk.

Refer to Chapter 4 for a discussion of the cyber-attack risk relative to the City of Avenal and Kings County.

#### *A.1.1.6 Drought*

The City's Utilities Department provides water supply production, treatment, and distribution to approximately 16,302 residents through approximately 2,080 residential, commercial, industrial, institutional, and landscape service connections (Lopez 2023). The City is different than other communities in Kings County because it relies on surface water from the San Luis Canal, which is part of the State and Federal Water Project supplying water to the west side of the San Joaquin Valley.

The City signed a long-term contract with the U.S. Bureau of Reclamation (USBR) on November 20, 1969, for up to 3,500 acre-feet of Central Valley Project (CVP) water annually. This contract



expired December 31, 2008, and has been superseded by a series of interim renewal contracts. The most recent of these contracts became effective on February 1, 2021, guaranteeing 3,500 acre-feet of CVP water annually for the City of Avenal. According to the 2014 USBR Water Management Plan, the City also receives a minor amount of water from groundwater sources (about 16 acre-feet in 2014), although this water is used for sports complex irrigation as the low quality makes it unsuitable for consumption.

Given the City relies on surface water from the CVP for drinking water, it is susceptible to drought and related climate change considerations. As the City grows and the demand for water increases, water demands in the City will be impacted by hotter days, drier conditions, and a longer irrigation season, which will increase the City's demand for imported surface water allocations and landscaping and irrigation water needs. Other climate change effects such as increased precipitation variability may result in the depletion of stored groundwater availability, and in turn reduced crop productivity, and potential higher water costs. The City of Avenal already encourages the community to do their part to conserve the region's water supplies.

Historically, the City has been affected by regional mandates, such as the Central Valley Project Improvement Act of 1992, which were put in place to better manage water resources in the Central Valley, particularly through the protection, restoration, and enhancement of fish and wildlife resources. Severe droughts and these mandates have also resulted in the adoption of the City's Water Conservation Ordinance. More recently in July 2022, the City of Avenal implemented a watering schedule that restricts residents to watering lawns between 12 am and 11:59 pm on Tuesdays and Saturdays. Additionally, no water user is permitted to wash motor vehicles, trailers, boats and other types of equipment without utilizing a hand-held bucket or hose equipped with a positive shut-off nozzle for quick rinses on appropriate watering days. The City also prohibits using potable water for "Car Wash" fundraising of any kind. All homes/apartment complexes with swimming pools require City approval prior to draining or filling pools. Additionally, city-provided potable water is strictly prohibited for use to wash down sidewalks, driveways, drive approaches, curbs and gutters and/or streets to clean and/or spray down houses and buildings.

In summary, the City has staff and resources to better manage water resources and has already taken steps to do so. The City may benefit from developing alternative backup supplies through additional surface water storage facilities to mitigate impacts during drought events in the future. Future water conservation policies should continue to be updated to comply with new legislation and water use objectives.

#### *A.1.1.7 Earthquake*

The City of Avenal is located within a region of significant seismic activity. While major fault systems are not known to exist within Kings County or the Avenal area, there is a potential for minor surface ruptures, particularly in the vicinity of the Kettleman Hills mountain range in the southwestern part of the County. It's important to note that the San Andreas Fault is situated less than four miles west of the Kings County line, contributing to the earthquake hazard in the area. As illustrated in Figure 4-14 of the Base Plan, earthquake hazards are most severe in the southwest of Kings County and the City of Avenal, with the potential for ground shaking ranging from 60-100% g. The southwestern County line experiences the highest potential for ground shaking, reaching 100% g and above.

Historical seismic activity, as depicted in Figure 4-15 (Kings County Earthquake Epicenters: 1855 - 2021), shows that several earthquakes have occurred within or near the City of Avenal. Notably, the 1983 Coalinga earthquake (6.7 on the Richter scale) was caused by a blind thrust on the Anticline Ridge Fault, which is relevant understanding the risk of earthquake hazards in the region. In addition, there was a 1985 earthquake (5.5 on the Richter scale) centered five miles northeast of Avenal in the Kettleman Hills. Although the 1985 earthquake did not result in



structural damage, it caused widespread cracks in City buildings, pavement, and numerous broken windows (City of Avenal 2018). Further, the White Wolf Fault to the south in Kern County may also influence seismic activity in the broader Central Valley region. Further research and consideration of this fault's proximity to Avenal should be examined to ensure a comprehensive understanding of potential earthquake risks in the City.

The Level 1 HAZUS analysis completed in the Base Plan, under the Great Valley ShakeMap Scenario, predicts that the City of Avenal is expected to experience the highest total building losses when compared to other jurisdictions in Kings County. This emphasizes the need for comprehensive earthquake preparedness and mitigation efforts. The City's transmission lines and its water source, the San Luis Canal and the CVP, are also vulnerable during seismic events. Moreover, the 2012 MJHMP noted that during the Coalinga earthquake in 1983, buildings in Avenal experienced significant shaking. In September 2012, there were two additional Coalinga earthquakes that resulted in intense ground shaking and subsequent water damage (Kings County 2012).

While soils in Avenal are not mapped as prone to liquefaction, it's important to be aware that both the Kettleman Hills and Kreyenhagen Hills are prone to landslides during seismic events. For further details on the potential impact of earthquakes on the City of Avenal and Kings County, refer to the Base Plan.

#### *A.1.1.8 Flood*

The extent of flood severity is influenced by various factors, encompassing the intensity and duration of rainfall, the landscape's topography, and the type of ground cover in the region. An abundance of rainfall within a brief timeframe can lead to sudden flash floods. Conversely, even a modest amount of rain can trigger flooding, particularly in regions with frozen or saturated soil from prior wet spells. Furthermore, floods might occur if rainfall accumulates over impermeable surfaces like extensive parking lots, paved roads, or densely developed zones.

The repercussions of flooding encompass a broad spectrum of effects, including injuries and loss of life, financial setbacks, psychological trauma, as well as damage to infrastructure such as roads and bridges, and properties. This damage spans across different aspects including structural elements (such as foundations), electrical systems (outlets, wiring, meters, etc.), mechanical equipment (washers, dryers, furnaces, water heaters, etc.), and finishing touches like floors and walls.

#### *Floodplains and Special Flood Hazard Area*

As referenced in the Base Plan, federal, state, and local agencies use the 1% likelihood flood, often called the "base flood" or "100-year flood," as a regulatory benchmark (SFHA) and FEMA maps these flood zones in regulatory maps. A floodplain is a flat area near water bodies prone to periodic flooding, reducing flood impact on communities. Floodplains have fertile soil and diverse ecosystems, requiring careful management for safety and environmental protection. As noted in the 2035 General Plan, the City of Avenal, situated on the Kettleman Plain amidst the Kettleman Hills and Kreyenhagen Hills, faces a distinct flood risk due to its intricate arroyo network. Unlike continuous year-round watercourses, Avenal experiences periodic surges of water through these arroyos during intense rainfall. This geographic setup leads to a fascinating yet potentially hazardous hydrological behavior. During heavy storms, runoff from the adjacent hills triggers flooding along the valley floor and near specific drainage channels. This water eventually follows southeast converging in the Tulare Lake Basin, about 18 miles away. Arroyo Curvo and Arroyo Esquinado, intermittent creeks within this intricate drainage network, rise during periods of heightened rainfall.





Notably, Avenal's flood vulnerability is accentuated by its location within FEMA's designated 100-year floodplain, which refers to an annual 1% likelihood of flooding. However, it's the arroyos that underscore the City's immediate flood susceptibility. Situated upstream, these arroyos are susceptible to flash flooding during major storms. Flash floods, characterized by their rapid onset and intensity, can overwhelm drainage systems and swiftly raise water levels.

Avenal residents have reported flooding incidents along Santa Clara Street, particularly beneath the path of Arroyo Esquinado. This underscores the arroyos' capacity to inundate nearby areas during storms, necessitating preparedness and mitigation strategies. Moreover, FEMA identifies Arroyo del Camino as a flood hazard, a concern that might be amplified by inadequately maintained culverts and drainage ditches. Approximately ten distinct watersheds contribute to Avenal's arroyo system, funneling water through or close to the urbanized region before dispersing onto the Kettleman Plain. This interplay of arroyos and watersheds requires attention to mitigate the flood risk. Given this context, Avenal must prioritize robust planning, maintenance of drainage infrastructure, and potentially tailored flood management measures. By doing so, the City can strengthen its ability to adapt to, minimize, and withstand arroyo-induced flooding, ensuring the safety of both its people and property.

A majority of the City of Avenal's residential properties are also located within the 500-year (0.2%) floodplain covering the southwestern portion of the City. Properties in the 500-year floodplain have a lower immediate risk of flooding compared to those in the 100-year floodplain. However, it's important to note that flooding can still occur, and in rare cases, events larger than the 500-year flood could happen. Zoning and construction regulations are less stringent in the 500-year floodplain compared to the 100-year floodplain. However, it's still important to consider potential flood risks when developing or purchasing property in these areas. While flood insurance might not be as strongly mandated for properties in the 500-year floodplain, it's still an important consideration. Property owners should assess their risk tolerance and the potential financial impact of flood damage.

The physical risks associated with potential flooding and the regulatory requirements for floodplain management are important considerations when decisions are being made regarding future land use throughout the City of Avenal. The rest of Avenal lies outside the 100-year floodplain designated by FEMA. Based on the history of flooding in King's County, the City and surrounding areas are considered likely to have the potential for future flooding. Parts of the City are also prone to local flooding problems associated with poor drainage issues. The 2012 MJHMP noted that there are localized flooding issues at the intersection of Seventh Avenue and Highway 33. Runoff from the Arroyo del Camino is conveyed through channels, culverts, and storm drains for approximately one-half mile between the city limits and Fremont Street. At the downstream end of Fremont Street, the discharge from this runoff can result in sheet flow flooding (Kings County 2012). The previous plan also noted that stormwater discharge from the areas west of Arroyo del Camino also concentrate along Highway 33 at the southwest limit of the City.

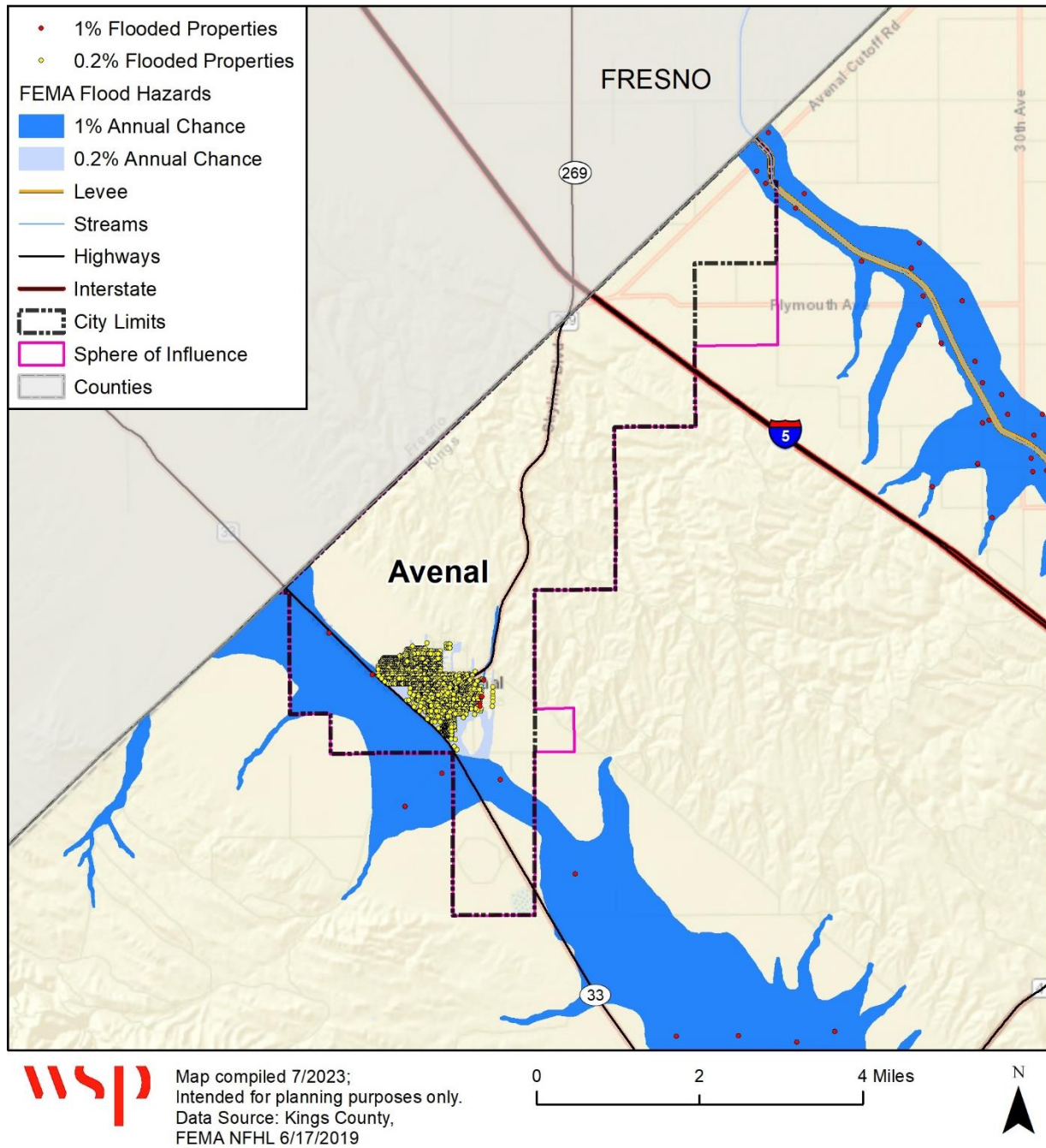
Climate change is expected to increase the intensity of major storms, which could create more frequent and severe flooding. In summary, the risk to riverine flooding in the City is high due to development in the floodplain and localized flooding issues.

A flood vulnerability assessment was completed during the 2022-2023 update, following the methodology described in Section 4 of the Base Plan. Flood hazards for the City of Avenal are shown in Figure A-5. Table A-11 summarizes the values at risk in the City's 1% annual chance floodplain. Table A-12 summarizes the values at risk in the City's 0.2% annual chance floodplain.





**Figure A-5 City of Avenal FEMA 1% & 0.2% Annual Chance Floodplains**



**Table A-11 City of Avenal FEMA 1% Annual Chance Flood Hazard, by Property Type**

Property Type	Improved Parcel Count	Building Count	Improved Value	Content Value	Total Value	Estimated Loss	Population
Agricultural	2	2	\$103,539	\$103,539	\$207,078	\$51,770	-
Commercial	1	1	\$11,386	\$11,386	\$22,772	\$5,693	-
Exempt	2	2	\$342,024	\$342,024	\$684,048	\$171,012	-
Residential	5	6	\$170,357	\$85,179	\$255,536	\$63,884	22



Property Type	Improved Parcel Count	Building Count	Improved Value	Content Value	Total Value	Estimated Loss	Population
<b>Total</b>	<b>10</b>	<b>11</b>	<b>\$627,306</b>	<b>\$542,128</b>	<b>\$1,169,434</b>	<b>\$292,358</b>	<b>22</b>

Source: Kings County Assessor's Office; National Flood Hazard Layer Effective 6/17/2019; FEMA; WSP analysis

**Table A-12 City of Avenal FEMA 0.2% Annual Chance Flood Hazard, by Property Type**

Property Type	Improved Parcel Count	Building Count	Improved Value	Content Value	Total Value	Estimated Loss	Population
Agricultural	1	1	\$163,000	\$163,000	\$326,000	\$81,500	-
Commercial	97	119	\$17,116,938	\$17,116,938	\$34,233,876	\$8,558,469	-
Exempt	7	9	\$109,198	\$109,198	\$218,396	\$54,599	-
Industrial	9	10	\$849,591	\$1,274,387	\$2,123,978	\$530,994	-
Multi-Family Residential	29	112	\$22,639,837	\$11,319,919	\$33,959,756	\$8,489,939	402
Multi-Use	6	9	\$749,775	\$749,775	\$1,499,550	\$374,888	32
Residential	1,363	1,419	\$114,303,823	\$57,151,912	\$171,455,735	\$42,863,934	5,094
<b>Total</b>	<b>1,512</b>	<b>1,679</b>	<b>\$155,932,162</b>	<b>\$87,885,128</b>	<b>\$243,817,290</b>	<b>\$60,954,322</b>	<b>5,529</b>

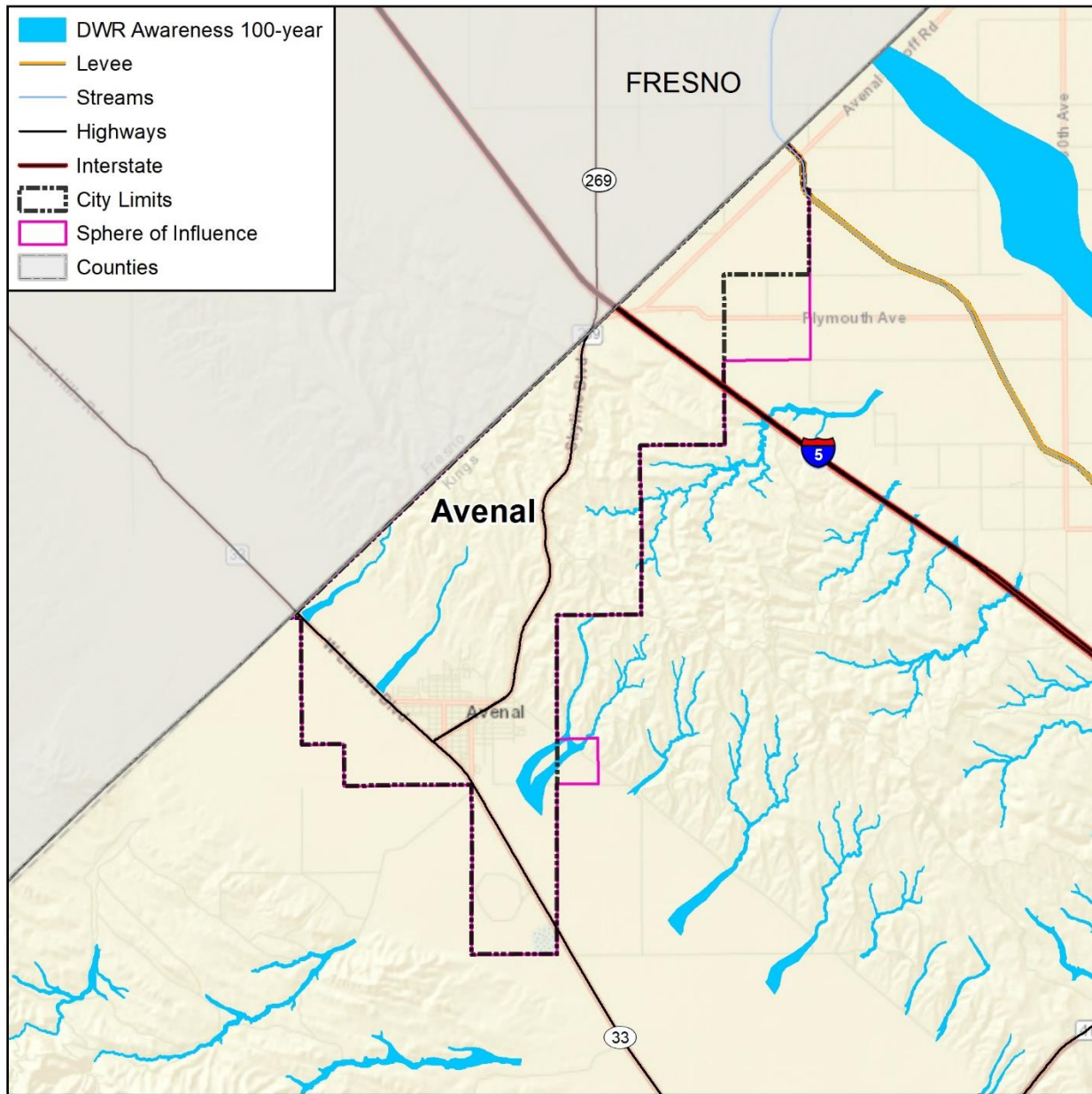
Source: Kings County Assessor's Office; National Flood Hazard Layer Effective 6/17/2019; FEMA; WSP analysis

Based on this analysis, the City of Avenal has 11 buildings located within the 1% annual chance floodplain for a total value of almost \$1.17 million. The potential loss is estimated at over \$292,000 if these areas were inundated by the 1% annual chance flood. In addition, the City of Avenal has 1,679 buildings located within the 0.2% annual chance floodplain for a total value of almost \$244 million. The potential loss is estimated at almost \$61 million if these areas were inundated by the 0.2% annual chance flood. The population at risk was calculated for the 1% and 0.2% annual chance floodplains based on the number of residential properties at risk and the average number of persons per household (3.59). There are an estimated 22 persons at risk to 1% annual chance flood and 5,529 persons at risk to 0.2% annual chance flood in the City of Avenal.

The Department of Water Resources (DWR) developed Best Available Maps (BAM) following legislation enacted in 20017 (Senate Bill 5) for the 100-, 200-, and 500-year floodplains located within the Sacramento-San Joaquin Valley. The BAM maps contains the best available information on flood hazards in cities and counties. While the BAM maps do not replace existing FEMA regulatory floodplains shown on the Flood Insurance Rate Maps (FIRM) they identify potential flood risk in aeras that may warrant further studies and are intended to facilitate land use decision making. The DWR Awareness 100-year floodplains within the City of Avenal are shown in Figure A-6.



Figure A-6 City of Avenal DWR Awareness 100-Year Floodplains



Map compiled 7/2023;  
Intended for planning purposes only.  
Data Source: Kings County,  
DWR

0 2 4 Miles



### Critical Facilities at Risk

Critical facilities are those community components that are most needed to withstand the impacts of disaster as previously described. Table A-13 and Table A-14 list the critical facilities in the City's 1% and 0.2% annual chance floodplains respectively. Figure A-7 shows the location of the critical facilities in the City's 1% and 0.2% annual percent chance floodplains.



**Table A-13 Critical Facilities at risk of 1% Annual Chance Flood Hazard, by FEMA Lifeline**

FEMA Lifeline	Count
Communications	-
Energy	1
Food, Water, Shelter	-
Hazardous Materials	-
Health and Medical	-
Safety and Security	-
Transportation	1
<b>Total</b>	<b>2</b>

Source: Kings County, HIFLD, NID, DWR, National Flood Hazard Layer Effective 6/17/2019; FEMA; WSP analysis

**Table A-14 Critical Facilities at risk of 0.2% Annual Chance Flood Hazard, by FEMA Lifeline**

FEMA Lifeline	Count
Communications	2
Energy	-
Food, Water, Shelter	-
Hazardous Materials	1
Health and Medical	-
Safety and Security	8
Transportation	-
<b>Total</b>	<b>11</b>

Source: Kings County, HIFLD, NID, DWR, National Flood Hazard Layer Effective 6/17/2019; FEMA; WSP analysis

Two facilities are potentially exposed to a 1% annual chance flood events, including the Kettleman Solar and Avenal Gliderport Corporation. There are also 11 facilities potentially exposed to a 0.2% annual chance flood events, including four child day care centers, the City of Avenal Water Treatment Plant, Kings County Fire Department Station 12 Avenal, Kings County Sheriff's Department - Avenal Substation, two microwave service towers, and two public schools. The impact on the community could be substantial if any of these facilities are damaged or destroyed during a flood event. Impacts to any of the City's key wastewater facilities and infrastructure and conveyance systems would also result in severe service disruptions to the community and subsequent costs associated with response and recovery. For example, the 2012 MJHMP noted that two water main lines, an 18-inch and a 12-inch, carry water from the California Aqueduct to the City through the Kettleman Hills, which are prone to slope failure and erosion during heavy rains that cause flooding. Because the areas where the City's water conveyance infrastructure is prone to landslides are outside the City limits, they are not discussed further in a landslide section. This infrastructure does however have a history of problems during large rain events that result in localized flooding and incidents were reported in March 1995 when the 18-inch main line broke due to slope failure around the water line, which resulted in a loss of water supply to the City for 12 days. Roads were closed during this time period, and businesses were without water, which in turn caused economic impacts (Kings County 2012). This same 18-inch water line broke again in January 1998, near the Old Skyline Road (Kings County 2012). While the failure area has since been reinforced, the 2012 MJHMP stated it is likely a similar event could happen along other portions of the water line in the future.





**Figure A-7 Critical Facilities at Risk of FEMA 1% & 0.2% Annual Flood Hazard**



Map compiled 9/2023;  
Intended for planning purposes only.  
Data Source: Kings County,  
FEMA NFHL 6/17/2019, HIFLD,  
NID, DWR

0 2 4 Miles



### Flood Insurance Coverage, Claims Paid, and Repetitive Losses

Flooding is the most common and costly natural disaster in the United States. In terms of economic disruption, property damage, and loss of life, floods are often referred to as "nature's number-one disaster." Consequently, flood insurance is typically not included in standard homeowner's and renter's insurance policies. To safeguard their property against flood-related losses, individuals are advised to acquire flood insurance through the NFIP. Established by Congress in 1968 to mitigate the rising costs of federal disaster relief, the NFIP is administered by FEMA, a division of the U.S. Department of Homeland Security. It provides federally backed



flood insurance to communities that adopt and enforce effective floodplain management ordinances aimed at reducing potential flood losses.

The NFIP offers flood insurance coverage to individuals residing in participating communities. Community membership is contingent on adopting and enforcing floodplain management and development regulations. The NFIP operates on the basis of voluntary community participation, regardless of size. In this context, a "community" refers to a political entity with the legal authority to implement and enforce floodplain management ordinances within its jurisdiction, including incorporated cities, towns, townships, boroughs, villages, or unincorporated areas of counties or parishes.

National flood insurance is only available in communities that apply for participation in the NFIP and commit to implementing prescribed flood mitigation measures. In return for adhering to basic floodplain management standards, local governments enable property owners to purchase modest levels of flood insurance coverage. Communities that adopt more comprehensive floodplain management measures can be promoted to the Regular Program, allowing local policyholders to access higher levels of insurance coverage.

Integral floodplain management involves both evaluating and permitting development within the SFHA, while also addressing equity and outreach. This entails raising new residential structures to or above the Base Flood Elevation (BFE), implementing floodproofing for non-residential structures, constraining development in floodways, strategically siting public utilities and facilities to minimize flood damage, and reinforcing foundations against floatation, collapse, or lateral shifting. These efforts prioritize fairness and engagement within flood-prone communities.

The City of Avenal joined the NFIP on April 5, 1989. NFIP Insurance data indicates that as of May 2022, there was one flood insurance policy in force in the City with \$277,000 of coverage. This policy is located in A01-30 & AE zone. This policy is for single family residential. There has been 1 historical claim that did not result in paid losses. According to the FEMA Community Information System accessed August 25, 2023, the City currently has no Repetitive Loss or Severe Repetitive Loss properties.

#### Future Development

SOI flood analysis shows that none of the parcels located within the City's SOI are exposed to 1% or 0.2% annual chance flood events.

##### *A.1.1.9 Land Subsidence*

Land subsidence is prevalent along the northeastern portion of Kings County. According to data from DWR, a majority of the City's SOI has not experienced vertical displacement, while the southernmost portion has experienced slight increases in vertical displacement. The southern most portion of the City currently houses the Avenal State Prison and the Avenal Sports Complex, although it is also zoned for light industrial and public facilities. Any future development in this area should plan for possible future vertical displacement. Land subsidence is an overall medium significance hazard for the City of Avenal and all jurisdictions within Kings County.

Refer to Chapter 4 for a discussion of land subsidence risk relative to the City of Avenal and the County.

##### *A.1.1.10 Extreme Temperatures: Freeze and Heat*

Extreme heat is highly likely to occur in Avenal. Extreme heat events have occurred in the summers of 2006, 2012, and have dramatically increased over the past decade. As noted in the Kings County Base Plan, there have been 52 excessive heat and heat events recorded in the





County from 2000 to 2022. These events result in increased energy costs and have a disproportionate impact on outdoor construction and agriculture workers.

*A.1.1.11 Severe Weather: Heavy Rain, Thunderstorms, Hail and Lightning*

Between 1968 and 2021, the NCEI Storm Events Database recorded a total of 431 instances of severe weather events in Kings County. These severe weather events are listed in Table A-15 Of these events, 8 were recorded in Avenal, consisting of two hail events, one flash flood, two lightning, and three heavy rain events.

**Table A-15 Heavy Rain, Thunderstorms, Hail and Lightning Events in the City of Avenal: 1968 to 2021**

Date	Property Damage	Summary
<b>Hail</b>		
October 10, 2000	\$500,000 (Crop Damage)	An early season convective rain event did economic damage to the Central and Southern San Joaquin Valley. Frontal passage with embedded and post-frontal thunderstorms swept through the Central and South San Joaquin Valley beginning around 0900 PST on the 10th. Hanford received 1/3" rain in an hour from a heavy thundershower from 1150 to 1250 PST. Severe weather hail damage occurred on the west side of the San Joaquin Valley in the Fresno and Kings County areas. Additionally, a 1-mile long, small hail swath in Central Fresno County near Malaga did agricultural damage. Crops impacted by the hail were lettuce, alfalfa, beans, broccoli, persimmons, raisin, pomegranates, and cotton. Going back through at least 1922, no Fresno Fair closures had been noted due to adverse weather but the heavy rain on the 10th closed the fair leading to an estimated revenue loss of \$200K. Over the 3-day period from the 9th through the 11th, Fresno received 1.22" of rain including a record breaking 0.76" on the 10th. Pondered water caused numerous flooding problems in and around the City of Fresno. In the Tulare area 0.67" was received during the afternoon of the 10th. The unusually significant, early rain caused damage in the form of ceiling collapses and water damage.
September 20, 2005	N/A	A late afternoon thunderstorm provided large hail...locally heavy rain...and high wind in the western portions of Kings and Fresno counties. Outflow south wind caused late season cotton to be laid over in addition to intense rainfall for short periods of time. The "horizontal rain" totaling 2" in a short period of time with the thunderstorm downburst caused extensive damage to a pistachio treatment plant in Kings County. To the east-southeast of Huron in Fresno County 0.58" of rain was reported within a 30 minute time period.
<b>Flash Flood</b>		
March 5, 2001	N/A	Large accumulations of rain from the 4th and into the 6th provided for substantial sheet flow or small stream flooding, especially on the west side of the San Joaquin Valley.
<b>Lightning</b>		
May 31, 2002	\$5,000	Localized heavy rain at the Hanford Airport of 1.01" within a 21-minute time period totally flooded local streets and intersections. Despite heavy rain being highly localized (known locations at Hanford, Armona, Avenal, downtown Fresno, and Piedra area of Fresno County), lightning activity with this event was widespread, long-lasting, and very visual...an infrequent occurrence for the Central and Southern San Joaquin Valley. There were 260 lightning strikes between just 1900 and 2000 PST through the Central and South San Joaquin Valley...and that activity continued to just after midnight PST as a band of convection moved north through Kings County and into Fresno County. A trained spotter reported lightning at the rate of 5-6 flashes/second around 2100 PST in the Pine Flat Reservoir location near Piedra.
August 31, 2007	\$1,000	A hot and humid airmass, combined with an approaching upper level trough, contributed to isolated strong thunderstorms across the San Joaquin valley on the 30th and 31st of August. Late at night on the 30th, a strong thunderstorm knocked out power to over 1500 Avenal residents. Similarly, 800 customers in Dinuba were without power due to strong thunderstorms. In Visalia, a tree was knocked down by gusty winds and lightning, causing minor property damage on the 30th.
<b>Heavy Rain</b>		



March 15, 2003	N/A	Heavy rain led to some urban flooding in portions of the Southeast San Joaquin Valley in Tulare County as well as some rural flooding problems from sheet flow in the southernmost areas of the South San Joaquin Valley. Locally heavy rainfall was reported on the west side of the San Joaquin Valley on the 15th in convective activity. Avenal in west Kings County received over 1.1 inches of rain on the 15th. Lemoore had received 3/4-inch of rain by mid-afternoon on the 15th with street flooding reported in Hanford by mid-day with a total of 0.85" during the day. Rain amounts on the east side of the S.J.Valley were generally closer to 1/2" over the period from the 15th through the 18th. There was more convection for storm development on the west side than east side during this period.
February 19, 2005	N/A	A thunderstorm passed over Avenal late in the afternoon of the 18th with 1/2" hail and very heavy rain reported. The city of Visalia had over 30 intersections between Tulare and Walnut Avenues around Central Street flooded due to persistent and locally heavy rain. Rainfall accumulations around Visalia for the 36-hour period ending late on the 18th were in excess of 1"
May 21, 2006	N/A	As the transition from near record high temperatures, a vigorous frontal passage swept over Interior Central California from the southwest starting at mid-afternoon of the 21st bringing substantial cooling and rainfall. Through the course of the afternoon heavy rain generated north-to-south along an eastward moving rain band. Much of the heavy rain fell in less than a couple of hours. Avenal in Western Kings County had 1" of rain in about an hour. Other reports of rainfall on the Central and northern portion of the Southern San Joaquin Valley included 1.59" at Spanish Lake near Coalinga, 1.26" at Tranquility, 1.43" at Madera, 1.95" at Chowchilla, and 1.07" at Merced.

*A.1.1.12 Severe Weather: High Wind/Tornado*

Between 1968 and 2022, the National Center for Environmental Information (NCEI) Storm Events Database recorded a total of 98 instances of high wind, strong wind, and tornado events in Kings County.<sup>2</sup> Of these 98 events, six were recorded in Avenal – four high wind and two strong wind. In addition to these events, the USDA declared three disaster designations, one in 2016 and two in 2017, due to high wind events. Table A-16 summarizes the high wind events recorded by the NCEI in Avenal.

**Table A-16 High Wind Events in Avenal: 1968 to 2021**

DATE	PROPERTY DAMAGE	SUMMARY
<b>High Wind</b>		
Jan. 4, 2008	\$4,500,000	Very strong winds developed on the west side of the San Joaquin Valley. The strongest winds occurred in the town of Avenal, where roofs were damaged, trees toppled, and two glider planes lifted off the tarmac and flipped over at the local airport. Based on surveys of the sustained property damage, top winds were estimated at 70-75 mph. Two direct injuries also occurred in Avenal during the wind event.
Oct. 14, 2014	\$500	This cold front brought strong winds to the west side of the San Joaquin Valley on April 14th, with dust storms occurring near Coalinga and Avenal. Both dust storms produced areas of near-zero visibility. The California Highway Patrol (CHP) reported blowing dust at Avenal cutoff on I-5 with near-zero visibility. The CHP determined it caused a traffic collision along Interstate 5. No fatalities were reported although several people were injured.
Oct. 11, 2021	\$25,000	Small pea sized hail fell at Avenal during the afternoon of April 20th, with similarly sized hail fall in Lamont that evening. Winds in the central and

<sup>2</sup> The NCEI Storm database defines high winds as sustained non-convective winds of 35 knots (40 mph) or greater lasting for 1 hour or longer, or gusts of 50 knots (58 mph) or greater for any duration (or otherwise locally/regionally defined). Events with winds less than High Wind criteria, resulting in fatalities, injuries, or significant property damage are encoded as a Strong Wind events.



DATE	PROPERTY DAMAGE	SUMMARY
		southern San Joaquin Valley gusted as high as 45 mph, toppling trees and downing power lines.
Dec. 31, 2022	\$0	Strong winds were blowing across Interstate 5 and highway 41. Due to the extended period of drought across the San Joaquin Valley, the winds caused blowing dust across most of the west side of the valley. Visibility was reduced to near zero in blowing dust, resulting in stopped traffic along Interstate 5 and highway 41 and other county roads between Avenal and Lost Hills. There were at least 7 accidents reported and highway 41 was closed from near Avenal to where it intersects highway 46 in San Luis Obispo county for at least 3 hours.
<b>Strong Wind</b>		
April 15, 2009	\$0	Several stations in the Coalinga-Avenal Zone reported wind gusts exceeding 58 mph. A few low impact indicator sites reported gusts exceeding 80 mph. The Kettleman Hills Remote Automated Weather Stations (RAWS) measured a peak wind gust of 61 mph.
April 20, 2010	\$0	Strong wind gusts occurred across the Coalinga-Avenal Zone with several stations in the West Side Hills and Tehachapi Mountains reporting gusts exceeding 60 mph. The Kettleman Hills RAWS measured a peak wind gust of 61 mph.

Tornadoes and windstorms pose a notable risk to both the residents and the property within the City of Avenal. Vulnerability varies depending on the intensity of the event, with certain entities, including mobile homes, damaged vegetation, trees, and utility infrastructure, being particularly susceptible. While vulnerability might differ based on the strength of the event, due to the regional scale of these events, the risk to the City of Avenal does not vary significantly from the risk to the County as a whole.

High wind and tornado events are an overall medium significance hazard for the City of Avenal and all jurisdictions within Kings County. Refer to Chapter 4 for a discussion of high wind and tornado risk relative to the City of Avenal and the County.

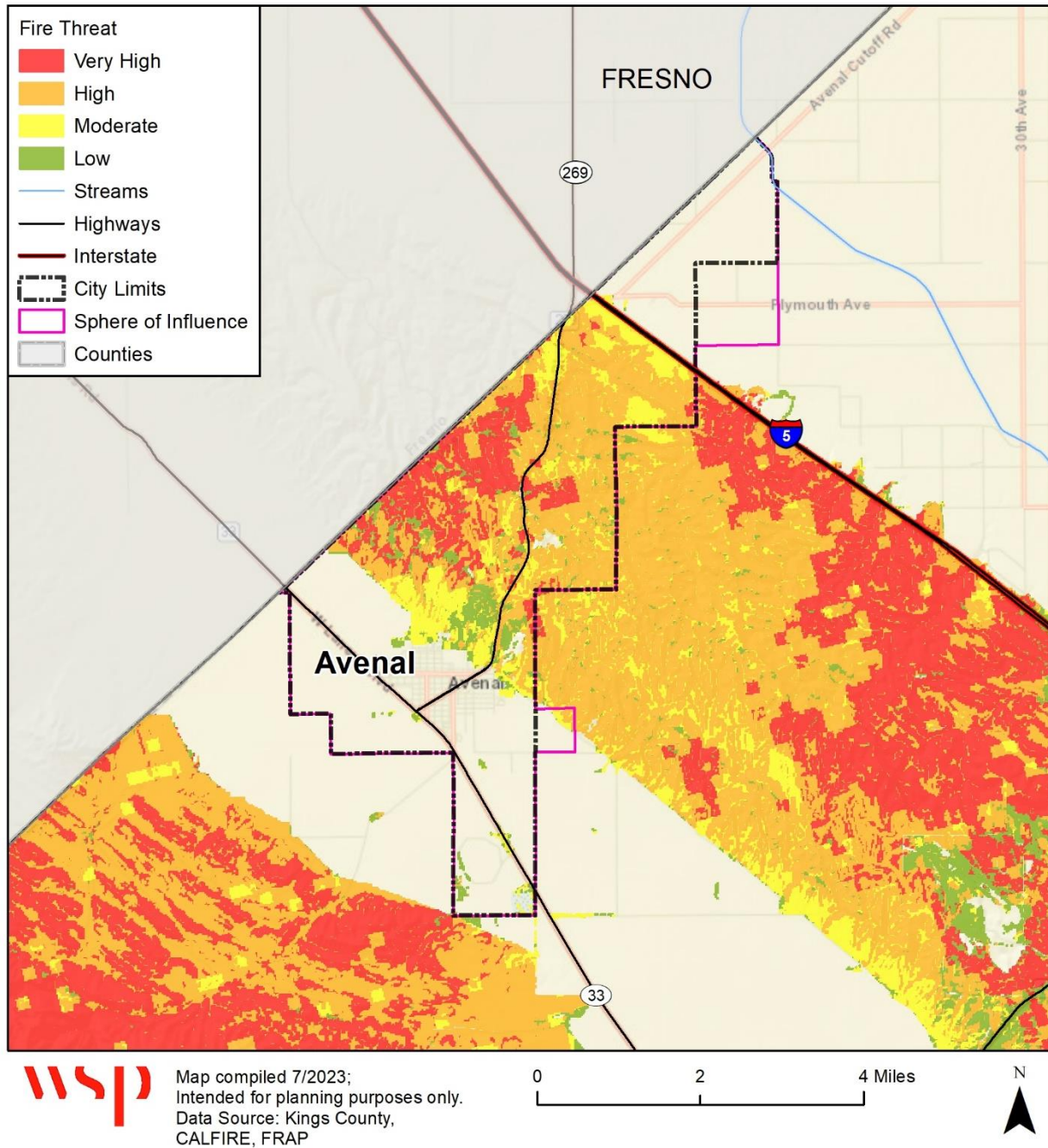
**A.1.1.13 Wildfire**

Kings County is at risk of both urban and wildland fires, which can cause damage to property and loss of life. CAL FIRE ranks fuel loading as low in most of the County, where fuels are mainly crops and grasses. However, in State Responsibility Areas (SRAs) located in the far western and eastern portions of the County, there is undeveloped and rugged terrain that contain highly flammable grass, brush, and some pine fuels. These areas are ranked as moderate fuel hazards, primarily in the area west of Interstate 5.

Figure A-8 shows the fire threat areas in the City of Avenal. As shown in Figure A-8, there are some pockets of high wildfire threat areas within the eastern portion of the City. Some very high and high wildfire threat areas are located in the central and far northeastern portions of the County making wildfire a greater threat to the City of Avenal than the other cities in Kings County. For example, the Skyline Fire in 1996 burned over 20,000 acres (about the area of Manhattan) east of Avenal along the west side of Interstate 5 and north of Highway 41. This fire also burned near 36<sup>th</sup> Avenue on the north side of the City (Kings County 2012). In general, the fuels in the surrounding hills near Avenal are prone to wildfire risk, and under certain conditions fast-burning fires can spread towards the City. Table A-17 Properties Exposed to Wildfire Threat Areas summarizes the values at risk, detailed loss estimates, and populations at risk. Note that the City does not have improved parcels that are located in very high or high wildfire threat zones.



Figure A-8 City of Avenal Wildfire Threat Areas





**Table A-17 Properties Exposed to Wildfire Threat Areas**

Property Type	Improved Parcel Count Moderate	Building Count Moderate	Total Improved Parcel Count	Total Building Count	Improved Value	Estimated Content Value	Total Value	Population
Agricultural	1	1	1	1	\$163,000	\$163,000	\$326,000	–
Commercial	1	1	1	1	\$95,604	\$95,604	\$191,208	–
Exempt	3	5	3	5	\$455,125	\$455,125	\$910,250	–
Multi-Family Residential	1	81	1	81	\$8,120,220	\$4,060,110	\$12,180,330	291
Residential	12	12	12	12	\$2,263,505	\$1,131,753	\$3,395,258	43
<b>Total</b>	<b>18</b>	<b>100</b>	<b>18</b>	<b>100</b>	<b>\$11,097,454</b>	<b>\$5,905,592</b>	<b>\$17,003,046</b>	<b>334</b>

Source: Kings County Assessor, CAL FIRE, FRAP, WSP analysis

Table A-18 shows the results of the critical facility analysis by fire threat area. None of the City's critical facilities are located within very high wildfire threat areas. A total of 7 critical facilities are located in high or moderate wildfire threat areas.

**Table A-18 Critical Facilities Exposed to Wildfire Threat Areas**

FEMA LIFELINE	COUNT
<b>High Wildfire Threat</b>	
Communications	1
Energy	1
<b>Moderate Wildfire Threat</b>	
Communications	3
Energy	1
Transportation	1
<b>Total</b>	<b>7</b>

Source: Kings County, HIFLD, NID, DWR, CAL FIRE, FRAP, WSP GIS Analysis

## A.4 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 outreach and partnerships, and other mitigation efforts. To develop this capability assessment, the jurisdictional planning representatives on the City's LPT reviewed a matrix of common mitigation activities to inventory which of these policies or programs and shared any updates or changes through the Avenal Plan Update Guide. The City's LPT then supplemented this inventory by reviewing additional existing policies, regulations, plans, and programs to determine if they contribute to reducing hazard-related losses.

During the plan update process, this inventory was reviewed by the jurisdictional planning representatives and WSP consultant team staff to update information where applicable and note ways in which these capabilities have improved or expanded. Additionally, in summarizing current capabilities and identifying gaps, the City's LPT also considered their ability to expand or improve upon existing policies and programs as potential new mitigation strategies. The City of Avenal's capabilities are summarized below.





## Regulatory Capability

The regulatory and planning capabilities table lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities. Table A-19 indicates those that are in place in the City of Avenal. The comment column notes whether the existing regulatory or planning mechanism is currently used, whether the existing HMP was integrated into the mechanism (if applicable), and whether there are future opportunities to expand or improve the regulatory tool.

**Table A-19 City of Avenal –Regulatory and Planning Capabilities**

REGULATORY TOOL (ORDINANCES, CODES, PLANS)	YES/NO	COMMENTS
General Plan	Yes	Adopted March 22, 2018
Zoning ordinance	Yes	Title 9, being updated in December 2023
Subdivision ordinance	Yes	-
Growth management ordinance	No	-
Floodplain ordinance	Yes	Title 8 Chapter 5 - Flood Damage Prevention Ordinance
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	Title 4 - Public Safety code, Water Conservation Ordinance
Building code	Yes	Title 8, Uniform Building Code 1998
BCEGS Rating	No	
Fire Department ISO rating	4	2012 Rating for Kings County Fire Department
Erosion or sediment control program	No	
Stormwater management program	Yes	Yes: Stormwater Management is under the City's Public Works Department, Stormwater Pollution Prevention Plans for Development
Site plan review requirements	Yes	
Capital improvements plan	Yes	Some capital improvements funding for projects
Economic development plan	Yes	Adopted 2017
Local emergency operations plan	Yes	2008, updated in 2013
Other special plans	No	
Flood insurance study or other engineering study for streams	Yes	September 1, 2015
Elevation certificates (for floodplain development)	No	
Other		

### *Avenal General Plan 2035 (2018)*

The Avenal General Plan provides a guide to comprehensive planning for the future. It encompasses what the City is now, what it intends to be, and provides the overall framework of how to achieve this future condition. Estimates are made about future population, household types and employment, so that plans for land use, circulation and public facilities can be made to meet future needs. The General Plan represents an agreement on the fundamental values and a vision that is shared by the residents and the business community of Avenal and the surrounding area of interest. Its purpose is to provide decision makers and staff of the City of Avenal with direction for confronting present issues, as an aid in coordinating planning issues with other governmental agencies, and for navigating the future.

The General Plan includes a Land Use Element, an Economic Development Element, a Conservation, Natural Resources, and Recreation Element, a Circulation Element, an Air Quality Element, a Public Services and Facilities Element, and a Safety Element.





### *Emergency Preparedness Ordinance*

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 the City in the event of an emergency; the direction of the Emergency Organization; and the coordination of the emergency functions of the City with all other public agencies, corporations, organizations, and affected private persons.

The ordinance established the Avenal Disaster Council. The mayor serves as the chairman and the Director of Emergency Services serves as the vice-chairman. The purpose of the Avenal Disaster Council is to develop and recommend for adoption by the City Council, emergency and mutual aid plans and agreements and such ordinances, resolutions, rules, and regulations as are necessary to implement such plans and agreements.

### *Building Standards Code Title 8 Chapter 1*

The City adopted the California Building Code, 2010 edition, including appendix chapters.

### *Fire Code Title 4 Chapter 3*

The City adopted the "Uniform Fire Code, 1991 Edition," "Uniform Fire Code Standards, 1991 Edition," published by the International Conference of Building Officials and the Western Fire Chiefs Association.

### *California Fire Code Title 15 Chapter 08*

The City of Avenal adopts the California Fire Code, Part 9 of Title 24 California Code of Regulations, 2019 edition, including Appendix Chapter 4 and Appendix B, BB, D, E, F, G, I, K, N, O and Division I California Administration and Division II Administration. The Fire Code regulates the safeguarding of life and property from fire and explosion hazards arising from the storage, handling, and use of hazardous substances, materials and devices, and from conditions hazardous to life or property in the occupancy of buildings. The Code also authorizes the City to issue permits, collect fees, and provides penalties for the violation and each and all of the regulations, provisions, penalties, conditions and terms of the California Fire Code, 2019 edition.

### *Ordinance 2009-01 Flood Damage Prevention Ordinance: Municipal Code: Title 8 Chapter 5*

Ordinance No. 2009-01 in the City of Avenal marks a significant shift in flood damage prevention and floodplain management by repealing Ordinance 95-07 and introducing comprehensive regulations under the City's Municipal Code Section 8.5. This action is taken under the authority granted by the State of California to local governments, enabling them to enact measures that protect public health, safety, and welfare. The ordinance acknowledges the substantial risks posed by flood hazard areas in Avenal, including the potential for loss of life, property damage, health and safety hazards, economic disruptions, and increased public expenditure for flood protection and relief efforts. These losses often occur due to inadequately elevated or floodproofed structures and the cumulative impact of obstructions in flood-prone regions.

The core objective of this ordinance is to establish and enforce consistent regulations across the community, encompassing both publicly and privately owned land within flood-prone, mudslide, or flood-related erosion zones. These regulations have several key purposes, including safeguarding human life and health, reducing the financial burden on the public for flood control projects, minimizing disruptions, protecting public facilities and utilities, preserving a stable tax base, informing potential property buyers about flood risk, and ensuring accountability among those residing in flood-prone areas. To achieve these goals, the ordinance employs a range of methods, such as restricting or prohibiting hazardous land uses, mandating flood-resistant construction, regulating alterations to natural floodplains, controlling



development that could exacerbate flood risk, and overseeing flood barrier construction to prevent adverse impacts on other flood hazard areas.

In line with FEMA's new policy guide, the ordinance also embraces the concept of substantial improvement and substantial damage. These elements play a role in determining compliance with floodplain management regulations. By incorporating substantial improvement and damage language in line with FEMA's updated guidelines, the ordinance ensures that development and redevelopment within flood-prone areas adhere to the latest standards and best practices for effective flood risk mitigation.

### *Storm Water Management and Discharge Control Title 13 Chapter 20*

The purpose of this chapter is to protect and promote the health, safety and general welfare of the citizens of the City of Avenal by controlling non-stormwater discharges to the stormwater conveyance system from spills, dumping or disposal of materials other than stormwater, and by reducing pollutants in urban stormwater discharges to the maximum extent practicable. This chapter also intends to assist in the protection and enhancement of the water quality of watercourses, water bodies and wetlands in a manner pursuant to and consistent with the Federal Clean Water Act (33 U.S.C. sections 1251 et seq.) and any subsequent amendments thereto, by reducing pollutants in storm water discharges to the maximum extent practicable and by prohibiting non-storm water discharges into the storm drain system.

### *City of Avenal Emergency Operations Plan (2008)*

The City of Avenal's Emergency Operations Plan (EOP) addresses planned response to extraordinary emergency situations associated with natural disasters, technological emergencies, and national security-related events in, or affecting the City. The EOP established policies, procedures and an emergency management organization, and assigns roles and responsibilities to ensure the effective management of emergency operations within the City of Avenal. The EOP addresses the City's planned response to disasters and supports the California Emergency Plan and the Kings County/Operational Area EOP. The EOP establishes the conceptual framework for emergency management in the City of Avenal, assigned roles and responsibilities of City staff, policies and procedures required to protect the health and safety of City residents and visitors, public and private property, and the environment from the effects of natural, technological and national security-related emergencies, and the operational concepts and procedures associated with the City Emergency Operations Center activities. Moreover, the plan intends to facilitate multi-agency and multi-jurisdiction coordination, particularly between the City of Avenal, Kings County Operational Area, other local cities and special districts, and State and Federal agencies. The EOP may be used for pre-emergency planning, as well as for emergency operations.

### *City of Avenal Economic Development Plan (2017)*

The City's Economic Development Plan contains the following contents: national economic context, regional economic context, the local economy, economic development, general plan element, and strategic action plan. The strategic action plan chapter, in particular, presents a list of actions - economic development projects and programs - that the City intends to prioritize and then implement in the future.

## **Administrative and Technical Capability**

Table A-20 identifies City personnel with responsibilities for activities related to mitigation and loss prevention in the City of Avenal. Many positions are full time and/or filled by the same person. A summary of technical resources follows. The comment column notes whether the capability is currently used, whether mitigation actions from the existing HMP were integrated



the roles and responsibilities of personnel duties, and whether there are future opportunities to expand or improve the City’s personnel resources.

**Table A-20 City of Avenal –Personnel Capabilities**

PERSONNEL RESOURCES	YES/NO	DEPARTMENT/POSITION	COMMENTS
Planner/engineer with knowledge of land development/land management practices	Yes	City Community Development Department	
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	City Building Division, City Engineer, Public Works	
Planner/engineer/scientist with an understanding of natural hazards	No	-	
Personnel skilled in GIS	No	The City does not have GIS capabilities; Kings County has supported GIS mapping	
Full time building official	No	-	
Floodplain manager	Yes	The Community Development Director	
Emergency manager	Yes	City Manager as the Director of Emergency Services	
Grant writer	Yes	Administration and Community Development Director	
Other personnel	Yes	Multiple agencies and departments with support personnel expanding capabilities for mitigation	
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	No		
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	KC Alert	
Other		Public Works Department; 2012 MJHMP noted that one position is split between water conservation officer and code enforcement	

**Mayor and City Council**

The Council acts as the governing body of the City, with all regulatory and corporate powers of a municipal corporation provided under California State Law. The Council is comprised of five members. Council members are elected from the community at large to serve four-year staggered terms. Every two years elections are held, with no more than three Council positions up for election. The City Council currently includes one Mayor, one Mayor Pro Term, and three Councilmen.



## City Manager

The City Manager is the administrative head of City Government under the direction and control of the City Council and is responsible for the administration of all affairs of the City which are under their control. In addition to the general powers as administrative head, the City Manager has the following powers and duties (but not limited to): law enforcement; direction of officers and employees; appointment of officers and employees (as per personnel system rules); reorganization of offices, positions and departments; recommendation of adoption of laws; attendance at city council meetings; preparation of budgets, salary plans and financial reports; expenditure control and purchasing; supervision of public property recommendations and oversight of franchises, permits and licenses; preparation of reports and recommendations to the city council; provide leadership; performance of additional duties as directed by the city council.

## City Clerk

The City Clerk is responsible for the preparation, execution, and archiving of all City Council documents as prescribed by California State law and the Avenal Municipal Code. These duties include archiving city council documents, official proceedings, ordinances, and resolutions; maintaining boards and commissions applications and appointments; maintaining city council meeting and election materials; publicizing of legal notices; recording official documents.

## Community Development Department

The Community Development Department consists of: Planning and Zoning; Economic Development; Housing Programs; Projects; Grant Writing; Building Division. The Department performs a variety of services intended to protect, maintain, and develop an attractive, safe, and healthy environment. Primary functions address property development and land use activities while working concurrently to promote and market the City for new development and job creation.

### Building Division

The Building Division serves as a resource for homeowners, businesses, developers, and contractors while regulating construction to ensure the health and safety of the public. The Building Division reviews building plans to ensure compliance with City, State, and Federal building code requirements; issues building permits for new construction and additions to existing buildings and structures; performs occupancy inspections for new businesses and residences.

The City of Avenal currently contracts with Willdan Engineering for all Building and Inspection Services and well as Building Code Enforcement.

### Public Works Department

The purpose of the Public Works Department is to promote and oversee the construction and maintenance of the city's infrastructure. Public Works' services include code enforcement; parks maintenance & landscaping; animal control; street maintenance; water distribution; wastewater collection & treatment; vehicles, equipment & building maintenance; and encroachment permits.

### Finance Department

The Finance Department manages all financial activity for the City of Avenal. It is responsible for: preparation of the city budget; preparation of city financial statements; payroll services; bids and purchasing; business licenses; utility billing; commercial parking permit; and administration of all other financial affairs of the city.



## Planning Commission

The Planning Commission is a body of citizens appointed by the City Council to serve as an advisory and authority decision maker on issues and polices relating to planning, land use regulation and community development.

## Public Safety Commission

The purpose of the Commission is "to review, advise and make recommendations to the City Council on community/public safety issues as directed by the City Council or as information is brought forth for review and consideration that pertains to public safety".

## Fiscal Capability

Table A-21 identifies financial tools or resources that the City could potentially use to help fund mitigation activities. There are currently no specific funding sources for hazard mitigation.

**Table A-21 City of Avenal –Available Financial Tools and Resources**

FINANCIAL RESOURCES	ACCESSIBLE/ ELIGIBLE TO USE	HAS THIS BEEN USED FOR MITIGATION IN THE PAST?	COMMENTS
Community Development Block Grants	Accessible	No	Source for Community & Recreation Center
Capital improvements project funding	Accessible	Yes. Special approval is required by the City Council in an emergency.	
Authority to levy taxes for specific purposes	Accessible	No	
Fees for water, sewer, gas, or electric services, new development	Accessible	No	Impact Fees
Incur debt through general obligation bonds	Accessible	No	
Incur debt through special tax bonds	Accessible	No	
Incur debt through private activities	Accessible	No	
Federal Grant Programs (Hazard Mitigation Grant Program)	Accessible	No	

## Outreach and Partnerships

The City of Avenal facilitates the coordination of emergency response efforts through its Emergency Operations Center (EOC), which is a central location of authority that allows for face-to-face coordination and decision making between City staff and outside organizations.

In an emergency, the City would activate its EOC to coordinate responses from various agencies, including the Kings County Sheriff's Department, Kings County Fire Department, American Red Cross, FEMA, and other mutual aid resources. Members of these agencies, along with City staff, would manage and respond to disasters of any kind.

To prepare for emergencies, the City does the following:

- Conducts frequent staff training;
- Holds tabletop exercises;





- Participates in the annual Countywide disaster drill;
- Identifies resources to be used in emergencies; and
- Tests coordination efforts with external organizations.

These efforts are designed to help ensure that the City and its emergency responders are well trained and equipped to coordinate and respond to any emergency.

Moreover, as outlined in the Kings County 2015 EOP, the emergency response role of cities and special districts is generally focused on restoring their normal services or functional area of responsibility. During disasters, cities and some types of special districts will be more extensively involved in the emergency response by directly coordinating, communicating, and assisting local governments. If a city or special district does not send a representative to the EOC, then the Liaison Officer in the County's EOC will be responsible for establishing communications and coordination with the cities or special district liaison(s).

The City is also a member of the California Rural Water Association, an affiliate of the National Rural Water Association, a non-profit organization of rural water and wastewater systems that provides training, technical assistance, and representation to public water and wastewater utilities. According to the 2012 MJHMP, the City supports the Kings County Water Education Commission. This organization provides water education programs for schools. The City provides information on safety to City workers as required by their risk management insurance.

During the 2022-2023 planning process the following outreach efforts were identified that the City of Avenal could support related to hazard mitigation:

- Water Portal Access
- Report a Problem Portal
- Avenal Community Center
- Alert Center (Emergency Alerts and Notifications)
- Social Media (Facebook & Instagram)
- Utility Mailers
- Physical flyers at all City locations and supermarkets
- Email, text, and phone tree for emergency purposes

Education and outreach efforts, as well as emergency response planning, will need to address the needs of low-income residents and the large Spanish-speaking population.

### Other Mitigation Efforts

In 2023, after the Veterans' Memorial Hall electrical was upgraded and a generator installed, the City designated the Veterans' Memorial Hall as a power-safety shut-off (PSPS) site, cooling and heating center, and emergency shelter. Construction is ongoing for a 34,000 square foot community and recreation center that will also serve as a heating and cooling center, and shelter for the City. The center is expected to be completed in 2025.

### Opportunities for Enhancement

Based on the capability assessment, the City of Avenal has existing regulatory, administrative/technical, fiscal mechanisms in place that help to mitigate hazards. In addition to these existing capabilities, there are opportunities for the City to expand or improve on these policies and programs to further protect the community. These are organized below by regulatory, administrative/technical, fiscal, and outreach opportunities.



#### *A.1.1.14 Regulatory Opportunities*

Future opportunities for regulatory enhancement should focus on compliance with Assembly Bill 2140, including amending the City of Avenal General Plan Safety Element to incorporate the 2023-2028 Kings County MJHMP and City of Avenal Annex by reference.

#### *A.1.1.15 Administrative/Technical Opportunities*

Other future enhancements may include providing hazard training for staff or hazard mitigation grant funding in partnership with Kings County and Cal OES. Existing City staff are aware of the benefits of participating in training and webinars offered by Cal OES Hazard Mitigation Assistance (HMA) Team related to Hazard Mitigation Grant Program (HMGP) opportunities, HMGP Sub application Development support, and other funding programs, such as Prepare California Jumpstart. Other opportunities may be related to coordinating and educating key stakeholders in the City. Other stakeholders may be interested in aligning efforts related to hazard mitigation and also supporting HMGP Sub applications and other hazard mitigation trainings.

#### *A.1.1.16 Fiscal Opportunities*

The City can update other plans, such as their CIP to incorporate hazard information and include hazard mitigation actions and climate adaptation strategies that relate to infrastructure systems resiliency associated with the water and wastewater systems. Once projects related to hazard mitigation are approved, the recent CIP can be shared with the community on the City's webpage. Capital investments and improvements related to seismic retrofits, cooling center upgrades, and WWTP upgrades should all be emphasized in the outreach materials as they are related to hazard mitigation. The City should also apply for HMGP grants to fund implementation costs associated with key CIP projects, and related projects in the City's mitigation strategy. These fiscal capabilities may be supported by City staff or augmented with Consultant staff.

#### *A.1.1.17 Outreach Opportunities*

The City can expand their outreach capabilities related to the implementation of the 2023-2028 Kings County MJHMP and the City of Avenal Annex. Specific enhancements may include continued public involvement through social media posts and advertisements focused on projects successes related to the Annex Mitigation Strategy as well as focused outreach to under-represented and special-interest groups in the City. The City can also develop outreach kits for partner organizations by expanding on the information include in the MJHMP Outreach Strategy included in Appendix F.

## **A.5 MITIGATION STRATEGY**

### **Goals and Objectives**

The City of Avenal adopted the hazard mitigation goals and objectives developed by the HMPC and described in Section 5 Mitigation Strategy of the Base Plan. Like the Mitigation Strategy in the Base Plan, this section outlines the City's roadmap for future hazard mitigation administration and implementation. The purpose of the strategy is to reduce vulnerabilities from key priority hazards outlined in the risk assessment through regulatory tools and projects. The selection and prioritization methods used by the City's LPT is also described in more detail in Section 5 Mitigation Strategy of the Base Plan.



## Progress on Previous Mitigation Actions

During the 2022-2023 planning, the City's CPT reviewed all the mitigation actions from the 2012 plan. As shown in Table A-22, of the four actions from the 2012 MJHMP, one mitigation action has been completed. The remaining three mitigation actions were carried forward into the 2023-2028 MJHMP.

**Table A-22 Completed or Deleted Mitigation Actions**

ID	HAZARD(S) MITIGATED	DESCRIPTION/ BACKGROUND/ BENEFITS	STATUS
2	Multi-Hazard	Emergency Power System for the Emergency Operations Center at the Ken Brown Public Safety Center	Completed in 2018, creating the City's EOC at the APD

## Continued Compliance with the NFIP

The City of Avenal joined the NFIP on April 5, 1989. In addition to the mitigation actions identified herein the City will continue to comply with the NFIP. Floodplain management is under the purview of the Community Development Department and Building Division. This includes ongoing activities such as enforcing local floodplain development regulations, issuing permits for appropriate development in SFHAs and ensuring that this development is mitigated in accordance with the regulations. This will also include periodic reviews of the flood damage prevention ordinance to ensure that it is clear and up to date and reflects new or revised flood hazard mapping. The City Public Works Department manages the storm water programs.

## Mitigation Actions

As part of the 2022-2023 planning process the City's LPT developed an updated list of hazard mitigation actions or projects specific to the City. The process used to identify, develop, and prioritize these actions is described in Chapter 5 of the Base Plan. The City's LPT identified and prioritized the 10 actions, including three actions carried forward from the 2012 MJHMP, and seven following new actions, as summarized in Table A-23. These mitigation actions are based on the risk assessment, goals, and objectives. Background information as well as information on how the action will be implemented and administered, such as ideas for implementation, responsible office, partners, potential funding, estimated cost, and timeline also are described. Per the DMA requirement, actions have also been identified that address reducing losses to existing development and future development. Moreover, the LPT reviewed existing mitigation actions from the County's 2012 MJHMP and provided status updates on past hazard mitigation planning efforts.

The mitigation strategy includes only those actions and projects which reflect the actual priorities and capacity of the jurisdiction to implement over the next five years covered by this plan. It should further be noted, that although a jurisdiction may not have specific projects identified for each significant (medium or high) 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. Should future projects be identified for significant hazards where the implementing jurisdiction has the capacity to implement, the jurisdiction would add those projects to their Annex. The City also recognizes that other mitigation actions proposed in the County's mitigation strategy will cover the significant hazards in the City that are not currently linked to a mitigation action.



**Table A-23 City of Avenal Mitigation Action Plan**

ID	GOAL(S) AND LIFELINES*	HAZARD(S) MITIGATED	DESCRIPTION/ BACKGROUND/ BENEFITS	LEAD AGENCY AND PARTNERS	COST ESTIMATE*	POTENTIAL FUNDING*	PRIORITY	TIMELINE*	STATUS/IMPLEMENTATION NOTES
A-1	Goals 1, 3-4; Food, Hydration, Shelter	Earthquake, Land Subsidence, Landslide	Housing Rehabilitation Program	City of Avenal Community Development Director	High	General Fund, Housing and Urban Development (HUD) Community Development Block Grant (CDBG) Funds, HOME, Cal Home Program	Medium	Medium-term	Ongoing, homes continue to be rehabbed with these funds-first come first serve. The City has received funding from CDBG, HOME, and the Cal Home Program to rehabilitate homes. Under this program most homes are torn down and reconstructed to current codes.
A-2	Goals 1-4; Food, Hydration, Shelter	Flood, Drought, Earthquake, Land Subsidence	Vulnerability of Water Distribution System - Upgrade the two water transmission lines that supply water to the city and Avenal State Prison (one 18-inch line and one 12-inch line) that experience water leaks and movement due to earthquakes that lead to slope failure.	City of Avenal Public Works Department	High	FEMA HMA HMPC, BRIC	Medium	Long-term	In progress, expected to be completed December 2023.
A-3	Goals 1, 3-4; Food, Hydration, Shelter	Earthquake, Subsidence, Landslide	Loss Reduction Program for unreinforced masonry (URM) Buildings - Establish a loss reduction program for URM buildings in compliance with the California URM Law of 1986. In response to the danger posed by the great number of potentially hazardous buildings in California, in 1986 the state legislature enacted the URM building law (Chapter 250, Statutes of 1986: SF547 [Alquist]; Government Code Section 8875 et seq.). The law is aimed at mitigating the hazards posed by URMs and applies to all jurisdictions in California's Seismic Hazard Zone 4, the region of highest earthquake	City of Avenal City Manager's Office, California Seismic Safety Commission, City of Avenal Public Works Department	Very High	FEMA HMA HMGP, BRIC, General Fund, Staff Time	Medium	Long-term	In progress.



ID	GOAL(S) AND LIFELINES*	HAZARD(S) MITIGATED	DESCRIPTION/ BACKGROUND/ BENEFITS	LEAD AGENCY AND PARTNERS	COST ESTIMATE*	POTENTIAL FUNDING*	PRIORITY	TIMELINE*	STATUS/IMPLEMENTATION NOTES
			activity in the nation, in which Avenal is located.						
A-4	Goals 2-4; Safety and Security	Earthquake	Replace Existing Valves at Tank Sites with Earthquake Valves to Protect Water Supply	City of Avenal Public Works	Moderate	General Fund	Medium	Medium Term	New in 2023
A-5	Goals 2-4; Food, Hydration, Shelter	Drought	Water Supply Rehabilitation - Install valve at the City water source to isolate from joint use facilities to maintain water supply during unexpected outages of Westland Water District facility.	DWR, City of Avenal, Westlands Water District	Very High	FEMA HMA HMGP, BRIC, USDA DWSRF, DWR Urban Community Drought Relief Grant Program	Low	Medium Term	New in 2023
A-6	Goals 1-4; Water Systems	Flood	Improve Flow Design for Arroyo Esquinado Channel	City of Avenal Public Works Department	Moderate	FEMA HMA HMGP, BRIC	Medium	Medium Term	New in 2023
A-7	Goals 1-4; Water Systems	Flood	Stormwater Drainage Master Plan	City of Avenal Public Works Department	Moderate	General Fund	Medium	Medium Term	New in 2023
A-8	Goals 1-4; Water Systems	Flood	Investigate Capacity for Floodwater Conveyance Facilities (Drainage Ditches and Culverts) along Arroyo del Camino	City of Avenal Public Works Department	Moderate	FEMA HMA HMGP, BRIC, General Fund	Low	Medium Term	New in 2023
A-9	Goals 1-4; Safety and Security, Food and Water, Shelter, Transportation	Land Subsidence	Conduct updated Land Subsidence Study to understand Elevation, Shifts, and Vulnerability.	Kings County Administration, Water Management Agencies, City of Avenal Public Works Department	Moderate	DWR, FEMA HMA HMGP, USACE	Medium	Long Term	New in 2023
A-10	Goals 1-4; Energy	Wildfire	Undergrounding of Utilities along City's Main Corridors	Kings County Fire Department	High	FEMA HMA HMGP, US Forest Service WUI Grants	Medium	Medium Term	New in 2023



**KEY:**

- \*This key provides additional information on cost estimates, potential funding, community lifelines, and the timing for implementation for each action.

**Cost Estimate**

- Little to no cost
- Low: Less than \$10,000
- Moderate: \$10,000 - \$100,000
- High: \$100,000 - \$1,000,000
- Very High: More than \$1,000,000

**Potential Funding**

- BRIC - Building Resilient Infrastructure and Communities Grant
- CDBG - Community Development Block Grant
- DWR Urban Community Drought Relief Grant Program - Grant program designed to strengthen drought resilience and better prepare communities for dry conditions.
- FEMA HMA HMGP - Hazard Mitigation Assistance Hazard Mitigation Grant Program
- HUD - Housing and Urban Development
- USACE - U.S. Army Corps of Engineer Funding like Silver Jacket Program, Flood Risk Management Program
- U.S. Forest Service Wildland-Urban Interface (WUI) Grants - Funds to mitigate risk from wildland fire within the Wildland Urban Interface (WUI) that are awarded annually.
- USDA DWSRF - Program that help water systems finance infrastructure improvements to ensure compliance with drinking water standards and public health objectives.

**FEMA Community Lifelines**

- Safety and Security
- Food, Hydration, and Shelter
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials
- Water Systems

**Timeline**

- Short Term: 1-2 years
- Medium Term: 3-5 years
- Long Term : 5+ years
- Ongoing: Action is implemented every year



## **A.6 IMPLEMENTATION AND MAINTENANCE**

Moving forward, the City will use the mitigation action table in the previous section to track the progress on the implementation of each project. Implementation of the plan overall is discussed in Section 6 in the Base Plan.

### **Incorporation into Existing Planning Mechanisms**

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the City to help inform updates and the development of local plans, programs and policies. The Community Development Department may utilize the hazard information when implementing the City's capital projects and may utilize the hazard information when reviewing a site plan or other type of development applications. The City will also incorporate this MJHMP into the Safety Element of their General Plan, as recommended by AB 2140.

As noted in Section 6 of the Base Plan, the City of Avenal LPT representatives will report on efforts to integrate the hazard mitigation plan into local plans, programs and policies and will report on these efforts at the annual LPT plan review meeting.

### **Monitoring, Evaluation and Updating the Plan**

The City will follow the procedures to monitor, review, and update this plan in accordance with Kings County as outlined in Section 6 of the Base Plan. The City will continue to involve the public in mitigation, as described in Section 6.2.1 of the Base Plan. The Avenal Police Department Police Chief will be responsible for representing the City in the County HMPC, and for coordination with City staff and departments during plan updates. The City realizes it is important to review the plan regularly and update it every five years in accordance with the Disaster Mitigation Act Requirements as well as other State of California requirements.



## **A.7 REFERENCES**

City of Avenal. 2022. City of Avenal Webpage. <https://www.cityofavenal.com/>

Kings County. 2012. Kings County Multi-Jurisdictional Hazard Mitigation Plan.

OEHHA. CalEnviroScreen Version 4.0. California Environmental Protection Agency Office of Environmental Health Hazard Assessment (OEHHA).  
2021. <https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-version-20>

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