

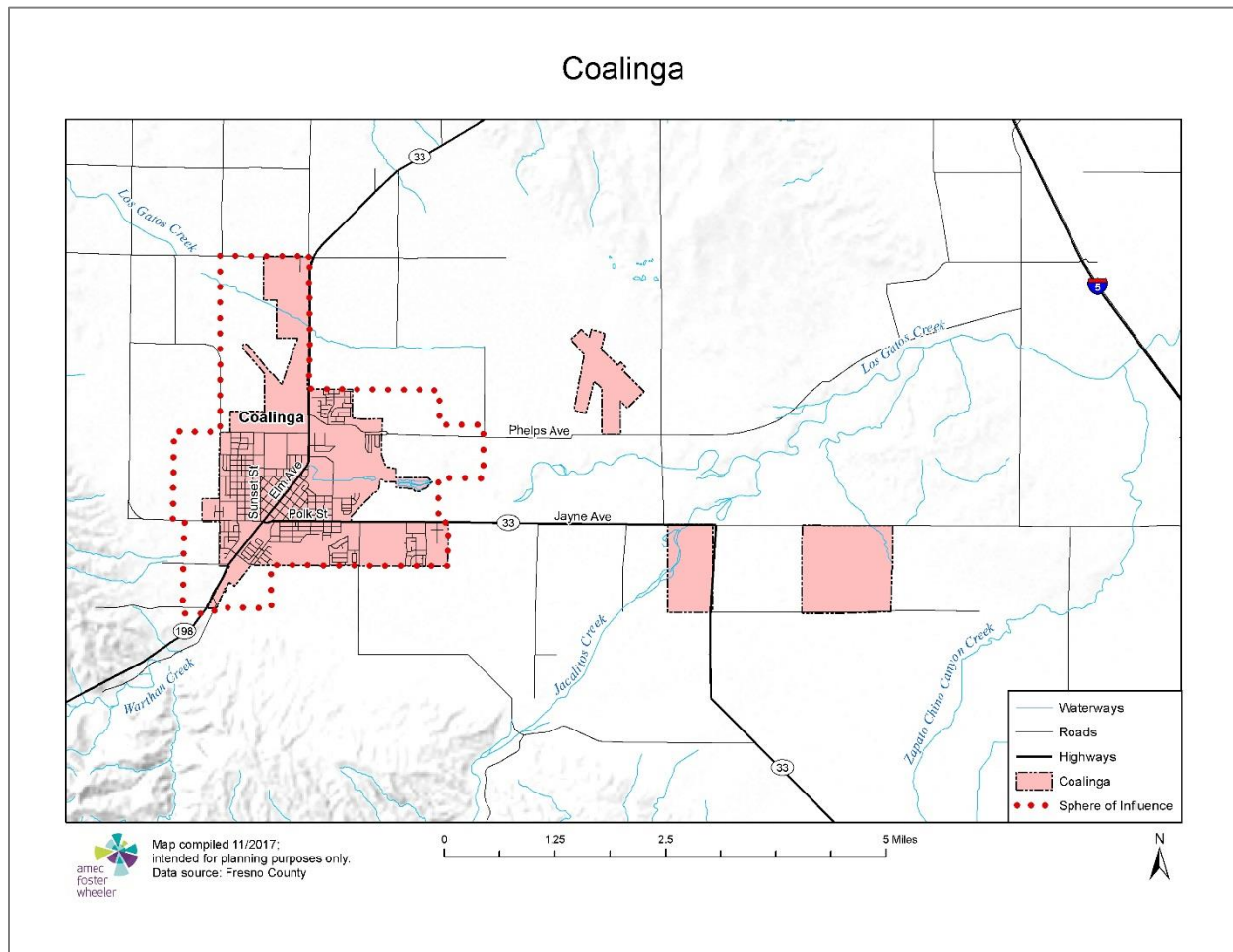


ANNEX B: CITY OF COALINGA

B.1 Community Profile

Figure B.1 displays a map and the location within Fresno County of the City of Coalinga and its Sphere of Influence.

Figure B.1: The City of Coalinga



B.1.1 Geography and Climate

The City of Coalinga is located in the southwestern portion of the San Joaquin Valley in an area known as Pleasant Valley. Over the past decade, the City boundaries have not changed, but the City did annex land southeast of State Route 33, outside the current Sphere of Influence. The

City and its Sphere of Influence cover 5,161 acres, 4,133 acres of which are within the City limits.

Access to Coalinga is by State Routes 198 and 33. Interstate 5 is located approximately 13 miles to the east. Existing development in the City is characterized by residential neighborhoods with commercial uses concentrated along State Routes 198 and 33 and Polk Street.

The City of Coalinga lies over or near more than one earthquake fault and lateral or blind thrust fault. It is approximately 29 miles from the Town of Parkfield, which is located on the San Andreas fault and has been the site of an earthquake study since the late 1970s.

The climate is mild and damp in the winter and hot and dry in the summer. High temperatures average 64°F in January and 103°F in July. Low temperatures average 29°F in January and 53°F in July. Annual precipitation is 8.4 inches.

B.1.2 History

The following history of Coalinga is from the City of Coalinga General Plan Update, 2007:

For many centuries, numerous tribes of Native Americans, all belonging to the Yokut, inhabited the San Joaquin Valley. Although it is not clear when the first people made their way to Coalinga, it is known that the Tache (Tachi), one of the largest of all the Yokut tribes, found a permanent water supply at a place called Posa Chanet near the City's present site. From this encampment, the Tache scoured the hills for trade goods. They discovered oil seeps and thick tar. Oil was an important item to early inhabitants of the Pleasant Valley. Seepages in the area provided asphalt used to line baskets and was a good traded among other tribes. Eventually, Spaniards and Basques, who wanted the land for its cattle and sheep grazing potential, displaced the Indians.

As new settlers came to the west seeking a new life and greater opportunities, interest in oil seepages inspired an oil rush in 1865. In 1867, a specialized oil-drilling rig, shipped from the east coast, began drilling for oil north of the present site of Coalinga. However, shipping problems caused early interest to die down; the world had not yet discovered the full potential of petroleum.

In the late 1800s, stories of sheepherders who burned rocks at night to keep warm drew the attention of Messer's Robins and Rollins, English second sons. Excited by the promise of coal in the area, they established a mine in a slash of hillside where the Coalinga Rifle Range now exists. It was never profitable. The coal was actually shale. However, the potential of coal from the mine and in nearby Priest Valley was enough to induce the Southern Pacific Railroad to extend its southern route. It crossed Huron and stretched slightly beyond the Coalinga area.

There is debate about how Coalinga got its name. The usual version is that while deposits of oil saturated shale, or "coal," were being mined in the hills nearby "Coaling Station A," "Coaling

Station B,” and “Coaling Station C” were situated along the rail line for loading purposes. “Coaling Station A” was eventually shortened to “Coalinga.” This story does not stand close scrutiny, and a more likely explanation is that Coalinga was given the final “a” for musical effect. The truth may never be known, since the great quake and fire in San Francisco in 1906 destroyed the Southern Pacific Railroad’s office and all its records. Whatever the origin, “Coalinga” was in use fairly quickly after the rail line opened in July 1888.

The extension of the railroad coincided with a significant worldwide interest in oil production. A second oil rush occurred around 1890. By 1910, Coalinga was the third largest shipping point for the railroads in California with nearly all tonnage connected to oil production.

The town grew quickly in the late 1800s. In 1889, the Coalinga post office was established. In 1891, Southern Pacific Railroad purchased the 160-acre homestead of M.L. Curtis for \$900 and laid out the town site of Coalinga as a square cut diagonally by the railroad tracks. Street numbers from one to eight went north to south and the letters A to H from west to east. The Coalinga Women’s Improvement Society later changed the alphabetical names to botanical ones. A succession of historically important oil wells brought “boomers” into Coalinga by the thousands.

With over 15 years of continuous prosperity behind them, a handful of local citizens began the process of incorporation, which was completed in April 1906. In 1909, the Coalinga Chamber of Commerce was organized, and in its first report dated April 16, 1910, they excitedly spoke about the promise of the City. The Coalinga oil field was the largest in California. In September 1909, the Silver Tip well, located just one-half mile from the City limits, blew with the greatest gusher known in California at that time. This discovery caused enough excitement among the financiers of California that the Los Angeles Stock Exchange was closed on a Friday in November and a special excursion train traveled to Coalinga so potential investors could marvel at the sight.

During the early years of production, there were several important developments in Coalinga. In 1904, a six-inch oil pipeline was laid from Coalinga to Monterey on the coast (104 miles) to provide tanker oil for overseas buyers. The pipeline was built in 90 days and crossed two mountain ranges with maximum elevation of 2,000 feet. In 1916, Coalinga oilfield workers fought for and won the industry’s first eight-hour workday. In 1919, A&W Root Beer was formulated in downtown Coalinga. During World War II, Signal Hill oil in Long Beach was brought in. The supply was so great that the existing pipeline flow from Coalinga to the Los Angeles refineries was reversed and excess Signal Hill oil was stored in a massive tank farm called Caliola about 10 miles east of Coalinga. Coalinga’s oil fields produced some of the oil industry’s giants, including R.C. Baker, founder of Baker Oil Tools. His original buildings in Coalinga are now home of the R.C. Baker Memorial Museum, which focuses on oil as well as pioneer life in the Coalinga area.

From the outset, it was said that whiskey was easier to get than water in Coalinga. The natural well water had high amounts of dissolved minerals in it, making it suitable for only the most

basic uses of washing and irrigating. To meet this challenge, Coalinga's drinking water was imported. Until 1960, the major source of drinking water was Southern Pacific water wells in Armona. In time, a municipal water service was provided for the central area of town.

In 1960, Coalinga was selected for experimental systems to soften hard water and make it suitable for human consumption. The first of these was an ionic system that was later replaced by the reverse osmosis method. In April 1972, Coalinga received its first delivery of San Luis Canal water from the state water system.

B.1.3 Economy

While oil was the staple of the local economy, agriculture always played an important role. Before 1972, agriculture was limited to cotton and other salt water resistant crops. With the arrival of canal water, the area has become a region of specialty crops, which include lettuce, tomatoes, asparagus, and a variety of nut and fruit trees.

While there was open speculation that Coalinga would not survive the May 1983 earthquake, the disaster became the catalyst that inspired revitalization. In 1988, the residents approved a bond issue for a new \$14 million community hospital facility to replace the one destroyed in the earthquake. Coalinga completed an 800-acre annexation to include Pleasant Valley State Prison and the new airport in the City limits in 1991. In 1994, the Department of Corrections located a major prison facility in Pleasant Valley. With this as an economic base, the City developed a 40-acre industrial park. To address concerns about proximity to schools and associated noise hazards, the airport was relocated four miles to the east. A brand new \$8 million airport facility was built in 1996. The Coalinga Regional Medical Center was completed in 2002, and construction of a new mental health facility, the Coalinga State Hospital, was completed in the spring of 2005. In the oilfields, a process of steam injection promises to produce \$2.3 billion more barrels of oil, perhaps as much as has already been mined.

Since the 1983 earthquake, significant efforts have been made to rebuild and revitalize the City. These efforts, combined with Coalinga's central geographical location and proximity to the busy Interstate 5 corridor, are expected to diversify the City's economy as state growth continues.

Select estimates of economic characteristics for the City of Coalinga from the American Community Survey (ACS) are shown in Table B.1.

Table B.1: City of Coalinga's Economic Characteristics, 2015

Characteristic	City of Coalinga
Families below Poverty Level	19.7%
All People below Poverty Level	23.2%
Median Family Income	\$58,936
Median Household Income	\$51,860
Per Capita Income	\$17,787

Characteristic	City of Coalinga
Population in Labor Force	5,969
Population Employed*	5,341
Unemployment	10.5%

Source: U.S. Census Bureau American Community Survey 2011-2015 5-Year Estimates, www.census.gov/

*Excludes armed forces

Table B.2 and Table B.3 show how the City of Coalinga's labor force breaks down by occupation and industry based on 5-year estimates from the 2015 American Community Survey.

Table B.2: City of Coalinga's Employment by Occupation, 2015

Occupation	# Employed	% Employed
Management, Business, Science and Arts Occupations	1,657	31.0
<i>Management, Business, and Financial Occupations</i>	<i>(487)</i>	<i>(9.1)</i>
<i>Computer, Engineering, and Science Occupations</i>	<i>(86)</i>	<i>(1.6)</i>
<i>Education, Legal, Community Service, Arts, and Media Occupations</i>	<i>(359)</i>	<i>(10.1)</i>
<i>Healthcare Practitioner and Technical Occupations</i>	<i>(725)</i>	<i>(13.6)</i>
Sales and Office Occupations	1,013	19.0
Service Occupations	993	18.6
Natural Resources, Construction, and Maintenance Occupations	950	17.8
Production, Transportation, and Material Moving Occupations	728	13.6
Total	5,341	100.00

Source: U.S. Census Bureau American Community Survey 2011-2015 5-Year Estimates, www.census.gov/

Table B.3: City of Coalinga's Employment by Industry, 2015

Industry	# Employed	% Employed
Educational Services, and Health Care, and Social Assistance	1,722	32.2
Agriculture, Forestry, Fishing and Hunting, and Mining	694	13.0
Public Administration	569	10.7
Arts, Entertainment, and Recreation, and Accommodation, and Food Services	469	8.8
Transportation and Warehousing, and Utilities	456	8.5
Retail Trade	446	8.4
Construction	336	6.3
Other Services, Except Public Administration	166	3.1
Professional, Scientific, and Management, and Administrative and Waste Management Services	143	2.7
Manufacturing	137	2.6
Information	104	1.9
Finance and Insurance, and Real Estate and Rental and Leasing	67	1.3
Wholesale Trade	32	0.6
Total	5,341	100.00

Source: U.S. Census Bureau American Community Survey 2011-2015 5-Year Estimates, www.census.gov/

B.1.4 Population

According to the California Department of Finance, the City of Coalinga's population was estimated to be 16,982 at the start of 2017. Select demographic and social characteristics for the City of Fresno from the U.S. Census Bureau's 2015 American Community Survey 5-year estimates are shown in Table B.4.

Table B.4: City of Coalinga's Demographic and Social Characteristics, 2015*

Characteristic	City of Coalinga
Gender/Age	
Male	62.8%
Female	37.2%
Median age	33.4
Under 5 years	6.6%
Under 18 years	22.2%
65 years and over	6.6%
Race/Ethnicity**	
White	58.0%
Asian	2.7%
Black or African American	7.7%
American Indian/Alaska Native	0.7%
Hispanic or Latino (of any race)	51.1%
Education	
High school graduate or higher	73.0%
Disability Status	
Population 5 years and over	10.3%

Source: U.S. Census Bureau American Community Survey 2011-2015 5-Year Estimates, www.census.gov/

*Based on a 2015 estimated population of 16,940

**Of the 94.4% reporting one race

B.2 Hazard Identification and Summary

Coalinga’s planning team identified the hazards that affect the City and summarized their frequency of occurrence, spatial extent, potential magnitude, and significance specific to the City (see Table B.5). In the context of the planning area, there are no hazards unique to Coalinga.

Table B.5: City of Coalinga—Hazard Summaries

Hazard	Geographic Extent	Probability of Future Occurrences	Magnitude/Severity	Significance
Agricultural Hazards	Limited	Highly Likely	Critical	Medium
Avalanche	N/A	N/A	N/A	N/A
Dam Failure	Extensive	Unlikely	Critical	Low
Drought	Significant	Likely	Limited	High
Earthquake	Significant	Occasional	Catastrophic	High
Flood/Levee Failure	Extensive	Likely	Critical	Medium
Hazardous Materials Incident	Significant	Likely	Critical	Medium
Human Health Hazards:				
Epidemic/Pandemic	Extensive	Occasional	Catastrophic	Medium
West Nile Virus	Limited	Highly Likely	Negligible	Low
Landslide	Limited	Unlikely	Limited	Low
Severe Weather				
Extreme Cold/Freeze	Significant	Highly Likely	Negligible	Medium
Extreme Heat	Extensive	Highly Likely	Limited	Medium
Fog	Extensive	Likely	Negligible	Low
Heavy Rain/Thunderstorm/Hail/Lightning	Extensive	Highly Likely	Limited	Low
Tornado	Extensive	Occasional	Negligible	Low
Windstorm	Extensive	Likely	Limited	Medium
Winter Storm	Extensive	Highly Likely	Negligible	Medium
Soil Hazards:				
Erosion	No Data	Likely	No Data	Low
Expansive Soils	No Data	Occasional	No Data	Low
Land Subsidence	Limited	Occasional	No Data	Low
Volcano	Extensive	Unlikely	Negligible	Low
Wildfire	Extensive	Highly Likely	Critical	High
<p>Geographic Extent Limited: Less than 10% of planning area Significant: 10-50% of planning area Extensive: 50-100% of planning area</p> <p>Probability of Future Occurrences Highly Likely: Near 100% chance of occurrence in next year, or happens every year. Likely: Between 10 and 100% chance of occurrence in next year, or has a recurrence interval of 10 years or less. Occasional: Between 1 and 10% chance of occurrence in the next year, or has a recurrence interval of 11 to 100 years. Unlikely: Less than 1% chance of occurrence in next 100 years, or has a recurrence interval of greater than every 100 years.</p> <p>Magnitude/Severity Catastrophic—More than 50 percent of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths Critical—25-50 percent of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability Limited—10-25 percent of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable do not result in permanent disability Negligible—Less than 10 percent of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid</p> <p>Significance Low: minimal potential impact Medium: moderate potential impact High: widespread potential impact</p>				

B.3 Vulnerability Assessment

The intent of this section is to assess Coalinga’s vulnerability separate from that of the planning area as a whole, which has already been assessed in Section 4.3 Vulnerability Assessment in the main plan. This vulnerability assessment analyzes the population, property, and other assets at risk to hazards ranked of medium or high significance that may vary from other parts of the planning area. Additional criteria for assessing vulnerability are identified below.

The information to support the hazard identification and risk assessment for this Annex was collected through a Data Collection Guide, which was distributed to each participating municipality or special district to complete during the original outreach process in 2009. 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 to identify the related vulnerabilities unique to each jurisdiction. In addition, the City of Coalinga’s HMPC team members were asked to validate the matrix that was originally scored in 2009 based on the experience and perspective of each planning team member relative to the City of Coalinga.

Each participating jurisdiction was in support of the main hazard summary identified in the base plan (See Table 4.1). However, the hazard summary rankings for each jurisdictional annex may vary slightly due to specific hazard risk and vulnerabilities unique to that jurisdiction (See Table B.5). Identifying these differences helps the reader to differentiate the jurisdiction’s risk and vulnerabilities from that of the overall County.

Note: The hazard “Significance” reflects the overall ranking for each hazard, and is based on the City of Coalinga’s HMPC member input from the Data Collection Guide and the risk assessment developed during the planning process (see Chapter 4 of the base plan), which included a more detailed qualitative analysis with best available data.

The hazard summaries in Table B.5 reflect the hazards that could potentially affect the City. Those of Medium or High significance for the City of Coalinga are identified below. The discussion of vulnerability related information for each of the following hazards is located in Section B.3.2 Estimating Potential Losses. Based on this analysis the priority hazards (High Significance) for mitigation include drought, earthquake, and wildfire.

- drought
- earthquake
- flood/levee failure
- hazardous materials incidents
- human health hazards: epidemic/pandemic
- severe weather: extreme cold; extreme heat; windstorm; winter storm
- wildfire

Other Hazards

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 in this plan, and are not assessed individually for specific vulnerabilities in this section. In the City of Coalinga, those hazards are as follows:

- agricultural hazards*
- dam failure*
- human health hazards: West Nile Virus
- landslide
- fog
- heavy rain/thunderstorm/hail/lightning
- tornado
- soil hazards
- volcano

Note on Agricultural Hazards*: Although ranked High by the County, the City ranks it as Low. According to the Committee, as the City's economy has diversified and become less reliant on agriculture, vulnerability to this hazard has declined, resulting in a lower overall priority rating.

Note on Dam Failure*: Although the County ranks dam failure as High in significance, the City determined the hazard to be of Low significance given that the only dam in the City is the Silt Pond dam, an extremely small dam at just 25 acres-feet of capacity.

Additionally, the City's Committee members decided to rate several hazards as Not Applicable (N/A) to the planning area due to a lack of exposure, vulnerability, and no probability of occurrence. **Avalanche** is considered not applicable to the City of Coalinga.

B.3.1 Assets at Risk

This section considers Coalinga's assets at risk, including population (previously discussed in Section B.1.4); values at risk; critical facilities and infrastructure; and growth and development trends.

Values at Risk

The following data on property exposure is derived from the Fresno County 2017 Parcel and Assessor data. This data should only be used as a guideline to overall values in the City as the information has some limitations. The most significant limitation is created by Proposition 13. Instead of adjusting property values annually, the values are not adjusted or assessed at fair market value until a property transfer occurs. As a result, overall value information is likely low

and does not reflect current market value of properties. 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. Table B.6 shows the 2017 values at risk broken down by property type for the City of Coalinga.

Table B.6: 2017 Property Exposure for the City of Coalinga by Property Type

Property Type	Parcel Count	Building Count	Improved Value	Content Value	Total Value
Agricultural	2	2	\$169,412	\$169,412	\$338,824
Commercial	207	456	\$50,008,372	\$50,008,372	\$100,016,744
Exempt	51	75	\$0	\$0	\$0
Industrial	45	57	\$10,263,329	\$15,394,994	\$25,658,323
Multi-Residential	184	337	\$64,311,054	\$32,155,527	\$96,466,581
Residential	2,782	2,870	\$268,992,081	\$134,496,041	\$403,488,122
Total	3,271	3,797	\$393,744,248	\$232,224,345	\$625,968,593

Source: Fresno County 2017 Parcel and Assessor data

Critical Facilities and Infrastructure

A critical facility may be defined as one that is essential in providing utility or direction either during the response to an emergency or during the recovery operation. An inventory of critical facilities in the City of Coalinga from Fresno County GIS is provided in Table B.7 and mapped in Figure B.2.

Table B.7: City of Coalinga's Critical Facilities

Critical Facilities Type	Number
Airport	1
Colleges & Universities	2
Communications	1
Department of Public Works	1
Fire Station	3
Health Care	1
Police	3
School	10
Total	22

Source: Fresno County, HIFLD 2017

Figure B.2: City of Coalinga's Critical Facilities

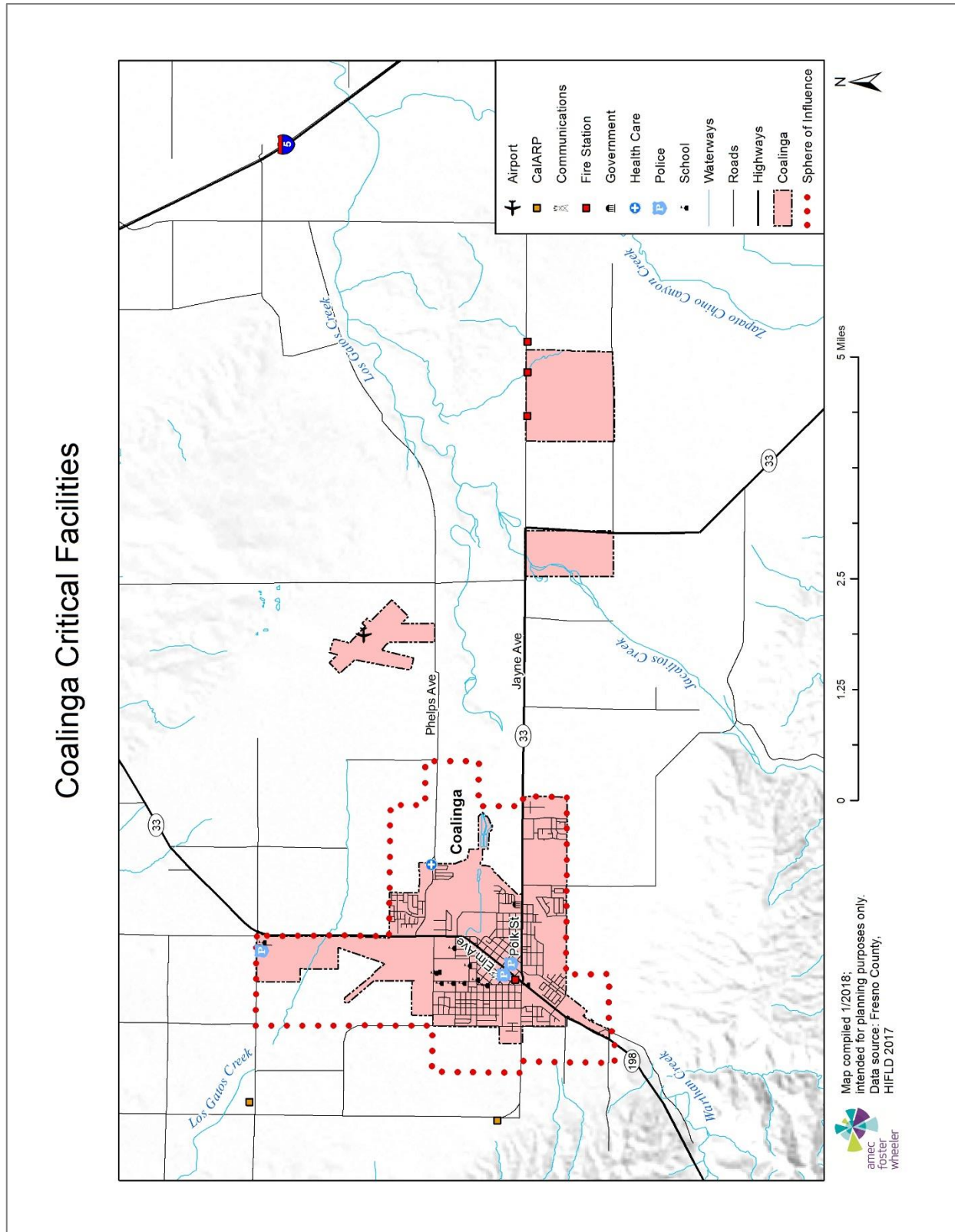


Table B.8 lists particular critical facilities and other community assets identified by Coalinga’s planning team as important to protect in the event of a disaster.

Table B.8: Specific Critical Facilities and Other Community Assets Identified by the City of Coalinga’s Planning Team

Name of Asset	Replacement Value (\$)	Occupancy/ Capacity #
City Hall Building, 160 W. Elm Avenue	1,925,148	15,791
City Hall Building (Building Expansion), 155 W. Durian Avenue	4,901,358	21,060
Corporation Yard, 135 Sacramento	33,101	1,600
Coalinga Airport Facility	6,602,127	
Waste Water Treatment Facility, 60500 Jayne Ave	528,000	
Water Filtration Plant, 25034 W. Palmer Avenue	6841332	
Water System, Palmer Avenue Tank	188,515	250,000 gallons
Water System, Oil King Tank	377,029	500,000 gallons
Water System, Derrick Avenue Tank	3,198,468	8,000,000 gallons
Water System, Palmer Avenue Tank	1,421,543	3,000,000 gallons
Water System, Calaveras Avenue Tank	1,444,290	5,000,000 gallons
Palmer Ave, Repeater Station, Emergency Communications	9,198	
Fire Station, City	1,421,543	12,254

Growth and Development Trends

Table B.9 illustrates how the City has grown in terms of population and number of housing units between 2010 and 2017.

Table B.9: City of Coalinga’s Change in Population and Housing Units, 2010-2017

2010 Population	2017 Population Estimate	Estimated Percent Change 2010-2017	2010 # of Housing Units	2017 Estimated # of Housing Units	Estimated Percent Change 2010-2017
13,380	16,982	+26.92	4,344	4,482	+3.18

Source: U.S. Census Bureau 2010 Census; California Department of Finance, www.dof.ca.gov/Forecasting

More general information on growth and development in Fresno County as a whole can be found in “Growth and Development Trends” in Section 4.3.1 Fresno County Vulnerability and Assets at Risk of the main plan.

B.3.2 Estimating Potential Losses

Table B.6 above shows Coalinga’s exposure to hazards in terms of number and value of structures. Fresno County’s assessor’s data was used to calculate the improved value of parcels. The most vulnerable structures are those in the floodplain (especially those that have been flooded in the past), unreinforced masonry buildings, and buildings built prior to the introduction of modern day building codes. Impacts of past events and vulnerability to specific hazards are further discussed below in accordance with the criteria identified under section B.3 Vulnerability

Assessment and Table B.5 above. (See Section 4.1 Hazard Identification for more detailed information about these hazards and their impacts on Fresno County).

Drought

The risk and vulnerability factors for this hazard are not unique to the City and the hazard potentially impacts the entire planning area. Please see the main plan's coverage of the Drought hazard in Section 4.0.

Earthquake

There are several faults in the vicinity of Coalinga that could cause problems in the future. These include the Nuñez fault, located about ten kilometers northwest of Coalinga; the Coalinga fault, located five kilometers northeast of Coalinga; and the New Idria fault; located approximately 21 miles northwest of Coalinga. The U.S. Geological Survey is predicting an earthquake in Parkfield in Monterey County, approximately 15 miles southwest of Coalinga. Coalinga is the only urban area in the County directly affected by earthquake-related settlement.

Two earthquakes of note that occurred in or near Coalinga are described below:

- **May 2, 1983**—In Coalinga, a surface rupture occurred along the Nuñez fault. The main shock was magnitude 6.7 on the Richter scale. Approximately 800 buildings were destroyed, and 1,000 people left homeless. No deaths resulted, but 200 people were injured. Private homeowner losses exceeded \$25 million. Public agency losses approximated \$6 million. The commercial section of Coalinga was heavily damaged; however, most schools and the hospital received only slight damage. Production in nearby oil fields was shut down. The City was left with numerous vacant parcels and city-owned lots. Local, state, and federal disaster declarations resulted.
- **August 4, 1985**—A magnitude 6.0 earthquake occurred that was centered about 10.5 kilometers east of Coalinga.

Flood/Levee Failure

According to FEMA's 2016 Flood Insurance Study (FIS), Coalinga's principal flood problems are associated with Los Gatos Creek and Warthan Creek. The Los Gatos Creek headwaters are approximately 22 miles northwest of the City in the eastern foothills of the Coast Range. The creek enters the northern portion of the City flowing east-southeast. The creek flows just north of the sewage treatment plant. The Warthan Creek headwaters are located approximately 16 miles southwest of the City in the eastern foothills of the Coast Range. Warthan Creek enters Coalinga from the south and flows through the southeastern portion of the City before leaving just north of the intersection of East Polk Street and Alicia Avenue. From there, the creek continues for less than a mile to its confluence with Los Gatos Creek just northwest of the sewage treatment plant. Some areas in the City are subject to shallow overland flooding caused by insufficient channel capacity of Los Gatos Creek or insufficient levee height on Warthan Creek.

According to the 2016 FIS, floods occurred in or around Coalinga in 1952, 1958, 1962, 1966, 1969, 1976, and 1978. Details on some of these events follow:

- **April 1958**—Flooding affected mainly agricultural lands and public facilities, such as roads and bridges.
- **December 1966**—Flooding caused extensive road and bridge damage in the upper reaches of Los Gatos and Warthan Creeks. East of the City, sewage treatment facilities and the levees along Warthan Creek were damaged, the Los Gatos Creek channel was severely eroded, and there was extensive damage to utilities and agricultural land. Damage totaled approximately \$570,000, and floodwater inundated 4,500 acres.
- **February 1969**—The largest and most damaging flood in Coalinga’s recorded history occurred when floodwater from Los Gatos and Warthan Creeks covered 16,600 acres and caused approximately \$4.5 million in damage. Flooding extended from the foothills west of the City to the valley east of the City. Bridges and roads were washed out, agricultural land was eroded, farm and ranch improvements and petroleum installations were damaged and destroyed, areas were isolated, traffic was disrupted, and residential and commercial areas in the northwest and southeast portions of the City were damaged.
- **February 1978**—Flooding occurred along Los Gatos Creek from the foothills to the valley floor and damaged agricultural lands, roads and bridges, and utilities. An estimated 4,500 acres were flooded. Damage totaled \$160,000.

Values at Risk

Following the methodology described in Section 4.3.2 Vulnerability of Fresno County to Specific Hazards, a flood map for the City of Coalinga was created (see Figure B.3). Table B.10 and Table B.11 summarize the values at risk in the City’s 100-year and 500-year floodplain, respectively. These tables also detail loss estimates for each flood.

Figure B.3: City of Coalinga's 100- and 500-Year Floodplains

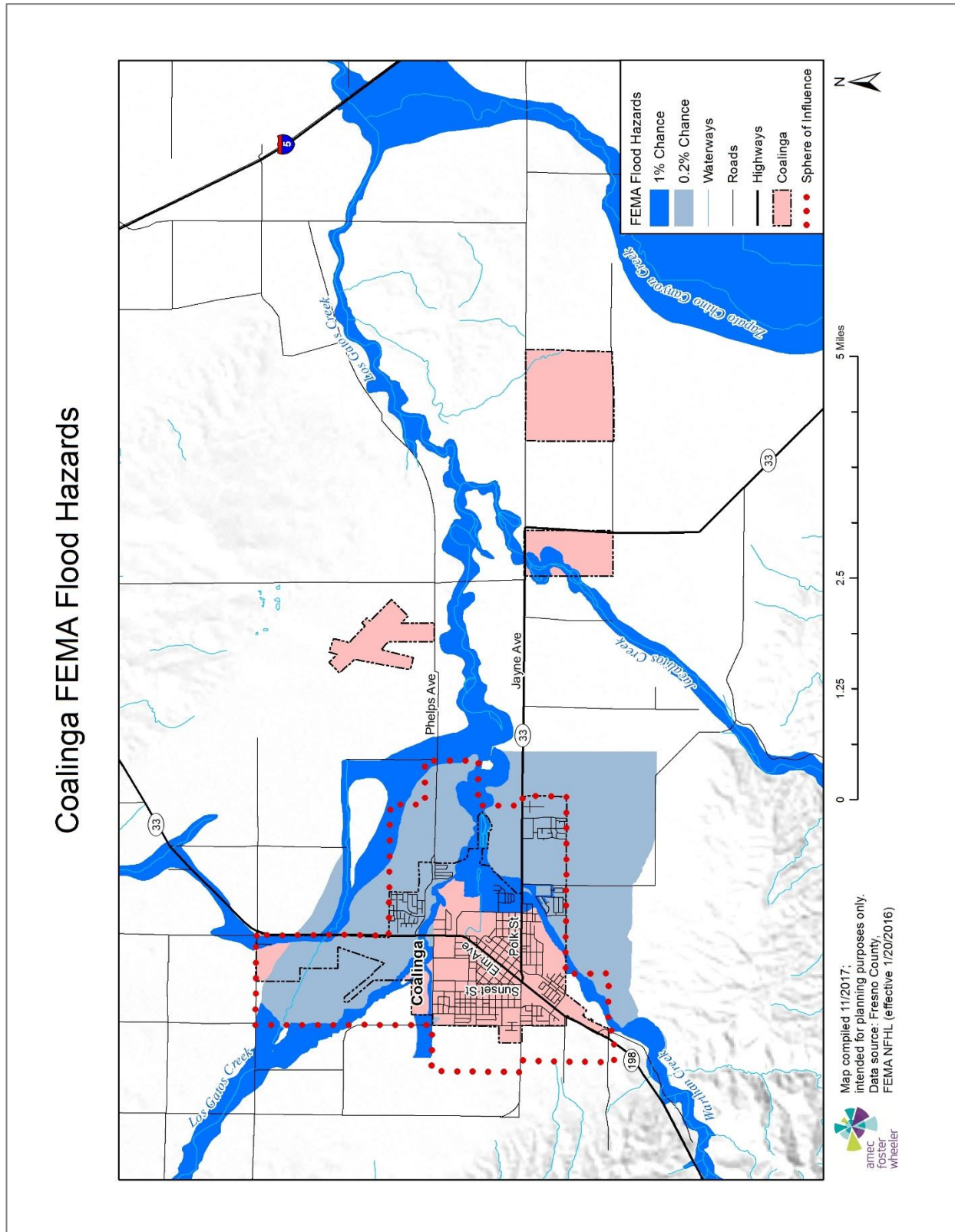


Table B.10: City of Coalinga's FEMA 1% Annual Chance Flood Hazard by Property Type

Property Type	Parcel Count	Building Count	Improved Value	Content Value	Total Value	Loss Estimate
Agricultural	1	1	\$66,463	\$66,463	\$132,926	\$33,232
Commercial	3	109	\$1,088,393	\$1,088,393	\$2,176,786	\$544,197
Exempt	1	1	\$0	\$0	\$0	\$0
Multi-Residential	3	5	\$82,927	\$41,464	\$124,391	\$31,098
Residential	101	105	\$8,863,171	\$4,431,586	\$13,294,757	\$3,323,689
Total	109	221	\$10,100,954	\$5,627,905	\$15,728,859	\$3,932,215

Sources: Fresno County 2017 Parcel and Assessor data; FEMA 2009 FIRM

Table B.11: City of Coalinga's FEMA 0.2% Annual Chance Flood Hazard by Property Type

Property Type	Parcel Count	Building Count	Improved Value	Content Value	Total Value	Loss Estimate
Commercial	7	70	\$4,983,568	\$4,983,568	\$9,967,136	\$2,491,784
Exempt	6	6	\$0	\$0	\$0	\$0
Industrial	3	2	\$4,264,378	\$6,396,567	\$10,660,945	\$2,665,236
Multi-Residential	2	14	\$9,920,000	\$4,960,000	\$14,880,000	\$3,720,000
Residential	565	574	\$81,806,142	\$81,806,142	\$163,612,284	\$40,903,071
Total	583	666	\$100,974,088	\$98,146,277	\$199,120,365	\$49,780,091

Sources: Fresno County 2017 Parcel and Assessor data; FEMA 2009 FIRM

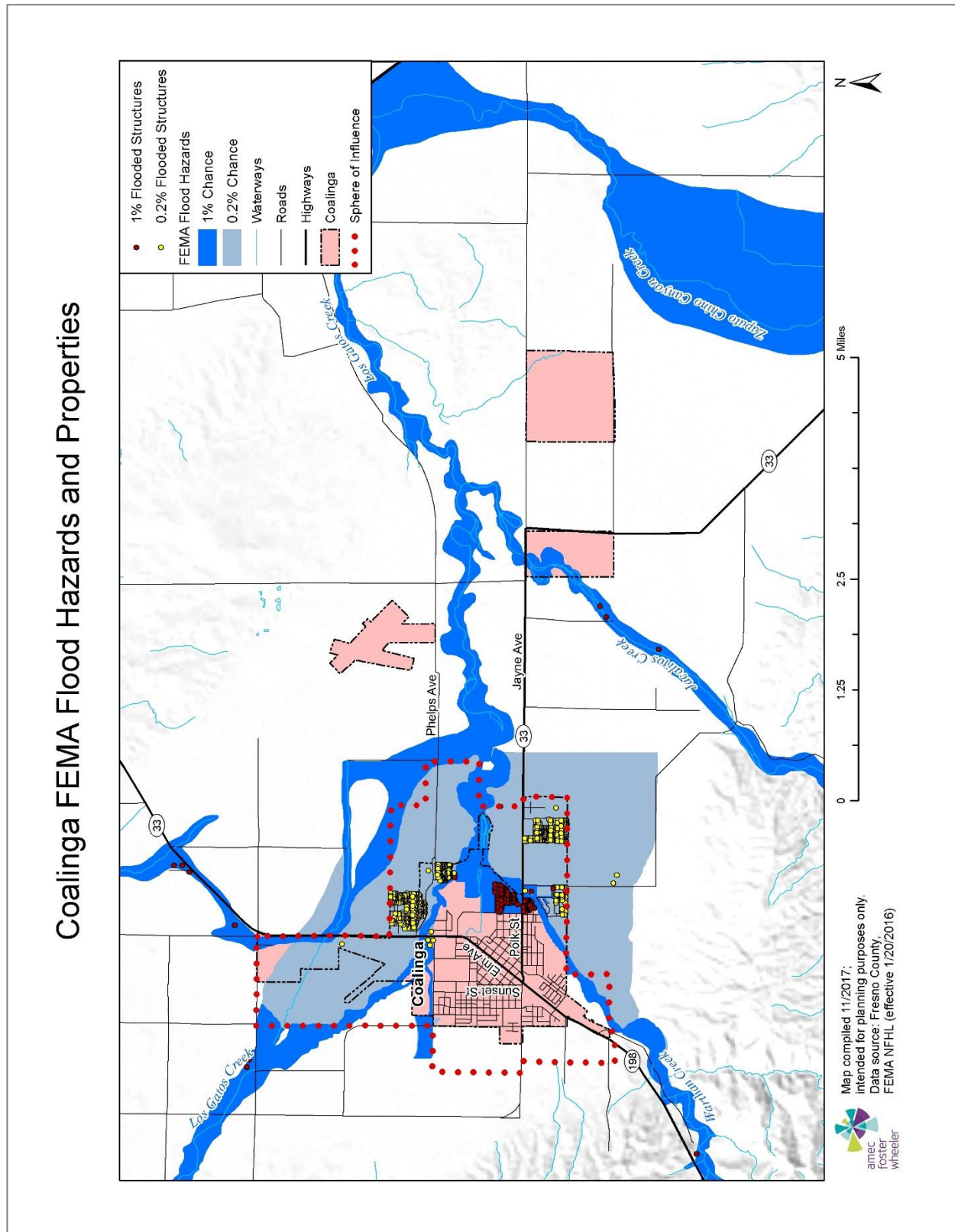
Based on this analysis, the City of Coalinga has significant assets at risk to the 100-year and greater floods. There are 109 improved parcels within the 100-year floodplain for a total value of roughly \$15.7 million. An additional 583 improved parcels valued at roughly \$199 million fall within the 500-year floodplain.

Applying the 25 percent damage factor as described in Section 4.3.2, there is a 1 percent chance in any given year of a 100-year flood causing roughly \$3.9 million in damage in the City of Coalinga and a 0.2 percent chance in any given year of a 500-year flood causing roughly \$53.7 million in damage (combined damage from both floods).

Limitations: This model may include structures in the floodplains that are elevated at or above the level of the base-flood elevation, which will likely mitigate flood damage. Also, the assessed values are well below the actual market values. Thus, the actual value of assets at risk may be significantly higher than those included herein.

Properties at risk to flooding are shown in relation to the floodplain in Figure B.4.

Figure B.4: City of Coalinga's Properties at Risk in the 100- and 500-Year Floodplains



Population at Risk

Using parcel data from the County and the digital flood insurance rate map, population at risk was calculated for the 100-year and 500-year floods based on the number of residential properties at risk and the U.S. Census Bureau 2016 estimate for the average number of persons per household (3.17). The following are at risk to flooding in the City of Coalinga:

- 100-year flood—320 people
- 500-year flood—1,797 people
- **Total flood**—2,117 people

Insurance Coverage, Claims Paid, and Repetitive Losses

The City of Coalinga joined the National Flood Insurance Program (NFIP) on August 23, 1982. NFIP Insurance data indicates that as of June 30, 2017 there were 60 flood insurance policies in force in the City with \$12,902,300 of coverage. This coverage represents a 38 percent decrease in coverage over the past decade. Of the 60 policies in force, all were residential. Fifty of the policies were in A Zones (A01-30 & AE Zones and AO Zones) and the remaining 10 were in B, C, and X zones. According to the FEMA Community Information System accessed 9/17/2018 there are no Repetitive Loss or Severe Repetitive Loss properties located in the jurisdiction. There have been no historical claims for flood losses.

Critical Facilities at Risk

Critical facilities are those community components that are most needed to withstand the impacts of disaster as previously described. Table B.12 lists the critical facilities in the City's 100- and 500-year floodplains.

Table B.12: Critical Facilities in the 100- and 500-Year Floodplains: City of Fresno

Critical Facility Type	100-Year Floodplain	500-Year Floodplain
Colleges & Universities	1	0
Department of Public Works	1	0
Health Care	-	1
Total	2	1

Source: Fresno County, HIFLD 2017

Hazardous Materials Incident

Hazardous materials likely to be involved in a spill or release within the City include herbicides, pesticides, chemicals in gas, liquid, solid, or slurry form; flammables; explosives; petroleum products; toxic wastes; and radioactive substances. The County Health Department is the designated administering agency for the Fresno County area hazardous material monitoring program.

A total of 5 incidents have occurred in the City of Coalinga between 2009 and 2016, including one fixed site incident (at a building), three storage tank/platform/pipeline (not specified), and one mobile vehicle incident. Four of the five incidents were related to oil spills, with one unknown material spill. No property damage and no injuries were reported. (Source: <http://www.rtk.net/erns/search.php>)

There are no identified CalARP hazardous materials facilities located in the City of Coalinga.

Human Health Hazards: Epidemic/Pandemic

The risk and vulnerability factors for this hazard are not unique to the City and the hazard potentially impacts the entire planning area. Please see the main plan's coverage of this hazard in Section 4.0.

Severe Weather: Extreme Cold/Freeze

The City of Coalinga does not have a record of past severe weather events, but significantly low temperatures have occurred in the City. Extreme cold can be exacerbated by winds, as the most common wind condition in Coalinga, is caused by severe winter storms.

Severe Weather: Extreme Heat

The City of Coalinga has experienced very high temperatures. High temperatures have exceeded 110°F and resulted in loss of crops, livestock, and wages (workers were sent home) as well as the temporary closure of schools. Very high temperatures in August 1997 contributed to five deaths. Also, during California's fire season, high temperatures have hampered firefighting efforts.

Wildfire

Following the methodology described in Section 4.3.2 Vulnerability of Fresno County to Specific Hazards, a fire map for the City of Coalinga was created (see Figure B.5). An analysis was performed using GIS software to determine where populations, values at risk, and critical facilities are located within wildfire threat zones. Table B.13 and Table B.14 show the values at risk in the high and moderate wildfire threat zones (there are no values at risk in the very high threat zone). Among the City's critical facilities, two are located in wildfire threat zones: a maintenance yard is in the high fire hazard zone and a health care facility is in the moderate fire hazard zone.

Table B.13: Values at Risk to Wildfire (High Threat) in the City of Coalinga

Property Type	Parcel Count	Building Count	Improved Value	Content Value	Total Value
Agricultural	1	1	\$66,463	\$66,463	\$132,926
Commercial	4	118	\$1,419,770	\$1,419,770	\$2,839,540
Multi-Residential	3	5	\$151,816	\$75,908	\$227,724

Residential	234	244	\$29,036,494	\$14,518,247	\$43,554,741
Total	242	368	\$30,674,543	\$16,080,388	\$46,754,931

Sources: Fresno County 2017 Parcel and Assessor data

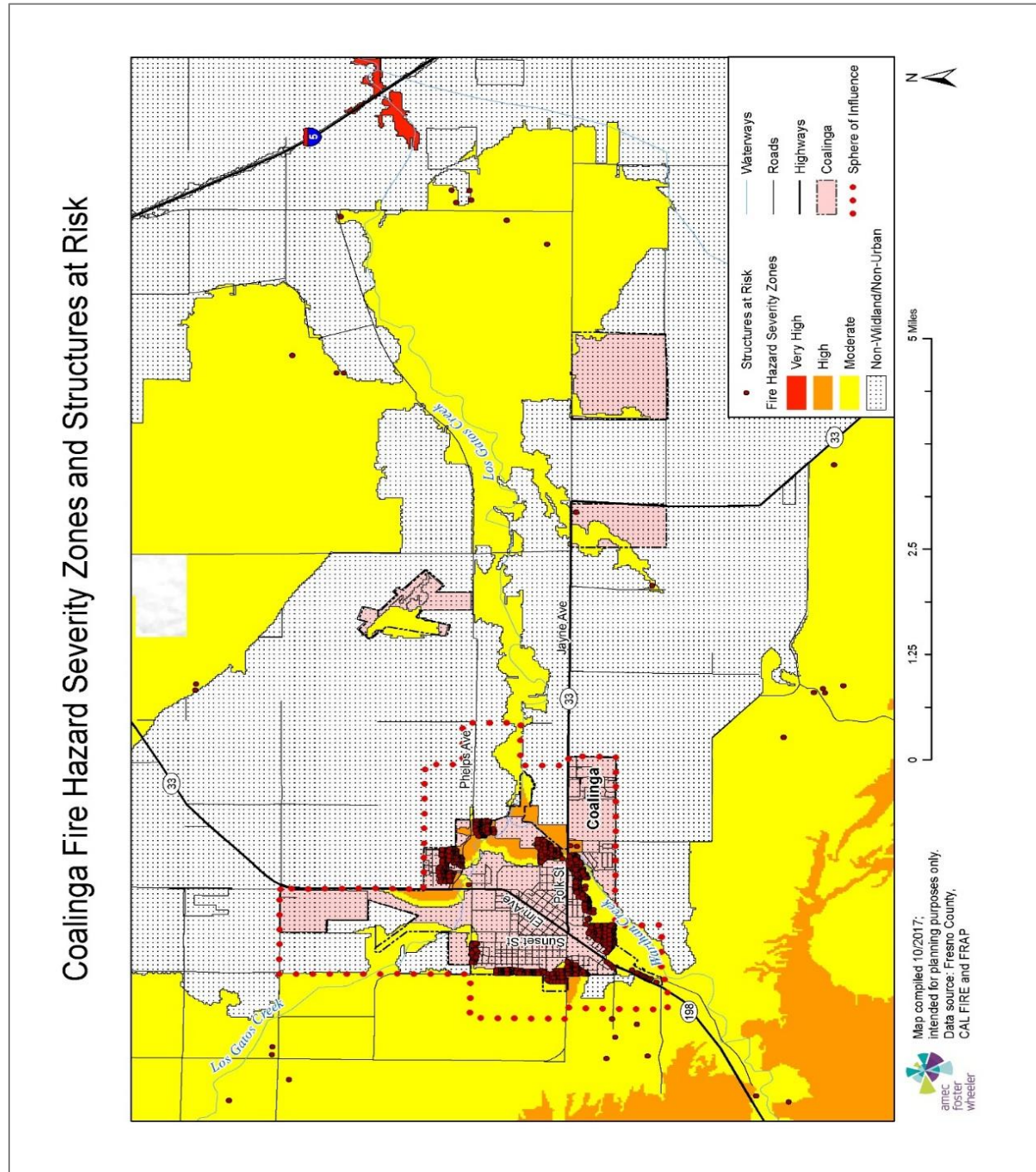
Table B.14: Values at Risk to Wildfire (Moderate Threat) in the City of Coalinga

Property Type	Parcel Count	Building Count	Improved Value	Content Value	Total Value
Agricultural	1	1	\$102,949	\$102,949	\$205,898
Commercial	3	59	\$1,996,374	\$1,996,374	\$3,992,748
Exempt	3	2	\$0	\$0	\$0
Industrial	16	16	\$1,780,623	\$2,670,935	\$4,451,558
Multi-Residential	12	18	\$15,122,867	\$7,561,434	\$22,684,301
Residential	542	554	\$58,954,216	\$29,477,108	\$88,431,324
Total	577	650	\$77,957,029	\$41,808,799	\$119,765,828

Sources: Fresno County 2017 Parcel and Assessor data

Based on this analysis, the City of Coalinga has significant assets at risk to a wildfire. There are 242 improved parcels valued at roughly \$46.8 million within the high wildfire threat zone. Based on the average household factor for Fresno County and the number of residential properties at risk, there are 751 people living within the high threat zone. There are an additional 1,756 people and 577 improved parcels valued at roughly \$119.8 million within the moderate wildfire threat zone. The majority of the parcels in both of these zones are residential.

Figure B.5: City of Coalinga's Wildfire Threat



B.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. The capabilities assessment is divided into four sections: regulatory mitigation capabilities, administrative and technical mitigation capabilities, fiscal mitigation capabilities, and mitigation outreach and partnerships.

To develop this capability assessment, the jurisdictional planning representatives used a matrix of common mitigation activities to inventory which of these policies or programs were in place. The team then supplemented this inventory by reviewing additional existing policies, regulations, plans, and programs to determine if they contributed to reducing hazard-related losses.

During the plan update process, this inventory was reviewed by the jurisdictional planning representatives and Amec Foster Wheeler 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 jurisdictional planning representatives also considered their ability to expand or improve upon existing policies and programs as potential new mitigation strategies. The City of Coalinga's updated capabilities are summarized below.

B.4.1 Regulatory Mitigation Capabilities

Table B.15 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities and indicates those that are in place in Coalinga.

Table B.15: City of Coalinga's Regulatory Mitigation Capabilities

Regulatory Tool	Yes/No	Comments
General plan	Yes	Certified by Council 2009
Zoning ordinance	Yes	Currently adopted
Subdivision ordinance	Yes	Uses by reference Subdivision Map Act
Site plan review requirements	Yes	Included in Zoning Ordinance
Growth management ordinance	No	Included in Zoning Ordinance and proposed in general plan update
Floodplain ordinance	Yes	Adopted in 2006 in accordance with FEMA and OES guidelines and FEMA approved
Other special purpose ordinance (stormwater, water conservation, wildfire)	No	Storm Water Master Plan, approved April 3, 2008
Building code	Yes	Adopted by reference in the Municipal Code
Fire department ISO rating	Yes	Rating: 3
Erosion or sediment control program	No	By reference in Subdivision Map Act and Zoning Ordinance/Building Code
Stormwater management program	No	Adopted Storm Water Master Plan
Capital improvements plan	Yes	Five-year implementation plan
Economic development plan	No	RDA % yr. Implementation Plan
Local emergency operations plan	Yes	

Regulatory Tool	Yes/No	Comments
Other special plans	Yes	Wastewater Master Plan Water Master Plan, Natural Gas Master Plan, Downtown Design Guidelines, Residential Design Guidelines
Flood Insurance Study or other engineering study for streams	Yes	FEMA Flood Insurance Study, 2016

B.4.2 Administrative/Technical Mitigation Capabilities

Error! Reference source not found. identifies the personnel responsible for activities related to mitigation and loss prevention in Coalinga.

Table B.16: City of Coalinga’s Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position
Planner/engineer with knowledge of land development/land management practices	Yes	Community Development Director
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Tri-City Engineering
Planner/engineer/scientist with an understanding of natural hazards	Yes	
Personnel skilled in GIS	No	
Full time building official	Yes	
Floodplain manager	Yes	City Engineer
Emergency manager	Yes	City Manager
Grant writer	Yes	Community Development Director
Other personnel	No	
GIS Data—Land use	No	Participation with Fresno County
GIS Data—Links to Assessor’s data	No	Participation with Fresno County
Warning systems/services (Reverse 9-11, outdoor warning signals)	Yes	Civil defense horn
Other	Yes	Community Development Director

B.4.3 Fiscal Mitigation Capabilities

Table B.16 identifies financial tools or resources that the City could potentially use to help fund mitigation activities.

Table B.16: City of Coalinga’s Fiscal Mitigation Capabilities

Financial Resources	Accessible/Eligible to Use (Yes/No)	Comments
Community Development Block Grants	Yes	
Capital improvements project funding	Yes	Development impact fees
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric services	Yes	Connection fees, utility fees, and development impact fees
Impact fees for new development	Yes	Sec. 66000 Development Impact Fee
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	

Incur debt through private activities	No
Withhold spending in hazard prone areas	No

B.4.4 Mitigation Outreach and Partnerships

The City of Coalinga partnered with the Coalinga-Huron Unified School District in the development of the Coalinga-Huron Unified School District Natural Hazards Mitigation Plan, which was completed in 2005.

B.4.5 Opportunities for Enhancement

Based on the capabilities assessment, the City of Coalinga has several existing mechanisms in place that already help to mitigate hazards. In addition to these existing capabilities, there are also opportunities for the City to expand or improve on these policies and programs to further protect the community. These opportunities for enhancement of the City's existing mitigation program are listed below.

- Develop a Stormwater Management Program. One opportunity of enhancement for the City is to build on its existing Storm Water Master Plan, approved in 2008, and create a stormwater management program with staff to help implement and enforce the existing Master Plan as well as develop an update for the plan.
- Develop a Drought Contingency Plan that will help to create a framework for drought response and mitigation in the City of Coalinga.

B.5 Mitigation Strategy

B.5.1 Mitigation Goals and Objectives

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

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, which is comprised of the Planning, Engineering, and Building and Code Enforcement divisions, may utilize the hazard information when reviewing site plans or building permit applications. The City will also incorporate this LHMP into the Safety Element of their General Plan, as recommended by Assembly Bill (AB) 2140.

As noted in Chapter 7.0 Plan Implementation, the HMPC representatives from Coalinga 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 HMPC plan review meeting.

Continued Compliance with the National Flood Insurance Program

The City has been an NFIP participating community since 1982. In addition to the mitigation actions identified herein the City will continue to comply with the NFIP. This includes ongoing activities such as enforcing local floodplain development regulations, including issuing permits for appropriate development in Special Flood Hazard Areas and ensuring that this development mitigated in accordance with the regulations. This will also include periodic reviews of the floodplain ordinance to ensure that it is clear and up to date and reflects new or revised flood hazard mapping.

B.5.2 Completed 2009 Mitigation Actions

The City of Coalinga completed two mitigation actions identified in the 2009 plan. These completed actions are:

- Inventory At-Risk Buildings
- Improve Nonstructural Earthquake Mitigation in Public Buildings

Completing these actions has reduced the City of Coalinga's vulnerability to hazards and increased the City's capability to implement additional mitigation actions.

Note: There is one action from the City of Coalinga's 2009 mitigation strategy that the City has not completed but has decided not to carry forward and recommend for implementation in this plan. The deleted action and the reason for their deletion are as follows:

- Provide Bilingual Neighborhood Emergency Response Team (NERT) Training to Community Residents and Businesses – *upon review, this action was considered a response-related activity rather than hazard mitigation*

B.5.3 Mitigation Actions

The planning team for the City of Coalinga identified and prioritized the following mitigation actions based on the risk assessment. Background information and information on how each action will be implemented and administered, such as ideas for implementation, responsible office, partners, potential funding, estimated cost, and schedule are included.

In addition to implementing the mitigation actions below the City of Coalinga will be participating in the county-wide, multi-jurisdictional action of developing and conducting a multi-hazard seasonal public awareness program, with an emphasis on drought, earthquake, and wildfire. The county-wide project will be led by the County in partnership with all municipalities and special districts. The City agrees to help disseminate information on hazards provided by the County. More information on the action can be found in the base plan Chapter 5 Mitigation

Strategy (see Section 5.3.3 Multi-Jurisdictional Mitigation Actions, Action #1. Develop and Conduct a Multi-Hazard Seasonal Public Awareness Program).

1. Plan for Alternative Water Sources for the Water System

Hazard(s) Addressed: drought, earthquake, wildfire

Issue/Background: The City of Coalinga currently receives its water from the California Aqueduct. This canal system is approaching 50 years old and is likely to need some major repairs in the future. The current water system is capable of supplying water to the city for 4-5 days in the event water from the aqueduct is lost. Having wells as a backup water supply will also help mitigate drought by providing a reliable source in case of low water supply in the California Aqueduct.

Ideas for Implementation: Construct two new wells as backup water sources for the City.

Other Alternatives: Rely on truck delivery of water as the only alternative

Responsible Office: City of Coalinga Public Works

Priority (High, Medium, Low): High

Cost Estimate: \$300,000 (\$150,000 per well. Two wells needed. One at water treatment plant and one in town)

Potential Funding: Water enterprise funds/bond.

Benefits (Avoided Losses): The City will have an alternative water source in the event that the California Aqueduct is not able to provide sufficient supply.

Schedule: Preliminary engineering 2/2018. Design 5/2018. Construction 9/2018.

Status: New project

2. Plan For Water System Sustainability In The Event of Long Term Power Failure

Hazard(s) Addressed: drought, earthquake, severe weather, wildfire

Issue/Background: The City of Coalinga currently receives its water from the California Aqueduct and the Pleasant Valley Canal system. Water that has been treated at the Water Treatment Plant (WTP) is pumped uphill with electric water pumps to Palmer Tank, and the water gravity feeds from that location to the remainder of the water system. If there is a loss of power, the main link of the water system is removed. This project would evaluate the cost/benefit of installing an emergency generator which would keep the plant operational during this loss of power.

Ideas for Implementation: Install an emergency generator to power the Water Treatment Plant during power outages.

Other Alternatives: Rely on truck delivery of water as the only alternative

Responsible Office: City of Coalinga Public Works

Priority (High, Medium, Low): High

Cost Estimate: \$150,000

Potential Funding: Water enterprise funds/bond.

Benefits (Avoided Losses): The Water Treatment Plant will not be vulnerable to power outages.

Schedule: Preliminary engineering 02/2018. Design 04/2018. Construction 06/2018.

Status: New project