

Executive Summary

Introduction

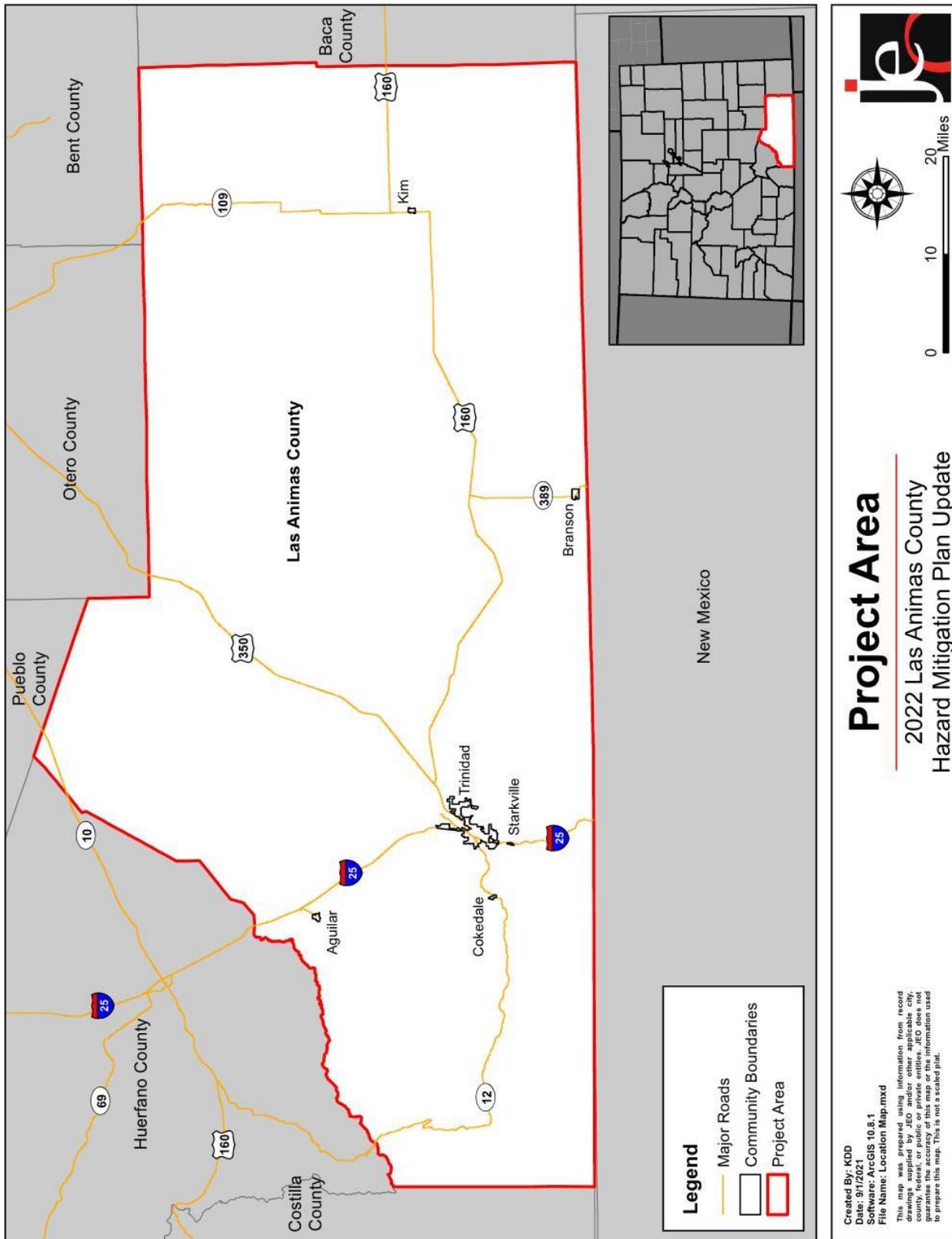
This plan is an update to the Las Animas County Hazard Mitigation Plan (HMP), last approved in 2017. The plan update was developed in compliance with the requirements of the Disaster Mitigation Act of 2000 (DMA 2000). Hazard mitigation planning is a process in which hazards are identified and profiled; people and facilities at-risk are identified and assessed for threats and potential vulnerabilities; and strategies and mitigation measures are identified. Hazard mitigation planning increases the ability of communities to effectively function in the face of natural and human-caused disasters. The goal of the process is to reduce risk and vulnerability, in order to lessen impacts to life, the economy, and infrastructure.

Plan participants are listed in the following table and illustrated in the following project map. New participating jurisdictions in this plan update included the Town of Branson, Town of Kim, Town of Starkville, Hoehne Fire District, Kim Reorganized 88 School District, and Trinidad School District #1. The Stonewall Fire Protection District did not participate in this HMP update.

Table 1: Participating Jurisdictions in Las Animas County HMP

Participating Jurisdictions	
Las Animas County	
Town of Aguilar	Town of Kim
Town of Branson	Town of Starkville
Town of Cokedale	City of Trinidad
Special Jurisdictions	
Hoehne Fire District	Kim Reorganized 88 School District
Trinidad School District #1	

Figure 1: Project Area



Goals and Objectives

The potential for disaster losses and the probability of occurrence of natural and manmade hazards present a significant concern for the communities participating in this plan update. The driving motivation behind the update of this hazard mitigation plan is to reduce vulnerability and the likelihood of impacts to the health, safety, and welfare of all citizens in the county. To this end, Las Animas County and local planning team members approved goals and objectives which helped guide the process of identifying both broad-based and community specific mitigation strategies and projects that will, if implemented, reduce their vulnerability and help build stronger, more resilient communities.

These goals and objectives were reviewed and approved by the Las Animas County and other key contacts at the Kick-off Meeting. The goals and objectives for this plan update are as follows:

Goal 1: Protection of People, Property, and Natural Resources

- Objective 1.1: Develop projects focused on preventing loss of life and injuries from natural hazards
- Objective 1.2: Identify and prioritize actions to protect critical, essential, and necessary assets, infrastructure, and cultural resources.
- Objective 1.3: Protect and enhance natural resources.
- Objective 1.4: Identify and expand emergency services protocols for people who are at high risk from hazard events, such as the homeless, elderly, disabled, and oxygen-dependent people.
- Objective 1.5: Reduce long-term vulnerabilities from high hazard potential dams that pose an unacceptable risk to the public.

Goal 2: Increase awareness of Natural Hazards and their Mitigation

- Objective 2.1: Continue to develop and expand public awareness and information programs.
- Objective 2.2: Expand public awareness of flood and flash flood hazards in general and at specific high-risk locations.
- Objective 2.3: Expand public awareness of wildfire hazards and measures by which people can protect themselves, their property, and their community.
- Objective 2.4: Educate elected officials, agency administrators, and business owners on mitigation strategies and best practices.

Goal 3: Coordinate and Integrate Hazard Mitigation Activities

- Objective 3.1: Strengthen connections between hazards mitigation activities; and preparedness, response, and recovery activities.
- Objective 3.2: Identify existing local government monitoring and decision-making tools; identify gaps and needed improvements.
- Objective 3.3: Strengthen collaboration with neighboring communities, non-governmental agencies, and businesses to improve hazard response capabilities and resources.
- Objective 3.4: Develop systems to identify hazard-prone areas and affected populations and track people and resources before and during a natural hazard event.

Summary of Changes

The hazard mitigation planning process undergoes several changes during each plan update to best accommodate the county and specific conditions. Changes from the 2017 Hazard Mitigation Plan and planning process in this update included: the addition of hazardous materials release as an assessed hazard, the creation of individual participant sections for plan clarity, inclusion of plan maintenance discussions for each participating entity, inclusion of FEMA's community lifelines, and additional details (timeline, priority ranking, lead agency) for identified mitigation actions.

It should be noted as well that due to the COVID-19 outbreak, numerous changes were made during the planning process. To best protect residents and staff members in the county, the Kick-off meeting, Round 1 public meeting, and Round 2 public meeting were held virtually. Additional one-on-one meetings were held via phone or through meeting recordings as needed. A summary of the planning process is described in *Section Two: Planning Process*.

Plan Implementation

Various communities across the county have implemented hazard mitigation projects following the 2017 Hazard Mitigation Plan. A few examples of completed projects include creating a memorandum of agreement for emergency water supply and moving the emergency operations center. Several other projects were also partially completed throughout the county.

In order to build upon these prior successes and to continue implementing mitigation projects, communities will need to continue relying upon multi-agency coordination as a means of leveraging resources. Communities across the county have been able to work with a range of entities to complete projects; potential partners for future project implementation include, but are not limited to: Colorado Division of Homeland Security and Emergency Management (DHSEM), Colorado State Forest Service (CSFS), Colorado Geological Survey (CGS), Colorado Department of Natural Resources (DNR), Colorado Department of Transportation (CDOT), Colorado Department of Public Health and Environment (CDPHE), United States Department of Agriculture (USDA), and Federal Emergency Management Agency (FEMA).

Hazard Profiles

The hazard mitigation plan includes a description of the hazards considered, including a risk and vulnerability assessment. Data considered during the risk assessment process includes historic occurrences and recurrence intervals, historic losses (physical and monetary), impacts to the built environment (including privately-owned structures as well as critical facilities), and the local risk assessment. The following tables provide an overview of the risk assessment for each hazard and the losses associated with each hazard.

Table 2: County Risk Assessment

Hazard	Previous Occurrences (events/year)	Approximate Annual Probability (years with an event recorded/total years)	Likely Extent
Avalanche	0/59	< 1%	Damage to structures and vehicles in avalanche prone areas.
Dam and Levee Failure	1/128	< 1%	Levee Failure: Minor flooding of private property. Dam Failure: Flooding greater than the 1% Annual Flood Risk Area.
Drought	549/1,513 months	36%	Mild Drought
Earthquakes	26/121	21%	5.0 or less magnitude
Erosion and Deposition	0	N/A	Minor erosion with minimal impacts.
Expansive Soil	0	< 1%	Minimal impacts.
Extreme Heat	74/74	42%	>100°F
Flooding	28/26	50%	Some inundation of structures and roads near streams and rivers. Some evacuations of people may be necessary.
Hail	221/26	96%	Avg: 1.1 inch Range: 0.75-2.75 inches
Hazardous Materials Release	Fixed: 12/32 Oil & Gas: 76/4 Transportation: 10/51	Fixed: 38% Oil & Gas: 100% Transportation: 15%	Range: 0 – 500 gallons May affect an area <1/4 mile.
Landslide, Mud/Debris Flow, Rockfall	0/26	< 1%	Minimal to no damage to property.
Lightning	6/59	100%	Some damage to property.
Severe Wind	207/26	100%	Avg: 68 mph Range: 49-98 mph
Subsidence	0	< 1%	Minimal to no damage to property.
Tornadoes	17/26	46%	EF0-EF1
Wildfire	759/26	100%	Avg: 454 acres Range: <1 – 45,814 acres
Winter Storms	399/26	100%	20°-40° below zero (wind chill) 1-12" snow 35-50 mph winds

The following table provides loss estimates for hazards with sufficient data. Detailed descriptions of major events are included in *Section Seven: Participant Profiles* as appropriate per jurisdiction.

Table 3: Hazard Loss Estimates Las Animas County

Hazard		Count	Property ¹⁰	Crop ²
Avalanche ²		0	\$0	\$0
Dam and Levee Failure	Dam Failure ³	1	\$0	N/A
	Levee Failure ⁴	0	\$0	\$0
Drought ⁵		549 out of 1,513 months	\$0	\$943,396
Earthquakes ⁶		457	\$1,000,000	N/A
Erosion and Deposition ⁷		0	N/A	N/A
Expansive Soil ⁸		0	N/A	N/A
Extreme Heat ⁹		Avg. 1 day a year	N/A	\$0
Flooding ¹⁰	Flash Flood	13	\$50,000	\$365,000
	Flood	4	\$500,000	
	Heavy Rain	11	\$0	
Hail ¹⁰		221	\$10,000	\$87,129
Hazardous Materials Release	Fixed Site ¹¹	12	\$0	N/A
	Oil & Gas ¹²	76	N/A	N/A
	Transportation ¹³	10	\$22,157	N/A
Landslide, Mud/Debris Flow, Rockfall ¹⁰		0	\$0	N/A
Lightning ² 1 Fatality		6	\$895	\$0
Severe Wind ¹⁰ 1 Fatality 103 Injuries	High Winds	183	\$560,000	\$1,209,643
	Thunderstorm Winds	24	\$1,000	
Subsidence ⁸		0	N/A	N/A
Tornadoes ¹⁰ 1 Injury		18	\$43,000	\$0
Wildfire ¹ 6 Injuries		759	\$1,080,000	\$0
Winter Storms ¹⁰	Blizzard	16	\$550,000	\$98,069
	Extreme Cold/Wind Chill	2	\$0	
	Heavy Snow	97	\$0	
	Ice Storm	1	\$0	
	Winter Storm	258	\$0	
	Winter Weather	25	\$0	
Total		2,194	\$3,817,052	\$2,703,237

N/A – Data not available

1 – Colorado State Forest Service, 1992-2017

2 – SHEL DUS, 1960-2018

3 – Stanford University, 1890-2018

4 – National Levee Database, September 2021

5 – NCEI, 1895-January 2021

6 – USGS, 1990-2020

7 – None Available

8 – Colorado Geological Survey, March 2022

9 – NOAA, 1948-September 2021

10 – NCEI, 1996-June 2021

11 – USACE NLN, 1900-September 2021

12 – Colorado Oil and Gas Conservation Commission, 1994-March 2022

13 – PHMSA, 1971-2021

Many of the natural hazards can be expected to occur annually within the county. Events like hail, wildfire, severe wind, and winter storms will occur nearly every year. Other hazards like drought, flooding, and tornadoes will occur less often. What is not known regarding hazard occurrences is the scope of events and how they will manifest themselves locally.

Historically, earthquakes, flooding, severe wind, wildfire, and winter storms have resulted in the most significant structural damage within the county. These hazards for the county are summarized below.

Earthquakes

Earthquakes were one of the costliest hazards in the county. In 2011 a magnitude 5.3 earthquake was recorded approximately nine miles southwest of the City of Trinidad. The earthquake damaged 46 nearby structures resulting in approximately \$1,000,000 in damages. In recent years, induced seismicity has become an increasingly relevant issue. Induced seismicity are earthquakes instigated by human activities and would not have occurred otherwise. In March 2016, the USGS released its first induced earthquake hazard model. The Raton Basin in western Las Animas County was identified as one of the areas of higher potential for induced earthquakes. 457 earthquakes have been reported in the county since 1900 with a recorded earthquake in the county every year since 2003.

Flooding

Flash flooding is the most common type of flooding in the county, but riverine flooding has caused the most damage (\$500,000 for riverine flooding compared to \$50,000 for flash flooding). Flooding can occur on a local level, only affecting a few streets, but can also extend throughout an entire watershed. The floodplain for the county is primarily located along the Purgatorie River and Apishapa River and their tributaries. There have been 28 flooding events reported in the county with an average annual loss of \$21,154. Several communities (Trinidad, Aguilar, Starkville) and the county participate in the NFIP with a total of 14 active policies.

Severe Wind

Severe winds are an annual occurrence in the county with two events having the largest impact. On July 14, 1989, 60 mph winds struck an encampment at Pinyon Canyon near the City of Trinidad. The high winds brought down 12 to 15 large tents, including a field hospital. It was estimated that 100 National Guard troops were injured, including 20 who were hospitalized. The other major severe wind event occurred on November 12, 2011. This event caused a reported \$500,000 in property damage to homes, sheds, barns, and cars. In addition, there was widespread power outages from numerous trees and power lines being blown down. Vulnerable populations include those living in mobile homes, nursing homes, schools, hikers/climbers, the elderly, and those living in substandard housing.

Wildfire

Over 750 wildfire events have occurred in the county since 1992. These events have burned a total of 344,810 acres, resulted in six injuries, and caused an estimated \$1,080,000 in property damage. Some of the largest fires include the Trinidad Complex Fire, Mauricio Canyon Fire, Bridger Fire, Bear Springs/Callie Marie Fires, Shell Complex Fire, Track Fire, Stateline Fire, and most recently (2018) the Cherry Canyon Fire. Most of the county's wildfire risk is located in the western portion of the county due to its high fuel load and difficult terrain. There are two Firewise areas, Santa Fe Trails Ranch and Blackhawk Ranch. In addition, there are three Community Wildfire Protection Plans that cover various parts of the county.

Winter Storms

Winter storms are an annual occurrence for the county and the entire state of Colorado. Winter storms can bring extreme cold temperatures, freezing rain and ice, and heavy or drifting snow. Blizzards are particularly dangerous and can have significant impacts throughout the county. Blizzards in the county have caused a reported \$550,000 in property damage in addition to closing roads for extended periods of time. This can impact emergency response capabilities and local businesses. Power loss is also a concern during winter storms, especially to those without adequate heat or shelter.

Mitigation Strategies

There are a wide variety of actions and strategies that can be used to reduce the impacts of hazards for the built environment and county residents. *Section Five: Mitigation Strategy* shows the mitigation and strategic actions chosen by the participating jurisdictions to prevent future losses. Some of the most common mitigation actions chosen by the participants to prevent future losses include Localized Flood Reduction, Backup Generators for Critical Infrastructure, and Shelter Improvements.