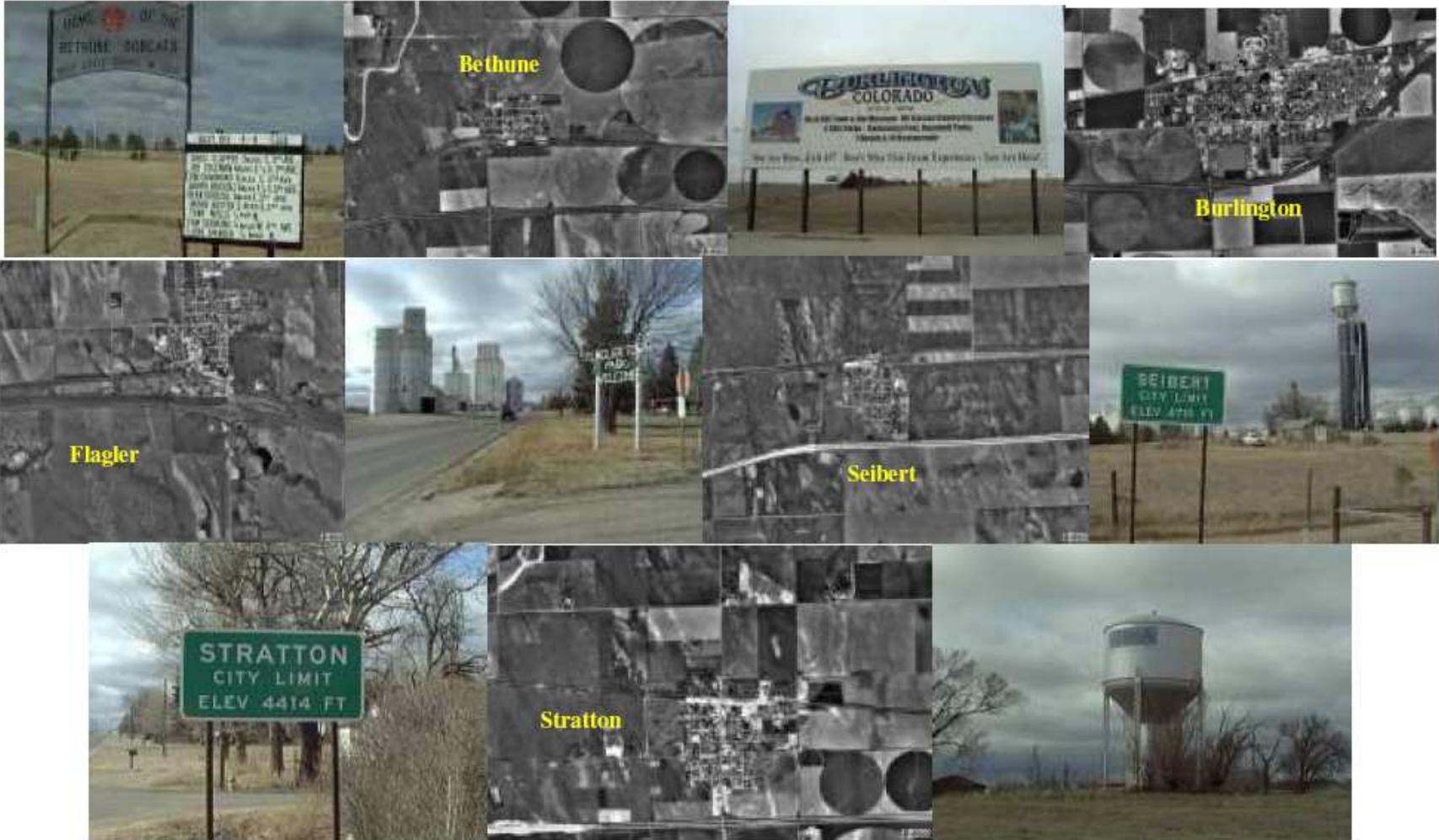


KIT CARSON COUNTY PLANNING ELEMENT



Kit Carson County Planning Subcommittee

The following entities participated in the DMA planning process through the Kit Carson County Planning Subcommittee (CPS) both in 2004 and in 2009. More details on the planning process followed and how the County, municipalities and stakeholders participated can be referenced in Chapter 3 of the base plan. Additional details on what local government departments participated and who represented them are listed in Appendix C.

Participating Jurisdictions	Stakeholders
Kit Carson County	Kit Carson County Memorial Hospital*
Emergency Management (CPS lead)	Kit Carson Electric*
Health & Human Services	Colorado State Forest Service*
EMS	Corrections Corporation of America (Kit Carson County Correctional Facility)*
County Administration	Burlington Rotary Club
County Commissioners	Burlington VFW
City of Burlington	CSU Cooperative Extension Service
Administration	Legacy Assisted Living
Police and Fire Depts	Colorado State Patrol
Town of Bethune**	Colorado Division of Emergency Management
Town of Flagler**	
Fire Department	
Town of Seibert	
Town of Stratton **	
Fire Department	
Municipal Government	
Fire Marshall	
Town of Vona**	
Stratton School District	
Hi Plains School District	
Bethune School District	
Burlington School District**	

* Stakeholders that attended planning meetings. ** New participants in 2009

County Profile

Kit Carson County is located in the northeastern region of Colorado. It includes the incorporated towns of Bethune, Seibert, Stratton, Flagler, Vona and the City of Burlington. The land area of Kit Carson County is 2,161 square miles. According to the 2000 U.S.

Census, the population for Kit Carson County was 8,011. The 2008 population estimate from the Census is 7,590. The estimated average density for the County is 3.5 people per square mile. Kit Carson County grew at a rate of 12.2% between 1990-2000 (which includes the local prison population). The population declined 5.25% between the years of 2000 and 2008. There are 3,557 housing units in the County, for an average density of .64 housing units per square mile.¹ As of the 2000 Census, the median age in the County is 37.4 years. 6.1% of the population is under the age of 5 and 14.6% of the population is over the age of 65. The average household size is 2.5, and the average family size is 3.07. 77.0% of the population over the age of 25 holds at least a high school degree and 15.4% hold a bachelors level degree or higher. 18.3 % of the population (over age 5) claims some disability status, and 13.2% of the population (over age 5) speaks a language other than English in the home. 9.4% of all families live below the poverty level, and 12.1% of individuals live below poverty level.² The County is predominantly agricultural. The 2007 Census of Agriculture reports 786 farms in the County with 1,352,319 total acres of farmland. This accounts for 97.7% of the total County area. The average farm size is 1,721 acres. A base map of the County can be referenced in Figure 1.

Hazard Identification and Summary

Kit Carson County's planning team identified the hazards that affect the County and summarized their frequency of occurrence, spatial extent, potential magnitude, and significance specific to Kit Carson County. This information is presented in Table 1. A detailed description of each hazard can be found in Section 4.2 Hazard Profiles.

¹ U.S. Census Bureau: State and County QuickFacts, as documented on the Kit Carson County Emergency Management Webpage at <http://readynortheast.org/Kit%20Carson.html>

² U.S. Census Bureau: Kit Carson County, Colorado – Fact Sheet 0 American FactFinder. www.factfinder.census.gov

Table 1. Kit Carson County Hazard Summary

Hazard	Geographic Extent	Probability of Future Occurrences	Magnitude/Severity	Significance
Biological Hazards				
Pestilence	Extensive	Occasional	Limited	Medium
Plague*	Limited	Likely	Limited	Medium
Blizzards & Severe Winter Storms	Extensive	Likely	Critical	High
Dam Failures & Levee Failures	Limited	Likely	Limited	Medium
Drought	Extensive	Likely	Critical	High
Earthquake	Limited	Occasional	Limited	Low
Flooding	Limited	Likely	Negligible	Medium
Fog	Significant	Likely	Negligible	Low
Hailstorms	Extensive	Highly Likely	Limited	Medium
Land Subsidence	Limited	Likely	Negligible	Low
Landslides	Limited	Occasional	Negligible	Low
Lightning	Extensive	Highly Likely	Limited	Medium
Noxious Weeds	Extensive	Highly Likely	Negligible	Low
Straight-Line Winds	Extensive	Highly Likely	Limited	High
Temperature Extremes	Extensive	Highly Likely	Limited	Low
Tornados	Extensive	Likely	Critical	High
Wildland & Grassland Fires	Extensive	Highly Likely	Limited	High

* Some zoonotic hazards have higher or lower ratings than those reflected here, based on individual datasets.

Geographic Extent

Limited: Less than 10% of planning area
 Significant: 10-50% of planning area
 Extensive: 50-100% of planning area

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.

Magnitude/Severity

Catastrophic—More than 50 percent of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths
 Critical—25-50 percent of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability
 Limited—10-25 percent of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable do not result in permanent disability
 Negligible—Less than 10 percent of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid

Significance

Low: minimal potential impact
 Medium: moderate potential impact
 High: widespread potential impact

Kit Carson County History of Recorded Natural Hazard Losses

In the 2008 State Hazard Mitigation Plan, the County identified flooding, winter storms, drought, tornados and thunderstorms as the highest hazard risks to the County. In 1999, Burlington was struck by a hailstorm that produced 2.5" hail and caused over \$10 million in damages. A summary of the past hazard events are captured in Table 2 and in the text that follows.

Table 2. Historic Hazard Events

Date	Event	Location	Damages	Other Info	Data Source
1930's	Drought	Dust Bowl	Farms abandoned		Planning Team
1935	Flood	Republican River	25 Ranch houses Actual Value (2002) \$13.68M	25" in 10 hours; Bonny Res. built after flood State wants to study as Nat'l Flood Standard	USDA
5/8/1952	Tornado		\$25K	F2, 1 injury	NCDC
5/15/1955	Tornado		\$25K		NCDC
5/17/1960	Tornado		\$25K	F1	NCDC
6/18/1960	Tornado		\$3K	F1	NCDC
5/6/1961	Tornado		\$3K	F1	NCDC
7/13/1962	Hail			2"	NCDC
7/11/1963	Tornado		\$3K		NCDC
5/23/1965	Tornado		\$25K	F1	NCDC
7/5/1969	Tornado		\$25K	F0	NCDC
6/9/1971	Hail			4.5"	NCDC
5/6/1973	Tornado		\$25K	F2, 5 injuries	NCDC
3/1/1977	Dust Storm		Debris Removal expenses	Tumbleweeds & Dust	NCDC
3/17/1977	Blizzard		5,500 poles lost ice damage	power out up to 6 days	REA
1980	Blizzard			State Dec	CO-OEM
1981	Grasshoppers			State Dec	CO-OEM
5/24/1984	Hail			2.5"	NCDC

Date	Event	Location	Damages	Other Info	Data Source
86,87,88	Ice Storm		KC Electric -poles down		REA
5/30/1988	Tornado		\$25K	F2	NCDC
May, 1988	Dust Storm		Caused 35-car pile-up		NCDC
July, 1990	Drought	20 counties	\$1 billion (USDA)		USDA/CO-OEM
5/26/1991	Hail			2.75"	NCDC
7/19/1992	Hail			2.75"	NCDC
8/12/1993	T-Storm/Wind Flood	Bethune Burlington	\$5K \$5K		NCDC
6/7/1995	Tornado	Bethune	\$100K Farm shed & house	F1, 1 horse injured	NCDC
8/8/1995	Lightning/Fire	12 mi. NE Stratton	1,600 acres/Busby Ranch		Planning Team/Newspaper
7/8/1997	Hail	Stratton	\$10K	.75"	NCDC
7/27/1997	Hail	Stratton/Burlington	\$500K: roofs, windows, autos, siding	1.75"	NCDC
10/11/1997	Tornado		\$10K	F1	NCDC
10/25/1997	Blizzard	Stratton		1 death, lost sledder; up to 3,000 cattle	NCDC
6/3/1998	T-Storm/Wind microburst	Flagler	\$100K rolled MH w/man inside	1 injury & other building damages	NCDC
6/10/1999	Hail	Burlington		2"	NCDC
6/30/1999	Hail	Burlington	Exceeded \$10M	2.5"	NCDC/newspaper
3/7/2000	Hail	Flagler		2"	NCDC
7/21/2000	Hail	Flagler		2.75"	NCDC
8/1/2001	Hail	Burlington		3.75"	NCDC
2000	Drought		(USDA Dec)	Contiguous County	USDA/CO-OEM
April 2001	Winter Storms Fed #1374		Ice damage	REA's damaged: KC only rec'd State Dec	FEMA/CO-OEM REA
April 2002	Snow/Dirt storm		Dirt drifts Stuck to everything	Clean-up problem	Planning Team

Date	Event	Location	Damages	Other Info	Data Source
May, 2002	Wind	Seibert Flagler	\$130K	Seibert School lost roof Roofs lost in Flagler	NCDC/Planning Team/newspaper
8/23/2002	T-Storm/Wind	Bethune	\$5K		NCDC
2003	West Nile Virus		2 human cases reported	No tracking of immunization costs	CDPHE Planning Team
1/12/2005	Blizzard/Ice Storm	Entire County	N/A	Icy roads accounted for a 3 fatality accident and one additional injury.	NCDC
11/27/2005	Blizzard/Ice Storm	Entire County	N/A	25-car pileup was reported near Flagler on the 27th as a result of the storm.	NCDC
12/2006	Blizzard	Entire County	N/A		2009 Planning Team
7/3/2007	Tornado	Seibert	\$15K	F1	NCDC
9/6/2007	T-Storm/Wind	Burlington	\$5K	Severe thunderstorms produced damaging winds, knocking over a metal building and golf ball sized hail	NCDC
10/2007	Blizzard	Entire County	N/A		2009 Planning Team
6/2/2008	Hail	Burlington	\$325K	4.25" hail	NCDC
8/4/2008	Flood	northwest Town of Stratton & some County roads	\$10K	The Kit Carson County fairgrounds were completely flooded by overnight heavy rainfall.	2009 Planning Team/NCDC
8/15/2008	Flood	Stratton	\$150K	5.35 inches of rain in 90 minutes	NCDC

(NCDC Filters Applied: Tornadoes \geq F1; Hail \geq 2"; Wind \geq 75 MPH)

Hazard History in Kit Carson County from 1950-2008 (58 years):

Dams:

- 0 Class I (High Hazard) Dams
- 1 Class II (Significant Hazard) Dams
- Known Failures: 0

Levees: 0

Drought Incidents: 6 (regional occurrence)

Dust Storms: Several have occurred that affect traffic on I-70 and visibility on local roads

Earthquake: Historic Event: 5/27/98 SE of Burlington, 3.0-3.9. No risk established by CGS.³

Extreme Temperatures:

- Highest Recorded Temperature in County, 107°F
- Lowest Recorded Temperature in County, -29°F
- Severe Cold Incidents: 3

Floods and Flash Floods: 16

Hailstorms: 29

Landslide Risk: (OEM map) with steep grade at FLAGLER LAKE,

- Locals say there's not enough dirt or slope to cause water displacement/overtopping
- Areas of suspected moderate risk in Southwestern corner and in a band along the northern border of the County.

Lightning: Averages 9,500 strikes per year, with 0 reported injuries and 2 reported deaths between 1980 and 2005.

Severe Windstorms: 141

Severe Winter Weather: 39

Tornadoes: (at least F1) 29 (Any size) 75

Wildfires: frequent/3-4 year (several hundred acres) lightning started

- S. of Stratton in 2002: 2,000 acres
- S. of Flagler in 2002: 3,500 acres
- Vona burned down in 1911

West Nile: 7 human illnesses, 0 human fatalities as of 2008

Total Reported Injuries: 10 + 7 West Nile Virus Cases

Total Reported Fatalities: 3 + 0 West Nile Virus cases

Kit Carson County Vulnerability Assessment

The intent of this section is to assess Kit Carson County'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

³ CGS. Earthquake Evaluation Report. Please see the earthquake section in the hazard identification chapter for more information.

planning area. For more information about how hazards affect the Region as a whole, see Chapter 4 Risk Assessment in the main plan.

Assets at Risk

This section identifies Kit Carson County’s assets at risk, including values at risk, critical facilities and infrastructure, historic assets, economic assets, and growth and development trends. Two data sources are used: assessed valuations, as available, and HAZUS-MR3 databases. The HAZUS building exposure (includes building counts, value of building structure and contents) is shown in Table 3.

Total Values at Risk from Hazards:

- **Bethune:** \$5.129M in Actual Value
- **Burlington:** \$143.142M in Actual Value
 - *Lincoln Street Plaza*, \$25.267M
 - *Parmer’s 3rd Addition*, \$3.153M
 - *Parmer’s 1st, 2nd, Yersin’s & unplatted*, \$18.068M
 - *Burlington Annex*, \$1.081M
- **Flagler:** \$19.440M in Actual Value
- **Seibert:** \$6.761M in Actual Value
- **Stratton:** 21.616M in Actual Value
- **Vona:** \$2.059M in Actual Value
- **Unincorporated County:** \$415.003M in Actual Value

Table 3. Building Exposure

City	Population	Building Count	Building Exposure (\$)	Building Content (\$)	Total Exposure (\$)
Bethune	225	125	11,931,000	8,763,000	20,694,000
Burlington	3,673	2,146	238,508,000	177,377,000	415,885,000
Flagler	615	570	46,008,000	31,839,000	77,847,000
Seibert	180	143	12,055,000	7,524,000	19,579,000
Stratton	672	560	50,757,000	36,726,000	87,483,000

City	Population	Building Count	Building Exposure (\$)	Building Content (\$)	Total Exposure (\$)
Vona	95	135	5,947,000	3,746,000	9,693,000
Unincorporated	2,551	2,434	137,660,000	93,432,000	231,092,000
Total	8,011	6,113	502,866,000	359,407,000	862,273,000

Source: HAZUS MH MR3

Critical Facilities and Infrastructure

An inventory of critical facilities in Kit Carson County is provided below in Table 4 supplemented with information from Table 5, including data from available statewide GIS resources (locations are illustrated in Figure 1) and from the Kit Carson County CPS.

Table 4. Critical Facilities Inventory

Facility Type	Number of Sites	Est. Replacement Value	Capacity or Enrollment	Additional Information
Essential Infrastructure				
Airports (paved)	1			
Communications Towers	4			
Correctional Facilities	2			
Electrical Generation/Distribution	3			KC Electric Tri-State
Media Outlets	KNAB			
National Guard	0			
Public Safety Communications Centers	1			
Public Safety Facilities	1			
Police Stations	3			
EMS/Ambulance Stations	5			
Fire Stations	5			
EOCs	1			
Town/City Halls	5			
Wastewater Treatment	5			

Facility Type	Number of Sites	Est. Replacement Value	Capacity or Enrollment	Additional Information
Water Utilities/Treatment	5			
Childcare Centers	2			
Schools	13			
Shelters	5			
Hospitals	1			
Clinics	4			
Nursing Homes/Assisted Living Centers	5			
Natural, Cultural and Historic Resources	5			
Community Centers	3			
Historic Properties	6			
Hazardous Materials				
Extremely Hazardous Substances	5			
Hazardous Chemicals storage	5			

Table 5. Critical Facilities Based on GIS

Facility Type	Facility Count
Airports	1
Bridges	128
Communications	2
Dams	4
Emergency Planning Offices	1
Fire Stations	5
Health Care	15
Hospital	1
Natural Gas Facility	3

Facility Type	Facility Count
Police	5
Power Plants	1
Schools	16
Scour Critical Bridges	4
Total	186

Source: Statewide GIS resources

Historic Sites in Kit Carson County

- Burlington State Armory
- Elitch Gardens Carousel/Kit Carson County Fairgrounds
- Winegar Building, Burlington (494-498 14th St.)
- Flagler Hospital (Municipal Building)
- Second Central School, Flagler
- Spring Creek Bridge, Vona

Development Trends:

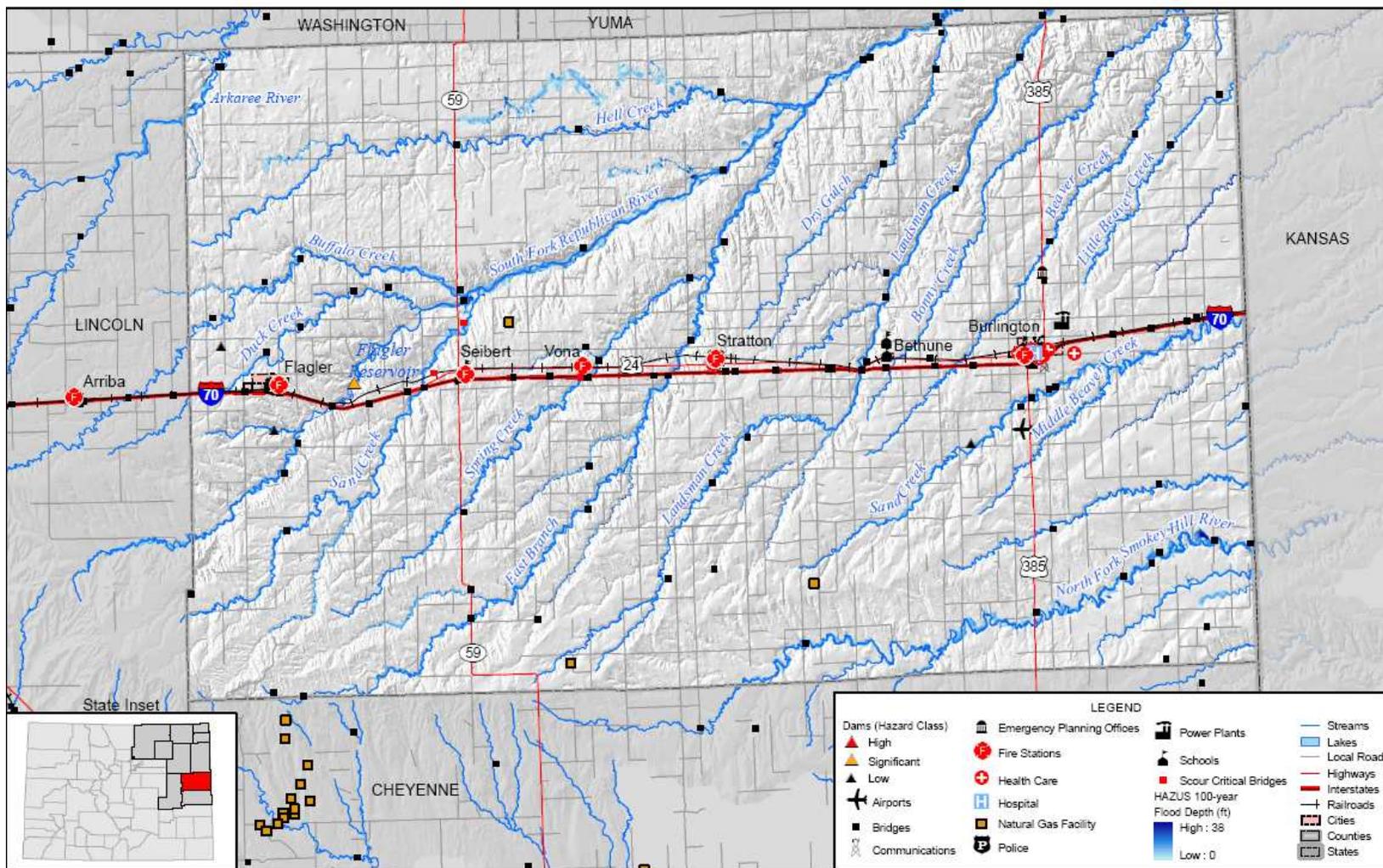
- **Burlington:** Experiencing slow growth in SE (South of Rose, North of I-70, and 8th. St to a block N. of Fay). There is also some growth on the North side by the Fairgrounds and on the West side extending into the County.
- **Flagler:** Annexations are occurring. Slow growth to west and north (noted by residences switching from septic to city sewer).
- **Stratton:** Developing slowly to the West.
- A small biodiesel plant is being planned in Burlington.
- Wind farms are planned north and south of Burlington.
- Tri-State Generation is putting in a generation plant and transmission lines through the County to the Kansas border.

Floodplain Vulnerability Assessment

The best available flood data for Kit Carson County was generated by HAZUS-MH MR3, FEMA's software program for estimating potential losses from disasters. See the base plan vulnerability assessment for a description of HAZUS methodology. The 100-year

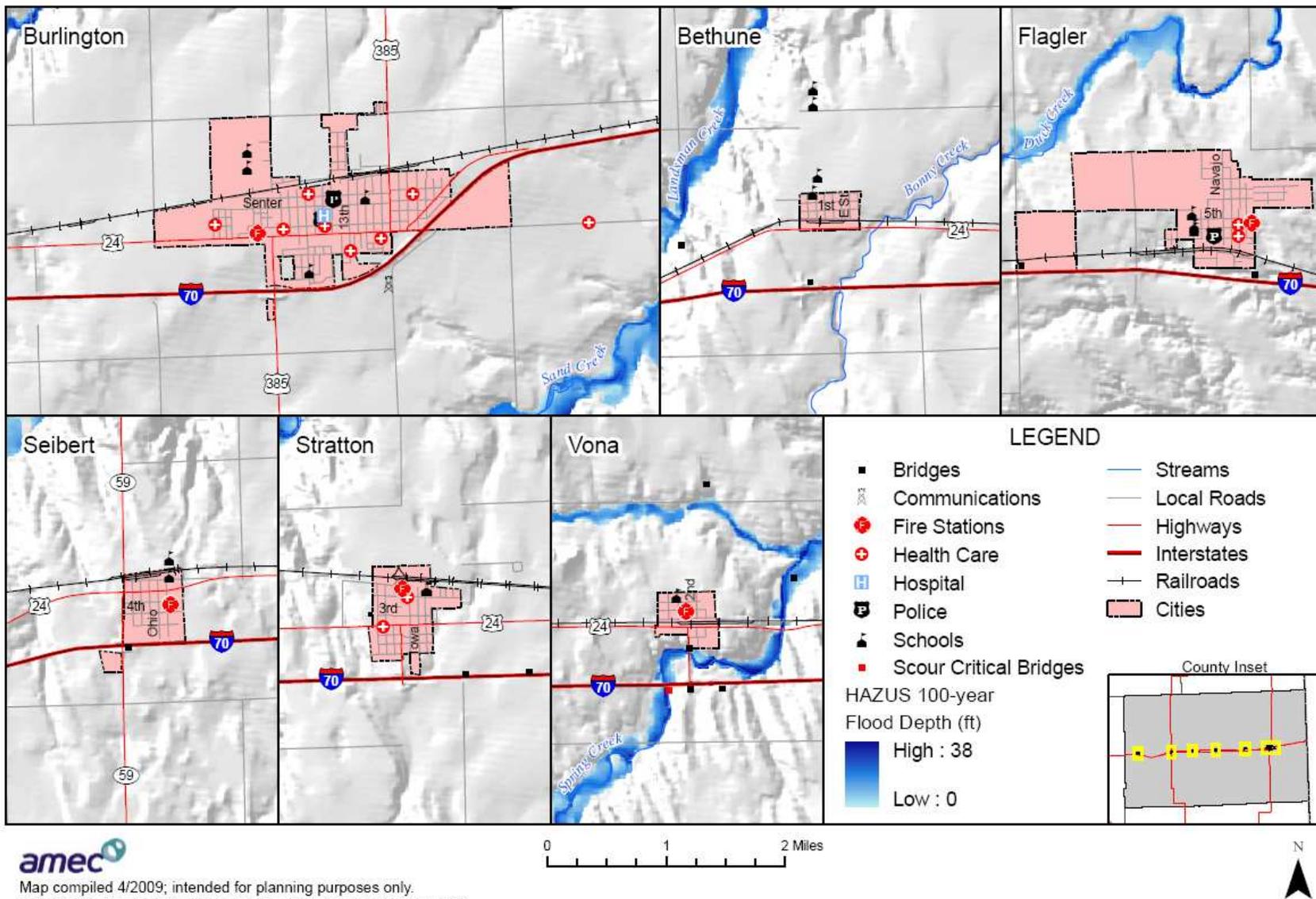
floodplain generated with HAZUS-MH is shown countywide in Figure 1 and at municipal scales in Figure 2. Both maps indicate the location of critical facilities as well.

Figure 1 Kit Carson County HAZUS 100-year Floodplain and Critical Facilities Map



Map compiled 4/2009; intended for planning purposes only.
 Data Source: State of Colorado, CDOT, CODWR, CSFS,
 Colorado Wildfire Risk Assessment 5/16/2002

Figure 2 Kit Carson County Cities HAZUS 100-year Floodplains and Critical Facilities Map



Map compiled 4/2009; intended for planning purposes only.
Data Source: State of Colorado, CDOT, CODWR, HAZUS-MH MR3

HAZUS-MH estimates the potential for over \$3 million in flood losses from a 100-year flood in the County. To estimate the monetary loss for each city, the flooded Census Blocks were extracted, and the damage costs were totaled using GIS. This was done for each city and unincorporated area to illustrate how the risk varies across the planning area. According to HAZUS-MH, none of the cities within Kit Carson County are at risk to flooding. The map in Figure 3 displays the distribution of the flood loss by Census Block across the County. According to the map in Figure 1 the majority of flood impacts in the unincorporated County are located on North Fork Smokey Hill River and South Fork Republican River.

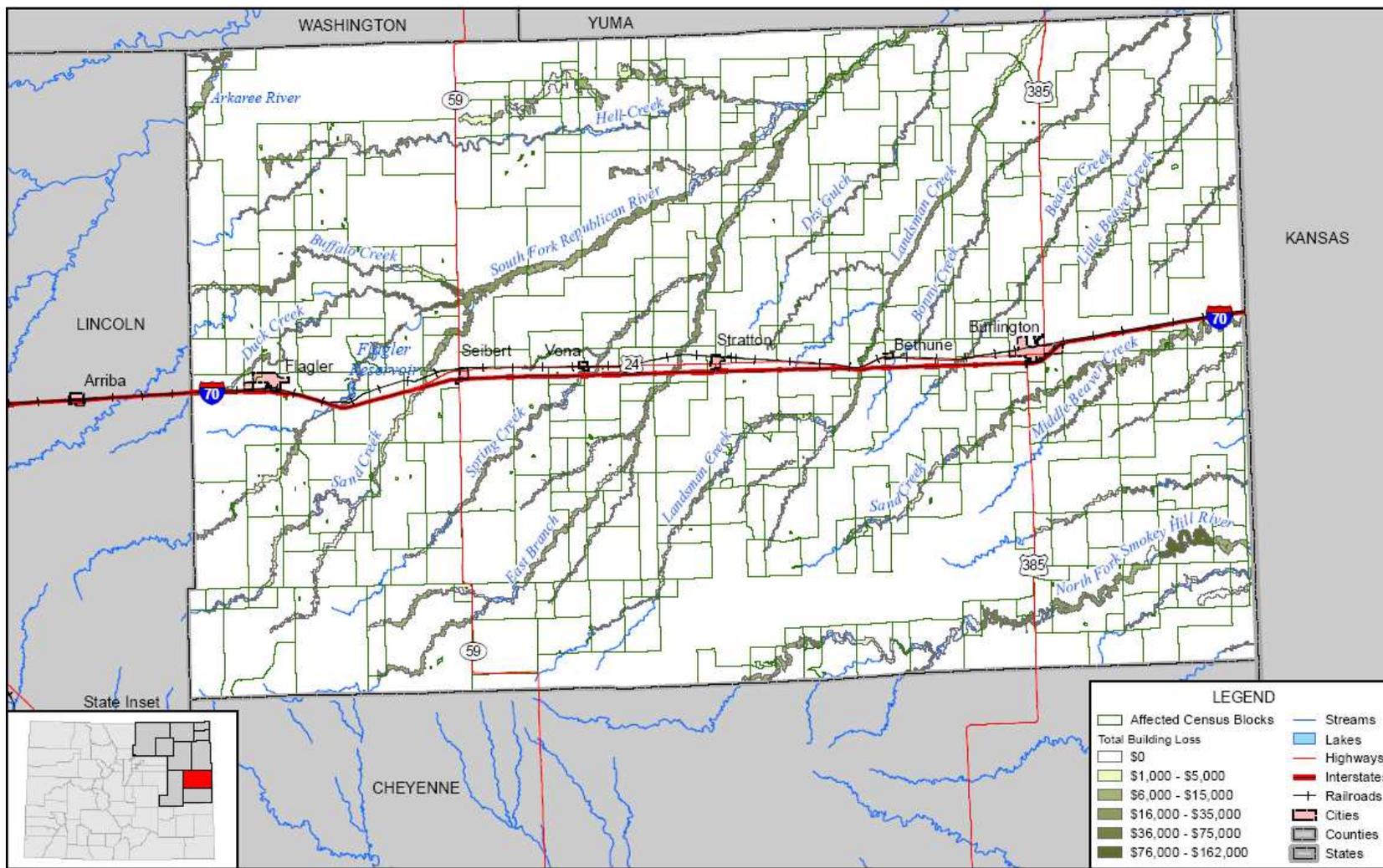
No local floodplain inventory has been conducted, as there are no maps; however the CPS identified 25 ranch-residences that flooded in 1935 as a result of 25” rain in 10 hours.

Table 6. Estimated Economic Losses from Flooding

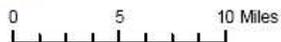
Jurisdiction	Cost Building Damage (\$)	Cost Contents Damage (\$)	Inventory Loss (\$)	Relocation Loss (\$)	Capital Related Loss (\$)	Rental Income Loss (\$)	Wage Loss (\$)	Total Loss (\$)	Percent of Total Loss	Loss Ratio
Bethune	-	-	-	-	-	-	-	-	-	-
Burlington	-	-	-	-	-	-	-	-	-	-
Flagler	-	-	-	-	-	-	-	-	-	-
Seibert	-	-	-	-	-	-	-	-	-	-
Stratton	-	-	-	-	-	-	-	-	-	-
Vona	-	-	-	-	-	-	-	-	-	-
Unincorporated	1,449,000	1,483,000	125,000	-	-	-	3,000	3,060,000	100%	1.1%
Total	1,449,000	1,483,000	125,000	-	-	-	3,000	3,060,000	100%	0.3%

Source: HAZUS-MH MR3

Figure 3 Kit Carson County Building Loss in the 100-year Floodplain



Map compiled 5/2009; intended for planning purposes only.
 Data Source: State of Colorado, CDOT, CODWR, HAZUS-MH MR3



Floodplain Population Information:

The 2008 State Hazard Mitigation Plan estimates that there are 0 people, 0 1-4 family structures, and 0 other types of structures in the County floodplains. Kit Carson County was identified in the State flood risk assessment as **Low Risk**, based upon the floodplain population, the number of structures at risk, and the number of dams. The displaced population and shelter needs estimated by HAZUS are shown in Table 7

Table 7. Population Displaced by Flooding

Jurisdiction	Displaced Population	Population Needing Shelter
Bethune	-	-
Burlington	-	-
Flagler	-	-
Seibert	-	-
Stratton	-	-
Vona	-	-
Unincorporated	103	-
Total	103	-

Source: HAZUS MH MR3

Critical Facilities in the Floodplain

Critical facilities in the floodplain were determined using GIS, by selecting all critical facilities that fell within the floodplain. There are not any critical facilities in Kit Carson County within the HAZUS generated floodplain.

Kit Carson County Scour Critical Bridges

Included with HAZUS-MH is a database of bridges called the National Bridge Inventory developed by the Federal Highway Administration. One of the database items is a “scour index,” which is used to quantify the vulnerability of a bridge to scour during a flood. Bridges with scour index between 1 and 3 are considered “scour critical,” or a bridge with a foundation element determined to be unstable for the observed or evaluated scour condition.

There are 4 scour critical bridges in Kit Carson County. They are all located on the highways that travel through Kit Carson County. Two scour critical bridges are located south of Vona on Interstate 70 at the intersection of Spring Creek, one is northbound and the other is on the southbound portion of the interstate. One is located north of Seibert on State Highway 59 at the intersection of Sand Creek. The other one is east of Seibert on US 24 at the intersection of Sand Creek.

The location of these bridges is shown in Figure 1, and described in detail in Table 8.

Table 8. Scour Critical Bridges

Name	Road Type	Stream	Near City
US 24	Rural Highway	Sand Creek	Seibert
State Highway 59	Rural Highway	Sand Creek	Seibert
I 70 Westbound	Interstate	Spring Creek	Vona
I 70 Eastbound	Interstate	Spring Creek	Vona

NFIP Claims Analysis

Policies and Claims Information:

As of 12/31/2008, Kit Carson County does not participate in the NFIP program. There are no policies or claims information for this County.

Repetitive Loss Properties: There are no repetitive loss properties in this County.

Dam Failure Vulnerability Assessment

There is one Class II dam in the County at Flagler Lake. It was built in 1965 by USACE for flood control. The land was donated for recreational purposes. It is currently a DOW State Wildlife area. There are currently 25 ranch houses downstream on Republican River. There is little threat to these houses as they are located more than 10 miles downstream. Table 9 indicates how dam failure risk varies among communities in Kit Carson County.

Table 9. Hazardous Dams in Kit Carson County

Dam Name	County	Max Storage (acre ft)	Dam Hazard	Downstream Community	Miles to Community	Relative Downstream Impacts
Flagler	Kit Carson	3,087	Significant	St. Francis, Kansas	51	Negligible

Source: HAZUS MR3

Wildfire Vulnerability Assessment

Kit Carson County Wildland Urban Interface

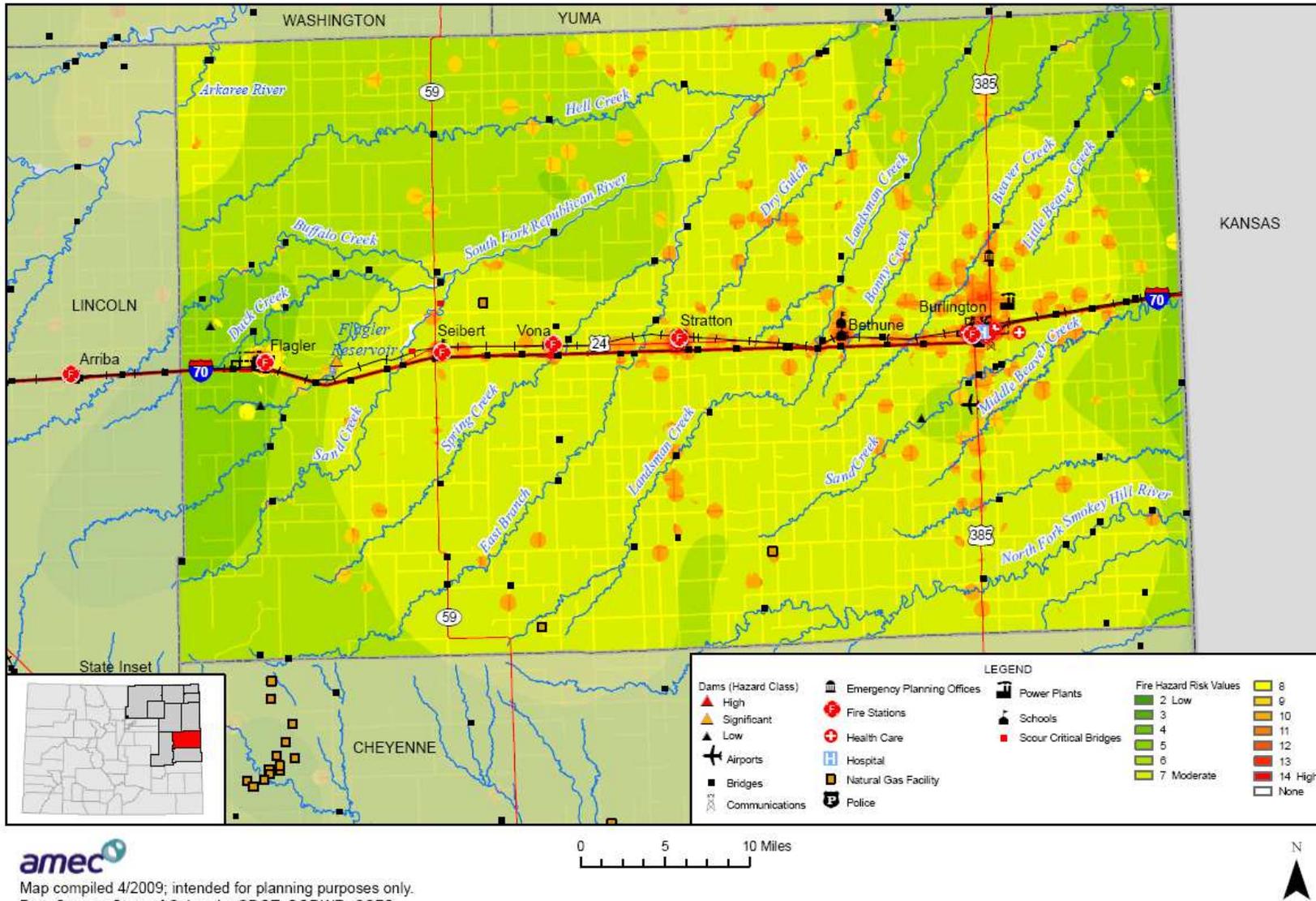
The Wildland Urban Interface in Figure 4 for Kit Carson County shows low to high fire hazard risk values. The majority of the county has low values with the higher values around the communities of Bethune, Burlington, Flagler, Seibert, Stratton, and Vona. Bethune, Seibert, and Vona have the highest fire risk in the county with values between moderate and high with the higher values within the city limits. Burlington and Stratton are surrounded by high risk values with moderate values within the city limits. Flagler has the lowest values with risk values in the low to moderate range.

Kit Carson and Cheyenne Counties reported the following events: ⁴

- February 11, 2005: Kenny Becker Grassland fire, mutual aid with Arriba Fire, location between Rd 2W and Rd 47. Burned approximately 3.5 x .5 miles area, caused by truck fire. Damage and cost estimates are not available.
- July 7, 2005: Large grassland fire, mutual aid with Vona Fire, burned 11 miles north and 2 miles east of Vona. Fire started by lightning. Loss and cost estimates are not currently available.
- July 24, 2005: Grassland fire, mutual aid with Arriba Fire. Location at Rd 48 and 3Y, fire burned approximately 200 acres of CRP grassland. The fire was started by lightning. No loss or cost estimates are currently available.
- June 6, 2006: Large grassfire south of Seibert, mutual aid assistance with Seibert Fire. Cause, cost, and loss estimates are unknown.

⁴ Cheyenne County and Kit Carson County Emergency Manager, *2009 Community Profile Information Guide*

Figure 4 Kit Carson County Wildland Urban Interface



Map compiled 4/2009; intended for planning purposes only.
 Data Source: State of Colorado; CDOT, CODWR, CSFS,
 Colorado Wildfire Risk Assessment 5/16/2002

Critical Facilities

A GIS overlay was used to identify certain facilities in the moderate to high fire risk areas. The facilities identified within a moderate to high wildfire risk area are summarized in Table 10. The following narrative describes the community and potentially at-risk critical facilities.

There are 155 Critical Facilities in a moderate to high fire hazard in Kit Carson County. Burlington has nineteen facilities in the fire hazard: one fire station, ten health care, one hospital, three police stations and four schools. Flagler has nine facilities: two bridges, one fire station, two health care, one police station and three schools. Siebert has two: one fire station and one school. Stratton has six facilities in the moderate to high fire hazard: one fire station, two health care, one police station and two schools. Vona has two: one fire station and one school. The unincorporated county has 117 critical facilities in the fire hazard: one airport, ninety eight bridges, four scour critical bridges, two communication towers, one dam, one emergency planning office, one health care, three natural gas facilities, one power plant and five schools.

Table 10. Critical Facilities Subject to Fire Hazard (by type)

Facility Type	Facility Count
Airports	1
Bridges	100
Communications	2
Dams	1
Emergency Planning Offices	1
Fire Stations	5
Health Care	15
Hospital	1
Natural Gas Facility	3
Police	5
Power Plants	1
Schools	16
Scour Critical Bridges	4
Total	155

Agricultural Vulnerability Assessment

Agriculture is an important aspect of the County’s economy. The following discussion analyzes the potential losses from floods using HAZUS and multiple hazards from federal crop insurance records.

HAZUS Methodology for Agriculture Economic Losses

The agriculture component of the HAZUS Flood Model estimated a range of losses to barley, corn, corn silage, oats and wheat. These crops were the only crops identified by the HAZUS model to have loss within the region of study. The model assumes a short duration and slow rise flood when estimating losses and does not account for high velocity flash floods. Loss estimates are based on United States Army Corp of Engineers (USACE) damage modifiers. The HAZUS-MH impact analysis predicts a loss estimate value by crop for flow time intervals. The first is a loss estimate for the day of the fixed event; the remaining three are for 3, 7 and 14 days following the event.

The agricultural products in Kit Carson County that show economic loss are barley, corn, corn silage and wheat. Barley’s total loss is \$2,632,452, corn’s total loss is \$20,704,940, corn silage’s total loss is \$44,877,660 and wheat’s total loss is \$13,047,432. The total loss of all of these products is \$81,262,484. More detail is given in Table 11.

Table 11. Kit Carson County Direct Economic Loss for Agriculture Products

Agriculture Product	Crop Loss Day 0 (\$)	Crop Loss Day 3 (\$)	Crop Loss Day 7 (\$)	Crop Loss Day 14 (\$)	Total Loss (\$)
Barley	0	717,941	957,255	957,255	2,632,452
Corn	0	5,646,802	7,529,069	7,529,069	20,704,940
Corn Silage	0	12,239,362	16,319,149	16,319,149	44,877,660
Wheat	0	3,558,390	4,744,521	4,744,521	13,047,432
Total	0	22,162,496	29,549,994	29,549,994	81,262,484

Source: HAZUS MH-MR3

Crop Insurance Analysis

Federal Crop Insurance Data represents losses from multiple hazards that could include: biological hazards, flooding, drought, hailstorms, noxious weeds, temperature extremes, tornados, wildfires and straight-line winds. Average annual claims payout amount to \$5.6 million in the County. More details are provided in Table 12 and 13.

Table 12. Kit Carson County Premium and Loss Data for Federal Crop Insurance from 1980 through 2007

Liability(Amount of Coverage)	Total Premium	Federal Premium Subsidy	Farmer-paid Premium	Amount Paid in Claims	Average Amt. Paid Annually in Claims
866,176,771	112,917,859	58,679,921	54,237,938	157,143,297	5,612,261

Source: Federal Crop Insurance Services

Table 13. 2008 Kit Carson County Provisional Data (claim data unavailable as 2008 claims are not fully reported)

Liability(Amount of Coverage)	Total Premium	Federal Premium Subsidy	Farmer-paid Premium
105,003,399	22,625,469	13,323,406	9,302,080

Source: Federal Crop Insurance Services

Kit Carson County 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 two sections: regulatory mitigation capabilities and additional mitigation projects and capabilities. The regulatory mitigation capabilities for the County and its municipalities are summarized in Table 14. Refer to the Introduction to the County Elements for an explanation of the capability assessment matrix.

Table 14. Regulatory Mitigation Capabilities

	KIT CARSON	Bethune	Burlington	Flagler	Seibert	Stratton	Vona
Comp Plan	Y		Y				
Land Use Plan	Y	N	N	N	N	N	N
Subdivision Ord	Y						

	KIT CARSON	Bethune	Burlington	Flagler	Seibert	Stratton	Vona
Zoning Ord	Y	Y	Y	Y	Y	Y	Y
NFIP/FPM Ord	N	N	N	N	N	N	N
- Map Date	Not Mapped	Not Mapped	Not Mapped	Not Mapped	Not Mapped	Not Mapped	Not Mapped
- Sub.Damage?	N/A	N/A	N/A	N/A	N/A	N/A	N/A
- Administrator?	N/A	N/A	N/A	N/A	N/A	N/A	N/A
- # of FP Bldgs?	N/A	N/A	N/A	N/A	N/A	N/A	N/A
- # of policies	N/A	N/A	N/A	N/A	N/A	N/A	N/A
- # of RL's?	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CRS Rating	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Stormwater Prgm	N		Y			Y	
Building Code	N	Y	Y	Y	Y	Y	Y
Building Official.	N	N	N	N	N	C	C
- Inspections?	State P&E	State P&E	State P&E	State P&E	State P&E	State P&E	State P&E
BCEGS Rating							
LEOP	Y	C	C	C	C	C	C
HM Plan	In Progress	C	C	C	C	C	C
Warning	Y	C	C	C	C	C	C
Storm Ready?	Y						
Weather Radio?	Y	Y	Y	Y	Y	Y	Limited, Dead spot, needs repeater
Sirens?	Y	Y-1	Y-4	Y-2	Y-1	Y-3	Y-1
Emergency Warning Notification?	Y	C	C	C	C	C	C
Other?	Y-EAS	C	C & cable override	C	C	C	C
GIS System	N	N	N	N	N	N	N
Structural Projects	N	N	N	N	N	N	N
Property Protection	N	N	N	N	N	N	N
Crit.Fac.Protection	N/A		REA generator				

	KIT CARSON	Bethune	Burlington	Flagler	Seibert	Stratton	Vona
Natural Res. Inv.	Y @ Flagler						
Cultural Res. Inv.	Y	Y	Y	Y	Y	Y	Y
Erosion Control	Y-BMP	N	N	N	Y	N	N
Sediment Control	Y-BMP	N	N	N	N	N	N
Pub. Info Prgrm	Web-Site	Y	Web-Site	Y	Y	Y	Y
Env. Ed Prgrm	CSU-ext	Y	Y	Y	Y	Y	Y

NFIP Mapping Information:

- **Bethune**, Never mapped
- **Burlington**, Never Mapped
- **Flagler**, Never Mapped
- **Stratton**, Never Mapped
- **County**: Current Map: 01/01/1950 (Never mapped, not participating).

Additional Mitigation Capabilities in Kit Carson County

The 2009 Data Collection Guide identified the following additional capabilities:

- Lightning detectors have been implemented at public swimming pools and baseball fields
- Surge Hospital unit is complete, and training for CERT and MRC volunteers has begun.

Kit Carson County Recommendations

GOAL: IMPROVE KIT CARSON COUNTY CAPABILITY TO REDUCE DISASTER LOSSES

Action Item #1: *County should work to become certified as “Storm Ready” by National Weather Service.*

Issue Statement: A primary goal of the Northeast Colorado Emergency Managers Association multi-jurisdictional DMA Hazard Mitigation Plan is for each County to become “Storm Ready” certified within the next three years. “Storm Ready” certification is an indication that the community has prepared for adverse weather conditions, trained officials and citizens to recognize and report adverse weather conditions, and has established and regularly tested a system for receiving and disseminating severe weather information and warnings to the public. Tornadoes are frequent in Kit Carson County and there is a gap in the warning capability throughout the County. Radio “Repeaters,” siren upgrades, and NOAA Weather Radios are needed. Known deficiencies include:

The need for NOAA Weather Radio “Repeaters” or tall antennae to provide coverage in a “Dead Zone” within Vona, and to cover the western portion of Flagler out to the Lincoln County line. The signal comes from the NWS in Goodland, KS and is weak. Flagler has an 80-foot siren tower on which the repeater can be mounted.

Sirens are needed for the east side of Stratton and the east side of Flagler.

NOAA Weather radios are needed in the Seibert, Stratton, and Vona schools. In Stratton notification is now accomplished through Fire Department personnel. The Kit Carson County shops in Burlington, Flagler and Stratton each need radios also.

Lightning detectors are needed at Burlington, Flagler, and Stratton swimming pools, ballfields and golf courses.

Implementation Manager and strategy: County Emergency Manager will contact the NWS, the Communities and the Fire Districts to determine what Kit Carson County needs to accomplish, and then help those entities seek funding through grants to make the necessary improvements. Monitor funding opportunities, and potential “partners” in order to obtain the required equipment.

Priority: High

Cost Estimate: \$35,000 for sirens, \$25,000 for 2 “repeaters,” and \$500 for NOAA Weather Radios. Lightning detectors unknown.

Cost-Effectiveness Explanation: The potential for saving just one life, and providing time for individuals and businesses to take effective actions to protect property, far outweighs the potential cost of the warning system and equipment. This goal and recommended action was selected by the MCPC due to its return on investment and relative ease in achieving. It may be the single most effective action the County and the entire Planning Area can undertake to reduce future disaster losses.

2009 Update: The County is now certified and remains compliant for the Storm Ready Program through the National Weather Service. Lightning detectors have been implemented at public swimming pools and baseball fields. NOAA radios have been, and continue to be, distributed throughout the County as funding becomes available.

Action Item #2: *Promote the benefits of tornado shelters and “Safe-Rooms” and foster their construction.*

Issue Statement: On average, over the past 47 years, Kit Carson County has experienced more than one tornado each year. While damage has been minimal to date, it is merely a matter of time before a more serious event occurs. There are few places for people to take shelter throughout the County, and several locations within the County where the need is more critical due to the number of people in the vicinity, or the inability of those in these areas to find safe shelter quickly in an alternate location. Among the known locations where “Safe-Rooms” or tornado shelters would be most useful, are:

- In Burlington, the Old Town area, the Softball and Baseball Fields, and in the City Center
 - The basement of the Armory building should be considered as an alternative
- In the school buildings of Flagler, Seibert and Vona
- In Flagler, at a location near the Assisted Living Facility and Elderly Housing Project.
- In Bethune: location to be determined

In addition this project will utilize the tornado safe room demonstration developed by Morgan County at County fairs and other public events.

Implementation Manager and strategy: County Emergency Manager, in conjunction with the town administration of Bethune, Burlington, Flagler, Seibert, Stratton and Vona, special needs facilities, and NWS, CO-OEM and FEMA. This project will also involve the school districts including Stratton, Hi Plains, Bethune and Burlington.

Priority: High

Cost Estimate: \$8K each, x 20 = \$160,000. In kind labor is available through the communities to help defray the construction costs and meet the “match” requirements of most grants. In addition, some existing buildings may have areas suitable for providing protection, such as basements in the city center.

Cost-Effectiveness Explanation: Preventing one loss of life or serious injury from wind or other hazards would be worth the expense. Tornado hazards are very frequent.

2009 Update: No action has been taken on purchasing Safe Rooms, or underground shelters. The process of implementing a partnership shelter program with the Red Cross is underway. Timeframes are dependent on funding allocation and procurement, but the high priority of the action indicates that the process will be executed in the most expedient manner possible. In 2009 at the public meeting the need for a tornado shelter in Burlington was reiterated. The Armory building basement in Burlington was noted as a possible shelter location.

Action Item #3: *Burlington should consider improving the drainage around the Kit Carson Fairgrounds, and adopt stormwater/drainage regulations to prevent new development from worsening the existing problems.*

Issue Statement: Currently, 2” of rain at the fairgrounds can flood buildings, create the ponding of water, aggravate traffic, and threaten area homes with flooding. The present solution is to pump the water over the railroad tracks versus its natural drainage pattern. This aggravates drainage downstream as the water proceeds south towards the Old Town facilities, where new in-street drainage facilities transport the water out of town. New development is at increased risk east of 15th and North of Railroad Avenue. Runoff in the “Gross Addition” now ponds at the SE corner of the subdivision. There has been discussion of a drainage project on the west side of 15th near the fairgrounds.

Implementation Manager and strategy: Kit Carson County Commissioners and the City of Burlington. Design and build.

Priority: High

Cost Estimate: \$70,000 for drainage improvements at Fairgrounds.

Cost-Effectiveness Explanation: Preventing future flood losses to fairgrounds and neighboring residential areas, and not interrupting traffic would be worth the expense. This is a frequent occurrence.

2009 Update: This project was completed in 2004-2005.

Action Item #4: *Implement an overall Communications program update.*

Issue Statement: The communications program upgrade is a two-step process. First, there needs to be an improvement in the communications between EMS, Fire, Police, the City of Burlington and the County Sheriff’s Department. Existing coverage and linkages are weak and on different frequencies. Second, the Countywide dispatch center is not in a tornado-safe building. It is currently in the ground level of the jail annex of the Courthouse – a block structure with a suspended roof. When it was being built, high winds blew down a wall of the structure. An underground location would be the best choice for a future location. It would also be able to function as a community shelter for the downtown area and neighboring residences.

The underground communications center will also support a parallel goal of Cheyenne County, with whom Kit Carson County shares an Emergency Management Director. The end result that is sought would be that each County has their own underground communications center, with one serving as the back-up to the other during any type of disaster event.

Implementation Manager and strategy: County Emergency Manager, in conjunction with the Kit Carson County Commissioners and Burlington City Council. First, detail the existing weaknesses in the communications system and identify the necessary improvements. Second, identify existing buildings that may have areas suitable for providing the needed protection, or that can be strengthened.

Priority: Medium (3-5 years)

Cost Estimate: \$500K. In kind labor is available through the communities to help defray the construction costs and meet the “match” requirements of most grants. Use of an existing building will reduce the expense enormously.

Cost-Effectiveness Explanation: Maintaining communications in an emergency is a critical element in a community’s ability to respond and recover from a disaster. Ensuring that response agencies can communicate directly, and without interference, helps maintain an efficient and coordinated response. Tornado hazards are very frequent in Kit Carson County and present a realistic threat to the existing facility.

2009 Update: County Communications continues to evolve and a significant project is underway to provide direct connectivity for both Cheyenne & Kit Carson County communications using an 800 MHz migration.. This project should be completed by the end of 2009.

Action Item #5: *Implement a Countywide Emergency Management Public Education Program.*

Issue Statement: The Kit Carson County CPS identified several areas of concern that can be effectively addressed through an Emergency Management Public Education program. The information that needs to be disseminated includes:

Promoting the “FireWise” Education Program, which teaches communities and property owners basic, simple, and inexpensive techniques that reduce damages from grass and wildland fires. This provides Fire Districts with an extra against defense measure when faced with such situations – which are moderately frequent throughout the County. (An example may be viewed at http://www.firewise.org/fw_youcanuse/index.htm).

An explanation to purchasers of in-line phone “zappers” that these devices will not allow Emergency Warning Notification systems to reach them while they perform their function of blocking any computer generated call to get their telephone.

Other items associated with this project were updated in 2009 to include:

- Encourage community preparedness and coordinate public health
- Provide County health information in Spanish
- Involve PH link

Implementation Manager and strategy: County Emergency Manager, in conjunction with the FSA (for promoting Crop Insurance), KCC Volunteer Fire Protection District (for promoting FireWise techniques), and electronic device dealers in the Kit Carson County area. This project will involve all incorporated communities including Burlington, Flager, Stratton,

Priority: Medium

Cost Estimate: \$2,000 to pay for producing and mailing posters, “flyers,” handouts, and envelope “inserts.”

Cost-Effectiveness Explanation: Public Education programs are generally inexpensive and are one of the more effective means of communicating useful information to people so that they may take effective actions to protect themselves from loss of property or harmful injuries in emergency and disaster events. There are FEMA funds available through CO-OEM following presidential declared disaster areas that can be utilized for such efforts without requiring a cost/benefit analysis. In addition, this action ensures all participating jurisdictions and unincorporated elements of the planning area have an action item in which they may actively participate.

2009 Update: Public Education continues to evolve with CERT & MRC, as well as community continuity of operations planning in the business community. The timeframe for this project is indefinite as public education is an ongoing and continuous process.

Action Item #6: *De-register the Historic Spring Creek Bridge.*

Issue Statement: During the planning process, The Kit Carson County CPS discovered that the Spring Creek Bridge has been designated a “Historic Structure.” (The bridge is east of Vona on Highway 24 at the bottom of the hill.) The bridge is considered unsafe by some, and the Historic Designation may inhibit proper and warranted upgrades. In fact, the very purpose of identifying Historic Structures through this planning process was to lessen post-disaster delays in repairing such facilities. The Spring Creek Bridge was apparently submitted and listed as Historic by the Colorado Department of Transportation (CDOT) through a survey mechanism that did not include any local input. De-registering the structure now will eliminate any “paperwork” problems later when the bridge is either upgraded or damaged and need repair or replacement.

Implementation Manager and strategy: Kit Carson County Road and Bridge Department with the State Historic Preservation Officer (SHPO) and CDOT. Bring this situation to the attention of the concerned parties, and if consensus is reached, apply to have the structure de-registered.

Priority: Low

Cost Estimate: No funding is necessary. This is an administrative action.

Cost-Effectiveness Explanation: N/A.

2009 Update: No action has been made on this project. The timeframe for this project is extended, indicating at least 24 months, based on the low priority of the action.

Action Item #7: *Provide a back-up power supply for Seibert sewage pump.*

Issue Statement: There are frequent power interruptions in Seibert, and when they occur the sewage pumps stop working and back-up into homes and businesses in the southern part of Seibert. The pump is west of Seibert on the north side of Highway 24.

Implementation Manager and strategy: Town of Seibert Public Works.

Priority: High

Cost Estimate: Unknown at the time. Need a backup battery to run a 35 HP pump and solar panel to keep the battery charged..

Cost-Effectiveness Explanation: The cost will eliminate future damages.

2009 Update: This activity has been completed with the purchase of a new generator.

New Actions in 2009

Action Item #8: *Encourage the State/NFIP to map the County's flood hazards.*

Issue Statement: The County and incorporated communities have never been mapped by the NFIP. HAZUS flood modeling in this plan indicates that flood hazards exist. Mapping would enable communities to plan wisely and administer floodplain development.

Implementation Manager and strategy: County staff should contact the Colorado Water Conservation Board to indicate interest in being mapped for the NFIP.

Priority: Moderate

Cost Estimate: Low

Action Item #9 *Town of Stratton drainage improvement project*

Issue Statement: The northwest portion of Stratton has drainage problems that would take a joint County-town effort to address. A potential project is in the initial planning stages.

Implementation Manager and strategy: Town of Stratton, County planning

Priority: Moderate

Cost Estimate: unknown

Regional Actions (tri-county Cheyenne, Kit Carson and Lincoln sub- region)

Create regional communication/public notification improvements (see description in Lincoln County Planning Element)

- Reverse 911 directories in the three county area

- Schools

- Digital conversion issues

2009 Wildfire Mitigation actions

The following actions are wildfire mitigation actions written for the 9 county region that the County will undertake or participate in (See appendix C for details).

- Update wildfire risk assessment

- Develop Countywide CWPPs

- Develop Wildfire pre-attack plans

- Develop County Annual Operating Plans for wildfire