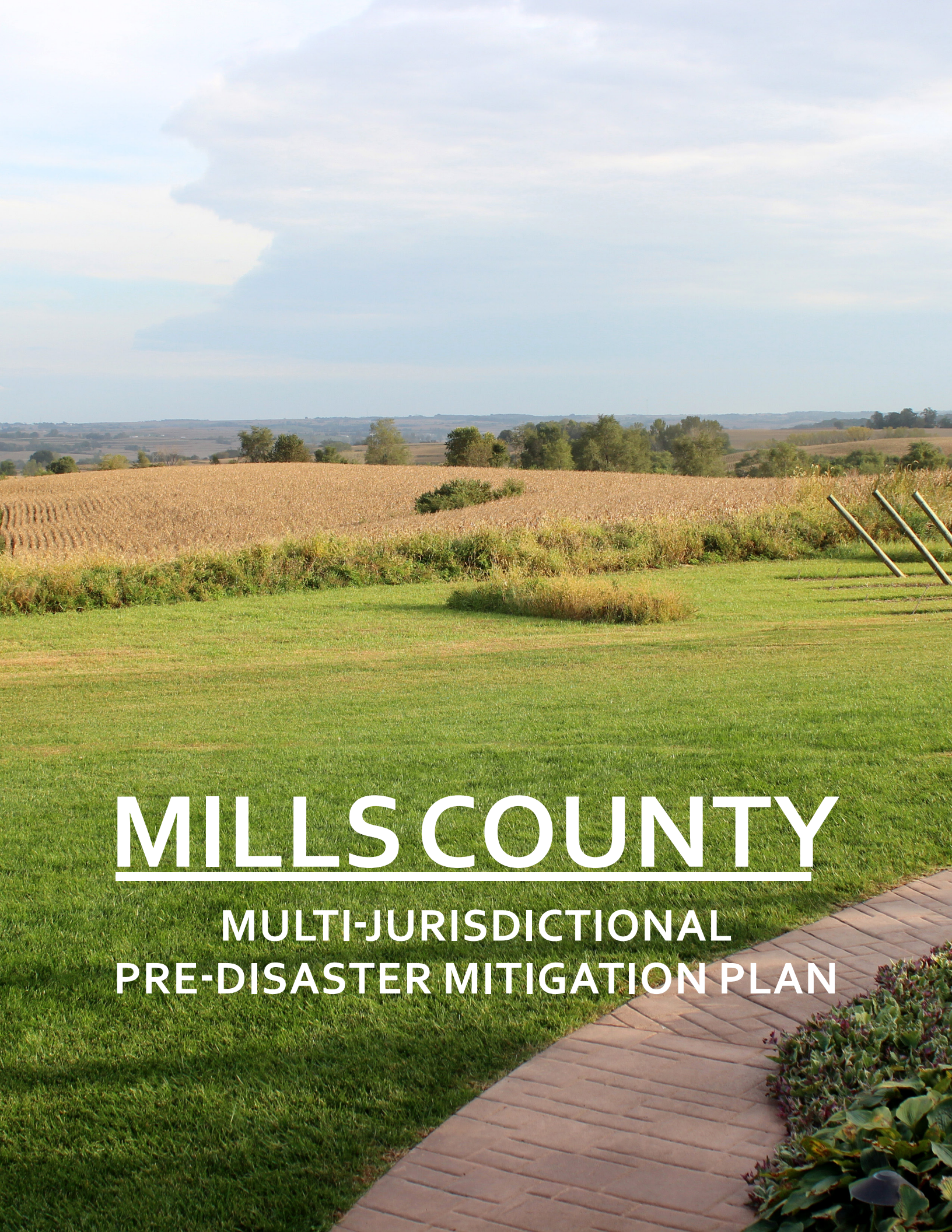




MILLS COUNTY

MULTI-JURISDICTIONAL PRE-DISASTER MITIGATION PLAN

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APPENDICES

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Pre-Disaster Mitigation Planning Sign-In Sheets - Appendix B
Adopting Resolutions - Appendix C

ACKNOWLEDGEMENTS

The Mills County, Iowa, Emergency Management Agency developed the Mills County Multi-Jurisdictional Pre-Disaster Hazard Mitigation Plan in collaboration with the Omaha-Council Bluffs Metropolitan Area Planning Agency, the elected and appointed officials of the county and jurisdictions therein, and volunteer citizens and stakeholders. The plan was prepared with direction from representatives of the communities, agencies and departments, and special districts of the entire Mills County planning area.

Participants and contributors of the plan are acknowledged below.

Mills County

Sheri Bowen	Public Health
Patrick Bins	GIS & Mapping
Richard Crouch	Board of Supervisors
Melissa Gray	Veterans Affairs
Larry Hurst	Homeland Security & Emergency Management Agency
Travis Hitchcock	Homeland Security & Emergency Management Agency
Nick Johnson	County Attorney's Office
Kevin Mayberry	Engineer & Secondary Roads
Lonnie Mayberry	Board of Supervisors
Carol Robertson	County Auditor
Carol Vinton	Board of Supervisors

Mills County Economic Development Foundation

Rick Allely	Executive Director
-------------	--------------------

City of Emerson

Lana Moyers	Deputy City Clerk
Liz Ungry	Fire Chief

City of Glenwood

Ron Kohn	Mayor
Holly Jackson	City Council
Eric Jonansen	Police Department
Dan McComb	City Council

Angie Winquist	City Administrator/Finance Director
Jeremy Rodman	City Council
Laurie Smithers	City Council

City of Hastings

Shirley Moorman	City Clerk
-----------------	------------

City of Henderson

Joel Tomford	Mayor
Mark Knop	Fire Department
Mike Baumfalk	Citizen/Formal Mayor

City of Malvern

Mary Poort	City Clerk
------------	------------

City of Pacific Junction

Lucas Lechtenberg	Fire Department
Korrena Neppi	City Clerk

City of Silver City

John Stacey	Fire Department
-------------	-----------------

Glenwood Community School District

Devin Embry	Superintendent
Curt Becker	School Board
Theresa Romens	School Board
Greg Schultz	School Board
Ann Staiert	School Board

Missouri River Levee District

Christopher Dashner	Chairperson
---------------------	-------------

M&P Missouri River Levee District

Dennis Lincoln	Chairperson
----------------	-------------

Miller-Sturgeon Levee District

Christopher Dashner	Chairperson
---------------------	-------------

Section 1

1 MILLS COUNTY

[section 1]

EXECUTIVE SUMMARY

The Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan (or “plan”) was developed for and applicable to one county government, seven incorporated municipal governments, and two special purpose districts. These government/special purpose entities include Mills County; the cities of Emerson, Glenwood, Hastings, Henderson, Malvern, Pacific Junction, and Silver City; the Glenwood Community School District; and the M&P Missouri River Levee District.

The Mills County Multi-Jurisdictional Pre-Disaster Mitigation Planning Committee (or “Planning Committee”) met three times to discuss potential hazards to the county and all sub-jurisdictions. Thirty-five natural and human-caused hazards were determined to have occurred or are likely to occur in the county and are cited in Section IV of this plan. The Planning Committee’s prioritization of hazards is explained in that section.

After studying potential hazards, the Planning Committee identified recent mitigation activities and assessed gaps in the mitigation/preparedness of hazards to the county and municipalities. The Planning Committee then set goals and objectives that cover all identified hazards, which are listed in Section VI of this plan.

Finally, the Planning Committee developed a strategy for completing pre-disaster mitigation goals and objectives. Hazard mitigation can occur through the accomplishments of actions identified in Section VII that will reduce the impacts of hazards on citizens and the local economy. Many of the actions are inexpensive and relatively simple while others are more costly and sophisticated in scope; however, all actions are within the realm of possibility and can be carried out to fruition.

Adoption by all governing bodies within the jurisdictional boundaries of Mills County demonstrates commitment on a countywide basis to fulfill the mitigation goals and objectives outlined in the plan. Adoption legitimizes the plan and authorizes responsible entities to execute their priorities.

Section 2

MILLS COUNTY

[section 2]

PURPOSE AND PROCESS OF THE MULTI-JURISDICTIONAL PRE-DISASTER MITIGATION PLAN

Purpose

There are three purposes for the development of the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan (or “plan”). The first purpose is to protect the health, safety, and economic interests of citizens and businesses by reducing the impacts of natural and human-caused disasters through awareness, planning, and implementation. Second, the plan fulfills compliance with the requirements of Iowa Administrative Code 605-7.2(4)(d)(1)(2)-29C.9 and the Disaster Mitigation Act of 2000 as established by the Federal Emergency Management Agency (FEMA). Third, the plan is a mechanism to identify short and long-term strategies to eliminate hazards or reduce the impacts of hazards on the people, infrastructure, and institutions of Mills County.

Process

In 2017, the Mills County Emergency Management Commission (EMC) received a Pre-Disaster Mitigation (PDM) grant through FEMA to update the county’s multi-jurisdictional hazard mitigation plan which was originally approved in 2013. Mills County EMC subsequently contracted with the Omaha-Council Bluffs Metropolitan Area Planning Agency (MAPA) to assist in the development of the plan update. The planning process began in the fall of 2017 by convening a planning committee comprised of elected officials and public and private stakeholders from all local jurisdictions that form Mills County.

The Planning Committee convened twice to verify hazard occurrences and future likelihood, assess potential threats from identified hazards and prioritize hazards for mitigation planning activities, and adopt goals and objectives and an actionable implementation plan.

Planning participants also contributed by completing assigned tasks and gathering locally relevant data and information. Meeting dates and associated agenda items are noted below. Planning Committee meetings took place in the evenings at the Mills County Engineer's Office in Glenwood; meeting sign-in sheets are included in Appendix B.

Meeting 1: November 29, 2017 – Hazard analysis and critical facility identification.

Meeting 2: February 28, 2018 – Plan outline review; discussion of goals and objectives and action items.

The planning consultant MAPA presented on the planning process and solicited feedback from local officials and administrators at a public multi-board meeting on March 21, 2018 in Glenwood. This meeting was attended by elected officials and administrators from the City of Glenwood, Glenwood Community School District, and Mills County Board of Supervisors.

Upon approval by FEMA and Iowa Homeland Security and Emergency Management Division, the plan was forwarded to all elected bodies within the county and neighboring jurisdictions of Fremont County, Montgomery County, Page County, Pottawattamie County, and the City of Tabor. The plan was formally adopted by all legal jurisdictions of the county following local public notices and postings. The Mills County EMC approved the plan in June 2019; all local adopting resolutions are included in Appendix C.

An historic flooding disaster that occurred in the spring of 2019 resulted in Presidential Disaster Declaration DR-4421, which was effective March 23 through May 16. Within 180 days of the end of the recent declaration, Mills County and all local jurisdictions will undertake a plan amendment to account for the disaster. The Planning Committee will convene later in 2019 to help fully assess the social, physical, and economic impacts of the flood, and to adopt a revised action/implementation plan that accurately reflects the disaster. All information regarding plan amendments and related meetings will be publically announced and published in the Glenwood Opinion-Tribune and Malvern Leader.

Section 3

MILLS COUNTY

[section 3]

COMMUNITY PROFILE

This section describes general facts and characteristics of Mills County. Subjects covered include the county's history, government, geography and climate, demographics, housing, economic development, facilities and services, and land use.

Location

Mills County is located in southwest Iowa and is part of the Omaha, NE-Council Bluffs, IA Metropolitan Statistical Area which in 2016 had an estimated population of 924,129. The county is bordered by Pottawattamie County to the north, Fremont County to the south, Montgomery County to the east, and the Missouri River to the west. Glenwood, Mills County's largest city and county seat, is located in the western half of the county near the junction of Interstate 29 (I-29) and US Highway 34 (US-34).

Figure 1 **Mills County, Iowa**

Mills County Locator Map



History

In 1846, Mormons traveled west from Illinois and settled Rushville, which was later known as Coonsville and now Glenwood. Further settlement occurred as pioneers moved to the area primarily to obtain land. Mills County began to form following the general election of 1851 and was named in honor of Lieutenant Fredrick Mills, an officer who was killed in the Mexican-American War. Mills County's population sustained growth as settlement continued. Under the Homestead Act of 1862, farmers owned their land after working it for five years. Later, under the Timber Culture Act of 1873, 160 acres could be claimed after trees were planted on one-fourth of the acreage. The land today is dominated by agriculture production, but in recent years residential housing has steadily grown between Glenwood and the Omaha-Council Bluffs area.

Government

Mills County's main unit of government, the Board of Supervisors, is comprised of three elected officials including an administrative staff that serves 18 offices/ departments. The term of office for Board members is four years with elections staggered so that no more than two officials are elected during a cycle. The Board meets each Tuesday at 8:15 am (excluding holidays) with additional meetings called by the Board Chairperson when necessary. Each municipality in Mills County elects a mayor and five council members to two to four year terms. Each city employs a city clerk, but only Glenwood employs a city administrator.

Geography and Climate

Mills County includes 446 square miles of rich agricultural land and is in a part of Iowa covered by deep loess, generally slopping to the west and southwest. The Loess Hills are a unique land feature found only in portions of western Iowa and Missouri along the Missouri River, and overseas in China. The county's landscape is characterized by floodplains and terraces along rivers, steep bluffs, valley slopes, and ridges in the upland areas. Elevation ranges from approximately 1,350 feet above sea level in the hills northwest of Glenwood to about 950 feet in the southwest corner of the county near the Missouri River.

Mills County, like Iowa and much of the Midwest, has a humid continental climate that produces extremes of heat and cold. Summers are characterized as warm and often humid, whereas winters are typically cold and dry. The majority of annual precipitation the region receives falls between April and September, usually in the form of showers and thunderstorms which can be severe and produce tornados. The region averages approximately 26 inches of snow between October and April; severe weather that produces sleet, ice accumulation, heavy snow, and strong winds is common in the winter. Table 1 shows historical climatic data averages for the county.

Table 1 **Climatic Data Averages**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average High °F	33.4	38.1	50.9	63.7	73.8	83.2	87.3	77.6	64.7	48.9	48.9	35.3
Record High °F	69	78	91	96	103	107	114	111	104	96	83	72
Average Low °F	13.6	18.1	28.1	39.8	50.9	61	66.2	64	53.9	41.6	28.2	16.7
Record Low °F	-32	-26	-16	5	25	39	44	43	28	8	-14	-25
Average Precipitation (in)	.72	.85	1.99	2.96	4.76	4.18	3.83	3.82	2.68	2.15	1.64	1.04
Average Snowfalls (in)	6.1	6.1	4.2	1	0	0	0	0	0	.3	2.5	6.2

Source: NOAA National Centers for Environmental Information

Population

Mills County's population is 14,972 according to 2016 American Community Survey (ACS) estimates. Mills is the seventh largest county in the eight-county Omaha-Council Bluffs metro and 53rd out of the 99 counties in the State of Iowa. Figure 2 shows historic population trends since 1920. Mills County saw its population peak to 15,866 in 1930 and then decline to its lowest total of 11,832 in 1970, nearly a 25% decrease. The county began rebounding in the 1970s as people started seeking housing alternatives outside the urban metro. The county exhibited net growth of nearly 25% over the next 45 years, seeing its highest growth during the 1970s and 1990s.

Figure 2 **Historical Population**

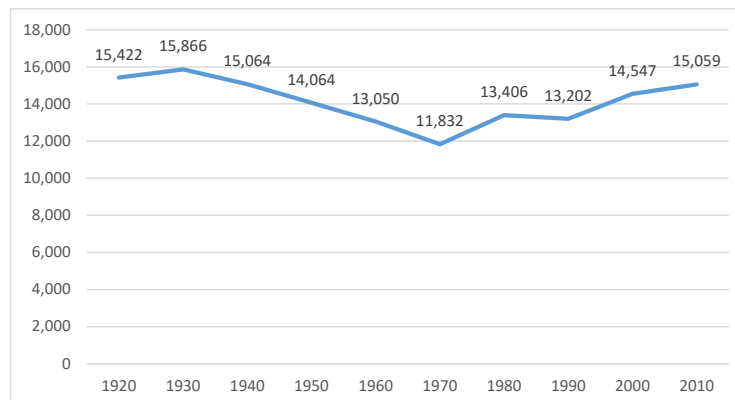


Table 2 highlights the population trends of Mills County and municipalities from 1970 through 2010. The county and all municipalities experienced fluctuations in their population counts during this period. Glenwood, which is the county seat and historic population center, experienced a population decline of 1.7% from 2000 to 2010, whereas the county as a whole grew by 3.5%.

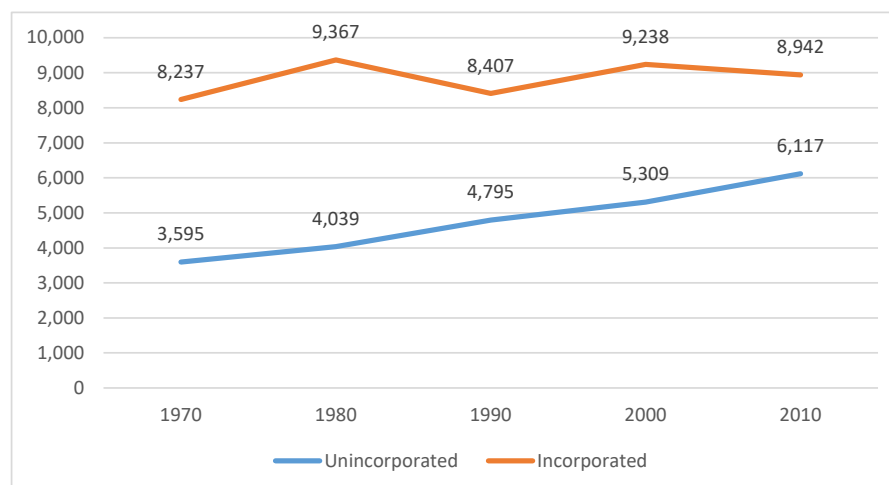
Table 2 **Population Change**

Population by Area	Historic Population Growth/Decline					Population Change (%)			
	1970	1980	1990	2000	2010	1980	1990	2000	2010
Mills County	11,832	13,406	13,202	14,547	15,059	13.3%	-1.5%	10.2%	3.5%
Emerson	484	502	476	480	438	3.7%	-5.2%	0.8%	-8.8%
Glenwood	4,421	5,280	4,571	5,358	5,269	19.4%	-13.4%	17.2%	-1.7%
Hastings	229	215	184	214	152	-6.1%	-13.0%	14.4%	-29.2%
Henderson	211	236	206	171	185	11.8%	-12.7%	-17.0%	8.2%
Malvern	1,158	1,244	1,210	1,256	1,142	7.4%	-2.7%	3.8%	-9.1%
Pacific Junction	505	511	548	507	471	1.2%	7.2%	-7.5%	-7.1%
Silver City	272	291	252	259	245	7.0%	-13.4%	2.8%	-5.4%

Source: US Census; American Community Survey

Figure 3 illustrates the population change of the county versus the incorporated cities. The population distribution was consistently 30% rural and 70% urban through the 1980s. However, residential growth in formerly agricultural areas and declining city populations shifted the split to 41% rural and 59% urban as of the 2010 census. This shift is expected to continue in the foreseeable future.

Figure 3 **Incorporated and Unincorporated Population Comparison**



Population Forecasts

Historic population trends projections display growth as if it were to repeat past long-term trends. The 2017 Mills County Comprehensive Plan states that the annual growth rate was 0.68% between 1970 and 2010 and 0.35% between 2000 and 2010. Table 3 compares the 40-year and 10-year historic growth projections for Mills County to the year 2040. Projections help communities identify the pace of growth and inform decisions on strategic capital and program investments that will eventually accommodate the future population.

Table 3 **Population Projections**

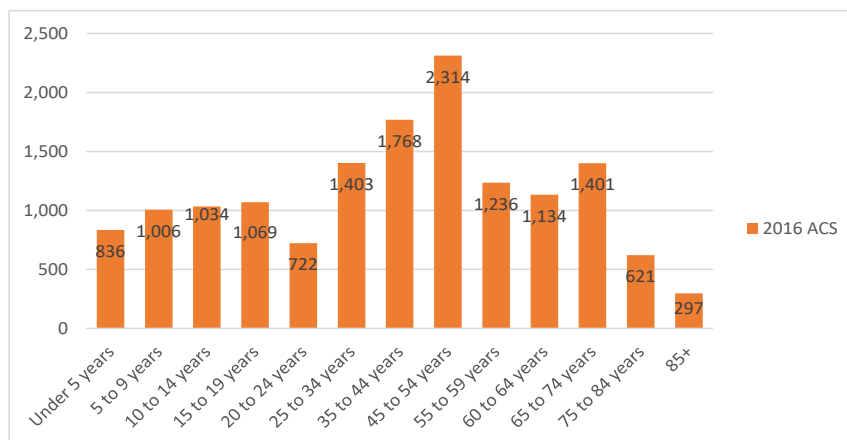
	40-Year Trend (1970-2010)		10-Year Trend (2000-2010)	
Year	Annual Rate 0.68%	Population Change	Annual Rate 0.35%	Population Change
2015	15,579	520	15,326	267
2020	16,118	538	15,598	272
2025	16,675	557	15,874	276
2030	17,251	576	16,155	281
2035	17,847	596	16,442	286
2040	18,464	617	16,733	291
Total		3,404		1,673

Source: 2017 Mills County Comprehensive Plan

Age Characteristics

The median age in Mills County is 42 years according to the 2016 ACS, four years older than the state average. Figure 4 illustrates the age distribution of Mills County residents. The largest age cohort in the county is 45 to 54 years which represents 15% of the total population. The ACS age distribution is similar to the 2010 census. It will be incumbent on local leaders to ensure that adequate housing and services are available as the population advances in age.

Figure 4 **Age Distribution**



Housing

Over three-quarters of Mills County's current housing is comprised of single-family units. Table 4 shows the change in housing type from 1990 to 2014. The number of single-family units has steadily risen, as has the rate of homeownership. Conversely, multi-family housing units have declined along with the number of renter-occupied units. The renter-occupied vacancy rate rose from 5.8% to 13.3% while owner-occupied vacancy increased from 1.1% to 2.5%.

Table 4 **Housing Trends by Type**

Households	1990	2000	2014
Total Housing Units	5,004	5,671	6,107
Single-Family	3,920	4,360	4,739
Duplex/Multiple Family	478	426	314
Mobile Home	568	528	286
Boats, RV, Van, etc.	38	10	9
Occupied Housing Units	4,665	5,324	5,348
Owner-Occupied Units	3,488	4,235	4,438
Renter-Occupied Units	1,177	1,089	910
Vacant Housing Units	339	347	759
Owner-Occupied Vacancy Rate	1.1%	2.3%	2.5%
Renter-Occupied Vacancy Rate	5.8%	5.1%	13.3%

Source: US Census; American Community Survey

Figure 5 shows the number of housing structures built in the county by decade according to the 2016 ACS. More than 28% of the total county's housing stock was built prior to 1940. Housing development was gradual yet modest from 1940 through the 1960s until a relative boom occurred in the 1970s. Development declined in the 1980s but rebounded and remained fairly steady in the proceeding decades. The stacked columns compare the share of units built in the unincorporated county and incorporated cities. Housing development was historically predominant in the cities until the start of the 1980s. Unincorporated residential growth has exceeded the cities for the past three-plus decades. This trend corresponds to the data earlier in this section that show population growth increasing in the unincorporated areas and decreasing in cities.

Figure 5 **Decade Housing Structure Built**

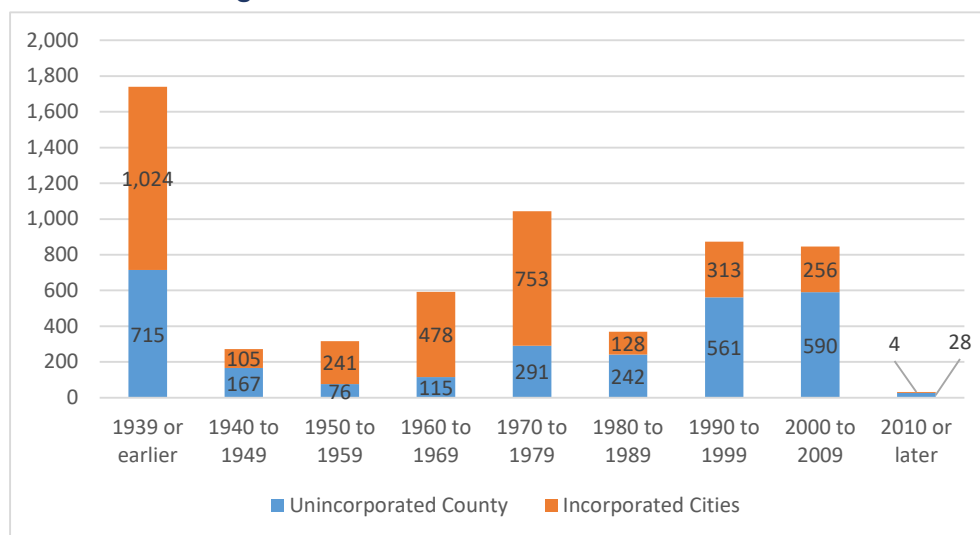


Table 5 shows household trends of the county. Though the total population and number of households have increased in the county since 1990, the average household size has steadily decreased. This can be attributed to families having fewer children and more couples without children.

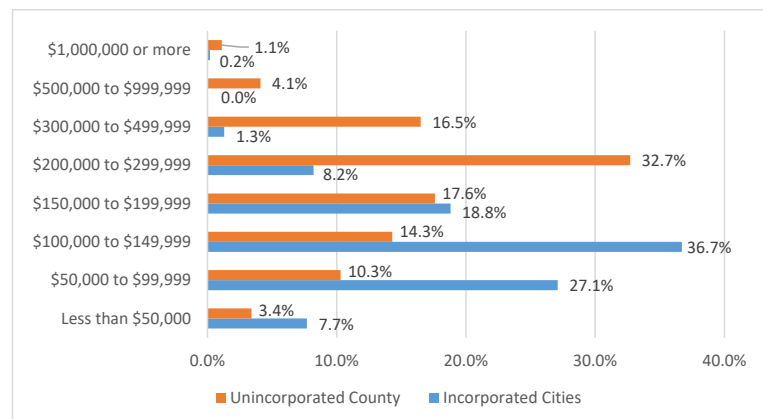
Table 5 **Household Trends**

Households	1990	2000	2014
County Population	13,202	14,547	15,059
Total Households	4,693	5,324	5,605
Persons in Households	12,358	13,847	14,451
Persons per Household	2.63	2.60	2.58
Family Households	3,513	3,938	4,093
Family Household Percentage	74.9%	74.0%	73.0%
Family Average Size	3.09	3.04	3.00
Family with own Children under 18	1,764	1,852	1,743
Married with own Children under 18	1,443	1,419	1,261

Source: US Census; American Community Survey

The 2016 ACS estimates that the median value of owner-occupied housing units in the county is \$154,200, which is up from the previous plan and higher than the state's median value of \$132,800; however, the median value declines to \$87,500 for only the incorporated areas. Figure 6 compares the percent distribution of median owner-occupied values of the unincorporated county and combined incorporated areas. Homes valued between \$200,000 and \$299,999 make up the largest share of owner-occupied units for the unincorporated county at 32.7%, whereas homes valued between \$100,000 and \$149,999 make up the largest share for the combined cities at 36.7%. The growth of single-family units in rural subdivisions (characterized by larger unit square footage and lot area) has contributed to the rise in median value of owner-occupied units.

Figure 6 **Value of Owner-Occupied Units**



County Buildings and Facilities

Mills County Courthouse

The Mills County Courthouse, 418 Sharp Street in Glenwood, houses the following departments: County Assessor, County Attorney, County Auditor, County Recorder, County Treasurer, Emergency Management Agency, 911 Communications, and Clerk of District Court. The current courthouse was built in 1959 and in 2013 it was upgraded to improve handicap accessibility and add office and storage space.

Public Health Agency/Glenwood Resource Center

The Public Health Agency and Glenwood Resource Center, 212 Independence Street in Glenwood, houses Public Health Nursing, Parents as Teachers, Family Centered Services, and Environmental Services. Veterans Affairs/General Relief now occupy their own facility located at 602 S. Locust Street in Glenwood.

Secondary Roads Facility

The Secondary Roads Facility, 403 Railroad Avenue in Glenwood, houses the County Engineer and Secondary Roads, Building and Zoning, and Information Technology and GIS departments.

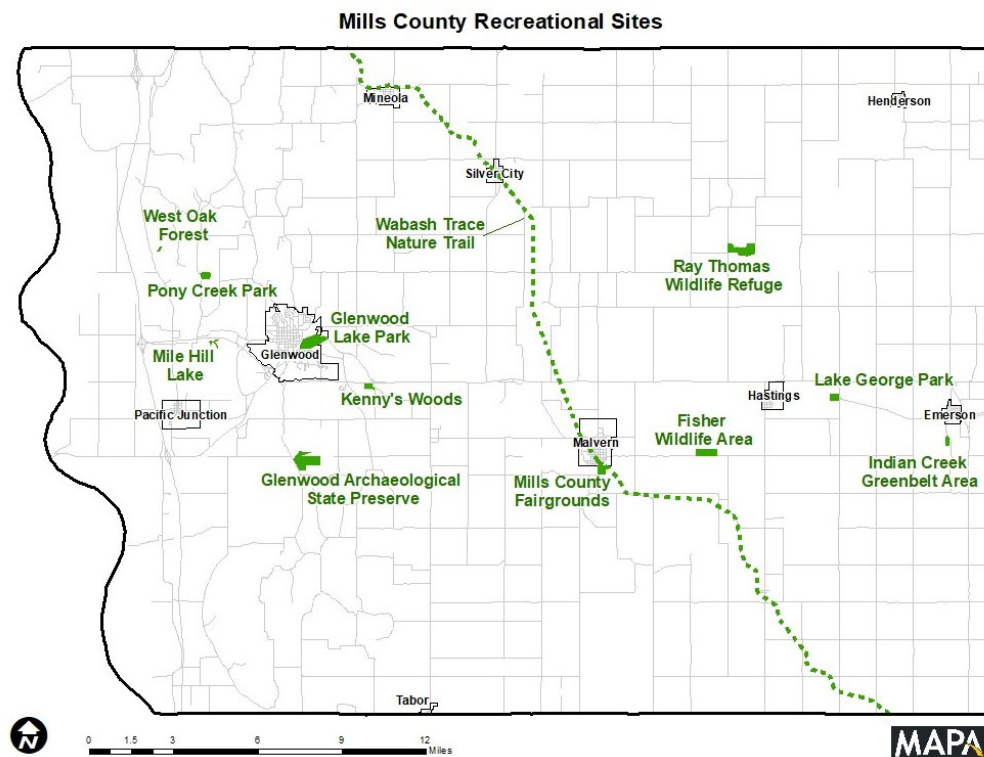
Law Enforcement Center

The Law Enforcement Center, 600 Industrial Road in Glenwood, houses the administrative offices for the Mills County Sheriff's Department and a 24-bed jail.

Public Parks, Spaces and Conservation Areas

The Mills County Conservation Board manages over 1,700 acres of conservation areas with various public amenities, some of which include camping, canoeing, and hiking. The Wabash Trace Nature Trail is a 63-mile multi-purpose recreation trail. The Mills County portion of the Wabash Trace is 25 miles long and creates approximately 300 acres of linear park within the county; the trail is one of the county's more frequented recreational amenities and attracts visitors from the Omaha-Council Bluffs area and elsewhere. Recreational areas and public spaces of Mills County are illustrated on Figure 7.

Figure 7 **Mills County Conservation and Recreational Sites**



Community School Districts

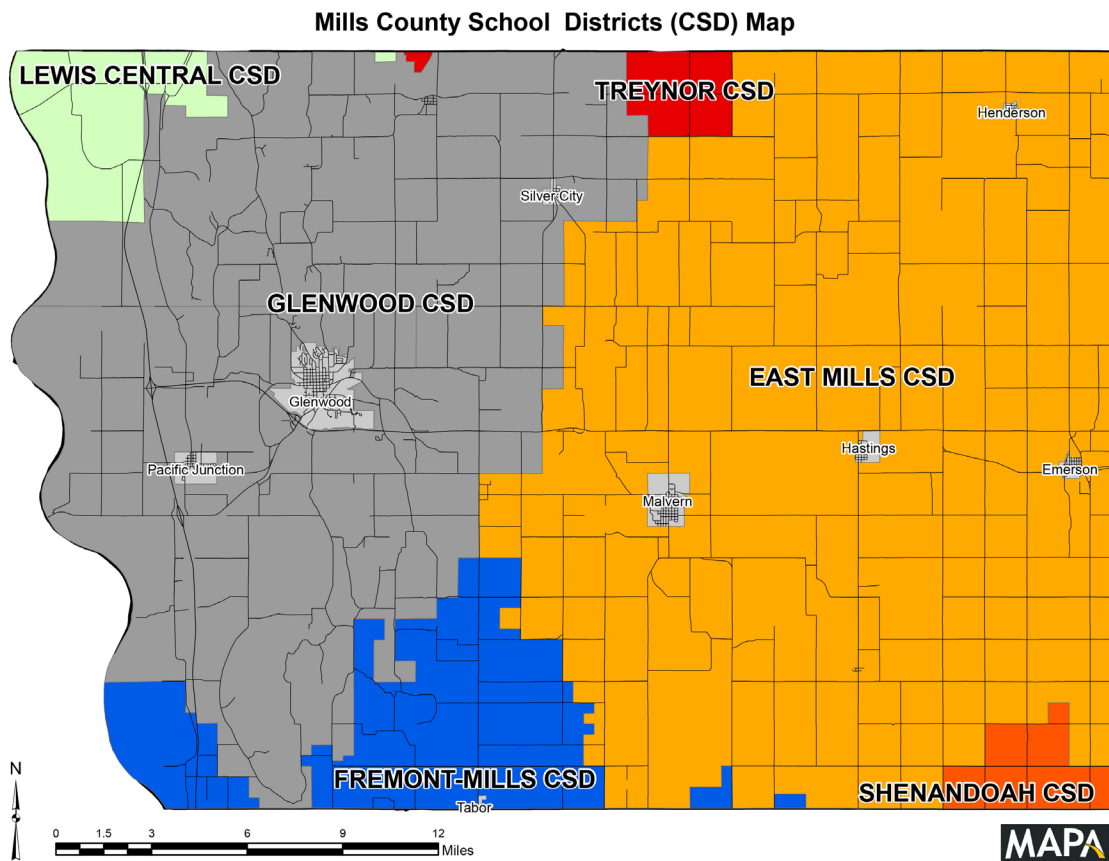
Mills County is primarily served by Glenwood Community School District (CSD) and East Mills CSD, plus parts of Lewis Central, Treynor, Shenandoah, and Fremont-Mills CSDs. As of spring 2015, there were 2,493 students enrolled in the six public schools located in Mills County. Table 6 shows enrollment by facility and Figure 8 illustrates school district boundaries.

Table 6 **School Enrollment of Mills County (Primary and Secondary Schools)**

School District	Location	Enrollment
Glenwood Senior High School	Glenwood, IA	603
Glenwood Middle School	Glenwood, IA	464
Northeast Elementary School	Glenwood, IA	535
West Elementary School	Glenwood, IA	412
East Mills Jr/Sr High School	Malvern, IA	218
East Mills Elementary School	Hastings, IA	261
Total		2,493

Source: Iowa Department of Education

Figure 8 **Schools Districts of Mills County**



Emergency Services

E911 Communications Center

The E911 Communications Center is located in the basement level of the Mills County Courthouse. The Communications Center is the public safety answering point (PSAP) for all of Mills County and receives calls and dispatches public safety services. There are eight personnel plus a supervisor within the Communications Center that answer calls and dispatch services 24/7.

Fire and Rescue

Fire response is provided by a combination of township and community-based volunteer fire departments. There are nine departments and 10 rescue units operating within the county staffing an estimated 255 volunteer emergency responders. Figure 9 and Figure 10 illustrate the fire response and Emergency Medical Services (EMS) districts operating in Mills County.

Figure 9 **Fire District Boundaries**

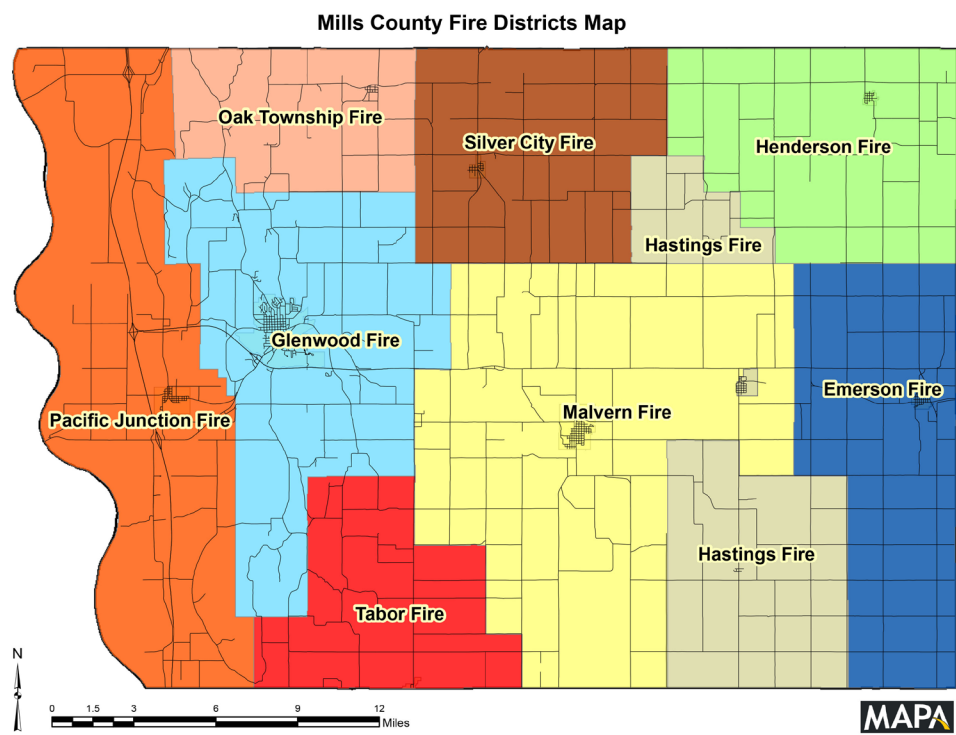
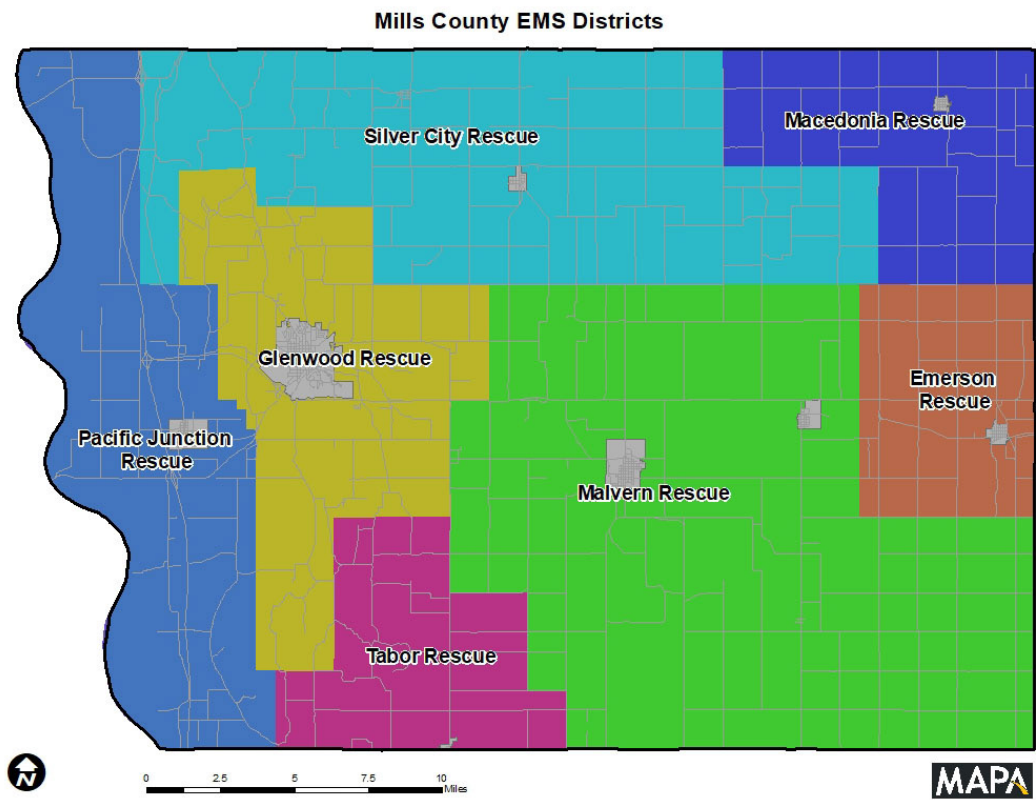


Figure 10 **EMS Service Boundaries**



Law Enforcement

The Mills County Sheriff's Office consists of approximately 20 employees including 11 law enforcement officers and six jailers. The department patrols approximately 436 square miles, 654 miles of secondary county roads, and over 100 miles of state and interstate highway. The Sheriff's Office contracts with each city in the county – excluding Glenwood – to provide law enforcement services. The Glenwood Police Department has a full-time staff of nine law enforcement personnel.

Warning Systems

Mills County is served by the National Oceanic and Atmospheric Administration (NOAA) Weather Radio Warning System. Coverage throughout the county is generally adequate due to the presence of a NOAA transmitter near Hancock in neighboring Pottawattamie County. Mills County Emergency Management Agency (EMA) controls outdoor warning sirens in the county and in all incorporated cities; each city has at least one warning siren that provides citywide coverage. The county participates in the Code Red Emergency Alert System. Mills County EMA will eventually offer voice, email, and/or text emergency alerts through the Alert Iowa system. This service should be available to the public in late 2019 or early 2020.

Healthcare Facilities

Mills County does not have a full service hospital, but there are two health clinics located in Glenwood and one in Malvern. Five hospitals are located within a 40-mile radius of the county.

- CHI Health Alegent Creighton Clinic Cardiology- Shenandoah, IA
- CHI Health Mercy- Council Bluffs, IA
- Methodist Jennie Edmundson Hospital- Council Bluffs, IA
- Montgomery County Memorial Hospital- Red Oak, IA
- Nebraska Medicine- Bellevue, NE

Economy and Employment

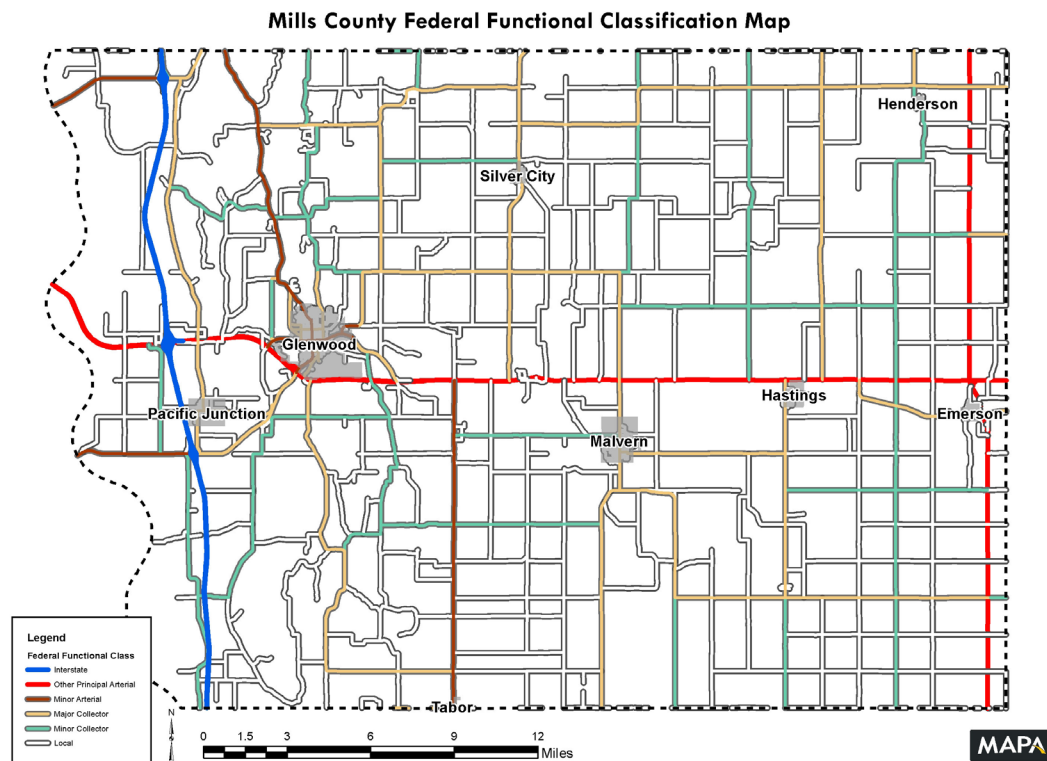
Mills County currently lacks large commercial and employment centers as a “bedroom community” to the urban Omaha-Council Bluffs metro. According to 2015 inflow/outflow data from the US census, 69% of Mills County's resident workforce works outside the county. Offutt Air Force Base, which is the region's largest employer, is approximately 15 miles northwest of Glenwood via US-34. The county's largest employers include Glenwood Community Schools, Glenwood Resource Center, and the Mills County government.

Transportation

Roads

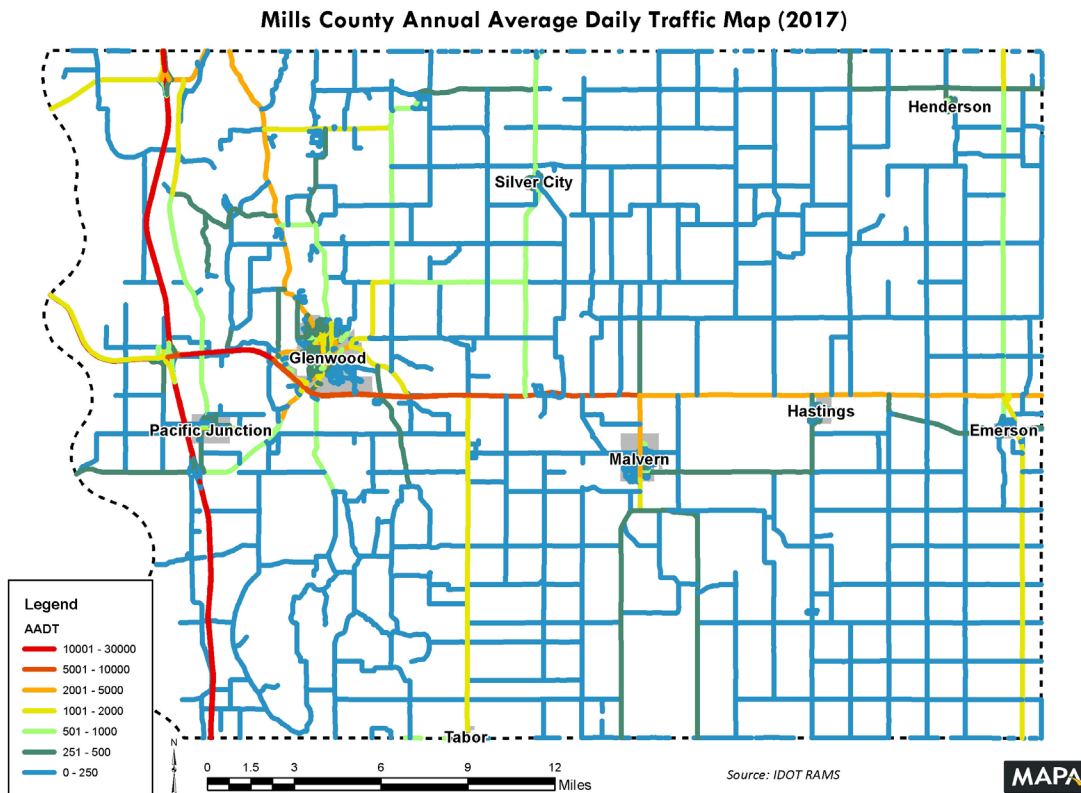
There are slightly over 756 miles of road in Mills County, the majority of which are maintained by the county. The functional classification is the process that categorizes streets and highways into classes according to the level of service they are intended to provide (Figure 11). The federal functional classifications include: Interstate, Freeway and Expressway, Principal/Minor Arterial, Major Collector, Minor Collector, and Local Road.

Figure 11 **Federal Functional Classification**



The Iowa Department of Transportation (IDOT) provides annual average daily traffic (AADT) maps for cities and counties every four years. Figure 12 displays the 2017 AADT map for Mills County. The highest level of traffic is on I-29 north of the US-34 interchange. The second highest level of traffic is on I-29 south of the same interchange as well as east-west traffic on US-34. Traffic flow on US-34 has increased substantially since the opening of the new bridge over the Missouri River in 2014. The bridge connects Mills County to southern Sarpy County, Nebraska and Offutt Air Force Base. These transportation corridors are essential to the movement of people, goods, and services throughout the county, and should continue to be prioritized and maintained as critical infrastructure.

Figure 12 **Annual Average Daily Traffic – 2016**

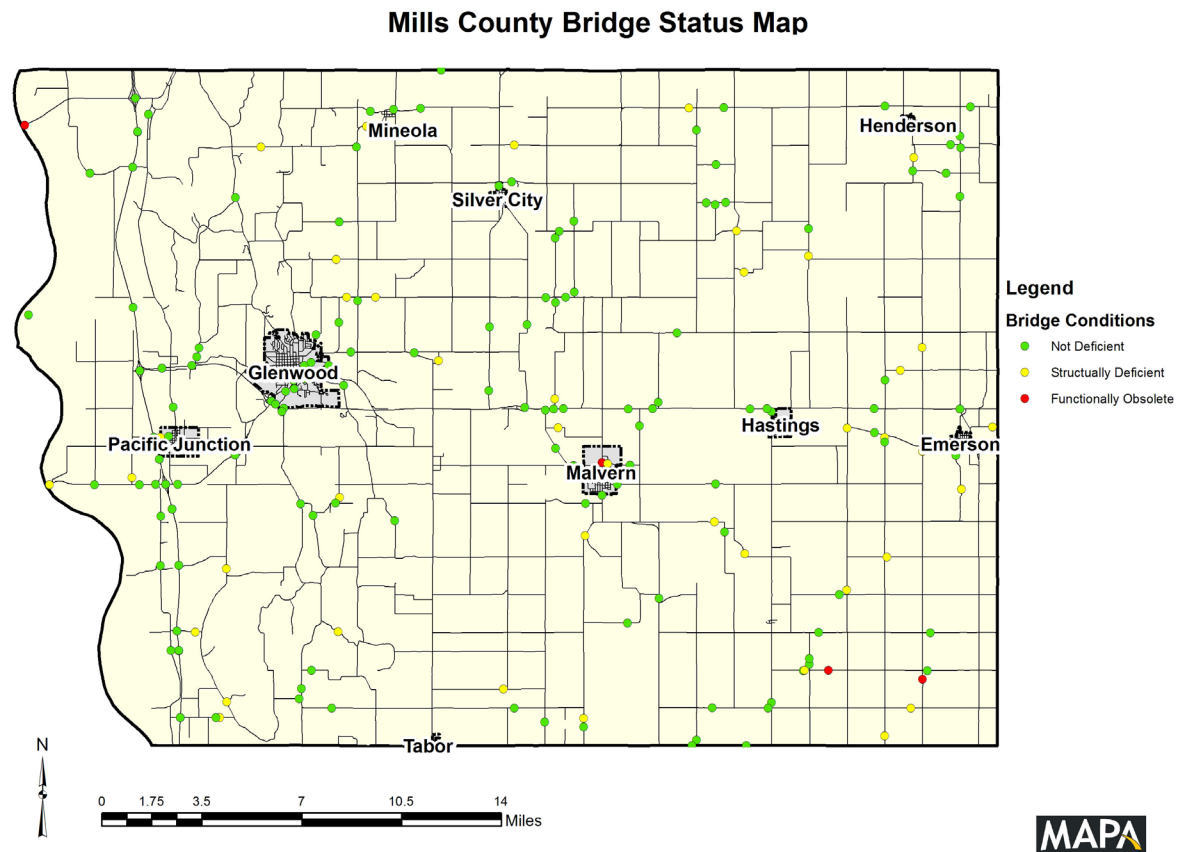


Bridges

There are 217 bridges in Mills County. The Federal Highway Administration maintains a database – the National Bridge Inventory (NBI) – with information on all public highway bridges in the United States that are greater than 20 feet in length. Bridges that are determined insufficient are placed in one of two categories: Structurally Deficient and Functionally Obsolete. A bridge is determined structurally deficient if the deck, superstructure, substructure, or culvert is rated at or below “poor” condition (0 to 4 on the NBI Rating Scale). A bridge can also be classified as structurally deficient if load-carrying capacity is significantly below current design standards, or the adequacy of the waterway opening provided is determined to be extremely insufficient to the point of causing intolerable roadway traffic interruptions. A bridge is considered functionally obsolete if the geometry of the roadway no longer meets current minimum design standards for width or vertical clearance classifications.

A functionally obsolete or structurally deficient classification does not mean that a bridge is unsafe. If a bridge meets the criteria to be classified as both structurally deficient and functionally obsolete, it is identified only as structurally deficient because structural deficiencies are considered more critical. Of the 217 bridges maintained by the county, 45 have an insufficient rating, 41 are structurally deficient, and four are functionally obsolete. Figure 13 shows the status of bridges in Mills County.

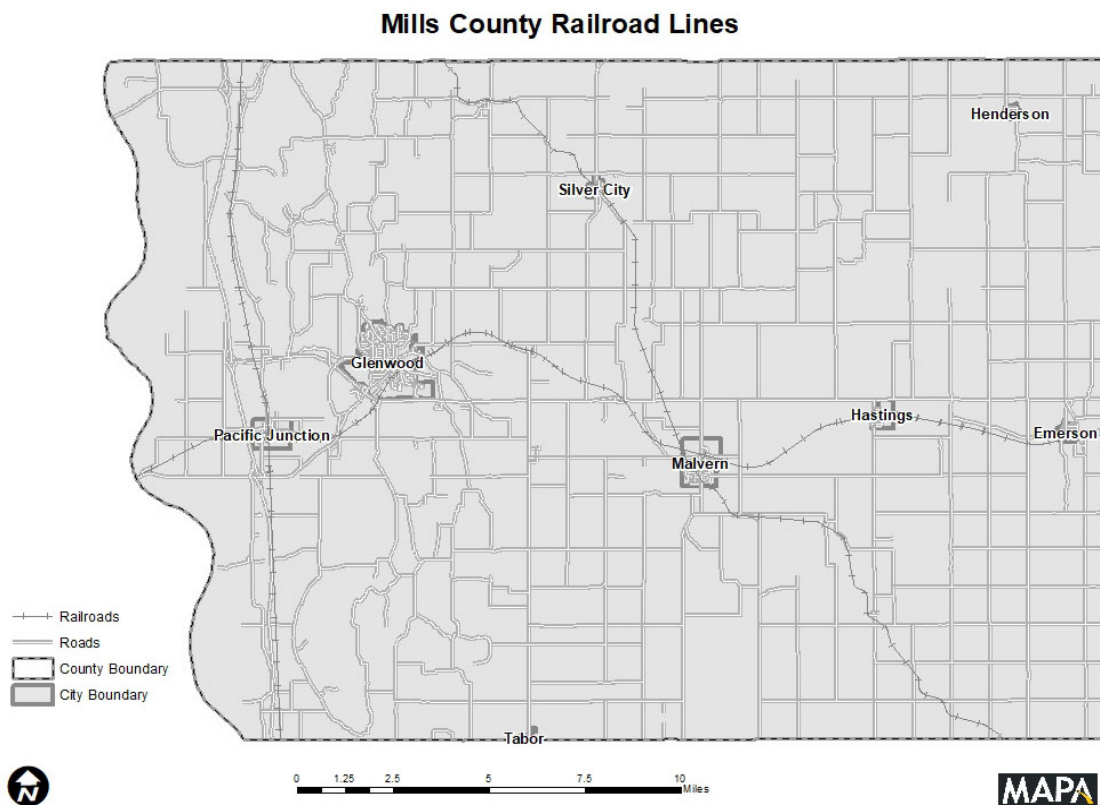
Figure 13 **Bridge Conditions Status**



Rail

Mills County is currently served by two major rail lines both owned by Burlington Northern and Santa Fe (BNSF). One line runs north-south along the I-29 corridor and the other runs east-west generally following US-34. The lines connect at a junction on the southwest side of Pacific Junction. In addition, passenger carrier Amtrak operates the cross-county California Zephyr, through the county. Nearby Amtrak stations are in Omaha and Creston, Iowa.

Figure 14 **Mills County Railroad Lines**



Air Service

There is currently no airport in Mills County. Eppley Airfield in Omaha is the primary commercial and general aviation airport for the region which in 2016 transported 4.3 million passengers. Smaller municipal airports near Mills County are located in Council Bluffs, Red Oak, and Shenandoah, Iowa. These facilities provide fuel, maintenance, chartered flights, and pilot training.

Public Transit

Southwest Iowa Transit Agency (SWITA) in Atlantic provides 24/7 public transit service to Mills County residents on an on-call basis pending vehicle and driver availability. Live dispatch is available Monday through Friday from 6:00 am to 5:00 pm.

Utilities and Public Works

Electric and Natural Gas

MidAmerican Energy Company is the county's primary electricity provider; Southwest Iowa Regional Electrical Cooperative serves areas south of Emerson. MidAmerican also provides natural gas in the county in addition to Black Hills Energy.

Telecommunications/Broadband

Cable and cellular services are available through the following providers:

AT&T	PointeNet
CenturyLink	Spiral Communications
Chat Mobility	Sprint
Howard’s High Speed Inc.	US Cellular
Interstate Communications	Verizon
Mediacom	Western Iowa Networks
Omni Tel	

Storm Water Drainage

Storm water drainage is mainly handled through roadside ditches and curb collection; the cities of Glenwood and Malvern maintain storm water collection systems. Developed areas of Glenwood rely on pipes to collect surface drainage from streets and convey it to cross-city lines that outlet into Keg Creek or one of its tributaries.

Solid Waste

Solid waste is delivered to the Loess Hills Landfill located south of US-34 and two miles west of Malvern. This facility is privately owned and operated by Iowa Waste Systems, Inc. The landfill serves all of Mills County and accepts waste from Pottawattamie County and communities in Missouri and Nebraska.

Water Supply and Distribution

Mills County does not provide residents with water service. The cities of Emerson, Hastings, Henderson, Malvern, and Silver City all have municipal systems. Glenwood Municipal Utilities provides water to Glenwood and Pacific Junction, the I-29/US-34 interchange, Lake Ohana subdivision, Woodfield subdivision, and surrounding rural areas. Southwest Regional Water District provides water to some rural residents in the county. It is important to note that tests of rural water wells in parts of the county have identified the presence of nitrates and bacteria. Rural water quality is a concern that will require regular monitoring and likely some form of mitigation action in the near future. Table 7 provides water supply and distribution information by jurisdiction/provider.

Table 7 **Water Supply and Distribution Systems**

Jurisdiction	Supply	Average Flow (gal/day)	Peak Flow (gal/day)
Emerson	150,000-gal Tower	33,000	52,000
Glenwood Municipal Utilities	4 Storage Reservoirs (2.1M gal)	680,000	1,200,000
Hastings	60,000-gal Standpipe	15,000	105,000
Henderson	30,000-gal Tower	15,000	19,000
Malvern	250,000-gal Tower	87,000	250,000
Pacific Junction	Provided by Glenwood Municipal Utilities	680,000	1,200,000
Silver City	91,000-gal Standpipe	18,000	172,800

Source: Local City Governments

Wastewater Treatment

Wastewater treatment service in the rural county – and City of Hastings – is provided largely by private septic systems. The cities of Emerson, Henderson, Malvern, and Silver City utilize lagoons for wastewater treatment. Glenwood Municipal Utilities treats wastewater for Glenwood and Pacific Junction. Table 8 provides wastewater system information by jurisdiction/provider and Figure 15 identifies wastewater facilities in the county by permit type.

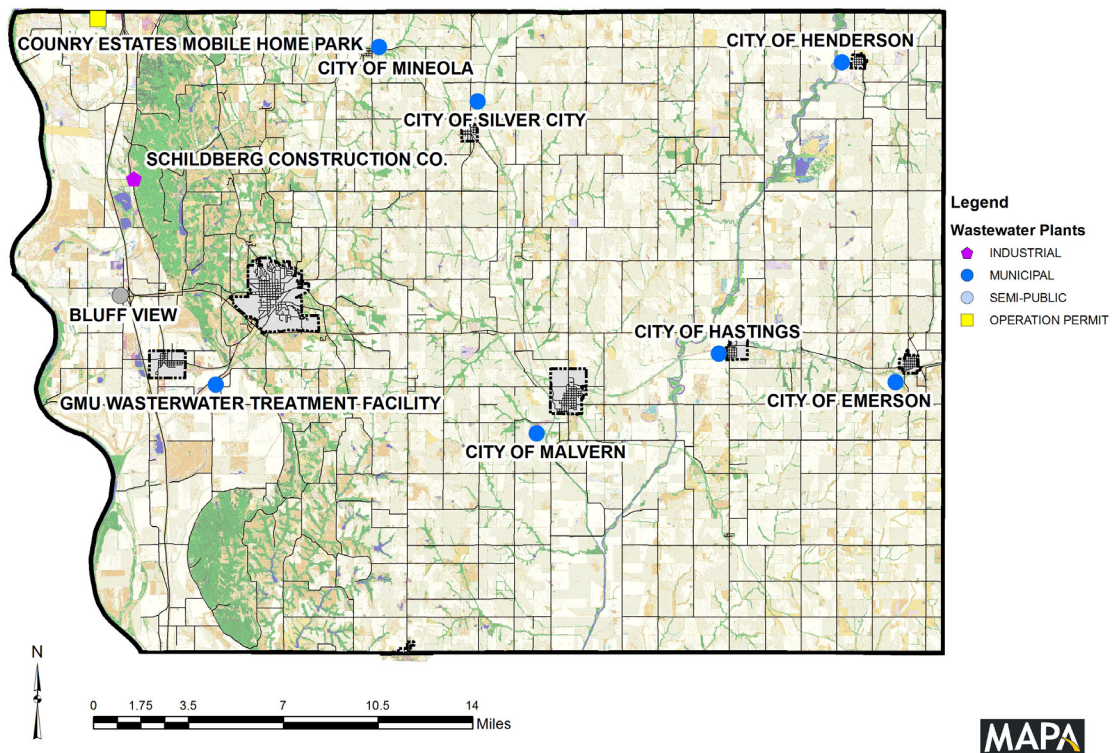
Table 8 **Wastewater Treatment Systems**

Jurisdiction	Supply	Average Flow (gal/day)	Peak Flow (gal/day)
Emerson	Cell Lagoons (3)	50,000	146,000
Glenwood Municipal Utilities	Lift Station & Treatment Plant	800,000	1,200,000
Hastings	Lagoon	14,000	75,000
Henderson	Cell Lagoons (3)	18,000	40,000
Malvern	Cell Lagoons (3)	180,000	900,000
Pacific Junction	Provided by Glenwood Municipal Utilities	800,000	1,200,000
Silver City	Cell Lagoons (2)	12,000	213,120

Source: Local City Governments

Figure 15 **Wastewater Facilities**

Mills County Wastewater Facilities Map - By Permit Type



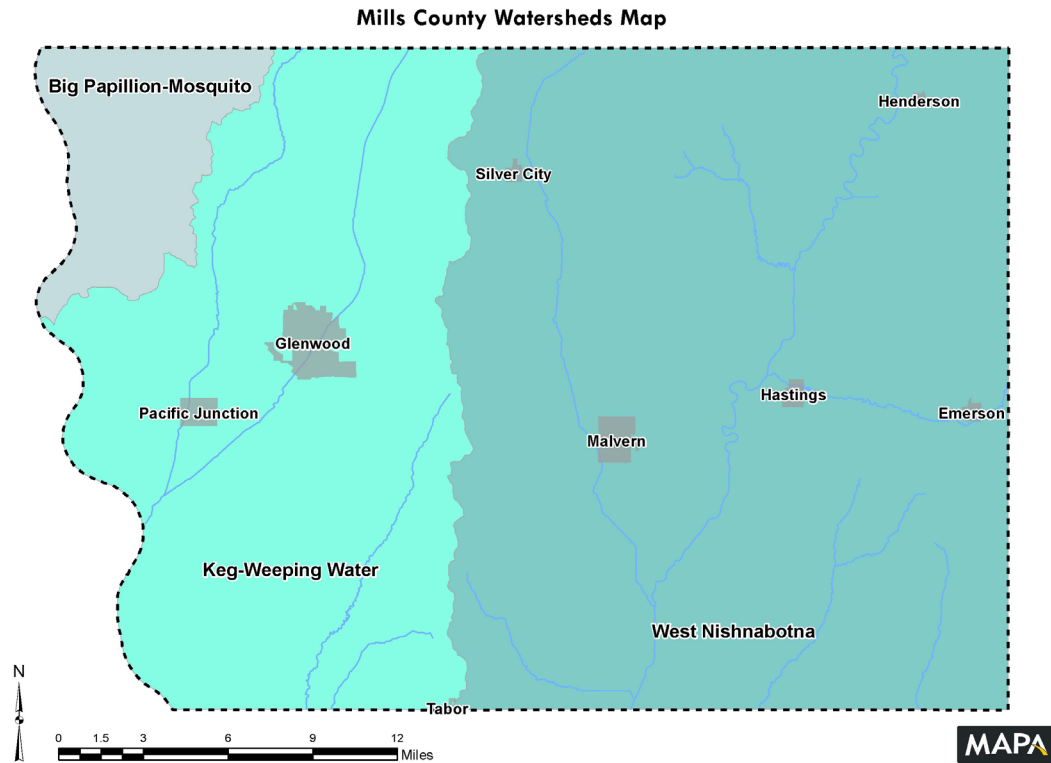
Watersheds, Major Rivers and Streams

Surface water of Mills County is in the Missouri River watershed. Silver Creek runs southward and discharges into the West Nishnabotna River which flows southwesterly into the Missouri River. Keg Creek and Waubonsie Creek collect water from the western upland areas. Surface water is also collected by Indian Creek, Farm Creek, Little Creek, Mud Creek, Mule Creek, and Pony Creek.

Three sub-watersheds exist within Mills County: Big Papillion-Mosquito occupies a relatively small area to the northwest; Keg-Weeping Water occupies most of the western county including the cities of Glenwood and Pacific Junction; and West Nishnabotna is the largest watershed geographically at 489,500 acres and encompasses the county's eastern territory.

Figure 16 illustrates the surface water sources and watershed boundaries of Mills County.

Figure 16 **Mills County Water Sources / Watersheds**



Floodplain and Flood Control Information

Floodplains of the county's rivers and channels present environmental issues that must be considered with regards to mitigation and future growth. Floodplains include the water channel, floodway, and floodway fringe. The floodway includes the main channel of a river or stream and the area that handles additional flows during flood events. The floodway fringe is the relatively flat area adjacent to the floodway that is totally engulfed by flood waters. The floodway and floodway fringe make up what is commonly known as the 100-year floodplain, which is defined as having a 1% chance of flooding every year or a 100% chance during any 100-year period. Areas that are inundated with water during a 100-year event are considered high risk for any development and should be avoided. The other commonly known flood area is the 500-year floodplain which has a 0.2% chance (or 1 in 500 chance) of flooding every year.

Flood areas exist along the Missouri River, West Nishnabotna River, and several tributaries. Because of the numerous flood threats present in Mills County, the county and six municipalities identified on the following page participate in the FEMA National Flood Insurance Program (NFIP). The NFIP enables homeowners, renters, and business owners in participating communities to purchase federally backed flood insurance as an alternative to disaster assistance. NFIP communities agree to adopt and enforce floodplain management ordinances to reduce future flood damage.

	Numerical Identification	Year Joined NFIP	Current Effective Floodplain Map
Mills County	190891	10/14/1982	8/3/1989
Emerson	190202#	4/3/1984	12/1/1987
Glenwood	190203#	5/17/1982	11/17/1982
Hastings	190204#	10/14/1982	9/16/1982
Malvern	190205#	9/16/1982	9/16/1982
Pacific Junction	190206#	4/4/1983	3/16/1989
Silver City	190207	9/4/1985	9/4/1985

(There are no potential flood areas in Henderson that would necessitate NFIP participation.)

The primary flood control structure in the county is the Missouri River levee system which is comprised of the Missouri River Levee District, M&P Levee District, and Miller-Sturgeon Segment. This levee network protects much of western Mills County from flooding for over 20 miles. The durability of the Missouri River levee was tested in 2011 when dams on the river released record amounts of water to cope with heavy spring rains and snow melt. Much of the Missouri River region, including western Mills County, was inundated with flood water from May through October of that year. As a result of the flood, the levee lost its FEMA accreditation which certified that land east of the levee was adequately protected from flooding. Without levee certification, property owners on the “dry” side of the levee will be required to purchase flood insurance. The cost to study the levee and make necessary repairs are significant to the county and prohibitive to any potential development.

Other Planning Activities and Initiatives

Beyond this countywide plan, the county and its sub-jurisdictions are responsible for planning studies and activities that are pertinent to local – and sometimes regional – geographies. Other planning initiatives throughout the county include:

Comprehensive Planning – Mills County most recently updated its countywide comprehensive plan in 2017. The county implements the general vision of the comprehensive plan via zoning and subdivision ordinances. The zoning ordinance defines the use of land within particular zones (e.g. commercial, industrial, residential), whereas the subdivision ordinance outlines the processes and procedures necessary for the proper division and development of land under county jurisdiction. The cities of Emerson and Glenwood adopted comprehensive plans in 2015 and 2001 respectively; Glenwood will reassess its comprehensive plan in 2019. Land use is discussed further in this section.

Ordinances Concerning Development Activities – The cities of Emerson, Glenwood, Henderson, Malvern, and Pacific Junction have adopted zoning ordinances which generally define the uses of land within incorporated limits and regulate where specific development may occur. Glenwood, Henderson, and Malvern have subdivision ordinances to regulate the division and development of land. Floodplain ordinances are in effect in Emerson, Glenwood, Hastings, Malvern, Pacific Junction, and Silver City to regulate development in flood areas.

Iowa Watershed Approach – In 2016, the State of Iowa was awarded \$96 million by US Housing and Urban Development (HUD) in response to areas impacted by flooding from 2011 to 2013. HUD, via the Iowa Economic Development Authority, funded eight watersheds under the Iowa Watershed Approach for the purposes of improving flood resiliency and water quality. Mills County is the lead entity representing the West Nishnabotna Watershed and its total grant allocation of \$5.4 million. The West Nishnabotna Watershed Management Coalition is a consortium of local governments, land owners, and other interested stakeholders that guide the strategy and implementation of practices. One of the deliverables of this initiative is a comprehensive watershed management and flood resiliency plan to address factors that contribute to flooding and water pollution. Planning will follow the FEMA Compliant Flood Risk Reduction Plan requirements as well as the US Environmental Protection Agency (EPA) framework for 9-element watershed planning. Project selection, engineering, and construction activities will eventually be derived from the plan. Implementation is expected to continue through September 2021.

Land Use and Development Patterns

Mills County's current land use is organized in the general classes of agriculture, commercial, industrial, residential, multi-family, and mixed use. The majority of unincorporated land is classified as agriculture or open land, whereas most commercial and residential uses are concentrated in the incorporated cities. Industrial and some commercial uses are located along US-34 and I-29. Land use classes are briefly described below – Mills County's 2017 comprehensive plan update should be referenced for a more thorough analysis of current and future land uses. Figure 17 shows the current land uses of the county.

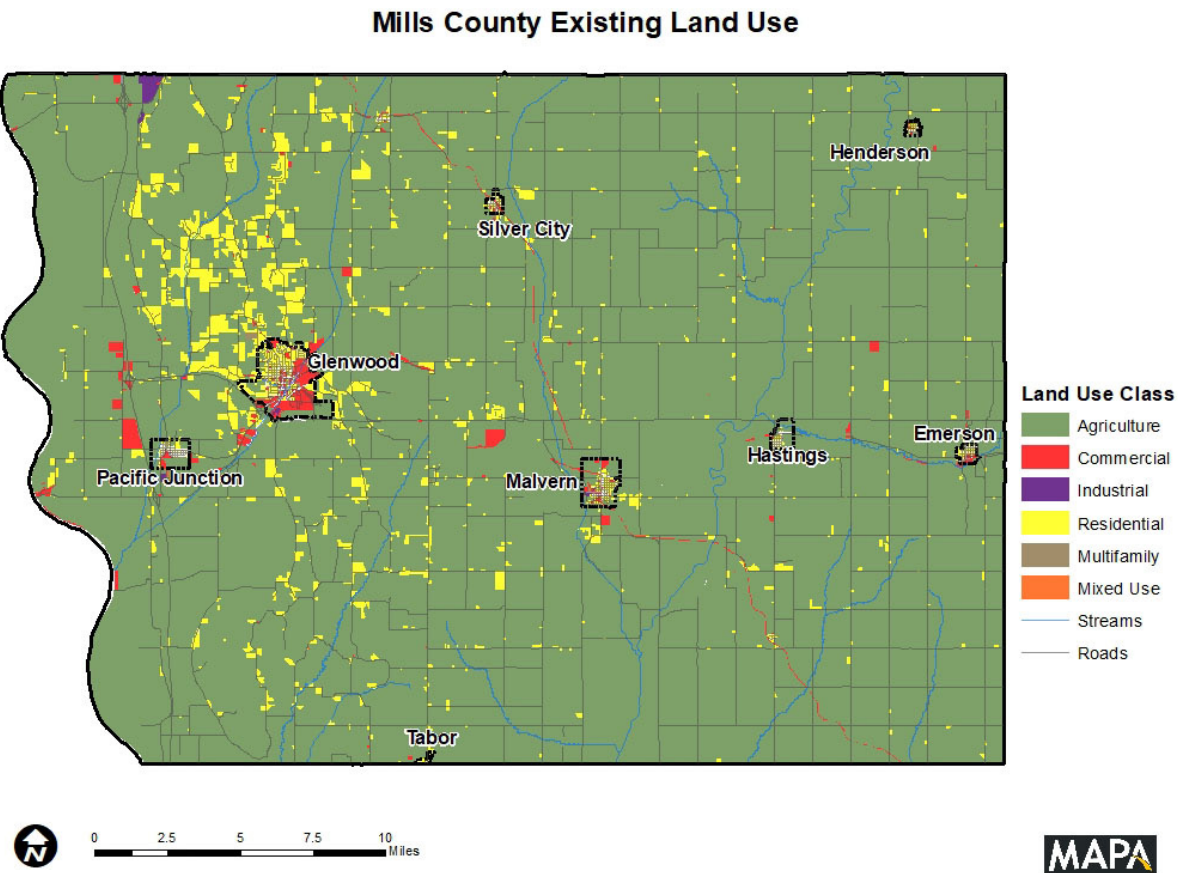
Agriculture – Agriculture is the dominant land use in Mills County. Most land is cultivated for corn and soybeans, but some areas are used for pasture. The lands of the Loess Hills are largely undeveloped due to steep bluffs, slopes, and upland ridges. Wetlands and forested areas are located along rivers and streams.

Commercial – Commercial use represents a small portion of Mills County land. Most commercial development is concentrated along I-29 and US-34 near the cities of Glenwood, Malvern, and Pacific Junction. Commercial uses consist of implement dealers, auto service, retail, and restaurant/entertainment.

Industrial – Most industrial uses in Mills County are located along the north side of Iowa Highway 370 and east of I-29, including the Bunge biofuel facility, which is the largest industrial site in Mills County and one of the largest in the Omaha-Council Bluffs area. Other industrial uses are concentrated near Pacific Junction. There are various farming facilities and grain storage operations located throughout the county.

Residential – Residential development is the second most prevalent land use in Mills County. Demand for increased residential development is manifesting in areas northwest of Glenwood and north to the county line. Such development to date has been generally decentralized.

Figure 17 **Current Mills County Land Use**



Mills County is predominantly a rural jurisdiction that has experienced incremental population growth over the decades. Residential construction has been the prevalent development activity in the county since this plan’s last update in 2013. New home construction is generally occurring in the western portion of the county, particularly near Glenwood and north to the Mills-Pottawattamie County line. Since its opening in 2014, the US-34 bridge over the Missouri River has been thought to be a catalyst for development in the county. Some recent commercial growth has occurred along I-29 and the I-29/US-34 juncture, most notably Love’s Travel Stop. However, historic flood events in 2011 and 2019, and subsequent loss of Mills County’s Missouri River levee system accreditation, have likely made further development in that area problematic for the time being.

Section 4

4 MILLS COUNTY

[section 4]

HAZARD ANALYSIS + RISK ASSESSMENT

This section reviews potential natural and human-caused hazards applicable to Mills County, including descriptions of previous disaster events. Mills County has been included in 17 recorded Presidential Disaster Declarations and 12 Governor's Disaster Proclamations which are listed in Table 9. The majority of disaster declarations have resulted from thunderstorms and/or flooding. Flooding has been and will continue to be a high priority hazard in Mills County.

Table 9 **Past Federal and State Disaster Declarations**

Numerical Identification	Numerical Identification	Numerical Identification
April 22, 1965	Flood	FEMA-DR-193
September 26, 1972	Severe Storms/Flood	FEMA-DR-354
July 17, 1987	Storms/Flash Flood	FEMA-DR-795
December 26, 1991	Ice Storm	FEMA-DR-928
July 8-9, 1993	Flood	FEMA-DR-0996
June 15 - July 23, 1996	Flood	FEMA-DR-1133
October 25-26, 1997	Winter Storm	FEMA-DR-1191
June 14-23, 1998	Flood	FEMA-DR-1230
August 6-7, 1999	Flash Flood	FEMA-DR-1282
May 13, 2001	Severe Storms	FEMA-DR-1367
May 19 - June 24, 2004	Severe Storms	FEMA-DR-1518
May 5-7, 2007	Severe Storms	FEMA-DR-1705
May 25 - August 3, 2008	Severe Storms	FEMA-DR-1763
May 25, 2008	Severe Storms	IA Proc #2008-22
December 22, 2009	Severe Winter Storms	IA Proc #2009-10
December 22, 28-30, 2009	Severe Winter Storms	IA Proc #2010-08
Dcember - March, 2009	Severe Winter Storms	IA Proc #2010-12
June 1 - August 31, 2010	Severe Storms	FEMA-DR-1930
May 25, 2011	Flood	FEMA-DR-1998
May 25 - October 28, 2011	Flood/Severe Flooding	IA Proc #2011-08*
June 3-5, 2014	Severe Storms	FEMA-DR-4181
June 3, 2014	Severe Storms	IA Proc #2014-04
March 14, 2019	Flooding and Flash Flooding	IA Proc #2019-01
March 22, 2019	Severe Storms and Flooding	FEMA-DR-4421

*Five additional Proclamations resulted from Missouri River reservoir releases and flooding in 2011: # 2011-13, 2011-18, 2011-25, 2011-29, and 2011-33.

Source: FEMA Disaster Declarations by State/Tribal Government; Iowa Homeland Security and Emergency Management Division

Critical Facilities

Critical facilities are structures and infrastructure that jurisdictions place a priority on protecting such as government buildings, fire and rescue facilities, public utilities, transportation corridors, hospitals/clinics, schools, and others. Damage to these facilities can endanger life, put vulnerable populations at risk, and impact the delivery of vital services.

The majority of critical facilities with countywide importance are located in Glenwood due to the city's position as the county seat and largest population center in Mills County.

Critical facilities in Glenwood include the Mills County Courthouse, Glenwood Resource Center, Secondary Roads Facility, and Sheriff's Office. Glenwood is the location of four public schools and two medical clinics. Outside of Glenwood, most of the county's critical facilities are located in or near the other incorporated cities or rural townships.

Several county and local critical facilities are located in 100-year or 500-year floodplains – Pacific Junction exists entirely in the 500-year floodplain. These sites are identified and further discussed in this section and in Appendix A – Local Flood Areas and Critical Facilities. To the greatest extent possible, communities should avoid locating facilities of critical importance in flood areas.

It is unclear if there are currently any NFIP insured repetitive loss properties anywhere within the county or incorporated jurisdictions, however, Pacific Junction has experience historic flooding on two occasions in 2011 and 2019. As the impact of flooding in 2019 is fully assessed, the effort must be made by the county and local officials to accurately determine the number and types of structures that have experienced repeated losses and consider the prospect of implementing a voluntary acquisition program of structures in the floodplain.

Hazard Profiles

The Planning Committee reviewed 35 potential hazards that are identified in the 2013 Iowa Hazard Mitigation Plan. For each of the hazards listed in Table 10, the Planning Committee discussed previous hazard occurrences and then reviewed conditions present that could result in similar future events. No hazards are addressed in this plan that the Planning Committee determined will not occur.

Table 10 **Hazard Identification**

NATURAL HAZARDS

HAS OCCURRED	May Occur	Hazard
	X	Dam Failure
X		Droughth
	X	Earthquake
	X	Expansive Soils
X		Extreme Heat
X		Flash Flood
X		Grass/Wild Land Fire
X		Hailstorm
X		Landslide/Erosion/Slope Failure
X		Levee Failure
X		River/Stream Flood
X		Severe Winter Storm
	X	Sinkholes
X		Thunderstorm & Lightning
X		Tornado
X		Windstorm

Human-caused Accidental Hazards

Has Occurred	May Occur	Hazard
	X	Air Transportation Incident
X		Communications Failure
X		Energy Disruption
X		Fixed Hazmat Incident
	X	Fixed Radiological Incident
X		Highway Transportation Incident
X		Rail Transportation Incident
X		Transportation Hazmat & Radiological Incident
X		Pipeline Incident
X		Waterway/Water Body Incident

Human-caused Purposeful Hazards

Has Occurred	May Occur	Hazard
	X	Enemy Attack
	X	Public Disorder
	X	Terrorism
	X	Cyber Terrorism

Human-caused Purposeful Hazards

Has Occurred	May Occur	Hazard
	X	Animal Disease Epidemic
	X	Human Disease Epidemic
	X	Plant/Crop Disease Epidemic
X		Structure Failure
X		Structural Fire

Hazard profiles were conducted on an area wide basis rather than analyzing each hazard for all jurisdictions. Unique conditions within the participating jurisdictions are noted in each hazard profile. For example, all communities are susceptible to severe winter weather, although not all communities are vulnerable to levee failure. Unless otherwise stated, school districts will have the same risk analysis as the jurisdiction where the school district assets are located. School district assets that may be uniquely impacted by a hazard will be identified in that specific profile. Hazards were assessed individually by considering their historical occurrence, probability, vulnerability, maximum geographic extent, severity of impact, and speed of onset. These factors were evaluated on a 1 to 4 scale; 1 being minor or unlikely and 4 being significant or highly likely (evaluating criteria is further defined in the following tables).

Historical Occurrence: The number of times that a hazard has occurred in the past 25 years.

Score	Description
1	Less than 4 occurrences on the past 25 years
2	4-7 occurrences in the past 25 years
3	8-12 occurrences in the past 25 years
4	More than 12 occurrences in the past 25 years

Probability: Reflects the likelihood of the hazard occurring again in the future, sometimes without regard to the hazard's historical occurrence.

Score	Description	
1	Unlikely	Less than 1% probability in the next 100 years
2	Possible	Between 1% and 10% probability in the next year, or at least one chance in the next 100 years
3	Likely	More than 10% but less than 100% probability, or at least one chance in the next 10 years
4	Highly Likely	Nearly 100% chance in the next year

Vulnerability: Measure of the percentage of people that will be adversely affected by the occurrence of the hazard.

Score	Description	
1	Negligible	Less than 10% of the total population of the jurisdiction No risk to response personnel, or no response needed
2	Limited	10% to 25% of the total population of the jurisdiction Minimal risk to response personnel
3	Critical	More than 25% and up to 50% of the total population of the jurisdiction. Moderate risk to response personnel
4	Catastrophic	More than 50% of the total population of the jurisdiction High risk to response personnel

Maximum Geographic Extent: The potential spatial extent of the impacted area.

Score	Description	
1	Negligible	Less than 10% of the jurisdiction
2	Limited	10% to 25% of the jurisdiction
3	Critical	More than 25% and up to 50% of the jurisdiction
4	Catastrophic	More than 50% of the jurisdiction

Severity of Impact: Assessment of severity in terms of injuries and fatalities, personal property, and infrastructure.

Score	Description	
1	Negligible	- Few if any injuries - Minor quality of life lost with little or no property damage - Brief interruption of essential facilities and services for less than 4 hours - No environmental impact - No impact to reputation of the jurisdiction
2	Limited	- Minor injuries and illness - Minor or short-term property damage which does not threaten structural stability - Shutdown of essential facilities and services for 4-23 hours - Minor short-term environmental impact - Very limited impact to reputation of the jurisdiction
3	Critical	- Serious injury and illness - Major or long-term property damage which threatens structural stability - Shutdown of essential facilities and services for 24-72 hours - Minor long-term environmental impact - Moderate impact to reputation of the jurisdiction
4	Catastrophic	- Multiple deaths - Property destroyed or damaged beyond repair - Complete shutdown of essential facilities and services for more than 3 days - Major long-term environmental impact - Severe impacts to the reputation of the jurisdiction

Speed of Onset: Rating of the potential amount of warning time that is available before the hazard occurs.

Score	Description
1	More than 24 hours warning time
2	12-24 hours waiting time
3	6-12 hours waiting time
4	Minimal or no warning

Prioritizing Hazards

Using the rankings described, each hazard was assigned a Calculated Priority Risk Index (CPRI). The CPRI formula, including the weighting factors, was developed in consultation with Iowa Homeland Security and Emergency Management Division planning staff.

(Historical Occurrence x 0.2) + (Probability x 0.2) + (Vulnerability x 0.3) + (Maximum Geographic Extent x 0.2) + (Severity of Impact x 0.3) + (Speed of Onset x 0.15) = CPRI

Hazards were assigned into three categories of planning significance based on CPRI calculations:

Low (1.4 – 2.7); Moderate (2.8 – 4.0); High (4.1 – 5.4)

The CPRI formula provides a supplement to overall planning significance. The Planning Committee took CPRI calculations into account when prioritizing hazards, though adjustments were made in the organization of hazards according to more qualitative considerations. It is understood that some hazards are unpredictable (e.g. transportation incident) or simply a part of life (e.g. severe winter weather). Table 11 shows the Planning Committee's prioritization of hazards based on the hazard analysis, CPRI value, and qualitative data.

Table 11 **Hazard Prioritization**

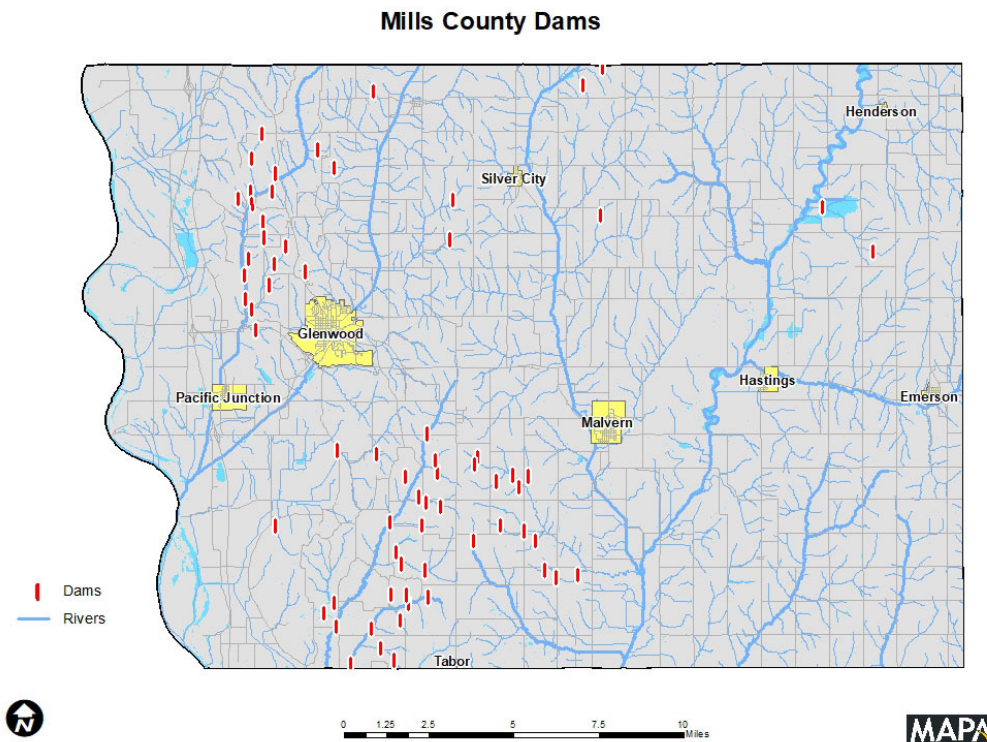
Priority 1 (High) Hazards	Priority 2 (Moderate) Hazards	Priority 3 (Low) Hazards
- Extreme Heat - Flash Flood - Hailstorm - River/Stream Flood - Severe Winter Storm - Thunderstorm & Lightning - Tornado	- Drought - Grass/Wild Land Fire - Windstorm - Air Transportation Incident - Communications Failure - Energy Disruption - Fixed Hazmat Incident - Highway Transportation - Fixed Radiological Incident - Rail Transportation incident - Transportation Hazmat/Radiological Incident - Enemy Attack - Cyber Terrorism - Human Disease Epidemic - Structure Fire	- Dam Failure - Earthquake - Expansive Soils - Landslide/Erosion/Slope Failure - Levee Failure - Sinkholes - Pipeline Incident - Incident - Waterway/Waterbody Incident - Public Disorder - Terrorism - Animal Disease Epidemic - Plant/Crop Disease Epidemic - Structure Failure

Dam Failure

A break in, or imposed threat from, any water retention fixture that may endanger population downstream of the containment area.

Dam Failure - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
1	2	2	2	2	3	2.7	Low

Figure 18 Mills County Dams



Historical Occurrence

No dam failures have occurred in the history of the Planning Area. While not technically a dam failure, the flooding on the Missouri River in 2011 by controlled release of water from dams in South Dakota partially showed how the Planning Area could be affected by such an incident.

Probability

In Iowa, dams are classified according to the downstream damages that would occur in the event of failure. The greater the risk, the higher the standards for dam construction or modification. There are three dam classifications:

High Hazard – Located in an area where dam failure may create a serious threat of loss of human life.

Moderate (Significant) Hazard – Failure may damage isolated homes or dwellings, industrial or commercial buildings, moderately traveled roads, interrupt major utility services, but are without substantial risk of loss of human life. Dams and their impoundments are themselves of public importance such as dams associated with public water supply systems, industrial water supply, or public recreation.

Low Hazard – Damages from a failure would be limited to loss of the dam, livestock, farm outbuildings, agricultural lands and lesser used roads, and where loss of human life is considered unlikely.

Dam classifications have nothing to do with the material condition of a dam, only the potential for death and/or destruction due to the size of the dam, the size of impoundment, and the characteristics of the area downstream. The Iowa Department of Natural Resources (IDNR) tracks all dams in the state with a height of at least 25 feet or a total storage of at least 50 acre feet of water. There is one High Hazard dam and two Significant Hazard dams located in the Planning Area (of 78 total dams in Mills County) according to the IDNR Dam Inventory. The High Hazard dam is located in the Pony Creek Drainage District (Pony Creek Watershed Site 21) at Pony Creek Lake which is approximately two miles northwest of Glenwood. The Iowa plan further states that 41% of dams in Iowa will be more than 50 years old by 2020. Dam (including levee) failure as a result of heavy flooding has a 10% to 20% probability of occurring in the state in any given year according to the Iowa plan.

Vulnerability

Pacific Junction is most at risk from upstream earthen dam failure. Pacific Junction is protected from Pony Creek by a levee; however, dam failure could cause the creek to overwhelm the levee causing significant damage to the city and surrounding farmland. Farmland in extreme southern Mills County may be vulnerable to dam failure in the Waubonsie Creek Watershed, though there is little population in that area. The area downstream of the Planning Area's High Hazard dam at Pony Creek Lake is generally undeveloped, but there are 43 total parcels - 20 of which are residential - in the breach inundation area that have an approximate assessed value of \$4.8 million. Portions of Deacon Road and potentially a small area of US-34 could become inundated in the event of a breach.

Maximum Geographic Extent

In the event of failure of one of the six Missouri River dams regulated by the US Army Corps of Engineers, all floodplains – including the 500-year – and adjoining low lying areas will be inundated within approximately 24 hours.

Severity of Impact

Public health and safety: Most at risk are those downstream of dam sites and those in the floodplains of streams and channels where dams exist.

First responder health and safety: Risk is higher when attempting to work in rising and swiftly moving currents.

Continuity of operations and service delivery: No known direct threats are apparent. Some utilities or system controls that serve specific areas can become compromised until water recedes.

Physical property and infrastructure: All property and infrastructure downstream of dam sites are at risk as well as that which is located in floodplains of streams and channels where dams exist.

Natural environment: Extensive erosion can occur.

Local economy: Repair and recovery costs can be significant. Few if any local businesses will be directly affected.

Local reputation: Dam design, construction, and monitoring practices may be the focus of some public scrutiny following an incident.

Speed of Onset

Given the distance of county dams to vulnerable areas, the public would have less than an hour of lead time to prepare and/or evacuate. However, while actual failure would be sudden, county officials are generally aware days in advance of areas experiencing heightened risk.

Drought

A period of prolonged lack of precipitation for weeks at a time producing severe dry conditions.

Drought - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
2	3	2	4	2	1	3.2	Moderate

Historical Occurrence

The NOAA Storm Events Database records a period of drought for the entire Planning Area lasting from late July 2012 through March 2013.

Probability

There are four types of drought conditions relevant to Iowa: meteorological drought, which refers to precipitation deficiency; hydrological drought, which refers to declining surface and groundwater supplies; agricultural drought, which refers to soil moisture deficiencies; and socioeconomic drought, which refers to when physical water shortages begin to affect people. Agricultural and meteorological droughts are generally the most common in the state and Planning Area. The Planning Committee expects drought conditions to affect the Planning Area at least once in a ten year period.

Vulnerability

Municipal water systems of the Planning area utilize groundwater and are somewhat protected from surface water fluctuations associated with drought. However, many of the Planning Area's rural residents are served by private water wells which are relatively shallow and can run dry in the event of prolonged drought. Drought will not typically present an immediate threat to human life or wellbeing.

Maximum Geographic Extent

Drought conditions are generally uniform on a region-wide scale. There would be little variance in the scale of drought throughout the Planning Area.

Severity of Impact

Public health and safety: No known threats are apparent.

First responder health and safety: No known threats are apparent, but fire suppression can be challenging due to dry vegetation and limited water supply.

Continuity of operations and service delivery: Water delivery can be impaired. Local jurisdictions may need to enact restrictions or limits on use.

Physical property and infrastructure: Drought and related soil shrinkage can create building foundation problems such as cracked walls and stuck doors and windows.

Natural environment: The natural environment is adaptable to fluctuations in moisture.

Local economy: The agriculture economy will be adversely affected more than any other sector in the Planning Area.

Local reputation: Can be negatively affected if water sources are not effectively managed or properly distributed.

Speed of Onset

Drought occurs slowly over a period of weeks, months or years.

Earthquake

Any shaking or vibration of the earth caused by the sudden release of energy that may impose a direct threat on life and property.

There are two common scales for categorizing earthquake magnitude, the Richter Scale and the Modified Mercalli Intensity Scale; the former measures an earthquake's magnitude (i.e. seismic waves) using a logarithmic scale, where the latter measures intensity (observed effects) using a Roman numeral scale. Below is a summarized comparison.

Richer (Magnitude)	Mercalli (Intensity)	Description/Maximum Expected Effects
1.0 - 3.0	I	Not felt - Not felt except by a very few under especially favorable conditions
3.0 - 3.9	II - III	Weak - Felt quite noticeably by persons indoors, especially on upper floors of building. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
4.0 - 4.9	IV - V	Moderate - Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
5.0 - 5.9	VI - VII	Very strong - Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
6.0 - 6.9	VII - IX	Violent - Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
7.0 & Higher	VIII or Higher	Extreme - Considerable to total damage.

Source: Magnitude/intensity comparison, USGS

Earthquake - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
1	1	1	4	2	4	2.7	Low

Historical Occurrence

Thirteen earthquakes with epicenters in Iowa have been recorded, the majority of which occurred in the eastern half of the state. The last earthquake with an epicenter in Iowa was recorded near Shenandoah on July 16, 2004. This event classified as "III," or "Weak," on the Mercalli Intensity Scale. An earthquake that originated in Oklahoma on September 4, 2016 was recorded in the Planning Area; this event was attributed to human-caused wastewater-injection related to fracking. Other than the events described, earthquakes that affect the Planning Area are exceptionally rare.

Probability

No major fault lines exist in Iowa. The nearest earthquake threat to the Planning Area is the New Madrid Seismic Zone (Figure 19). The New Madrid fault line extends into parts of Arkansas, Illinois, Indiana, Kentucky, Mississippi, Missouri, and Tennessee. Iowa is located in low risk zones based on the Peak Ground Acceleration Map for the New Madrid fault line (Figure 20). The 2013 Iowa Hazard Mitigation Plan cites a scientifically estimated 90% chance of a Richter scale 6.0 magnitude earthquake in the New Madrid Seismic Zone by the year 2040. Such a magnitude earthquake on the New Madrid fault would result in minimal damages across Iowa. The Iowa plan's analysis placed the probability of future earthquakes in the state at less than 10% in any given year.

Figure 19 **New Madrid Seismic Zone Area**

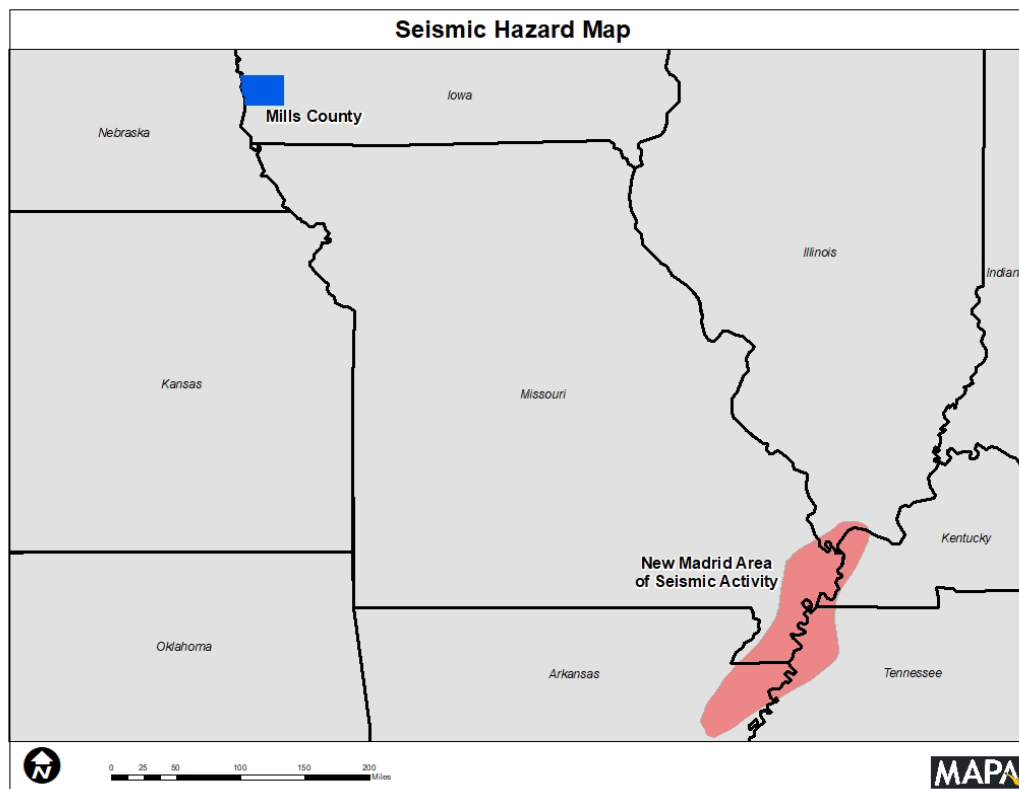
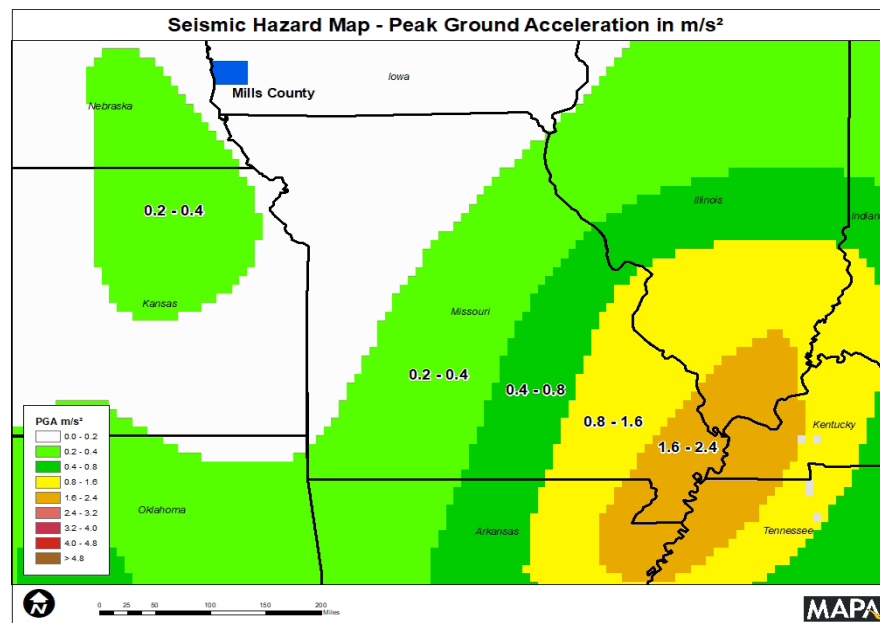


Figure 20 **Peak Ground Acceleration**



Vulnerability

Those most at risk from an earthquake will be in structurally deficient buildings or in buildings constructed on poorly consolidated substrate, particularly floodplain materials. Because the Planning Area is located in a region of the country that does not typically experience earthquakes, most structures are not built to earthquake standards, but the most serious property damage would likely be foundational.

Maximum Geographic Extent

A Richter Scale 6.5 magnitude earthquake can generate vibrations similar to the passing of heavy truck traffic, rattling of dishes, creaking of walls, and swinging of suspended objects. Such sensations would be experienced throughout the entire Planning Area.

Severity of Impact

Based on a 6.0 to 6.5 Richter Scale magnitude occurrence:

Public health and safety: No known threats are apparent.

First responder health and safety: No known threats are apparent, but first responders should anticipate a higher volume of calls and inquiries after an incident.

Continuity of operations and service delivery: Any interruptions would be brief and act more as an inconvenience.

Physical property and infrastructure: Shaking or shifting of older and poorly constructed buildings are possible. Minor damage to underground utilities may occur.

Natural environment: Leaks or spills may occur where hazardous materials are stored or carried.

Local economy: No known threats are apparent.

Local reputation: No known threats are apparent.

Speed of Onset

Earthquake tremors and aftershocks will occur with virtually no warning.

Expansive Soils

Soils and soft rock that tend to shrink or swell excessively due to changes in moisture content.

Expansive Soils - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
1	1	1	1	1	1	1.4	Low

Historical Occurrence

There have been no occurrences of expansive soils in the Planning Area in the last 25 years.

Probability

It is difficult to determine reasonable probability of expansive soils due to the slow occurring nature of the hazard. According to the 2013 Iowa Hazard Mitigation Plan, the effects of expansive soils are most prevalent in regions of moderate to high precipitation, where prolonged periods of drought are followed by long periods of rainfall. Such climate conditions are generally not typical in the Planning Area.

Vulnerability

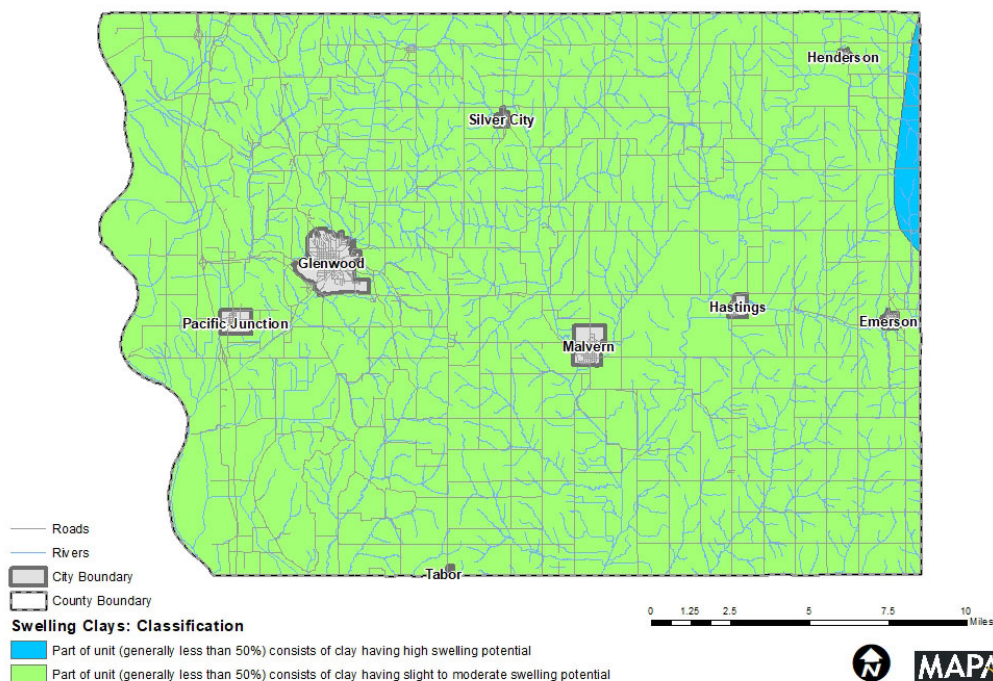
Expansive soils is a slowly occurring hazard. Public wellbeing and safety would likely be unaffected by expansive soils. Physical property and infrastructure could be impacted under an alignment of circumstances.

Maximum Geographic Extent

The geographic extent of expansive soils is expected to be negligible. The majority of soil in the Planning Area consists of clay having “slight to moderate swelling potential” according to a US Geological Survey (USGS) swelling clay map of the conterminous United States (Figure 21).

Figure 21 **USGS Swelling Clay Map of Conterminous US**

Mills County Expansive Soils



Severity of Impact

Public health and safety: No known threats are apparent.

First responder health and safety: No known threats are apparent.

Continuity of operations and service delivery: No known threats are apparent.

Physical property and infrastructure: May contribute to or cause damage to roadways, bridges, pipelines, and other infrastructure. Building codes may need to be re-evaluated to ensure proper construction standards in vulnerable areas.

Natural environment: May exacerbate land erosion.

Local economy: May place a financial burden on individual commercial and residential property owners in impacted areas.

Local reputation: No known threats are apparent.

Speed of Onset

Consistent with other geologic hazards, expansive soils will occur slowly over time.

Extreme Heat

Temperatures (including heat index) in excess of 100° Fahrenheit or three successive days of plus-90° Fahrenheit. A heat advisory is issued when temperatures reach 105° and a warning is issued at 115°.

Extreme Heat - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
4	4	3	4	2	1	4.1	High

Historical Occurrence

The NOAA Storm Events Database records 19 heat related events in the Planning Area since 1993.

Probability

The probability of an extreme heat event occurring in the Planning Area in any given year is nearly 100%.

Vulnerability

Extreme heat can impose stress on humans and animals according to the 2013 Iowa Hazard Mitigation Plan. Heatstroke, sunstroke, cramps, exhaustion, and fatigue are possible with prolonged exposure and/or physical activity. Extreme heat can result in distortion and failure of structures and surfaces such as roadways and railroad tracks. Extreme heat can pose a threat to crops and livestock.

Young children and the elderly are especially at risk from extreme heat, even more so if an energy disruption is involved. The Glenwood Resource Center and Glen Haven Home/Linnwood Estates in Glenwood house vulnerable populations that are at heightened risk during periods of dangerously high temperatures.

Maximum Geographic Extent

An extreme heat event will generally affect the entire Planning Area.

Severity of Impact

Public health and safety: Heatstroke, sunstroke, cramps, exhaustion, fatigue, and even death can occur.

First responder health and safety: Similar to the general public.

Continuity of operations and service delivery: Certain operations may be required to close or limit services during peak temperature hours.

Physical property and infrastructure: Electrical transmission systems are impacted when power lines sag in high temperatures. High demand for electricity outpaces supply which causes rolling blackouts. The demand for water increases during periods of extreme heat; this can contribute to fire suppression problems for local volunteer fire departments.

Natural environment: Extreme heat is conducive to drought. Heat combined with drought can precipitate grass/wild land fires.

Local economy: The agriculture economy will be adversely affected more than any other sector in the Planning Area. Electric and water utility costs may rise for a time.

Local reputation: No known threats are apparent.

Speed of Onset

As with other weather phenomena, periods of extreme heat are predictable within a few degrees several days in advance. Variations in local conditions can affect the actual temperature in a matter of hours or even minutes. The National Weather Service will initiate a heat advisory when a heat index of 100° or higher is expected for a period of three hours or more, or an excessive heat warning when a heat index of 105° is expected over that same duration.

Flash Flood

A flood event occurring with little or no warning where water levels rise at an extremely fast rate.

Flash Flood - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
4	3	3	3	2	4	4.1	High

Historical Occurrence

Mills County has been included in three Presidential Disaster Declarations as a result of flash flooding:

- 1) FEMA DR-795 – Incident occurred on May 31, 1987.
- 2) FEMA DR-1230 – Flooding from record rains and thunderstorms on June 14, 1998 and additional severe thunderstorms on June 19, 1998 caused extensive damage to public infrastructure and homes in Mills County.
- 3) FEMA DR-1282 – A rainstorm deposited up to 13 inches of rain on western and central Mills County in less than 24 hours on August 6 and 7, 1999.

Probability

Land converted to roads, parking lots, lawns, etc. lose the ability to absorb rainfall. Urbanization increases runoff two to six times over what would occur on natural terrain. More areas of the Planning Area around Glenwood are being developed with impervious surfaces. The amount of runoff produced will likely increase the probability of flash flooding as development continues. The conditions for flash flooding are especially prevalent in the West Nishnabotna and Keg-Weeping Water watersheds.

Vulnerability

Particularly at risk are those in low lying areas; close to dry creek beds or drainage ditches; near water; or downstream from a dam, levee, or storage basin. People and property in areas with insufficient storm sewers and other drainage infrastructure can be put at risk as drains cannot rid the area of runoff quickly enough. Nearly half of all flash flood fatalities are auto related. Motorists often try to traverse water covered roads and bridges and are subsequently swept away by the current. Six inches of swiftly moving water can knock persons off their feet and only two feet of water can float a full sized automobile.

All incorporated cities in the Planning Area have a degree of vulnerability to flash flooding, either due to topography, proximity to creeks and stream channels, or lack of storm sewers. However, few historical occurrences and nominal record keeping have made it difficult to accurately estimate vulnerability in terms of property, critical assets, vulnerable populations, etc.

Furthermore, jurisdictions in Mills County do not have the technical resources to project vulnerability in a reliable manner. There are no creeks or streams in the cities of Emerson, Henderson, and Silver City that might channelize rapidly rising water; however, there are no storm sewers in those cities to receive heavy rains and snow melt. Glenwood, Hastings, Malvern, and Pacific Junction do have waterways that run through their corporate limits. These low-lying channels may inundate adjacent areas. Glenwood and Malvern do have some storm water piping but areas remain that rely on ditch networks for drainage.

Maximum Geographic Extent

People and property located in low lying areas and in areas with narrow stream channels, saturated soil, or on land with large amounts of impermeable surfaces are likely to be impacted in the event of a significant rainfall. Unlike areas affected by a river/stream flood, flash floods can impact areas far from the stream itself. Streets can become moving rivers and basements can quickly fill with water.

Severity of Impact

Public health and safety: People caught in areas susceptible to flash flooding are at risk of injury or even death. Stagnant water after a flood can cause health concerns as well.

First responder health and safety: First responders are at risk when attempting rescue operations in rapidly rising and swiftly moving flood waters.

Continuity of operations and service delivery: Flood waters can slow or obstruct the ability of first response vehicles from arriving at emergency scenes.

Physical property and infrastructure: Structures can be severely damaged or destroyed from swiftly moving waters. Local officials may need to re-evaluate land use and zoning regulations in areas where flash flooding has created issues.

Natural environment: Floodwaters and runoff can contain human-made materials, some of which are hazardous to the environment.

Local economy: Flood waters can create financial hardships on affected property owners. Affected businesses would likely be forced to cease operations, at least temporarily; some may not be able to recover. Damaged utilities and infrastructure can impact businesses not directly affected. Cleanup costs can be significant to local communities.

Local reputation: Community development patterns or practices may be scrutinized in the aftermath of a flash flood.

Speed of Onset

Flash floods are somewhat unpredictable, but there are factors that can point to the likelihood of a flood event. Flash floods occur within a few minutes or hours of excessive rainfall, a dam or levee failure, or a sudden release of water held by an ice jam. Advance warnings for some of these events are not always possible.

Grass/Wild Land Fire

An uncontrolled fire that threatens life and property in either a rural or wooded area and is beyond normal day-to-day response capabilities.

Grass/Wild Land Fire - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
3	3	2	2	1	4	3.1	Moderate

Historical Occurrence

There have been numerous grass and timber fires in rural Mills County over the last 25 years, some of which required a multi-jurisdictional response. There have been no grass or wild land fires in that span that endangered densely populated areas of the Planning Area.

Probability

Grass and wild land fires are likely during dry and hot conditions, especially when wind is present.

Vulnerability

Portions of the Planning Area most vulnerable to a grass or wild land fire are the levee areas along the Missouri River and the undeveloped areas along the Loess Hills. Vulnerability in western Mills County will increase as rural residential development continues.

Maximum Geographic Extent

Most grass fires are less than a few acres in size and contained to highway and rail right-of-way ditches. High winds can turn a small flame into a multi-acre grassfire within a matter of minutes. However, due to the land cover throughout the Planning Area, it is unlikely that a grass fire would spread to more than a few isolated properties.

Severity of Impact

Public health and safety: Threats are low as adequate notice can be provided to those who reside in the path of an uncontrolled fire.

First responder health and safety: The threat to volunteer fire fighters can be high. Proper training and adequate equipment and gear are crucial to safety.

Continuity of operations and service delivery: Significant incidents might require a response from more than one local fire department, but most public and private services should be unaffected.

Physical property and infrastructure: Structures located in rural, grassy, and wooded areas are most at risk. Incidents are typically contained and extinguished before there is a serious threat to residential property.

Natural environment: Indigenous natural vegetation will recover in time.

Local economy: Economic impacts will be mostly related to lost field crops and damaged agricultural land.

Local reputation: No known threats are apparent.

Speed of Onset

Most grass and wild land fires occur without warning and travel at a moderate rate. Fires that will impact the Planning Area will more frequently generate along right-of-ways or from burn piles, and will likely be blown toward crop areas and residential subdivisions. In a situation where a grass fire threatens several properties, residents should have adequate time to evacuate.

Hailstorm

An outgrowth of a severe thunderstorm in which balls or irregularly shaped lumps of ice greater than 0.75 inches in diameter fall with rain.

Hailstorm - Hazard Score Calculation							
Historical Occurrence	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
4	3	3	3	3	4	4.4	High

Historical Occurrence

The NOAA Storm Events Database records 95 hail events in the Planning Area since 1993 that measured 0.75 inches in diameter or more. Of those events, 8 occurred in Emerson, 27 in Glenwood, 3 in Hastings, 7 in Henderson, 6 in Malvern, 13 in Pacific Junction, 8 in Silver City, and 23 elsewhere in the Planning Area including Mineola and Tabor.

Probability

The Planning Area has experienced an average of 3.8 significant hailstorm events (hail diameter at least 0.75") annually from 1993 through 2017. There is nearly a 100% probability that at least one hailstorm event will occur in the Planning Area in any given year.

Vulnerability

Primary threats associated with hailstorms are damage to buildings, crops, and vehicles. Hailstorms can cause injuries from time to time but they rarely result in fatalities. Those most vulnerable are persons caught outside during hail activity, such as people in parks or recreational areas of the Planning Area unable to find adequate shelter.

Maximum Geographic Extent

Hail can occur over an area up to several square miles.

Severity of Impact

Public health and safety: Those caught outdoors during a storm are vulnerable to injury and even death in rare cases.

First responder health and safety: Similar to the general public.

Continuity of operations and service delivery: Severe storms that produce hail can cause power outages on an area wide basis.

Physical property and infrastructure: Can severely damage built structures on an area wide basis. Roofs, windows, and vehicles are especially vulnerable. Severe storms that produce hail can damage trees and power lines. Resilience is often dependent on the age of structures and quality of building materials.

Natural environment: Damage to trees and other vegetation can occur.

Local economy: Can result in up to millions of dollars in crop and property damage.

Local reputation: No known threats are apparent.

Speed of Onset

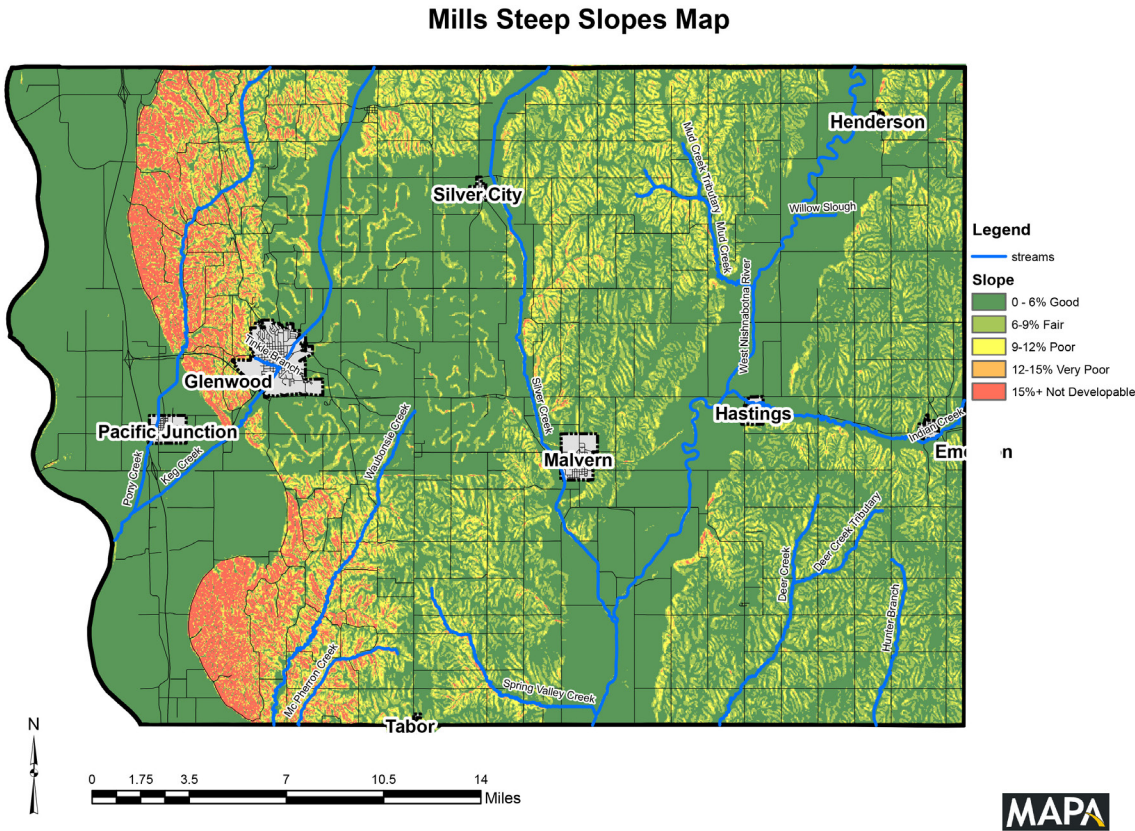
Weather forecasters can predict hail activity and track the movement of storms with general accuracy; however, hail can occur with little warning and severity (i.e. size) can vary rapidly.

Landslide/Erosion/Slope Failure

A downward and outward movement of slope forming materials reacting under the force of gravity.

Landslide/Erosion/Slope Failure - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
1	3	1	1	1	1	1.8	Low

Figure 22 Mills County Slope Topography



Historical Occurrence

In 1993, a landslide occurred along County Road L-31 near Indian Hollow. The landslide was caused in part by soil saturation from significant rain and poor soil management practices at a quarry. The landslide resulted in complete blockage of the roadway and necessitated repair of the road surface and ditches.

After significant rain events in Emerson, the roadbed of Manchester Street is regularly affected by erosion of the Indian Creek basin. Slumping and slope failure is common in the Loess Hills landform and occurs regularly, although no landslides have resulted in significant damage to property or loss of life.

Probability

Loess sediment is highly cohesive and tends to stand in cliffs or blocks when dry, but saturation can cause the slopes to fail and result in landslides. Due to the terrain and presence of steep loess sediment bluffs in the western part of the Planning Area, the Planning Committee expects that landslides will occur at least once in a decade. Slope failure is more likely along steep terrain adjacent to the Missouri River and quarries where loess soil is mined for fill dirt.

Vulnerability

People occupying structures overlooking steep slopes or located at the bottom of steep slopes are vulnerable. The nature of landslides in the Planning Area is such that damage would be localized and relegated to gullies where there is little human activity. There are no communities in the Planning Area that have significantly steep topography or topography that is conducive to landslides or slope failure.

Maximum Geographic Extent

Slopes are predominantly located east of the Missouri River along the Loess Hills formations (see Figure 22 for slope topography).

Severity of Impact

Public health and safety: Injuries and deaths are unlikely unless a landslide occurred suddenly in a populated area.

First responder health and safety: No known threats are apparent.

Continuity of operations and service delivery: No known threats are apparent.

Physical property and infrastructure: Structures that overlook steep slopes or are at the bottom of steep slopes are vulnerable.

Natural environment: No known threats are apparent.

Local economy: Impacts would include loss of private property on steep slopes or at the bottom of steep slopes.

Local reputation: No known threats are apparent.

Speed of Onset

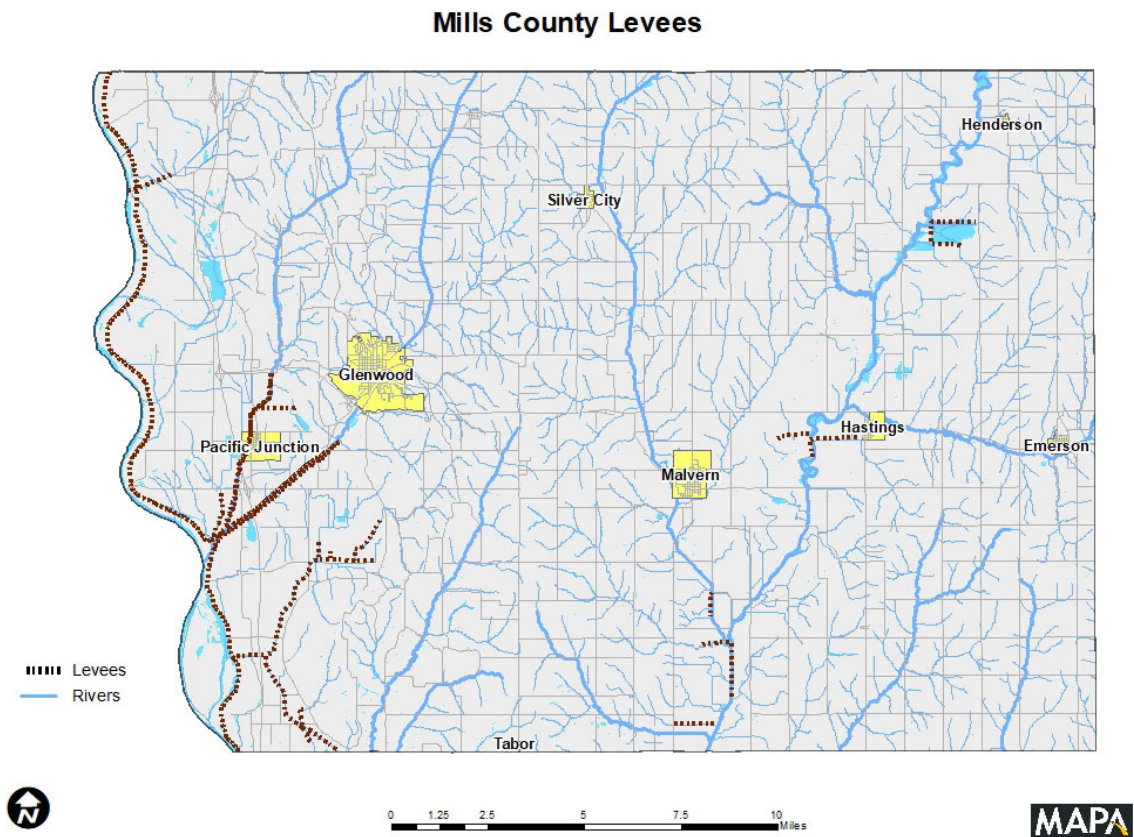
Landslides, erosion, and slope failure are often results of conditions that develop slowly over time. Weather conditions that are conducive to this hazard (i.e. saturating rains) can be forecast days in advance.

Levee Failure

Loss of structural integrity of a wall, dike, berm, or elevated soil by erosion, piping, saturation, or under seepage causing water to inundate normally dry areas.

Levee Failure - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
1	2	2	2	3	1	2.7	Low

Figure 23 Mills County Levees



Historical Occurrence

Though no actual levee failures have occurred in the history of the Planning Area, massive flooding events in 1993 and 2011 threatened levee integrity along the Missouri River. A combination of rainfall and snow melt from above normal snow pack brought record high water levels to the Missouri River chain of reservoirs in late spring of 2011. Controlled reservoir discharges by the US Army Corps of Engineers inundated much of the Missouri River Valley from mid-June into early August. I-29 through Mills County was closed during that period and residents near the river were forced to evacuate.

Probability

There are 13 levee systems located within the Planning Area according to the National Levee Database; the majority of levees protect lands west of Glenwood that are predominantly agricultural. Levee (including dam) failure in the state as a result of heavy flooding has a 10% to 20% probability of occurring in any given year according to the 2013 Iowa Hazard Mitigation Plan.

Vulnerability

Pacific Junction has the highest vulnerability in the Planning Area due to the city's proximity to the Missouri River, Keg Creek, and Pony Creek. According to the National Levee Database, levee segments along the banks of Keg Creek and Pony Creek protect Pacific Junction and adjacent areas that include 552 people, 270 structures, and a total property value of \$71.5 million.

There are no levee systems that would directly impact the cities of Emerson, Glenwood, Henderson, Malvern, and Silver City. Levee failure at the West Nishnabotna River near Hastings could cause inundation in the northern part of the city.

Maximum Geographic Extent

A flood event that matches or exceeds the 2011 Missouri River flood has the potential to inundate the 500-year floodplain in western portions of the Planning Area including all of Pacific Junction.

Severity of Impact

Public health and safety: Threats are low as adequate notice can be provided to those who reside in high risk areas.

First responder health and safety: First responders are at higher risk when responding to calls in or near flood waters.

Continuity of operations and service delivery: Critical facilities located in the floodplain may be forced to operate out of temporary locations. Rising water may limit access to some roads and bridges.

Physical property and infrastructure: Apart from the levee itself, buildings and infrastructure located in the floodplain can be eroded, extensively damaged, or completely destroyed.

Natural environment: Standing water over an extended period can damage vegetation and soil nutrients. Land erosion is the most lasting effect.

Local economy: Economic losses for homeowners and business owners can be catastrophic regardless of flood insurance and other precautions. Businesses without continuity measures in place will be unable to operate in the short-term and may not be able to reopen at all. The permanent loss of one local business in rural communities can have detrimental ripple effects throughout the entire Planning Area. Flood recovery and levee repair efforts are cost prohibitive to the jurisdictions that are responsible.

Local reputation: Levee design, construction, and monitoring practices may be the focus of some public scrutiny following an incident.

Speed of Onset

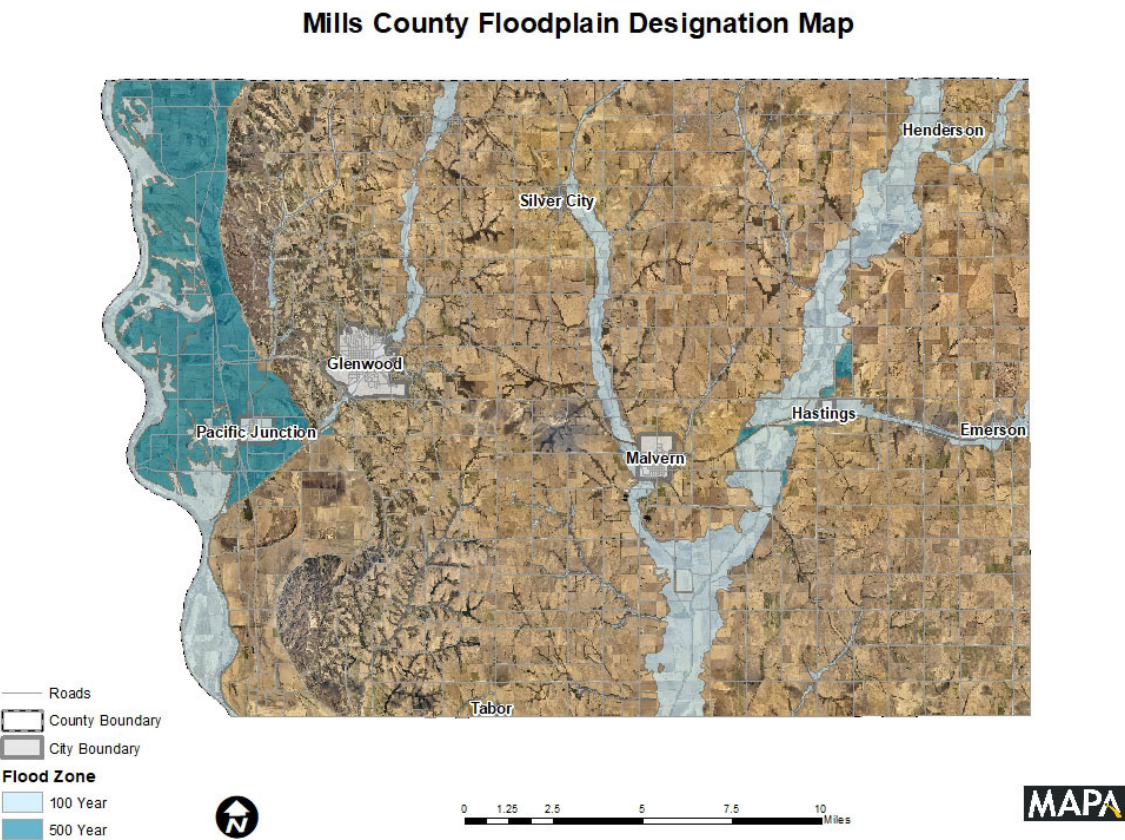
Flooding conditions that would lead to levee failure are measurable and can be forecast with adequate time to notify residents and property owners in flood areas.

River/Stream Flood

A rising or overflowing of a tributary or body of water that covers adjacent land not usually covered by water when the volume of water in a stream exceeds the channel’s capacity.

River/Stream Flood - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
4	3	3	2	4	1	4.1	High

Figure 24 Mills County Floodplain Designation



Historical Occurrence

Nineteen flood event days have been recorded in the Planning Area since 1993 according to the NOAA Storm Events Database. These events resulted in approximately \$5.13 million in property damage and \$4 million in crop damage. Seven of the NOAA recorded events eventually received Presidential Disaster Declarations.

Natural and human-caused conditions have contributed to two historic floods on the Missouri River. In 2011, areas of the western Planning Area were inundated for over three months due to record releases of water from the US Army Corps' network of dams. The releases were the result of record rainfall and melted snow pack in the upper Missouri River basin. Western Mills County was impacted again in March 2019 after rapidly melting snow and rainfall flooded rivers and tributaries throughout much of the Midwest. Pacific Junction was completely inundated as a result. The full extent of the 2019 flood has yet to be assessed.

Probability

The 2013 Iowa Hazard Mitigation Plan concluded that the probability of a flood occurring in the state in any given year is highly likely. The Planning Area should expect a 100-year flood at least once a decade.

Vulnerability

Residents, businesses, and critical facilities located in the 100-year floodplain have the highest vulnerability to river/stream flooding. These flood areas exist along the Missouri River, West Nishnabotna River, and several tributaries. Current FEMA Flood Insurance Rate Maps (FIRMS) show that developed portions of the cities of Emerson, Glenwood, Hastings, Henderson, Malvern, and Pacific Junction are within the 100 and/or 500-year floodplain. (Silver City's water treatment plant and lift station are within the 100-year floodplain, but no other built or occupied structures are at risk.) In total, there are 400 parcels zoned commercial and 1,018 parcels zoned residential in the Planning Area that sit in 100 or 500-year floodplain. Pacific Junction is the community most at risk due to its proximity to the Missouri River, Keg Creek, and Pony Creek. The Missouri River levee system is designed to protect the western Planning Area from a 100-year flood; however, this area has experienced two historic floods since 2011.

Maximum Geographic Extent

Most of the land along the Missouri River and West Nishnabotna River corridors, plus the Indian Creek, Keg Creek, and Silver Creek corridors are designated as 100-year floodplain. These flood areas and much of the land in the Planning Area protected by the levee systems are zoned for agriculture use and are sparsely populated.

Severity of Impact

Public health and safety: Flooding events occur generally with adequate advanced notice for the public to evacuate flood areas before there is a serious safety threat.

First responder health and safety: The slow occurring nature of river/stream floods does not place first responders in immediate danger. First responders are at higher risk when responding to calls in or near flood waters.

Continuity of operations and service delivery: All communities should expect at least a minimum disruption of organizational continuity and service delivery in the short-term. Some roads and bridges may be unpassable until flood waters recede.

Physical property and infrastructure: Buildings and infrastructure located in flood areas can be eroded, extensively damaged, or completely destroyed. Water/wastewater treatment facilities are often located in floodplains.

Natural environment: Floodwaters can contain human-made materials, some of which are hazardous to the environment. Land erosion is the most lasting effect.

Local economy: Property and business owners can be significantly burdened by flooding regardless of flood insurance. Many businesses that are forced to close during a flood are unable to re-open; one business closure can have negative repercussions for the local tax base. Flood recovery and mitigation actions are often costly to local governments and their residents.

Local reputation: The preparation leading up to a flood and response activities during and after the event will largely determine how local jurisdictions are perceived internally and externally.

Speed of Onset

River flooding usually develops over the course of several hours or days depending on basin characteristics and external weather patterns. Flood warnings are issued over television, radio, mobile device, and NOAA weather radio. Advanced warning is typically adequate for the public to take necessary precautions.

Severe Winter Storm

Severe winter weather conditions that affect day-to-day activities including blizzard conditions, heavy snow, blowing snow, freezing rain, heavy sleet, and extreme cold.

Severe Winter Storm - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
4	3	3	4	3	2	4.3	High

Historical Occurrence

Thirty-six winter storm/blizzard events have occurred in the Planning Area since 1993 according to the NOAA Storm Events Database; three events resulted in Presidential Disaster Declarations (Table 9). The most recent major event occurred from December 24 through December 27, 2009. Glenwood and Hastings received approximately one foot of snow. Wind gusts as high as 40 mph were recorded.

Probability

It is not uncommon for the Planning Area to experience at least one winter storm annually; however, most occurrences are an inconvenience and do not pose a significant threat to life or property.

Vulnerability

Hazardous driving conditions and exposure to extreme wind chills and temperatures are the primary threats associated with severe winter storms. Most homes would not be able to stay adequately heated in the event of a prolonged power outage. Roads may be closed and water pipes can freeze. All types of structures including critical facilities and vertical infrastructure could be damaged by high winds.

Facilities that house or serve populations vulnerable to severe winter weather are located in Glenwood, Hastings, and Malvern. These facilities include:

Glenwood – CHI Health Clinic, Glenwood Northeast and West Elementary, Glenwood Middle School and High School, Glenwood Resource Center, Glen Haven Home and Linnwood Estates, Methodist Physicians Clinic, Mills County YMCA, and Park Place Retirement

Hastings – East Mills Elementary

Malvern – East Mills High School and Methodist Health Clinic

Maximum Geographic Extent

Winter storms can encompass hundreds of square miles. A winter storm will typically affect the entire Planning Area, although total accumulations and effects may vary by location.

Severity of Impact

Public health and safety: Extended exposure can lead to frostbite, hypothermia, and even death. Especially at risk are the elderly, young children, and those who work outdoors. Automobile drivers are at risk if involved in an accident or stranded. The arrival of emergency response in isolated areas can be delayed or prevented entirely.

First responder health and safety: Threats arise from extended exposure outdoors in response to highway accidents. There is further risk in responding to emergency calls when driving conditions are unsafe or when access is obstructed.

Continuity of operations and service delivery: Roadways can become unpassable and emergency response vehicles can become immobilized. Power and communications failures can occur and persist for hours or days. Businesses and schools will close when conditions are expected to be severe.

Physical property and infrastructure: Heavy snows, blizzards, and ice storms can wear on roadways, damage trees and power lines, and collapse buildings and communications towers.

Natural environment: Severe winter weather is a natural occurrence. Ice jams may increase the threat of flooding during rapid thaws.

Local economy: Commerce can be impeded at least temporarily during the height of a storm. A long-term power disruption can cease business activity for days or longer. Snow removal, cleanup, and repairs can be costly to local communities.

Local reputation: Severe winter weather is a natural occurrence and is generally accepted as a part of life in the winter months. Roadway clearance, snow removal, and power restoration are often the activities local jurisdictions and utility providers are most depended on providing.

Speed of Onset

Winter storms are often forecast several days in advance, but actual severity may change with little warning. The public will have generally adequate time to prepare for most winter storm events.

Sinkholes

The loss of surface elevation due to the removal of subsurface support.

Sinkholes - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
1	1	1	1	1	1	1.4	Low

Historical Occurrence

There have been no occurrences of sinkholes in the Planning Area in the last 25 years.

Probability

There are no human-caused activities (e.g. underground mining, drilling, etc.) or geologic characteristics in the Planning Area that are conducive to sinkholes. The Planning Committee considers the probability of this hazard occurring to be unlikely.

Vulnerability

The Planning Committee expects that a sinkhole event would affect less than 10% of the Planning Area population; vulnerability to this hazard is considered negligible.

Maximum Geographic Extent

A sinkhole event in the Planning Area would be limited to an area less than one square mile.

Severity of Impact

Public health and safety: No known threats are apparent.

First responder health and safety: No known threats are apparent.

Continuity of operations and service delivery: No known threats are apparent.

Physical property and infrastructure: Damage to property, facilities, and infrastructure would only occur if the event undermined foundations.

Natural environment: Sinkholes can aggravate flooding potential.

Local economy: Land values in impacted areas can depreciate in value.

Local reputation: No known threats are apparent.

Speed of Onset

The human activities and geologic conditions conducive to sinkholes are predictive enough to have adequate warning of occurrence.

Thunderstorm & Lightning

Atmospheric imbalance and turbulence resulting in heavy rains, winds reaching or exceeding 58 mph, tornadoes, or surface hail at least 0.75 inches in diameter.

Thunderstorm & Lightning - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
4	4	3	3	2	4	4.3	High

Historical Occurrence

Thunderstorms and lightning occur in the Planning Area virtually every year, most often in the spring and early summer months.

Probability

The expected probability of thunderstorms and lightning occurring in the Planning Area each year is virtually 100%, or highly likely.

Vulnerability

Those most vulnerable are those caught outdoors and those who live in mobile homes or older homes with structural deficiencies. Thunderstorms and lightning are often a triggering hazard event for many other hazards including flash flooding, river flooding, hailstorms, and fires, which further increases vulnerability to the Planning Area.

All jurisdictions of the Planning Area are vulnerable to thunderstorms and lightning. High winds can damage trees, residences, and businesses, and knock vehicles off of the road. Straight-line winds are responsible for most thunderstorm damage. Older homes can likely expect greater damage from wind and hail. The percentages of homes built prior to 1940 in the jurisdictions of the Planning Area are as follows based on 2013-2017 ACS Estimates:

Mills County – 28.3% (1,587)

Emerson – 63.1% (118)

Glenwood – 20.6% (374)

Hastings – 49.1% (28)

Henderson – 66.7% (48)

Malvern – 40.5% (166)

Pacific Junction – 46.3% (76)

Silver City – 63.2% (55)

Maximum Geographic Extent

Thunderstorms can encompass many square miles. A passing thunderstorm will typically affect at least 25% of the Planning Area, although severity may vary by location. Thunderstorms and lightning are often a triggering hazard event for many other hazards including flash flooding, river flooding, hailstorms, and fires, which can further expand the geographic scope.

Severity of Impact

Public health and safety: Serious injuries and even deaths are possible, especially from lightning and wind related threats.

First responder health and safety: Similar to the general public.

Continuity of operations and service delivery: Energy disruptions and communications failures are to be expected.

Physical property and infrastructure: Minor to severe damage from hail and wind can occur. Mobile homes and automobiles are especially vulnerable. Buildings often experience damage to roofs, siding, and windows.

Natural environment: Tree damage from strong winds and grass fires from lightning are common impacts.

Local economy: Most of the financial impacts related to thunderstorms and lightning are covered under crop and property insurance. Jurisdictions can expect to incur costs for cleanup and repairs.

Local reputation: Thunderstorms and lightning are naturally occurring hazards and are generally accepted as a part of life in the spring and summer months. Debris clearance and power restoration are often the activities local jurisdictions and utility providers are most depended on providing.

Speed of Onset

While weather forecasters can predict the chance of thunderstorms days in advance, it is difficult to predict exactly when and where a thunderstorm will occur or how severe it will be. In many cases, advanced warning is minimal.

Tornado

A violent, destructive, rotating column of air taking the form of a funnel shaped cloud that progresses in a narrow, erratic path. Rotating wind speeds can exceed 200 mph and travel across the ground at average speeds of 25 to 30 mph.

The Enhanced Fujita Scale (EF) is used to assign a tornado a rating based on estimated wind speeds and related damage. When tornado related damage is surveyed, it is compared to a list of Damage Indicators and Degrees of Damage which help estimate the range of wind speeds the tornado likely produced. From that, a rating of EF-0 to EF-5 is assigned. The following chart shows the relationship between structure damage and wind speeds as it pertains to EF tornado ratings.

Enhanced Fujita Scale

Richer (Magnitude)	Mercalli (Intensity)	Description/Maximum Expected Effects
1.0 - 3.0	I	Not Felt - Not felt except by a very under especially favorable conditions
3.0 - 3.9	II - III	Weak - Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
4.0 - 4.9	IV - V	Moderate - Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
5.0 - 5.9	VI - VII	Very Strong - Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
6.0 - 6.9	VII - IX	Violent - Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
7.0 & higher	VIII or higher	Extreme - Considerable to total damage.

Tornado - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
3	3	4	3	3	4	4.5	High

Historical Occurrence

There have been 11 recorded tornado events in the Planning Area since 1993 according to the NOAA Storm Events Database, the most recent occurring on June 16, 2017 west of Folsom Lake. Recorded tornado events in the last 25 years are listed in the following table.

Tornador Location	Date	Magnitude
Pacific Junction	5/16/1999	EF0
Glenwood	10/31/2000	EF1
Emerson	4/11/2001	EF0
Mineola	4/11/2001	EF1
Glenwood	4/27/2002	EF0
Glenwood	5/5/2007	EF0
Southeastern Mills County	5/5/2007	EF0
Pacific Junction	6/4/2008	EF1
Emerson	6/4/2008	EF1
Northwestern Mills County	6/16/2017	EF1
Northwestern Mills County	6/16/2017	EF1

Source: NOAA Storm Events Database

Probability

Iowa is ranked third in the United States in the number of strong to violent (EF-2 to EF-5 on Enhanced Fujita Scale) tornadoes per 10,000 square miles. Historically, 30 to 40 tornadoes are confirmed in Iowa per year. The Planning Area is located on the northern edge of Tornado Alley, an area delineated by meteorologists and named for the high number of tornadoes that occur on an annual basis.

Vulnerability

Those most at risk from tornadoes include people in campgrounds (see Public Parks, Spaces and Conservation Areas, Section III), mobile homes, and other dwellings without secure foundations or basements. There are 245 mobile homes in the Planning Area according to 2013-2017 ACS estimates. The number of mobile homes and their percentage of housing type are as follows by incorporated city:

- Emerson** – 9 (4.8%)
- Glenwood** – 11 (0.6%)
- Hastings** – 8 (14%)
- Henderson** – No mobile homes
- Malvern** – 26 (6.3%)
- Pacific Junction** – 43 (26.2%)
- Silver City** – 5 (5.7%)

Also at risk are those caught outdoors such as constructions workers, drivers on open roads, and people at open spaces where shelter is unavailable. Coordinating efforts are required by care givers and service providers to move individuals with mobility restrictions to shelter (e.g. elderly and the handicap). The following jurisdictions in the Planning Area have facilities that house or serve populations with higher vulnerability than the general population:

- Glenwood** – Glenwood Northeast and West Elementary, Glenwood Middle School and High School, Glenwood Resource Center, and Glen Haven Home and Linnwood Estates
- Hastings** – East Mills Elementary
- Malvern** – East Mills High School

Maximum Geographic Extent

The area that can be directly affected by a tornado will vary from a couple hundred feet to over a mile in some cases. Tornadic thunderstorms are often accompanied by large hail, lightning, heavy rain, and destructive straight-line winds. Extent of damage is largely dependent on the wind speed and duration of the tornado. Extent can be as little as a few city blocks to an entire community.

Severity of Impact

Public health and safety: All persons in the path of a tornado and not in shelter are at risk of injury and death.

First responder health and safety: Similar to the general public.

Continuity of operations and service delivery: Energy disruptions and communications failures are to be expected. Underground utilities can be affected by damage to their system components above ground.

Physical property and infrastructure: Impacts can range from roof damage, loss of siding, and broken windows, to complete loss of well-constructed buildings. Falling trees and tall structures can create damage as well.

Natural environment: Tornadoes are inherently destructive. Tree damage and scattered debris are the most visible effects.

Local economy: Businesses that sustain significant damage may not be able to operate or produce for an adverse length of time. Some businesses may be lost entirely. The agriculture economy would likely be impacted most notably. Tornadoes can completely destroy field crops or cause damage that can reduce yields.

Local reputation: A tornado is a natural hazard that occurs regardless of planning. Recovery can be difficult for communities that experience significant property damage and fatalities. Adequate warning is crucial. Debris clearance and power restoration are often the activities local jurisdictions and utility providers are most depended on providing.

Speed of Onset

Tornadoes often develop from very powerful thunderstorms. Although a tornado watch/warning can be issued hours in advance, the touchdown of a funnel comes with virtually no warning. If not already in shelter at the time of a tornado warning, persons will have very little time to seek cover once a funnel has touched down. All jurisdictions in the Planning Area have jurisdiction-wide warning siren coverage which notifies the public to seek immediate shelter.

Windstorm

Extreme winds associated with severe winter storms, severe thunderstorms, downbursts, and very steep pressure gradients.

The Beaufort Wind Scale shown in the chart below associates visible wind conditions and expected damage with wind speeds in mph.

Beaufort Wind Scale	
MPH Wind Speed	Description - Visible Condition
0	Calm: smoke rises vertically
1 - 4	Light: air direction of wind shown by smoke but not wind vanes
4 - 7	Light Breeze: wind felt on face; leaves rustle; wind vane movement
8 - 12	Gentle Breeze: leaves and small twigs in constant motion; wind extends light flag
13 - 18	Moderate Breeze: raises dust and loose paper; small branches are moved
19 - 24	Fresh Breeze: small trees in leaf begin to sway; crested wavelets form on inland water
25 - 31	Strong Breeze: large branches in motion; telephone wires whistle; umbrellas used with difficulty
32 - 38	Moderate Gale: whole trees in motion; inconvenience in walking against wind
39 - 46	Fresh Gale: breaks twigs off trees; generally impedes progress
47 - 54	Strong Gale: Slight structural damage occurs; chimney pots and slates removed
55 - 63	Whole Gale: trees uprooted; considerable structural damage occurs
64 - 72	Storm: very rarely experienced; accompanied by windspeed damage
73 or greater	Hurricane: hurricane-level devastation occurs

Windstorm - Hazard Score Calculation							
Historical Occurrence	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
4	4	2	3	2	4	4.0	Moderate

Historical Occurrence

The NOAA Storm Events Database records 13 occurrences of high wind in the Planning Area since 1993. The most recent high wind event occurred in the Planning Area on January 26, 2014.

Probability

Due to the climatic and geographic characteristics of the Planning Area, the Planning Committee expects nearly a 100% chance of strong winds occurring in any given year.

Vulnerability

Persons in high profile vehicles and those caught working outdoors during a wind-storm are usually most susceptible to injury. People and property near large mature trees and power lines are also at risk. Vulnerability to windstorms is similar to that of thunderstorms and tornadoes.

Maximum Geographic Extent

Unlike tornadoes, which are localized in scope, windstorms often affect an area of hundreds of square miles. Damage is expected to be greater in areas of open, flat terrain with few natural buffers.

Severity of Impact

Public health and safety: Injuries can result from wind-blown debris and structural failure.

First responder health and safety: Similar to the general public, but some standard rescue procedures can be made increasingly difficult by high winds.

Continuity of operations and service delivery: Energy disruptions and communications failures can be expected.

Physical property and infrastructure: Damage to building exteriors, roofs, and windows can be expected. Tall structures such as antennas and cellular towers are vulnerable. High profile vehicles are vulnerable to tipping when on the road.

Natural environment: Tree damage and scattered debris are the most visible effects.

Local economy: Some costs may be incurred for community-wide cleanup and debris removal. Much of the property damage that can result from severe wind is covered by insurance.

Local reputation: Severe wind is a naturally occurring hazard. No known threats are apparent.

Speed of Onset

Severe wind conditions can be forecast days or at least hours in advance, but pinpointing when and where peak gusts occur is unfeasible.

Air Transportation Incident

Any incident involving a military, commercial, or private aircraft.

Air Transportation Incident - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
1	2	2	1	3	4	2.9	Moderate

Historical Occurrence

No air transportation incidents have occurred in the history of the Planning Area.

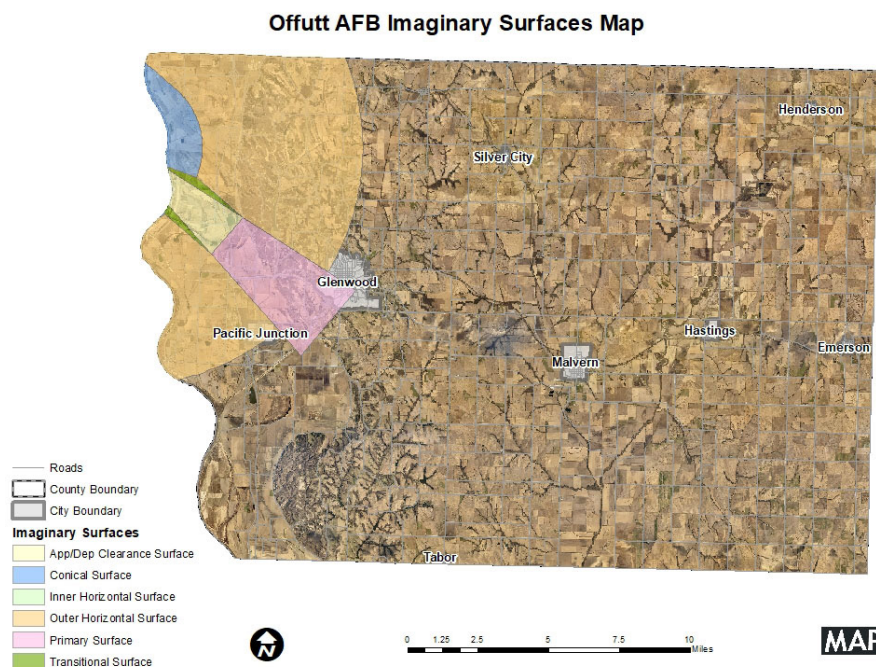
Probability

The Planning Area is in the flight path of aircraft approaching and departing Eppley Airfield in Omaha and Offutt Air Force Base south of Bellevue, but air transportation incidents are generally rare.

Vulnerability

Other than those directly involved, persons and property most vulnerable to air transportation incidents will likely be in the runway approach/departure zone of Offutt Air Force Base as depicted in Figure 25. A portion of southwest Glenwood is in the runway approach/departure path for Offutt aircraft; however, the base runway is approximately eight miles from this area of the city.

Figure 25 **Offutt AFB Imaginary Surfaces Military Compatibility Area**



Maximum Geographic Extent

An air transportation incident would be generally restricted to the crash site, an area usually no larger than a few acres.

Severity of Impact

Public health and safety: The lives of aircraft crew and passengers are most at risk. Any bystanders near a crash site are vulnerable.

First responder health and safety: First responders can be exposed to fire hazards and other threats associated with crashes. First responders may have to work around debris and in confined spaces.

Continuity of operations and service delivery: Emergency response capabilities of more than one jurisdiction may need to be diverted to adequately respond. Unless a critical facility is directly impacted, no other known threats are apparent.

Physical property and infrastructure: Any physical property or structures located in the path of an incident is vulnerable. Property and infrastructure most vulnerable are located in the Offutt Air Force Base runway approach/departure zone which encompasses land southwest of Glenwood.

Natural environment: Impacts can include fire, release of hazardous materials, and damage to land forms.

Local economy: No known threats are apparent.

Local reputation: Incidents are largely attributed to mechanical failure, operator error, or external conditions such as adverse weather.

Speed of Onset

Air transportation incidents occur with no warning.

Communications Failure

The widespread breakdown or disruption of normal communication capabilities. This could include major telephone outages, loss of local government radio facilities, or long-term interruption of electronic broadcast services.

Communiaction Failure - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
2	2	2	3	3	4	3.5	Moderate

Historical Occurrence

A washout of a fiber optic line between Council Bluffs and Oakland in 2004 left several communities including Glenwood without telephone or 911 service for several hours. A similar incident occurred in Mills County in 2003 when a phone cable was accidentally cut. There have been instances when severe weather conditions knocked out communications. The 1991 Halloween ice storm caused a widespread disruption of communications. In November of 2002, a contractor performing work near a communications tower at Glenwood Lake Park severed a guy wire causing the tower to fall; the tower provided radio, cable, and cellular service to a significant portion of the Planning Area.

Probability

The risk of a long-term communications failure in the Planning Area is possible but not highly expected. Restoration of communications capabilities during a prolonged blackout would be a priority, and during most hazard events Mills County will establish a command center and ensure that communications are reestablished as soon as possible.

Vulnerability

Disruption of continuity of operations would be the primary threat among jurisdictions in the Planning Area. There would likely be a void in emergency response and coordination until a secondary means of communication is established. Essential communications equipment in the Planning Area are supported by backup systems, and nearby communities – along with the Sheriff’s Department – can provide limited alternate communications capabilities in the event of a prolonged failure.

The 911 and communications center for all of Mills County is located at the county courthouse in Glenwood. CenturyLink (telecommunications) maintains phone switching terminals in Glenwood and Malvern that serve a large base of customers. A countywide communications tower is located in Glenwood.

Maximum Geographic Extent

The Planning Committee expects that a significant communications failure could likely affect at least 25% and possibly up to 50% of the Planning Area. Jurisdictions in the Planning Area are not reliant on one means of communication. Many households and businesses have alternative means to communicate.

Severity of Impact

Public health and safety: Injuries and deaths resulting from communications failure are rare. Those with emergency needs may be vulnerable if their means of communication is disrupted.

First responder health and safety: Virtually all first responders have redundancy measures in place to carry on in the event of a system failure.

Continuity of operations and service delivery: Most critical functions and services of the Planning Area have redundant systems to carry on in the event of a system failure. Some delays should be expected as backup systems will not always operate with the same level of efficiency.

Physical property and infrastructure: No known threats are apparent unless damage is sustained to a critical communications facility.

Natural environment: No known threats are apparent.

Local economy: Most incidents should only have minimal impacts on business operations and production. Long-term incidents that last days or longer can have more adverse impacts.

Local reputation: No known threats are apparent unless failure is caused by avoidable human error or negligence.

Speed of Onset

Severe weather conditions that might affect communications can be forecast, but the failure itself will happen instantaneously. Other human-made incidents that can compromise communications are unpredictable.

Energy Disruption

An extended interruption of electric, petroleum or natural gas service which could create a potential health problem for the population and possibly mass panic.

Energy Disruption - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
3	3	2	3	2	4	3.6	Moderate

Historical Occurrence

Minor electrical power outages occur in the Planning Area virtually every year and those issues are usually resolved in a matter of hours. The most significant electrical power disruption occurred in 1991 during an ice storm; many residents were without power for up to 72 hours. A winter storm in February of 2001 left some residents without power for almost 24 hours. No significant disruptions related to petroleum or natural gas have been documented in the Planning Area in the last 25 years.

Probability

The Planning Committee expects at least one power outage somewhere in the Planning Area in any 10-year period.

Vulnerability

The Mills County Courthouse, Sheriff's Department, and Glenwood Police Department have backup power capabilities, though the courthouse's permanent generator is aged and should not be used for extended periods. Extended power failure would create numerous issues for municipal water, waste water treatment, and pump station facilities of the Planning Area, including the facilities operated by Glenwood Municipal Utilities. Those most vulnerable to an extended power outage – especially during extreme temperatures – are the elderly and very young.

Maximum Geographic Extent

Mid-American Energy provides most of the electricity for the Planning Area. A failure to any of Mid-American Energy's sub-stations or key systems could easily affect at least 50% of the Planning Area.

Severity of Impact

Public health and safety: An incident that occurs in periods of extreme cold or heat can endanger the most vulnerable populations.

First responder health and safety: There are no known direct threats, but first responder performance can be diminished in a period of power loss.

Continuity of operations and service delivery: Most critical functions and services of the Planning Area have redundant systems to carry on in the event of an energy failure; however, secondary resources are finite and backup systems will not always operate with the same level of efficiency.

Physical property and infrastructure: Power outages can limit the use of pumps and other necessary equipment to protect structures during other hazards. Water pipes are vulnerable to freezing during cold weather months if energy is not available to adequately heat structures.

Natural environment: No known threats are apparent.

Local economy: Most incidents should only have minimal impacts on business operations and production. Long-term incidents that last days or longer can have more adverse impacts.

Local reputation: No known threats are apparent unless failure is caused by avoidable human error or negligence.

Speed of Onset

Some energy disruptions like those that are caused by excess usage can be detected well in advance and mitigated through measures such as issuing peak alerts and encouraging energy conservation. Disruptions caused by natural or human-caused hazards will usually occur with virtually no warning.

Fixed Hazmat Incident

Accidental release of chemical substances or mixtures that presents danger to the public health or safety during production or handling at a fixed facility.

Fixed Hazmat Incident - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
3	3	2	2	3	4	3.7	Moderate

Historical Occurrence

An anhydrous ammonia leak at the Farm Service Co-Op south of Pacific Junction in 2002 forced the evacuation of approximately 15 residences. A 500-gallon ammonia storage tank tipped over northeast of Emerson in 2003.

Probability

The Planning Area contains 11 facilities where Extremely Hazardous Substances (EHS) – as defined by the Emergency Planning and Community Right-to-Know Act of 1986 – are used, stored or manufactured. The most prevalent EHS in the Planning Area is anhydrous ammonia. The 2013 Iowa Hazard Mitigation Plan's analysis determined that a high impact occurrence of a fixed hazmat incident has a 10% to 19% probability in any given year. A high impact occurrence is one defined as an environmental emergency by the Environmental Protection Agency (EPA). An environmental emergency is a sudden threat to the public health or the wellbeing of the environment, arising from the release of oil, radioactive materials or chemicals into the air, land, or water.

Vulnerability

Those most vulnerable to a fixed hazmat incident will be located within a half-mile to one-mile radius of the release point. A Vulnerability Zone Radius (VZR) is calculated for a worst case spill at each EHS site. Emergency responders can arrive on site within 10 minutes of a release, but the decision to broadcast evacuation or shelter-in-place to the public may come sooner.

Pacific Junction has the highest vulnerability of jurisdictions in the Planning Area due to the presence of three facilities in a near vicinity that store hazardous materials such as anhydrous ammonia and fertilizer. Glenwood has the largest concentration of hazmat storage sites in the Planning Area. With the exception of Hastings, the remaining incorporated cities of Mills County have at least one facility (e.g. industrial agriculture) that stores noxious materials within their corporate limits or planning jurisdiction.

Maximum Geographic Extent

Depending on weather conditions and type of substance, a worst case incident in which 100% of an EHS is released within a period of 10 minutes can potentially result in a VZR ranging from a few tenths of a mile to nearly four miles. The speed of response to an incident will eventually determine geographic scope.

Severity of Impact

Public health and safety: Exposure to hazardous materials will cause serious illness, disablement, and even death.

First responder health and safety: Adequate training, reliable equipment and gear, and adherence to safety procedures are critical to first responder health and safety.

Continuity of operations and service delivery: Hazmat releases may result in the evacuation or shelter-in-place of public and private operations in the vicinity of the incident. Emergency responses to other calls may be delayed. Local officials may need to re-evaluate land use, zoning regulations, or permits allowing the use of hazmat facilities.

Physical property and infrastructure: Impacted property and infrastructure will normally be limited to the area of the incident site.

Natural environment: Air, ground, or water contamination can adversely affect fauna and flora, including crops and livestock.

Local economy: Commerce may be impeded or ceased temporarily while an incident is being contained.

Local reputation: Will largely depend on a timely and efficient response.

Speed of Onset

Fixed hazmat incidents occur with virtually no warning.

Fixed Radiological Incident

An incident resulting in a release of radiological material at a fixed facility to include power plants, hospitals, laboratories, etc.

Fixed Radiological Incident - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
1	1	3	3	3	4	3.4	Moderate

Historical Occurrence

The United States Nuclear Regulatory Commission has four emergency classification categories related to radiological incidents. From least to most severe, the classifications are: Unusual Event, Alert, Site Area Emergency, and General Emergency. The following are number of incidents that have occurred since 1990 at the two nuclear power facilities within a 50-mile radius of the Planning Area.

Cooper Nuclear Power Plant, Brownville, NE: 20 Unusual Events, 1 Alert, and no Site Area or General Emergencies.

Ft. Calhoun Nuclear Power Plant, Ft. Calhoun, NE: 20 Unusual Events, 3 Alerts, and no Site Area or General Emergencies.

Probability

The 2013 Iowa Hazard Mitigation Plan's analysis determined that the probability of a fixed radiological incident occurring in Iowa is unlikely in any given year. The nuclear power plant in Ft. Calhoun, Nebraska was permanently shut down on October 24, 2016 after 43 years of operation. Though the plant is no longer generating power, spent nuclear fuel will be stored on site as the plant undergoes decommissioning, a process that will take up to six decades.

Vulnerability

Virtually all of the Planning Area is within the 50-mile ingestion exposure pathway zone of the Cooper Nuclear Power Plant located near Brownville, Nemaha County, Nebraska.

Maximum Geographic Extent

The majority of the Planning Area is within the 50-mile ingestion exposure pathway zone for both the Cooper and Ft. Calhoun nuclear stations, but the latter facility has permanently ceased operations. Virtually all of the Planning Area south of Silver City is within the Cooper station ingestion zone.

Severity of Impact

Public health and safety: Depending on the level of exposure, radiation can cause short and long-term health effects and even death from damage to human cells. Time, distance, and shielding minimize radiation exposure. Associated human health and safety risks include whole body and thyroid injuries from ingestion of radiologically contaminated food and water.

First responder health and safety: Specialized training is needed to respond to such incidents. If inadequately trained personnel attempt to respond, the impacts can be the same as those for the general public.

Continuity of operations and service delivery: Resources and services of the entire Planning Area could be interrupted and diverted almost exclusively in response to a radiological incident.

Physical property and infrastructure: Damage to human-made structures can be long-term depending on the half-life (the time required for one half the atoms of a given amount of a radioactive substance to disintegrate) of radioactive material involved in an incident.

Natural environment: Damage to the environment can be long-term depending on the half-life of radioactive material involved in an incident.

Local economy: Commerce could cease entirely as efforts would be made to evacuate or avoid the Planning Area.

Local reputation: Due to the likely high profile nature of a nuclear incident, the reputation of the site and impacted area could be significantly diminished for an indeterminate period of time.

Speed of Onset

A fixed radiological incident can occur instantaneously. The public must rely on emergency alerts to know of the hazard as dangerous levels of radiation are not immediately detectable with human senses.

Highway Transportation Incident

A single or multi-vehicle incident which requires responses exceeding normal day-to-day capabilities.

Highway Transportation Incident - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
4	3	1	1	1	4	2.8	Moderate

Historical Occurrence

Highway transportation incidents occur regularly in the Planning Area. Most incidents involve minimal property damage and minor personal injury, but there is usually at least one incident that involves a fatality each year. There have been 44 traffic fatalities in the Planning Area from 2006 to 2015 according to IDOT.

Probability

Thousands of trips are made daily on streets, roads, highways, and interstates in the Planning Area. Highway incidents are inevitable regardless of improvements made in engineering, inspections, land use management, and local emergency response. Too many variables including high traffic volume, weather conditions, mechanical problems, and human error make highway incidents highly probable.

Vulnerability

Those traveling on or located near high volume corridors such as I-29, US-34, and US-59 are especially vulnerable. Vulnerability is further heightened during peak travel hours in the morning and evening.

Emerson – US-59 traverses north-south along eastern Emerson. US-34 is less than one mile north of city limits.

Glenwood – US-34 traverses east-west in far southern Glenwood. As the county's largest city by area and population, Glenwood has the most road miles and traffic volume of any jurisdiction in the Planning Area.

Hastings – US-34 traverses east-west in far northern Hastings. Indian Avenue is the main thoroughfare which runs north-south and eventually connects to US-34 north of town.

Henderson – There are no high speed or traffic volume corridors that pass directly through Henderson. US-59 traverses north-south approximately 1.5 miles east of the city.

Malvern – Malvern has the second highest traffic volume in the Planning Area. Main Street (or 315th Street) is Malvern's major thoroughfare and dissects the central business district north-south. Main Street eventually connects to US-34 approximately one mile north of town.

Pacific Junction – North-south 195th Street and east-west Kane Avenue intersect roughly at the center of Pacific Junction. I-29 traverses north-south through the Planning Area less than one mile west of Pacific Junction; the nearest exit is Exit 32 located less than one mile southwest.

Silver City – There are no high speed or traffic volume corridors that pass directly through Silver City; the nearest highway is US-34 which is approximately six miles south. Main Street (or 278th Street) is the major thoroughfare and dissects the central business district.

Maximum Geographic Extent

Most highway transportation incidents are isolated to the vehicles and persons directly involved. The extent of an incident can be broadened if a vehicle carrying hazardous materials is involved. Threats from spills, leaks or fires can endanger those not directly involved in the incident.

Severity of Impact

Public health and safety: Drivers and passengers of all vehicle types are vulnerable at all times when on the road. Risk is higher at certain times such as morning and evening commutes, holidays, and before and after large events or gatherings. Though rare, pedestrians can be at risk.

First responder health and safety: Similar to the general public. Accident scenes can be volatile. First responders are at a higher risk when hazardous materials are involved.

Continuity of operations and service delivery: Incidents can require road closures and traffic diversions which can temporarily prevent or delay services dependent on transportation access.

Physical property and infrastructure: Impacts are mostly limited to vehicles and cargo. Sometimes road infrastructure and utilities (e.g. fences, light poles, signs, etc.) adjacent to roadways can be damaged.

Natural environment: Impacts are usually limited to the immediate incident site located on or near the roadway. Fire, smoke, and debris are common effects. An incident that involves a hazmat release can have greater environmental implications.

Local economy: Business activities in proximity to an incident site may experience temporary interruptions.

Local reputation: Incidents are generally the result of conditions and factors outside the control of any local jurisdiction.

Speed of Onset

Highway transportation incidents occur instantaneously.

Rail Transportation Incident

A derailment or a train accident that directly threatens life or property, or which adversely impacts a community's capabilities to provide emergency services.

Rail Transportation Incident - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
2	3	3	2	3	4	3.8	Moderate

Historical Occurrence

There have been four rail transportation incidents in the Planning Area in the last 25 years: one west of Emerson in 1998, one south of Glenwood in 2000, and two near Pacific Junction in 2002 and 2004.

Probability

There are two BNSF rail corridors in the Planning Area, one running east-west generally following the route of US-34, and the other running north-south following I-29; the two lines intersect at Pacific Junction. Train incidents can result from a variety of causes including human error, mechanical failure, faulty signals, or problems with the track.

Vulnerability

Rail lines in the Planning Area traverse the cities of Emerson, Glenwood, Hastings, Malvern, and Pacific Junction. People and property in close proximity to the railway lines, crossings, sidings, switching stations, and loading/unloading points are the most vulnerable. Those away from railroad tracks and facilities are vulnerable only to large scale incidents including those in which hazardous materials are involved. Pacific Junction is most at risk from a rail incident since the two rail lines in the Planning Area intersect in the city.

Emerson – A rail line traverses through southern Emerson. Harris Street intersects the tracks but it is a low volume residential street.

Glenwood – There is one rail line that traverses through an area of southeast Glenwood that is generally low volume in population and development. South Vine/ Main Street intersects the tracks.

Hastings – Indian Avenue intersects tracks that traverse through north-central Hastings. Scoular Elevator is adjacent to the tracks just west of Indian Avenue.

Malvern – A rail line traverses east-west through northern Malvern in an area that is generally low density residential.

Pacific Junction – The two BNSF rail lines intersect near the center of Pacific Junction at an area that is mostly industrial. Approximately 15-20 trains pass through the city on any given day.

Maximum Geographic Extent

Collisions or crossing accidents are usually limited to the area of impact which is relatively small in scale. In the case of derailment, an incident can result in widespread damage. The extent of damage can be further intensified if hazardous materials are released.

Severity of Impact

Public health and safety: Pedestrians near an active rail line or crossing are at risk. Automobile drivers and passengers are at risk at at-grade crossings.

First responder health and safety: Threats are much higher during train derailments when combustible and otherwise hazardous materials are part of the cargo.

Communication and coordination with the rail operator will be crucial in such an event. **Continuity of operations and service delivery:** Incidents can require road closures and traffic diversions if an incident impacts an at-grade crossing. A large scale incident can require emergency response capabilities beyond one local jurisdiction.

Physical property and infrastructure: Apart from the train and its cargo, any property or infrastructure adjacent to rail lines, crossings, or switching stations are at risk. Automobiles can be affected if an incident occurs at an at-grade crossing.

Natural environment: Released train cargo that includes hazardous gases, liquids, and solids can contaminate the air, soil, and water at and near the incident site.

Local economy: Business activities in proximity to an incident site may experience temporary interruptions. A related hazmat release can force the evacuation of a populated area and cause an extended interruption for local businesses.

Local reputation: Incidents are generally the result of conditions and factors outside the control of any local jurisdiction.

Speed of Onset

Rail transportation incidents occur instantaneously.

Transportation Hazmat and Radiological Incident

Accidental release of chemical substances, mixtures or radiological material that presents danger to the public health or safety during transportation.

Transportation Hazmat & Radiological Incident - Hazard Score Calculation							
Historical Occurrence	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
4	3	2	2	3	4	3.9	Moderate

Historical Occurrence

No transportation incidents have occurred in the Planning Area that involved radioactive materials, but incidents involving other hazardous materials happen at least once a year. Most of these incidents are resolved promptly by local authorities and do not pose significant threats to the public.

Probability

Hazardous materials may be traveling through the Planning Area at any given time, most commonly on I-29 and US-34, 59, and 275. Hazardous materials are also transported on the BNSF railroad and on barges on the Missouri River. The most potentially hazardous point is where US-34 joins I-29 and crosses over the BNSF railroad southwest of Pacific Junction. The Planning Committee expects at least a 10% probability of a transportation hazmat incident occurring in any given year based on previous events and the frequency of materials being transported.

Vulnerability

Hazardous materials will most likely be transported on I-29 and US Highways 34, 59, and 275. The most vulnerable cities based on proximity to referenced corridors, traffic volume, and distribution routes include Glenwood and Pacific Junction. Proximity to major highways also threatens Emerson, Hastings, Henderson, and Malvern depending on the Vulnerability Zone Radius (VZR) of a substance release. Vulnerability is further heightened in the cities of Emerson, Glenwood, Hastings, Malvern, and Pacific Junction due to the presence of rail freight traffic.

Maximum Geographic Extent

The transportation of Extremely Hazardous Substances (EHS) poses a threat to communities in the Planning Area that are located within five miles of major highways and rail lines. Such materials cannot be identified precisely in advance. In most cases, effects are contained to the incident site. However, there may be an occurrence when a leak, spill or explosion carries hazardous materials away from the incident site to a larger area.

Severity of Impact

Public health and safety: The release of some hazardous materials may cause immediate death, disablement, or sickness if absorbed through the skin, injected, ingested, or inhaled. Some materials may cause painful and damaging burns to skin if direct exposure occurs.

First responder health and safety: Specialized training is needed to respond to such incidents. Impacts can be the same as those for the general public if inadequately trained personnel attempt to respond.

Continuity of operations and service delivery: Can often shut down transportation corridors for hours at a time while the scene is stabilized. Service providers close to the incident scene may evacuate or shelter-in-place. Emergency response capabilities of more than one jurisdiction may need to be diverted to adequately respond.

Physical property and infrastructure: Similar to a highway or rail transportation incident. Any radioactive material involved in an incident will make property unusable or uninhabitable for a length of time based on the rate of radioactive decay.

Natural environment: Similar to a highway or rail transportation incident. Any radioactive material involved in an incident will contaminate the natural environment.

Local economy: Similar to a highway or rail transportation incident. Commerce near the incident site can cease entirely as efforts would be made to evacuate or avoid the area. An incident involving radioactive materials near any business activities can have far greater long-term repercussions.

Local reputation: Will largely depend on a timely and efficient response. Incidents are generally the result of conditions and factors outside the control of any local jurisdiction. Perceptions related to radiological contamination can diminish an area's reputation where an incident took place.

Speed of Onset

Transportation hazmat incidents occur instantaneously. People in the vicinity of a hazardous substance release may have little time to evacuate, making shelter-in-place the safest practicable option.

Pipeline Incident

A break in a pipeline creating a potential for an explosion or leak of a dangerous substance possibly requiring evacuation.

Pipeline Incident - Hazard Score Calculation							
Historical Occurrence	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
1	2	2	1	2	4	2.6	Low

Historical Occurrence

No pipeline incidents have occurred in the Planning Area in the last 25 years.

Probability

A pipeline incident would likely arise from construction requiring significant ground disturbance. Such construction usually involves infrastructure improvements which are designed and certified by professional engineers. Pipeline operators are required to coordinate all safety preparedness and response activities with local jurisdictions.

Vulnerability

There are approximately 260 miles of pipeline in the Planning Area – the densest concentration of pipeline is in the west-central portion of Mills County. These pipelines transport petroleum and gases, and range from 2 to 30 inches in diameter. Most at risk are those involved in trenching or digging operations near a pipeline.

Maximum Geographic Extent

Pipeline incidents can range from a slow leak to a large rupture where an explosion is possible. An incident will impact less than 10% of any jurisdiction in the Planning Area.

Severity of Impact

Public health and safety: All petroleum liquids present threats of fire or explosion; fire may produce poisonous or irritating gasses that can cause serious health threats. Released products should be treated as any other hazardous material.

First responder health and safety: Specialized training is required to work around pipelines because of hazardous materials, potential high pressure liquids and gases, and trench rescue techniques.

Continuity of operations and service delivery: Services that depend on products moving through pipelines can be impacted if they do not have an auxiliary source.

Physical property and infrastructure: Property and infrastructure damage are characteristic of pipeline incidents.

Natural environment: Soil and water contamination are likely.

Local economy: Business disruptions can occur to those operations that rely on regular pipeline service.

Local reputation: Maintenance practices and safety procedures by pipeline owners/operators will likely be the focus of public scrutiny following an incident.

Speed of Onset

Though there may be some signs that point to a potential incident, pipeline leaks or ruptures often occur instantaneously. Emergency managers and responders will rely on information and support from the operators.

Waterway/Waterbody Incident

An accident involving any vessel that threatens life or which adversely impacts a community's capability to provide emergency services.

Waterway/Waterbody - Hazard Score Calculation							
Historical Occurrence	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
1	1	2	1	2	4	2.4	Low

Historical Occurrence

No waterway/waterbody incidents have occurred in the Planning Area in the last 25 years.

Probability

Other than the Missouri River, the Planning Area lacks large water bodies that are conducive for transportation or mass recreation. Incidents will likely be sporadic and not exceed local emergency response capabilities.

Vulnerability

Those vulnerable are operators and passengers of watercraft on the Missouri River and other traversable water bodies in the Planning Area. Glenwood Lake Park is a recreational area located southeast of Glenwood; however, the lake does not accommodate water vessels. Creek and stream channels flow near or through Hastings, Malvern, and Pacific Junction but none are recreational waterways. Drowning is the likely threat to individuals.

Maximum Geographic Extent

The extent of damage related to a waterway/waterbody incident would be generally confined to the area where the incident originated, likely an area no larger than hundreds of square feet.

Severity of Impact

Public health and safety: Risks would be limited to those directly involved in an incident. Injuries and sometimes deaths can occur.

First responder health and safety: Regular training and adequate equipment and gear will greatly reduce threats to first responders.

Continuity of operations and service delivery: The site of an incident may be limited or restricted until rescue, salvage, and cleanup/decontamination operations have been completed.

Physical property and infrastructure: Impacts would mostly be limited to watercraft involved in an incident.

Natural environment: There is potential for release of fuel and other hazardous materials from watercraft involved in an incident.

Local economy: Economic losses would be on an individual property and site specific scale.

Local reputation: Operator error is often the cause of incidents, but adverse weather conditions can contribute.

Speed of Onset

Waterway/waterbody incidents occur instantaneously.

Enemy Attack

An incident that would cause massive destruction and extensive casualties. Some areas would experience direct weapons effects: blast, heat, and nuclear radiation; others would experience indirect weapons effects, primarily radioactive fallout.

Enemy Attack - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
1	1	3	3	3	3	3.3	Moderate

Historical Occurrence

No enemy attack has occurred in the history of the Planning Area.

Probability

The jurisdictions of the Planning Area compose a small population, rural community where few sites or facilities of strategic military importance exist. Though the Planning Area is near Offutt Air Force Base and US STRATCOM, the Planning Committee considers the overall probability of an enemy attack in Mills County to be low.

Vulnerability

Those in cities and more densely populated areas would be especially vulnerable in an enemy attack. Economic and government facilities would likely be primary targets. These facilities include information and communications systems; utilities; transportation infrastructure; banking/finance centers; water supply, distribution, and treatment systems; emergency services; and other general services.

Maximum Geographic Extent

The extent of an enemy attack on the Planning Area will likely be experienced indirectly. The Planning Area could expect significant distributions to basic and essential services. Economic hardships resulting in the aftermath could affect virtually all of the Planning Area in both the short and long-term.

Severity of Impact

Public health and safety: Mass casualties and fatalities can be expected. Threats after an attack may include illness, severe hunger and dehydration, and exposure to elements.

First responder health and safety: Similar to the general public, plus added risks related to aftermath effects such as fire, hazmat exposure, structural collapse, etc.

Continuity of operations and service delivery: Any number of operations and services can be disrupted for an indeterminate period of time after an attack. First response capabilities will be critical to re-establish.

Physical property and infrastructure: Significant property and infrastructure damage can be expected.

Natural environment: Depending on the method of attack and weapons used, air, soil, and water can all be compromised. Natural effects can be long-term if weapons containing hazardous or radioactive materials are used.

Local economy: The majority of business activities would likely cease in such an event for an indeterminate period of time. The financial repercussions of an attack would extend far beyond the Planning Area.

Local reputation: There is little that jurisdictions of the Planning Area could do to prevent and effectively respond to such an incident. Much of the response and recovery efforts would require state and federal assistance.

Speed of Onset

The United States government monitors political and military activity worldwide. Media coverage of events would provide the public with some advanced warning of impending danger, but uncertainty would not be totally eliminated. Surprise attacks are less likely as the Planning Area is centrally located within the contiguous US.

Public Disorder

Mass demonstrations or direct conflict by large groups of citizens, as in marches, protest rallies, riots, and non-peaceful strikes.

Public Disorder - Hazard Score Calculation							
Historical Occurance	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
1	1	1	1	2	3	2.0	Low

Historical Occurrence

No large scale public disorders or civil disturbances have occurred in the history of the Planning Area. Non-peaceful incidents have occurred in the past, but all were within the response capabilities of local law enforcement.

Probability

There are few regularly occurring demonstrations, events, gatherings, etc. in the Planning Area that are conducive to public disorder or put law enforcement officials on heightened alert. Though circumstances may arise in the future that instigate civil unrest, the Planning Committee considers the overall probability low.

Vulnerability

Those most at risk are willing participants and law enforcement officials directly involved in a disturbance. In some instances, innocent bystanders and personal property may be vulnerable as well.

Maximum Geographic Extent

Public disorders are typically confined to localized areas (e.g. a public space, streets, city blocks, etc.). It would be rare for a public disorder to engulf an entire community.

Severity of Impact

Public health and safety: Injury is likely among those inciting or participating in violent acts. Bystanders are at risk as well.

First responder health and safety: First responders face inherent risks when dealing with public disturbances. Law enforcement officials can find themselves the target of violent demonstrations.

Continuity of operations and service delivery: Operations and services in proximity to an incident can be delayed or ceased throughout the duration. Law enforcement may place barriers or enact procedures that restrict the movement of goods, people, and services as the incident is being contained.

Physical property and infrastructure: Property damage of some nature is often a result of public disorders. The severity of damage will largely depend on the scope and where the incident originates.

Natural environment: Public disorders typically occur in developed urbanized areas.

Local economy: Local businesses affected by a violent incident may not be able to resume until cleanup has occurred and repairs have been made.

Local reputation: The response by local law enforcement will largely determine how the situation is perceived internally and externally.

Speed of Onset

Events that incite public disorder can build up over hours, days, or longer. Public disorders can escalate rapidly at events where large numbers are gathered such as sporting events, concerts, rallies, etc.

Terrorism

Use of conventional weapons and explosives against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion or ransom.

Terrorism - Hazard Score Calculation							
Historical Occurrence	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
1	1	1	1	1	4	1.8	Low

Historical Occurrence

No terrorist attack has occurred in the history of the Planning Area. On occasion, Mills County jurisdictions, and sometimes local schools, receive terroristic threats. Such threats are typically hoaxes perpetrated by individuals acting alone, but all threats are taken seriously.

Probability

The public and law enforcement agencies nationwide have been more cognizant of terrorism since September 11, 2001. Though the threat of foreign and domestic terrorism in the US has seemingly increased in recent years, the Planning Committee considers the probability of a terrorist attack occurring in the Planning Area to be low.

Vulnerability

Terrorist acts are typically intended to generate fear through attacks of unsuspecting targets. It is difficult to determine how more or less vulnerable the Planning Area is to terrorism compared to other similar communities, but it is assumed that an attack would be intended/designed to cause maximum destruction and inflict mass casualties. People congregated in mass would likely be more vulnerable.

Maximum Geographic Extent

Conventional terrorist acts are usually target-specific, and a target may be attacked to debilitate an area of strategic importance or to inflict mass casualties. An incident will likely be limited to the immediate area of impact.

Severity of Impact

Public health and safety: It is difficult to speculate who might be potential targets, but certain facilities (e.g. schools, government buildings) are especially vulnerable. Psychological effects resulting from an attack will need to be considered as well.

First responder health and safety: First responders will converge on the scene where an incident has occurred and become potentially vulnerable to secondary attacks. Injuries and fatalities can result from structural collapse, fire, hazmat exposure, etc.

Continuity of operations and service delivery: It should be expected that operations and services will decide to shelter-in-place during and following an attack.

Physical property and infrastructure: Infrastructure may be the target of an attack. It is difficult to speculate what structures are potential targets.

Natural environment: Impacts are expected to be minimal, except in a scenario where a hazmat facility is targeted or a hazmat substance is used in an attack.

Local economy: Commerce should be expected to suffer at least for a period of days after an attack. The time necessary for normal business activities to resume is indeterminate.

Local reputation: Even a small scale terrorist act will alter how the targeted community is perceived internally and externally.

Speed of Onset

While there may be warning signs predictive of terrorist activity, the Planning Committee recognizes that most attacks will occur with no warning on unsuspecting targets.

Cyber Terrorism

Electronic attack using one computer system against another in order to intimidate people or disrupt other systems.

Cyber Terrorism - Hazard Score Calculation							
Historical Occurrence	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
1	3	2	1	2	4	2.8	Moderate

Historical Occurrence

There are no documented occurrences of cyber terrorism or widespread malicious cyber activity in the public institutions of the Planning Area.

Probability

The probability of a cyber-based attack increases as individuals and operations rely more on electronic/computer automation.

Vulnerability

All persons and operations that use or rely on modern technology to conduct business or maintain essential functions are vulnerable to potential malicious cyber activity. The most common likely threat involves malware, a malicious software intentionally designed to cause damage to computers, servers or computer networks once it is introduced into the target. Malicious software can be prevented by installing protective software, regularly updating programs and performing scans, and avoiding emails and related links, attachments, etc. from unknown or suspicious senders. Another common threat to the general public is an attack that results in a breach of private financial or proprietary information.

Maximum Geographic Extent

There is little interconnectivity among the various public databases and operating systems within the Planning Area; extent of a cyber-attack would be limited to the intended target.

Severity of Impact

Public health and safety: Should not result in any direct threats. The breach of private personal information can lead to stress and other issues.

First responder health and safety: No known threats are apparent.

Continuity of operations and service delivery: Many operations and services rely on some level of computer automation. Short-term disturbances or interruptions can be expected at the very least.

Physical property and infrastructure: No physical impacts are apparent, though certain systems or functions could be disabled that might compromise facilities indirectly.

Natural environment: No known threats are apparent.

Local economy: Computers or systems infected with malicious software such as malware can debilitate essential functions, which can delay or prevent business transactions. The interruption of operations and costs related to computer/system recovery can be significant.

Local reputation: Any scrutiny will likely be directed at the attackers or holders of sensitive data that were found not to have adequate safety protocols in place.

Speed of Onset

A network administrator may become aware of attempted malicious activity prior to system breach or failure, but the speed of occurrence can be instantaneous.

Animal Disease Epidemic

A medical, health, or sanitation threat to the wildlife or domestic animals (such as contamination, epidemics, plagues, and insect infestation).

Animal Disease Epidemic - Hazard Score Calculation							
Historical Occurrence	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
1	2	2	2	2	2	2.5	Low

Historical Occurrence

No animal disease epidemics have occurred in the history of the Planning Area.

Probability

The 2013 Iowa Hazard Mitigation Plan's analysis determined that the probability of a high impact animal disease occurrence in the state is low in any given year.

Vulnerability

Those who handle or produce animals and livestock would be vulnerable from an economic standpoint. There are no livestock processing operations in the Planning Area, but the ability to move and export livestock and animal products would be adversely impacted.

Maximum Geographic Extent

There is little livestock or animal production activity in the Planning Area. Mills County ranks near the bottom of Iowa counties for livestock inventory and value of products sold according to the 2012 USDA Census of Agriculture.

Severity of Impact

Public health and safety: Improper removal and disposal of infected animal remains and waste can cause health issues and create a public nuisance. Though rare, humans may become ill from consuming infected livestock.

First responder health and safety: No known threats are apparent.

Continuity of operations and service delivery: No known threats are apparent.

Physical property and infrastructure: No known threats are apparent.

Natural environment: Natural water sources can become contaminated if remains are not properly removed. Certain pests can proliferate amongst animal remains.

Local economy: Knowledge of a confirmed or suspected animal disease epidemic would likely cause a decline in livestock production and related markets, but livestock and animal production are not prevalent economic activities in the Planning Area.

Local reputation: Animal handlers and producers could face scrutiny if negligence was discovered or if proper precautions were not implemented.

Speed of Onset

Local veterinarians should be able to identify circumstances and patterns that point to likely animal health epidemics. Federal/state agencies such as the US Department of Agriculture (USDA) monitor animal diseases in Iowa and across the United States; information is typically made available to the public on preventative measures.

Human Disease Epidemic

A medical, health, or sanitation threat to the general public (such as contamination, epidemics, plagues, and insect infestation).

Human Disease Epidemic - Hazard Score Calculation							
Historical Occurrence	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
1	2	3	3	3	2	3.3	Moderate

Historical Occurrence

No mass human disease epidemics have occurred in the history of the Planning Area.

Probability

The 2013 Iowa Hazard Mitigation Plan's analysis determined that the probability of a serious human disease incident is less than 10% in any given year.

Vulnerability

Because diseases spread more easily in places with greater population density, incorporated cities of the Planning Area have a higher degree of vulnerability than sparsely populated rural areas. Those especially vulnerable are the elderly, very young, people with weakened immunity, and healthcare professionals. Glenwood and Malvern have outpatient medical clinics and facilities that house or serve vulnerable populations. These facilities include CHI Health Clinic, Methodist Physicians Clinic, and Glenwood Resource Center in Glenwood, and Methodist Health Clinic in Malvern. Glenwood, Hastings, and Malvern are also the locations of the Planning Area's six public schools.

Maximum Geographic Extent

Infectious diseases are more easily transmitted in densely populated areas, and they often originate and spread in daycares, schools, workplaces, health clinics, and other care facilities. With the frequency and ease in which people interact day-to-day, highly infectious diseases can be transmitted across a wide geographic area in a relatively short period of time.

Severity of Impact

Public health and safety: The public remains vulnerable to known and undiscovered communicable diseases despite the development of vaccines and advances in modern medicine. Proper hygiene and safe health practices can help reduce risks.

First responder health and safety: Medical practitioners have the greatest risk. Universal precautions can greatly diminish the transfer rate among first responders and healthcare providers.

Continuity of operations and service delivery: The healthcare capabilities and services of the Planning Area will likely be inadequate during an outbreak.

Physical property and infrastructure: No known threats are apparent.

Natural environment: No known threats are apparent.

Local economy: An epidemic may warrant a travel advisory to a sizable area which will limit or cease commerce in the Planning Area.

Local reputation: The impact on reputation would likely exceed that of any one jurisdiction.

Speed of Onset

Local health care professionals will be the first to identify patterns or cases that suggest a potential human health epidemic. Federal/state agencies such as the Department of Health and Human Services and Centers for Disease Control monitor health risks in Iowa and across the United States. Communicable diseases can spread quickly, but the public is made aware of health epidemics (e.g. influenza) generally far enough in advance to take proper precautions.

Plant/Crop Disease Epidemic

The threat of transmittable disease or pest infestation to indigenous plant life and agricultural crops.

Plant/Crop Disease Epidemic - Hazard Score Calculation							
Historical Occurrence	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
1	2	2	3	2	1	2.6	Low

Historical Occurrence

There have been no plant/crop disease epidemics recorded in the history of the Planning Area.

Probability

The Planning Area is primarily rural with hundreds of thousands of acres of agricultural land. Officials and land owners within the Planning Area should prepare for at least a 10% chance of plant/crop disease in any given growing season.

Vulnerability

Though no human life would be impacted by a plant/crop disease epidemic, economic losses in the Planning Area could be significant.

Maximum Geographic Extent

There are 162,031 acres with an Agriculture zoning designation in the Planning Area.

Severity of Impact

Public health and safety: No known threats are apparent.

First responder health and safety: No known threats are apparent.

Continuity of operations and service delivery: No known threats are apparent.

Physical property and infrastructure: No known threats are apparent.

Natural environment: The propagation of certain diseases and pests can threaten indigenous flora, which can have negative residual effects on the natural ecosystem over time.

Local economy: As of June 2018, the total assessed value of all parcels with an Agriculture assessment classification is \$674 million. Loss of crop yields can significantly depress economic gains of agriculture producers and related industries throughout the Planning Area.

Local reputation: The impact on reputation would likely exceed that of any one jurisdiction.

Speed of Onset

Diseases that present a risk to plants and crops in the Planning Area are monitored by federal/state agencies such as USDA. Disease epidemics can be generally forecast and information disseminated with adequate time necessary to prepare accordingly.

Structural Failure

The collapse (part or all) of any public or private structure including roads, bridges, towers, and buildings.

Structural Failure - Hazard Score Calculation							
Historical Occurrence	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
1	2	2	1	2	3	2.5	Low

Historical Occurrence

The fire districts of the Planning Area respond to an average of 42 structural fires each year. Most of these incidents are relatively minor in scope. At least one structural fire will occur annually that requires the response of more than one fire department.

Probability

The 2013 Iowa Hazard Mitigation Plan's analysis placed the probability of structural failure in the state at less than 10% in any given year.

Vulnerability

Older residential and non-residential structures are particularly vulnerable to structural failure due to age, stress, long-term exposure to natural elements, and sometimes deferred maintenance. According to 2013-2017 ACS estimates, 28% of the Planning Area's housing stock was built prior to 1940.

Maximum Geographic Extent

The extent of a structural failure would be limited to the immediate area of the occurrence.

Severity of Impact

Public health and safety: Though rare, personal injuries and deaths can occur directly by building collapse or falling debris.

First responder health and safety: First responders are at a heightened risk when entering or coming near unstable structures.

Continuity of operations and service delivery: Failure of transportation infrastructure can delay the arrival of first responders to emergency scenes. Failure of towers and poles that bear communications/utility lines will create short-term issues.

Physical property and infrastructure: Property and infrastructure damage are characteristic of structural failures.

Natural environment: Should be generally unaffected unless a structural failure involves a hazmat release.

Local economy: Costs to repair or replace public and private property can be significant regardless of insurance. The loss of any commercial or industrial structure can mean the end of a business operation and its economic impact locally.

Local reputation: Failure contributed by negligence or ineffective code enforcement can lead to public scrutiny.

Speed of Onset

While a failing structure may show obvious signs of deterioration, actual failure will often occur with little or no warning. Adverse climate/weather conditions can expedite structural failure.

Structural Fire

An uncontrolled fire in a populated area that threatens life and property and is beyond normal day-to-day response capabilities.

Structural Fire - Hazard Score Calculation							
Historical Occurrence	Probability	Vulnerability	Maximum Geographic Extent	Severity of Impact	Speed of Onset	CPRI Score	Hazard Priority
4	3	2	1	2	4	3.6	Moderate

Historical Occurrence

The fire districts of the Planning Area respond to an average of __ structural fires each year.

Probability

There is nearly a 100% probability that a structural fire will occur somewhere in the Planning Area in any given year based on the call volume recorded by local fire districts.

Vulnerability

Older structures with obsolete wiring systems and buildings not built to current fire codes are most vulnerable to structural fires. Operations that use heat, fire or combustible materials are at increased risk. Most rural portions of the Planning Area are not served by municipal water and hydrants, so it is necessary to transport water in the event of fire. Those most at risk from structural fires are the elderly, very young, or other groups with restricted mobility.

Those most at risk from structural fires are people with restricted mobility. There are 10 multi-family housing or care facilities in the Planning Area identified below that have a heightened vulnerability to fire.

Emerson – Manchester Manor

Glenwood – Glenwood Heights Apartments, Glenwood Resource Center, Glen Haven Home/Linnwood Estates, Hillside Village, Loess Hills Apartments, North Glen Apartments, Park Place Retirement

Malvern – Malvern Village

Maximum Geographic Extent

A structural fire is generally limited to the structure where it originates, but fires can spread easily in areas of greater building density (e.g. commercial downtowns).

Severity of Impact

Public health and safety: Personal injuries or deaths can occur from structural fire or fire related hazards.

First responder health and safety: Regular training and adequate equipment and gear will greatly reduce threats to first responders.

Continuity of operations and service delivery: If not directly involving a critical facility, certain operations or services in proximity to a fire may be temporarily affected as first responders work to control the situation.

Physical property and infrastructure: Damage to physical property is often unavoidable. Total property loss can occur depending on incident severity and speed of response.

Natural environment: Structural fires in rural areas may lead to grass/wild land fires in rare cases.

Local economy: A structural fire that impacts an existing business or viable business space can have a significant adverse impact on the local economy; many businesses may not be capable of recovering regardless of insurance. An incident that occurs in a downtown commercial area can be especially devastating due to the density of buildings where fire can more easily spread. Loss of a locally meaningful space or structure can have adverse social impacts as well.

Local reputation: Fires contributed by negligence or ineffective code enforcement can lead to public scrutiny.

Speed of Onset

Structural fires, whether accidental or human-caused, occur with virtually no warning. Flames can quickly spread within and between structures.

Section 5

MILLS COUNTY

[section 5]

CURRENT PRE-DISASTER MITIGATION ACTIVITIES

This section provides a synopsis of recent hazard mitigation accomplishments and ongoing activities by jurisdiction. Many of the activities cited below are carried out by all or most of the local cities and their volunteer fire departments.

Mills County

- A. Maintains the following: command vehicle containing backup communications and weather detection equipment; decontamination trailer; first responder rehabilitation vehicle for extended response situations; mass casualty trailer; mobile medicine dispensary; and pet trailer for home evacuations.
- B. Maintains and updates countywide Emergency Operations Plan and works with local communities to develop emergency response plans.
- C. Designates shelter locations and maintains memorandums of understanding with owners of shelter properties.
- D. Maintains 28E service agreement with the Council Bluffs Fire Department Hazardous Materials Team.
- E. Ensures that county critical facilities are equipped with permanent backup power generators.
- F. Regularly convenes a security committee; assesses security needs at county facilities.
- G. Promotes public awareness on emergency preparedness and notification services.
- H. Provides first responder training and equipment acquisition as resources allow.
- I. Provides safety and incident management training for county employees.
- J. Participates in the National Flood Insurance Program (NFIP)
- K. Participates in the National Incident Management System (NIMS) training program.
- L. Enforces open burning ordinance.

Emerson

- A. Enforces snow emergency, water management, and floodplain management ordinances.
- B. Participates in the NFIP.
- C. Ensures that the Emerson Community Building, fire station, water treatment facility, and sewer plant have adequate backup power capabilities.
- D. Maintains the Emerson Community Building as the local emergency operations center and disaster shelter.
- E. Provides first responder training and equipment.
- F. Continues training programs for hazmat response capability and incident command.
- G. Collaborates with service organizations concerning hazard awareness and safety procedures; holds open house events to promote preparedness and safety.
- H. Follows Mills County's open burning ordinance and applicable notices.
- I. Collaborates with MidAmerican Energy to keep tree limbs from interfering with power lines.

Glenwood

- A. Enforces snow emergency, water management, floodplain management, and open burning ordinances.
- B. Participates in the NFIP.
- C. Ensures the city's water and sewer treatment facilities, Glenwood Police Department, and Glenwood Resource Center have adequate backup power capabilities.
- D. Maintains the American Legion Hall, Glenwood Resource Center, YMCA, and various churches and schools as emergency shelters.
- E. Provides first responder training and equipment.
- F. Continues training programs for hazmat response capability and incident command.
- G. Conducts periodic cleanup activities along Keg Creek to improve drainage and water flow.
- H. Collaborates with MidAmerican Energy to keep tree limbs from interfering with power lines.

Hastings

- A. Enforces floodplain and snow emergency ordinances.
- B. Participates in the NFIP.
- C. Maintains a portable backup power generator.
- D. Provides first responder training and equipment.
- E. Continues training programs for hazmat response capability and incident command.
- F. Participates in the NIMS training program.
- G. Follows Mills County's open burning ordinance and applicable notices.

Henderson

- A. Enforces water management ordinance.
- B. Maintains portable backup power generators for water and sewer functions and other designated critical facilities.
- C. Maintains City Hall (includes the library and community center) as the official emergency shelter.
- D. Provides first responder training and equipment.
- E. Continues training programs for hazmat response capability and incident command.
- F. Maintains a water chlorination system to minimize the risk of public health threats.
- G. Follows Mills County's open burning ordinance and applicable notices.

Malvern

- A. Enforces snow emergency, water management, floodplain management, and open burning ordinances.
- B. Participates in the NFIP.
- C. Maintains a permanent power backup generator for the main sewer lift station.
- D. Maintains the Malvern Community Center and Faith Ridge Life Center as emergency shelters.
- E. Provides first responder training and equipment acquisition.
- F. Continues training programs for hazmat response capability and incident command.
- G. Participates in the NIMS training program.
- H. Collaborates with businesses that store anhydrous ammonia and other hazardous materials that adequate security measures are in place.

Pacific Junction

- A. Enforces snow emergency, water management, and floodplain management ordinances.
- B. Participates in the NFIP.
- C. Maintains portable backup power generators at the Pacific Junction Community Center, Fire Department, and other designated critical facilities.
- D. Maintains the Pacific Junction Community Building as the local emergency operations center and disaster shelter.
- E. Provides first responder training and equipment.
- F. Continues training programs for hazmat response capability and incident command.
- G. Collaborates with service organizations concerning hazard awareness and safety procedures; holds open house events to promote preparedness and safety.
- H. Works to educate residents about clearing debris from ditches and culverts to improve drainage and water flow.
- I. Collaborates with MidAmerican Energy to keep tree limbs from interfering with power lines.
- J. Follows Mills County's open burning ordinance and applicable notices.

Silver City

- A. Enforces snow emergency, water management, and floodplain management ordinances.
- B. Participates in the NFIP.
- C. Maintains one permanent backup power generator at the water treatment facility and one portable generator for use at designated critical facilities.
- D. Maintains the Silver City Community Building as the local emergency operations center and disaster shelter.
- E. Provides first responder training and equipment.
- F. Continues training programs for hazmat response capability and incident command.
- G. Collaborates with service organizations concerning hazard awareness and safety procedures; holds open house events to promote preparedness and safety.
- H. Collaborates with MidAmerican Energy to keep tree limbs from interfering with power lines.
- I. Follows Mills County's open burning ordinance and applicable notices.

Section 6

6 MILLS COUNTY

[section 6]

HAZARD MITIGATION GOALS + OBJECTIVES

Even with previous and ongoing efforts to minimize the threats of hazards, Mills County and its sub-jurisdictions realize that specific strategies are necessary to improve preparedness, response, and recovery efforts through the development of mitigation goals and objectives. In all, there are 12 overarching goals with corresponding objectives that address each identified natural and human-caused hazard.

Goal 1: Continue development of plans, policies, and procedures to minimize the effects of any identified hazard event that may occur in Mills County.

Hazard(s) addressed: all identified natural or human-caused hazards

Objective 1.1: Maintain comprehensive emergency management and hazard mitigation plans.

Objective 1.2: Improve comprehensive emergency management and maintain a high level of service and response.

Objective 1.3: Implement programs, procedures, and ordinances that further mitigation.

Objective 1.4: Ensure inter-local cooperation among jurisdictions in Mills County to develop and maintain plans that further mitigation.

Objective 1.5: Train jurisdictional staff, first responders, and elected officials to utilize the processes, protocols, and procedures established through the National Incident Management System (NIMS).

Objective 1.6: Enhance capabilities to monitor and assess hazard sites.

Goal 2: Protect life and property from flooding.

Hazard(s) addressed: dam failure, flash flood, levee failure, and river/stream flood

Objective 2.1: Provide for the safe and efficient flow of rivers and streams throughout Mills County.

Objective 2.2: Provide for the safe and efficient flow of storm water throughout Mills County.

Objective 2.3: Conduct regular maintenance on dam and levee structures as necessary.

Objective 2.4: Maintain, update, and enforce zoning ordinances and floodplain management ordinances as needed.

Objective 2.5: Continued participation in the NFIP.

Objective 2.6: Educate and provide technical information to citizens and businesses regarding flood prevention.

Objective 2.7: Discourage development in the floodplain through land use planning and zoning regulations and enforcement.

Objective 2.8: Work with Iowa Homeland Security and Emergency Management Division and FEMA for updated floodplain maps.

Objective 2.9: Protect public and private properties that currently exist in the floodplain; consider property acquisitions, structural retrofits, and relocations as potential alternatives.

Objective 2.10: Improve communications to residents, businesses, and visitors during periods of high flood risk.

Goal 3: Minimize the impacts of erosion along the banks of creeks, streams, recreational lakes or ponds, and areas with steep grades.

Hazard(s) addressed: erosion, flash flood, and river/stream flood

Objective 3.1: Implement stabilization projects on stream and river banks where necessary.

Objective 3.2: Maintain that future development is built in a manner that minimizes storm water runoff issues.

Objective 3.3: Encourage future development to maintain natural topographic features, drainage ways, and tree cover.

Objective 3.4: Continue to actively participate in the West Nishnabotna Watershed Management Coalition in conjunction with the Iowa Watershed Approach.

Goal 4: Minimize the impacts of soil and land hazards.

Hazard(s) addressed: earthquake, expansive soils, and sinkholes

Objective 4.1: Provide for safe development practices related to soil and land.

Objective 4.2: Maintain local building codes and land use regulations.

Objective 4.3: Coordinate county and local resources to inspect buildings and enforce building codes in participating jurisdictions.

Goal 5: Protect life and property from severe weather.

Hazard(s) addressed: flash flood, severe winter storm, thunderstorm & lightning, tornado, and windstorm

Objective 5.1: Maintain and modernize emergency notification equipment.

Objective 5.2: Educate citizens on severe weather safety and how to stay alert to severe weather.

Objective 5.3: Ensure citizens can access shelters during severe weather by designating public shelters in areas of public use and high density.

Objective 5.4: Encourage interested parties, including school districts, to construct safe rooms, especially in structures or outdoor venues where no shelter is available.

Objective 5.5: Continue to enforce local building codes to ensure structural integrity of all buildings throughout Mills County.

Objective 5.6: Continue to enforce snow emergency ordinances throughout Mills County.

Objective 5.7: Update local building codes to account for improvements to materials and practices that protect against high winds.

Goal 6: Minimize the impacts of communication and energy failures.

Hazard(s) addressed: communications failure and energy disruption

Objective 6.1: Ensure shelters and critical facilities have adequate backup power capabilities and are equipped to handle generator power.

Objective 6.2: Monitor tree trimming of limbs near power lines that may pose a threat to power service during windstorms and other hazards.

Objective 6.3: Encourage residents to acquire and maintain disaster kits.

Objective 6.4: Educate residents on the proper and safe use of generators.

Objective 6.5: Analyze the cost benefit of placing electrical utilities underground.

Goal 7: Minimize the impacts of transportation incidents.

Hazard(s) addressed: air, highway, rail, and waterway/waterbody incidents

Objective 7.1: Ensure rescue personnel are fully equipped and capable to perform traffic rescue activities.

Objective 7.2: Ensure road conditions are conducive to driver safety by implementing capital improvement programs to upgrade roads and safety devices.

Goal 8: Protect life and property from hazardous substance releases.

Hazard(s) addressed: fixed hazmat, fixed radiological, pipeline, transportation hazmat, and transportation radiological incidents

Objective 8.1: Ensure all firefighters and first responders are trained to the operations level of hazardous material response capability.

Objective 8.2: Continue to support appropriate regional hazmat response teams such as the one maintained by the Council Bluffs Fire Department.

Objective 8.3: Foster the creation of a countywide shelter-in-place public education program.

Objective 8.4: Maintain, update, and enforce hazardous substance ordinances as needed.

Objective 8.5: Maximize safety and security of hazmat locations throughout Mills County.

Objective 8.6: Promote safe disposal of household hazardous waste.

Goal 9: Minimize the potential human, physical, and financial threats caused by purposeful hazards.

Hazard(s) addressed: enemy attack, public disorder, and terrorism

Objective 9.1: Foster surveillance and reporting procedures.

Objective 9.2: Properly train and equip local officials and first responders.

Objective 9.3: Collaborate with regional, state, and federal agencies to mitigate human-caused purposeful threats.

Objective 9.4: Develop and maintain plans that mitigate human-caused purposeful threats.

Goal 10: Minimize the impacts of public health incidents.

Hazard(s) addressed: animal, human, and plant/crop disease epidemics

Objective 10.1: Inform residents of any public health or agriculture/plant related threats; provide information on how to manage health threats.

Objective 10.2: Foster improved monitoring and reporting procedures for potential health hazards.

Objective 10.3: Monitor water sources for higher-than-normal bacteria and nitrate levels.

Goal 11: Protect life and property from fires and related threats.

Hazard(s) addressed: grass/wild land and structural fires

Objective 11.1: Maintain and upgrade firefighting equipment and facilities to maximize firefighting capabilities.

Objective 11.2: Continue public awareness on fire prevention and fire related ordinances.

Objective 11.3: Enforce open burning bans.

Goal 12: Minimize the impacts of prolonged drought and extreme heat conditions.

Hazard(s) addressed: drought and extreme heat

Objective 12.1: Monitor water levels during periods of prolonged drought.

Objective 12.2: Ensure relief is available to those most vulnerable during extreme heat conditions.

Objective 12.3: Enact water restrictions when necessary.

Section 7

MILLS COUNTY

[section 7]

MITIGATION PLAN IMPLEMENTATION

Prioritization and Implementation

This section proposes the implementation actions that Mills County and its sub-jurisdictions can implement based on the goals and objectives identified by the Planning Committee in the previous section. Many of the proposed actions are ongoing activities or continuation of existing policies and procedures, and can be completed with little or no additional cost to the county or local jurisdictions. Other actions may require substantial technical and/or financial resources to complete and will likely only be implemented with supplemental assistance.

The mitigation actions listed in Table 12 have been selected by the Planning Committee based on need, importance, level of coordination, and overall scope. These factors denote project feasibility for implementation which can be classified as “good,” “fair,” or “poor.” Actions are organized according to the jurisdiction responsible for implementation: A) exclusively Mills County; or B) one or more jurisdictions that may include Mills County. Actions are further classified into four general categories: **Local Planning and Regulation**, **Infrastructure and Facilities**, **Practices and Management**, and **Equipment and Training**.

Table 12 **Mitigation Actions**

Action: [Maintain and update the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan.](#)

Corresponding Goal & Objective	Goal 1: Objectives 1.1 & 1.4
Responsible Entities	Mills County Board of Supervisors (BOS); Emergency Management Agency (EMA); cities of Emerson, Glenwood, Hastings, Henderson, Malvern, Pacific Junction, Silver City; Glenwood Community Schools
Timeframe	Ongoing
Project Feasibility	Good- The plan can be assessed annually by County EMA staff and the County EMC. Pre-Disaster Mitigation program assistance is available through FEMA/ Iowa HSEMD for 5-year updates.

Action: [Maintain and update the Emergency and Continuity of Operations Plans for the countywide Planning Area.](#)

Corresponding Goal & Objective	Goal 1: Objectives 1.1
Responsible Entities	County EMA
Timeframe	Ongoing
Project Feasibility	Fair- Development of these plans require professional technical assistance that must be budgeted.

Action: [Commission a joint countywide position to enforce building codes and complete inspections.](#)

Corresponding Goal & Objective	Goal 4: Objectives 4.3
Responsible Entities	County BOS; City of Glenwood
Timeframe	Long-term (5 or more years)
Project Feasibility	Fair- Such a position will require multi- jurisdictional cooperation and likely some shared costs.

Action: [Establish and update building codes to ensure safe development practices and protect against potential hazards.](#)

Corresponding Goal & Objective	Goal 4: Objective 4.2; Goal 5: Objective 5.5
Responsible Entities	County BOS; cities of Glenwood, Malvern
Timeframe	Long-term (5 or more years)
Project Feasibility	Poor- Jurisdictions must allocate resources and staff time to enact and enforce applicable codes.

Action: [Update building codes to allow installation of underground utilities for areas of new development.](#)

Corresponding Goal & Objective	Goal 6: Objectives 6.5
Responsible Entities	County BOS; cities of Glenwood, Malvern
Timeframe	Long-term (5 or more years)
Project Feasibility	Fair- Development costs can be expected to rise.

Action: [Adopt and communicate alternative transportation routes for movement of hazardous materials.](#)

Corresponding Goal & Objective	Goal 8: Objectives 8.3
Responsible Entities	County BOS; Mills County Sheriff; cities of Glenwood, Pacific Junction; Glenwood Police Department
Timeframe	Short-term (1-2 years)
Project Feasibility	Good- Can be achieved by board/council action, but alternative routes must be communicated and effectively applied to ensure safe passage of hazmat transit.

Action: [Update Mills County Breach Rating Study.](#)

Corresponding Goal & Objective	Goal 2: Objectives 2.9
Responsible Entities	County BOS; EMA; Soil & Water Conservation District
Timeframe	Medium-term (2-5 years)
Project Feasibility	Fair- Development in western portions of Mills County has rendered the existing study obsolete. Outside funding is likely necessary to undertake an updated study.

Action: Continue to maintain the Emergency Operations Center (EOC) with 24-hour operational capability.

Corresponding Goal & Objective	Goal 1: Objectives 1.2
Responsible Entities	County; EMA
Timeframe	Ongoing
Project Feasibility	Fair- Sustaining the EOC can be costly, especially in support of municipal jurisdictions. The size of the current EOC is inadequate and privacy/security issues are problematic as well.

Action: Recertify the Missouri River levee system.

Corresponding Goal & Objective	Goal 2: Objectives 2.3
Responsible Entities	County BOS; EMA; Missouri River Levee District; M&P Levee District
Timeframe	Long-term (5 or more years)
Project Feasibility	Poor- This action is necessary but cost prohibitive. No federal or state resources are available for this action.

Action: Flood proof or relocate critical facilities located in the 100-year floodplain.

Corresponding Goal & Objective	Goal 2: Objectives 2.9
Responsible Entities	County BOS; EMA; cities of Emerson, Glenwood, Malvern, Pacific Junction
Timeframe	Long-term (5 or more years)
Project Feasibility	Poor- This will require significant technical assistance and county/local staff time to implement; likely cost prohibitive as well.

Action: Voluntarily acquire flood prone residential properties and properties that present high risk if flooded.

Corresponding Goal & Objective	Goal 2: Objectives 2.9
Responsible Entities	County BOS; EMA; cities of Emerson, Glenwood, Malvern, Pacific Junction
Timeframe	Long-term (5 or more years)
Project Feasibility	Poor- Acquisition projects are costly and require professional technical assistance. Voluntary acquisitions can be negatively perceived among some in the public.

Action: Construct FEMA compliant safe rooms at public facilities and spaces where shelter is lacking or inadequate.

Corresponding Goal & Objective	Goal 5: Objective 5.4
Responsible Entities	County EMA; cities of Glenwood, Malvern
Timeframe	Long-term (5 or more years)
Project Feasibility	Poor- Funding must be set aside; communities will require professional technical assistance to complete an HMGP application.

Action: Construct a FEMA compliant safe room at the Mills County Fairgrounds.

Corresponding Goal & Objective	Goal 5: Objective 5.4
Responsible Entities	County BOS; EMA
Timeframe	Long-term (5 or more years)
Project Feasibility	Fair- Funding must be set aside; County EMA may require professional technical assistance to complete an HMGP application.

Action: **Monitor flood control structures for potential threats.**

Corresponding Goal & Objective	Goal 2: Objective 2.3
Responsible Entities	County BOS; EMA; Missouri River Levee District; M&P Levee District; Miller-Sturgeon Levee District
Timeframe	Ongoing
Project Feasibility	Good- This action is routine under the direction of the County Engineer.

Action: **Remove debris and obstructions from river/stream channels.**

Corresponding Goal & Objective	Goal 2: Objective 2.1
Responsible Entities	County Soil & Water Conservation District; Missouri River Levee District; M&P Levee District
Timeframe	Ongoing
Project Feasibility	Good- Ensuring clear river and stream channels is an essential and practical flood mitigation activity.

Action: **Remove debris and obstructions from storm sewers and drainage ditches.**

Corresponding Goal & Objective	Goal 2: Objective 2.2
Responsible Entities	County BOS; cities of Emerson, Glenwood, Hastings, Henderson, Malvern, Pacific Junction, Silver City
Timeframe	Ongoing
Project Feasibility	Good- Ensuring clear storm sewers and drainage districts is an essential and practical flood mitigation activity.

Action: **Designate and publicize official shelter locations.**

Corresponding Goal & Objective	Goal 5: Objective 5.3
Responsible Entities	County BOS; EMA; cities of Emerson, Glenwood, Hastings, Henderson, Malvern, Pacific Junction, Silver City; Glenwood Community Schools; East Mills Community Schools
Timeframe	Ongoing
Project Feasibility	Good- Shelter sites are designated by jurisdiction in coordination with County EMA. Some designations are maintained by MOU between the jurisdiction and property owner(s).

Action: **Continue to improve security at hazmat sites and public utilities.**

Corresponding Goal & Objective	Goal 8: Objective 8.5
Responsible Entities	Mills County Sheriff; cities of Glenwood, Malvern; Glenwood Police Department
Timeframe	Ongoing
Project Feasibility	Good- Coordination and communication among local officials, law enforcement, and site owners/operators must continue regularly.

Action: **Adopt notification strategies for recreational properties in the Missouri River floodway.**

Corresponding Goal & Objective	Goal 2: Objective 2.10
Responsible Entities	County BOS; EMA; Mills County Sheriff
Timeframe	Ongoing
Project Feasibility	Fair- Notices can be delivered and posted on site, however, there is no guarantee that warnings can be communicated to all visitors in real time.

Action: **Continue to train and adequately equip first responders and local officials.**

Corresponding Goal & Objective	Goal 1: Objective 1.5; Goal 8: Objective 8.1; Goal 9: Objective 9.2
Responsible Entities	County EMA; volunteer fire departments of Oak Township, Emerson, Glenwood, Hastings, Henderson, Malvern, Pacific Junction, Silver City
Timeframe	Ongoing
Project Feasibility	Good- Training is conducted on an annual basis among jurisdictions and will continue as time and budgeting allows. Funding is typically set aside in local budgets.

Action: **Acquire permanent and portable backup power generators to support continuity of operations and emergency response.**

Corresponding Goal & Objective	Goal 6: Objective 6.1
Responsible Entities	County EMA; cities of Emerson, Glenwood, Hastings, Henderson, Malvern, Pacific Junction, Silver City; Glenwood Community Schools; East Mills Community Schools
Timeframe	Medium-term (2-5 years)
Project Feasibility	Fair- Local jurisdictions should consider prioritizing the need and location for generators; local match should be allocated to apply for HMGP funds.

Action: **Acquire updated firefighting and emergency medical equipment.**

Corresponding Goal & Objective	Goal 11: Objective 11.1
Responsible Entities	County EMA; emergency response/ rescue units of Oak Township, Emerson, Glenwood, Hastings, Henderson, Malvern, Pacific Junction, Silver City
Timeframe	Ongoing
Project Feasibility	Fair- The costs of continuous training and upgrades are burdensome on local fire and emergency medical districts. Grant opportunities such as the FEMA Assistance to Firefighters Grant Program are extremely competitive.

Action: **Provide the Mills County Fairgrounds with a permanent backup power generator so the site may act as an emergency shelter.**

Corresponding Goal & Objective	Goal 6: Objective 6.1
Responsible Entities	County BOS; EMA
Timeframe	Short-term (1-2 years)
Project Feasibility	Good- Generators are commonly funded by FEMA/Iowa HSEMD.

Action: **Equip all critical facilities with NOAA weather radios.**

Corresponding Goal & Objective	Goal 5: Objective 5.1
Responsible Entities	County BOS; EMA; cities of Emerson, Glenwood, Hastings, Henderson, Malvern, Pacific Junction, Silver City; Glenwood Community Schools; East Mills Community Schools
Timeframe	Short-term (1-2 years)
Project Feasibility	Good- Weather radios are generally affordable and require little expertise to operate.

Three mitigation actions were removed from the 2013 plan. These actions are listed below along with rationales for why the actions were not carried over to this current update:

- (1) “Modernize indoor warning systems to meet 01/01/2013 federal mandate.” – This action was successfully completed.
- (2) “Purchase backup batteries for all outdoor warning sirens.” – It was determined that modern batteries are incompatible with older sirens.
- (3) “Amend local ordinances to require notification of hazardous materials traveling through jurisdictional boundaries.” – It was determined that implementation of this action is not practical.

Mills County and its sub-jurisdictions should begin allocating funds to applicable mitigation actions as their budgets allow – many projects with grant funding potential will require a contribution of local match. Jurisdictions should consider these mitigation actions when developing updates to existing plans and ordinances.

Virtually all mitigation actions were carried over from the previous plan adopted in 2013; some were rearticulated or combined to improve clarity and reduce redundancy (e.g. there is now one action item for acquisition of permanent AND portable back up power generators). The migration actions that remain from the previous plan update are either highly cost prohibitive or require reoccurring implementation and are deemed essential activities.

Section 8



[section 8]

PLAN EVALUATION AND ONGOING MAINTENANCE

This section provides an overview of the overall strategy for plan maintenance outlines the method and schedule for monitoring, updating, and evaluating the plan. It also discusses incorporating the plan into existing planning mechanisms and how to address continued public involvement.

Evaluation

The Mills County Emergency Management Commission provides the authority and leadership capability to manage this plan and oversee its implementation on a countywide basis. However, the sub-jurisdictions of the county shall be responsible for achieving the goals, objectives, and actions relative to their unique needs. It is suggested that the plan be reviewed at least annually to assess progress and account for changes in data and other trends that might affect the content and direction of the plan. The functionality of the plan should be assessed following significant hazard events as they occur. The plan shall undergo a complete reevaluation within three to five years of the most current adopted version in order for all jurisdictions of the Planning Area to remain eligible for state and federal funding programs. Subsequent plan updates will follow the procedures and techniques outlined as follows.

First Task: Evaluate the effectiveness of the planning process.

- A. Convene the Planning Committee.
- B. Review the planning process. Items to discuss may include:
 - 1. Representation of the Planning Committee
 - 2. Public engagement
 - 3. Data to collect or consider
 - 4. Coordination with applicable partners and stakeholders

Second Task: Evaluate the effectiveness of mitigation actions.

- A. What were the results of implemented actions?
- B. Did the results achieve adopted goals and objectives?
- C. Were implemented actions cost effective?
- D. Were there delays or obstacles to action implementation?

Third Task: Determine why mitigation actions were or were not successful.

- A. Were resources and funding available or adequate?
- B. Was there public and political support?
- C. Were responsibilities assigned to the appropriate individuals or entities?
- D. Was the timeframe to implement actions realistic?

Continued Public Involvement

The update process provides an opportunity to publicize success stories from the plan's implementation and seek additional public comment. Information will be posted in a countywide publication following the annual review of the hazard mitigation plan. Public meetings to receive public comment on plan maintenance and updating will be held during the update period. When the Planning Committee reconvenes for the update, it will coordinate with all stakeholders participating in the planning process, including those who joined the Planning Committee after the initial effort.

In conclusion, public notices will continue to be posted and public participation will continue to be sought and encouraged through available local media outlets as this planning document is reviewed and amended.

Incorporation into Existing Planning Mechanisms

When possible, the participating jurisdictions will use existing plans and/or programs to implement hazard mitigation actions. Based on the capability assessments of the participating jurisdictions, the communities will continue to plan and implement programs to reduce loss of life and property from hazards. This plan builds upon the momentum developed through previous related planning efforts and mitigation programs, and recommends implementing actions through the following means:

- Mills County Basic Operations Plan
- Comprehensive or strategic plans of participating jurisdictions
- Ordinances of participating jurisdictions
- Capital improvement plans and budgets
- Future Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan updates
- Other community plans either in existence or developed in the future
- Other county/regional plans either in existence or developed in the future

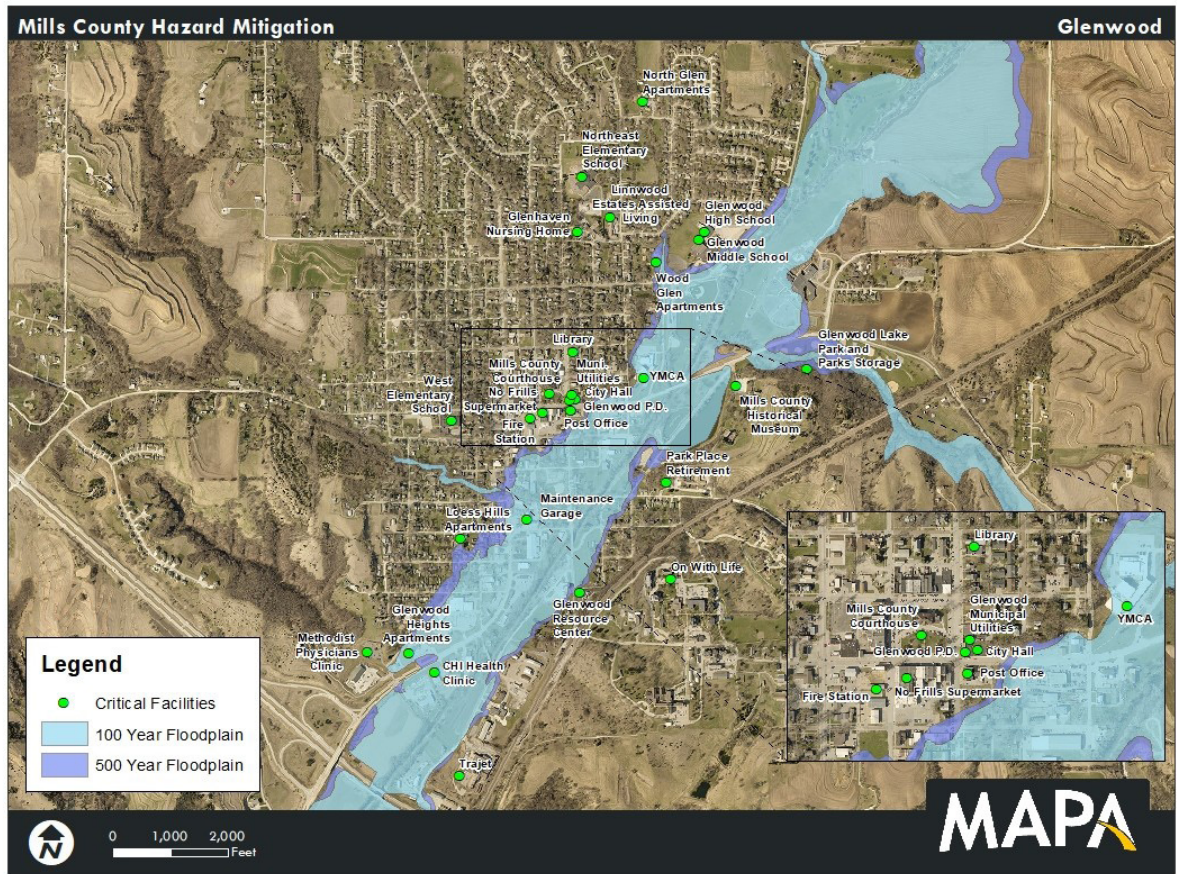
Appendix A

Emerson



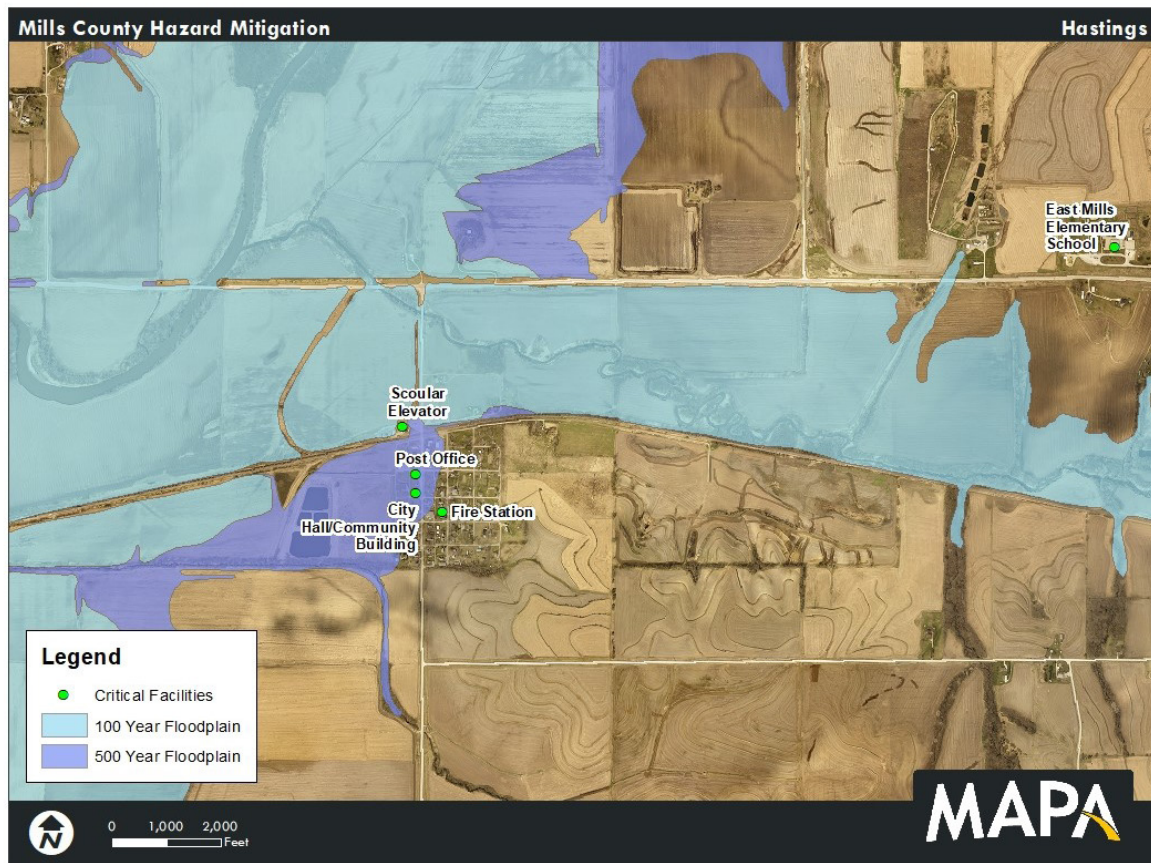
Indian Creek flows south of Emerson. The Emerson Fire Station and a business which maintains some hazardous materials are located in the 100-year floodplain. A portion of Highway 59 to the south and west of Emerson is in the floodplain.

Glenwood



Glenwood is Mills County's largest city and county seat. Keg Creek flows southwest through the city. There are approximately 140 structures located in the 100-year floodplain including 50 single-family homes and 3 multi-family complexes. Glenwood's water and waste water treatment facilities (not shown) are in the 100-year floodplain; these facilities also serve Pacific Junction.

Hastings



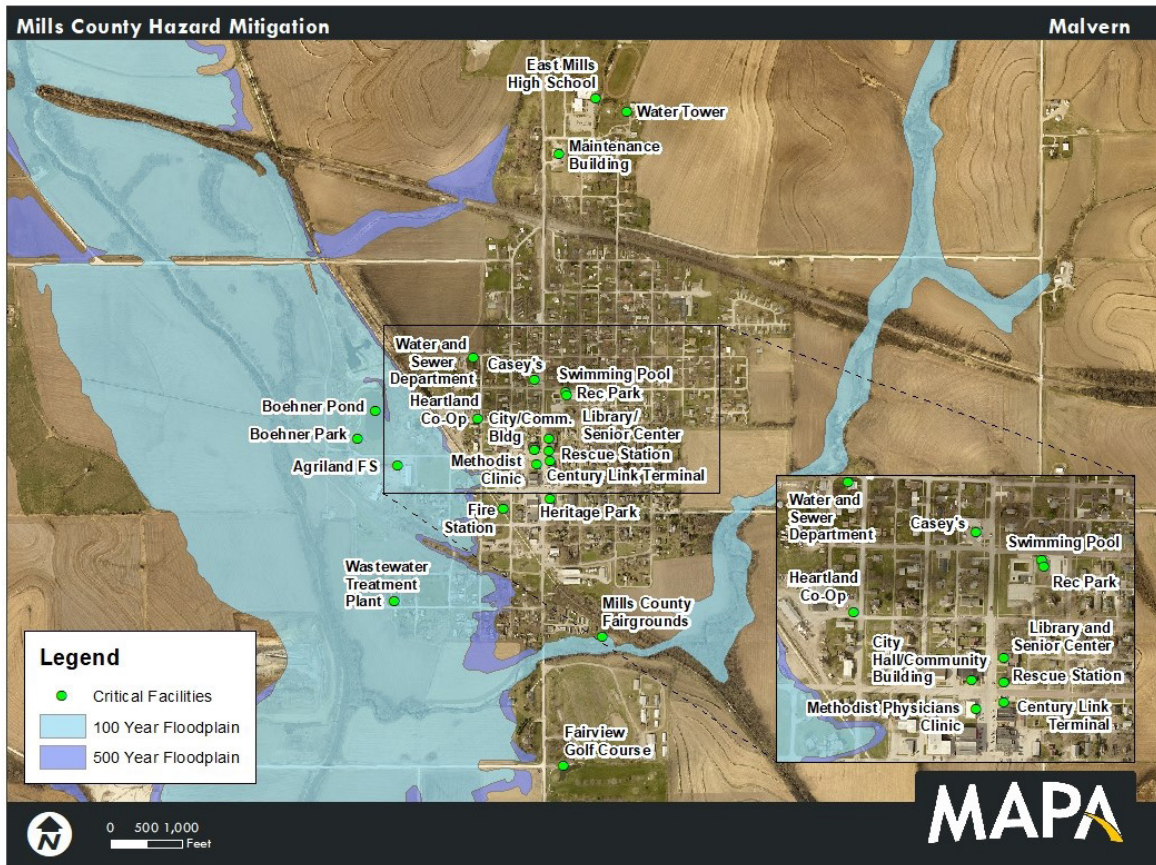
The West Nishnabotna River flows west of Hastings while Indian Creek flows north. There are no critical facilities in the 100-year floodplain; Hastings City Hall/Community Building and the post office are in the 500-year floodplain.

Henderson



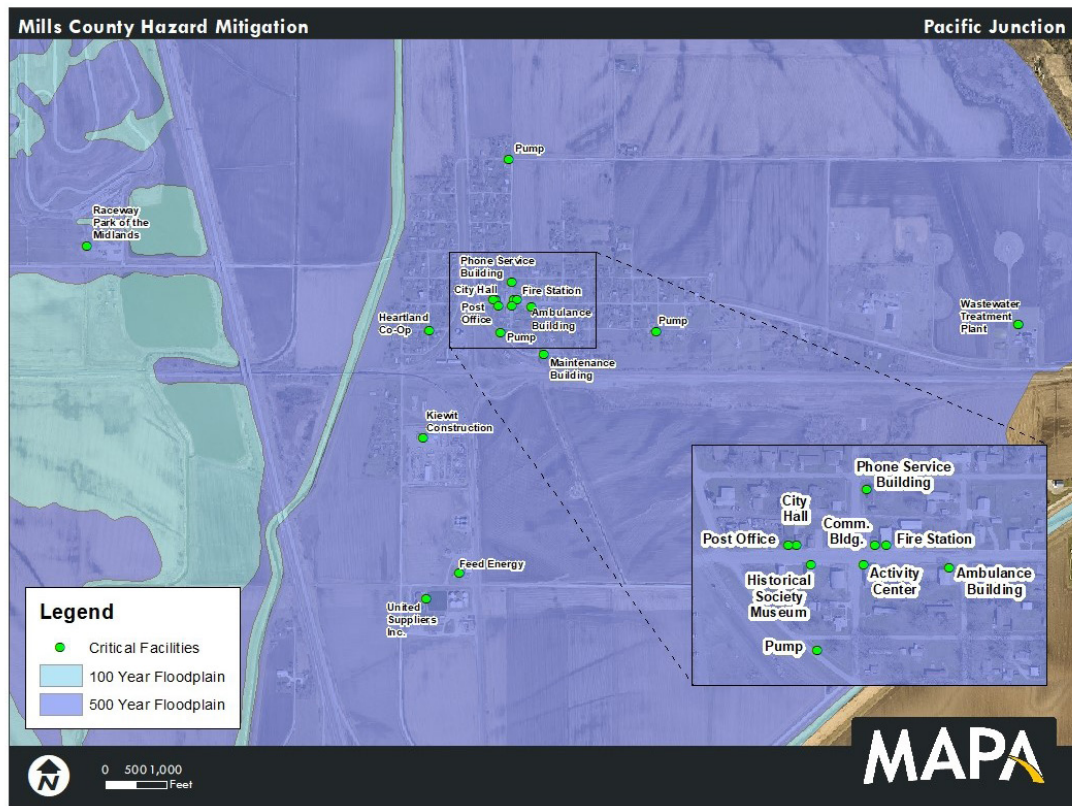
Two agriculture co-op facilities sit in the 100-year floodplain of the West Nishnabotna River in the far west end of Henderson

Malvern



Silver Creek flows west of Malvern. The city's waste water treatment plant and an industrial agriculture facility which stores some hazardous materials exist in the 100-year floodplain. No other structural critical facilities are known to exist in the floodplain.

Pacific Junction



Pony Creek flows through western Pacific Junction generally along 195th Street while Keg Creek flows about one half-mile southeast. Pacific Junction is less than three miles east of the Missouri River and exists entirely in the river's 500-year floodplain. A number of facilities that store hazardous materials are located in Pacific Junction. Glenwood's waste water treatment plant is located north of Kane Avenue less than a mile east of Pacific Junction.

Silver City



Silver City’s lift station and water treatment plant are located in Silver Creek’s 100-year floodplain to the east. Some undeveloped land exists in the 500-year floodplain.

Appendix B

Proud Past, Successful Present, Growing Future

Devin Embray - Superintendent Kristi Buman - Director of Finance
103 Central, Suite 300 * Glenwood, IA 51534 * 712-527-9034 * Fax 712-527-4287

March 21, 2018

To: All School Board Members
From: Devin Embray, Superintendent

Voting Order:
Greg Schultz - At-Large '21
Michelle Bahr- At-Large '21
Ann Staiert - At-Large '21
Curt Becker - At-Large '19
Theresa Romans - At-Large '19

Re: **Super Board Meeting** - Thursday, March 22, 2018 - 6:00 - 7:00 p.m.
High School Media Center - 504 E. Sharp Street, Glenwood

City Report

1. Holly Jackson
 - A. County Mitigation Meeting/Grant Anderson-Grant Funding Storm Shelters
2. Laurie Smithers
 - A. Community Service Hours Opportunities
3. Other

School Report

1. Devin Embray
 - A. Update on Athletic Complex
 - B. Sharing Agreements
2. Other

County Report

1. Richard Crouch
 - A. Discuss East Mills Superboard
 - B. Backfill Commercial Property Tax
 - C. TIF
2. Lonnie Mayberry
 - A. Zoning & Subdivision Ordinance
 - B. 190th Street Bridge
3. Carol Vinton
 - A. Tourism
 - B. Golden Hills
 - C. West Central Activities
 - D. Heartland 2050
 - E. Narc
4. Other

Next Meeting Date - _____

Thank you all for your time and making this meeting a priority!

10/12/2018

Metro Area Planning Agency Mail - SuperBoard Meeting



Grant Anderson <ganderson@mapacog.org>

SuperBoard Meeting

1 message

Holly Jackson <hjackson@millscoia.us>
To: Grant Anderson <ganderson@mapacog.org>

Fri, Oct 12, 2018 at 8:51 AM

Grant:

I apologize for the delay. I had to get the names of some of the guests that were there. Here is the list of attendees from the meeting you attended. Donna M. Barry (Grassley's rep), Lonnie Mayberry, Carol Vinton, Carol Robertson, Richard Crouch, Laurie Smithers, Ron Kohn, Jeremy Rodman, Dan McComb, Theresa Romens, Greg Schultz, Devin Embray, Curt Becker, Ann Staiert, Holly Jackson, Angie Winquest.

Hope this helps.

Holly Jackson

Zoning Technician

MILLS COUNTY

Building & Zoning Department

403 Railroad Avenue

Glenwood, Iowa 51534

Office: (712)527-4347

Website: <http://millscoia.us/index.php/depts/building-zoning>

<https://mail.google.com/mail/u/0?ik=8adbe8e392&view=pt&search=all&permthid=thread-f%3A1614127874648890900%7Cmsg-f%3A1614127874648...> 1/1



Pre - Disaster Mitigation Plan Meeting
 Wednesday, November 29th, 2017 at 6:30pm
 Mills County Training Rm - 403 Railroad Ave, Glenwood IA.
 Page ___ of ___

NAME	JURISDICTION / DEPARTMENT	OFFICE / CELL	E-MAIL
Patrick Binns	Mills County IT Dept	712 302 7005 712 309 1587	pbinns@millscoia.us
Nick Johnson	Mills County Attorney	712 527-5233	NJohnson@millscoia.us
Mike Baumfalk	Henderson (Mexico)	370-2061 712-527-5233	mike.baumfalk@gmail.com henderson.city@gmail.com
Holly Jackson	Mills County Be 2 Glenwood City Council	712-527-4347	h.jackson@millscoia.us
Sheri Bowen	Mills Co. P.H.	712-527-9699	SheriBemph.us



Pre - Disaster Mitigation Plan Meeting

Wednesday, November 29th, 2017 at 6:30pm
 Mills County Training Rm - 403 Railroad Ave, Glenwood IA.
 Page ___ of ___

NAME	JURISDICTION / DEPARTMENT	OFFICE / CELL	E-MAIL
<i>Kerry Mayberry</i>	<i>Mills County</i>	<i>712 527 4873</i>	<i>KerryMayberry@millscoia.us</i>
<i>[Signature]</i>	<i>Mills Co</i>	<i>712 302 7010</i>	<i>Talley@millscwa.us</i>
<i>ERIC SCHANSEN</i>	<i>Econ. Development</i>	<i>712 527 8114</i>	
	<i>GLENWOOD P.D.</i>	<i>712 520 7892</i>	<i>ERIC.SCHANSEN@GLENWOODPOLICE.ORG</i>
		<i>712 527 9920</i>	



Pre - Disaster Mitigation Plan Meeting

Wednesday, November 29th, 2017 at 6:30pm

Mills County Training Rm - 403 Railroad Ave, Glenwood IA.

Page ___ of ___

NAME	JURISDICTION / DEPARTMENT	OFFICE / CELL	E-MAIL
Dennis Lincoln	M.P. Lake District	402-679-1764	lincoln.dgeniew@hotmail.com
Richard Crouch	B.O.S.	712-370-3963	richard.crouch@redix.net



Pre - Disaster Mitigation Plan Meeting

Wednesday, February 28th, 2018 at 6:30pm
Mills County Training Rm - 403 Railroad Ave, Glenwood IA.
Page ___ of ___

NAME	JURISDICTION / DEPARTMENT	OFFICE / CELL	E-MAIL
Joel Tomford	Mayor Henderson	402-637-4108	joeltomford@outlook.com
Mark Knop	Fire Chief Henderson	712-370-5561	
Rick Allely	Mills Co Ec. Dev. Foundation	712-527-8114	millscountydevelopment@gmail.com
Dennis Linak	M.P. Love Dist.	402-679-1764	linakridgeviewchurch.com
Travis Hitchcock	Mills Co EMA	712-527-3643	



Pre – Disaster Mitigation Plan Meeting

Wednesday, February 28th, 2018 at 6:30pm

Mills County Training Rm – 403 Railroad Ave, Glenwood IA.

Page ___ of ___

NAME	JURISDICTION / DEPARTMENT	OFFICE / CELL	E-MAIL
Dan McComb	City Council, Glenwood		dsmecomb@mchsi.com
Holly Jackson	Building & Zoning		hjackson@millscoia.us
Richard Crouch	B. of Super.	712-370-3903	



Pre - Disaster Mitigation Plan Meeting

Wednesday, February 28th, 2018 at 6:30pm

Mills County Training Rm - 403 Railroad Ave, Glenwood IA.

Page ___ of ___

NAME	JURISDICTION / DEPARTMENT	OFFICE / CELL	E-MAIL
Melissa Gray			
ERIC JOHANSEN	GLENWOOD	712 527 9920	

Mills County Board of Supervisors

Richard Crouch • Carol Vinton • Lonnie Mayberry

Mills County Courthouse • 418 Sharp Street • Glenwood, IA 51534

Phone: (712) 527-4729 • Fax: (712) 527-1579 • Website: www.millscoia.us

RESOLUTION # 19-20

Purpose: A Resolution to approve and adopt the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan.

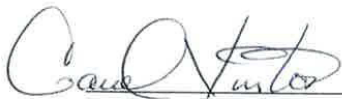
WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan was presented to Mills County; and

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan was prepared in compliance with the Hazard Mitigation Planning Requirements of the Disaster Mitigation Act of 2000 provided by the Iowa Homeland Security and Emergency Management Division; and

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan identifies Mills County's potential hazards in the community; and

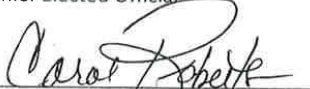
WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan includes a profile of hazard events, a vulnerability assessment, evaluation of mitigation goals and a plan maintenance process.

NOW THEREFORE BE IT RESOLVED that Mills County does hereby approve and adopt the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan this 18th day of June, 2019.



Chief Elected Official

6/18/19
Date



Attest:

6-18-19
Date

RESOLUTION # 2019-19

Purpose: A Resolution to approve and adopt the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan.

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan was presented to the City of Emerson; and

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan was prepared in compliance with the Hazard Mitigation Planning Requirements of the Disaster Mitigation Act of 2000 provided by the Iowa Homeland Security and Emergency Management Division; and

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan identifies the City of Emerson potential hazards in the community; and

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan includes a profile of hazard events, a vulnerability assessment, evaluation of mitigation goals and a plan maintenance process.

NOW THEREFORE BE IT RESOLVED that the City of Emerson does hereby approve and adopt the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan this 14 day of August, 2019.


Chief Elected Official

8/14/19
Date

Mary D. Bolton
Attest:

8-14-2019
Date

RESOLUTION # 3468

Purpose: A Resolution to approve and adopt the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan.

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan was presented to The City of Glenwood; and

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan was prepared in compliance with the Hazard Mitigation Planning Requirements of the Disaster Mitigation Act of 2000 provided by the Iowa Homeland Security and Emergency Management Division; and

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan identifies the City of Glenwood's potential hazards in the community; and

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan includes a profile of hazard events, a vulnerability assessment, evaluation of mitigation goals and a plan maintenance process.

NOW THEREFORE BE IT RESOLVED that The City of Glenwood does hereby approve and adopt the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan this 23rd day of July, 2019.

Ron Kohn
Mayor Ron Kohn

Amber Farnan
Attest: Amber Farnan, City Clerk

7/23/19
Date

7/23/19
Date



RESOLUTION # 2019-23

Purpose: A Resolution to approve and adopt the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan.

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan was presented to the City of Hastings; and

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan was prepared in compliance with the Hazard Mitigation Planning Requirements of the Disaster Mitigation Act of 2000 provided by the Iowa Homeland Security and Emergency Management Division; and

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan identifies the City of Hastings potential hazards in the community; and

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan includes a profile of hazard events, a vulnerability assessment, evaluation of mitigation goals and a plan maintenance process.

NOW THEREFORE BE IT RESOLVED that the City of Hastings does hereby approve and adopt the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan this 18th day of September, 2019.


Alita Jones, Mayor

9/18/19
Date


Darren Gray City Clerk

9/18/19
Date

RESOLUTION # 2019-11

Purpose: A Resolution to approve and adopt the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan.

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan was presented to the City of Henderson; and

WHEREAS, the Mills County Multi- Jurisdictional Pre-Disaster Mitigation Plan was prepared in compliance with the Hazard Mitigation Planning Requirements of the Disaster Mitigation Act of 2000 provided by the Iowa Homeland Security and Emergency Management Division; and

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan identifies the City of Henderson potential hazards in the community; and

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan includes a profile of hazard events, a vulnerability assessment, evaluation of mitigation goals and a plan maintenance process.

NOW THEREFORE BE IT RESOLVED that the City of Henderson does hereby approve and adopt the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan this 11th day of June, 2019.



Chief Elected Official

6/11/19

Date



Attest:

6-11-19

Date

RESOLUTION # 2019-29

Purpose: A Resolution to approve and adopt the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan.

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan was presented to the City of Malvern; and

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan was prepared in compliance with the Hazard Mitigation Planning Requirements of the Disaster Mitigation Act of 2000 provided by the Iowa Homeland Security and Emergency Management Division; and

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan identifies the City of Malvern's potential hazards in the community; and

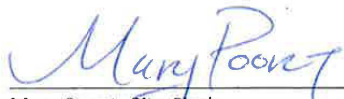
WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan includes a profile of hazard events, a vulnerability assessment, evaluation of mitigation goals and a plan maintenance process.

NOW THEREFORE BE IT RESOLVED that the Malvern City Council does hereby approve and adopt the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan this 30th day of July, 2019.


Michael K. Blackburn, Mayor

7/30/19
Date

ATTEST:


Mary Poort, City Clerk

7/30/19
Date

RESOLUTION # 2019 - 12

Purpose: A Resolution to approve and adopt the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan.

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan was presented to the **City of Pacific Junction, Iowa;** and

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan was prepared in compliance with the Hazard Mitigation Planning Requirements of the Disaster Mitigation Act of 2000 provided by the Iowa Homeland Security and Emergency Management Division; and

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan identifies the **City of Pacific Junction** potential hazards in the community; and

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan includes a profile of hazard events, a vulnerability assessment, evaluation of mitigation goals and a plan maintenance process.

NOW THEREFORE BE IT RESOLVED that the **City of Pacific Junction** does hereby approve and adopt the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan this 5th day of August, 2019.



Chief Elected Official

9/5/19

Date



Attest:

8/5/19

Date

RESOLUTION 08-19-01

PURPOSE: A Resolution to approve and adopt the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan.

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan was presented to the City of Silver City; and

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan was prepared in compliance with the Hazard Mitigation Planning Requirements of the Disaster Mitigation Act of 2000 provided by the Iowa Homeland Security and Emergency Management Division; and

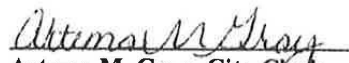
WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan identifies the City of Silver City's potential hazards in the community; and

WHEREAS, the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan includes a profile of hazard events, a vulnerability assessment, evaluation of mitigation goals and a plan maintenance process.

NOW THEREFORE BE IT RESOLVED that the City of Silver City does hereby approve and adopt the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan this 19th day of August, 2019.

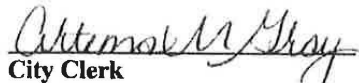

Paula Reeves, Mayor

8-19-2019
Date


Artema M. Gray, City Clerk

08-19-19
Date

I hereby certify the above to be true and correct and was passed by the Silver City Council on August 19, 2019.


City Clerk