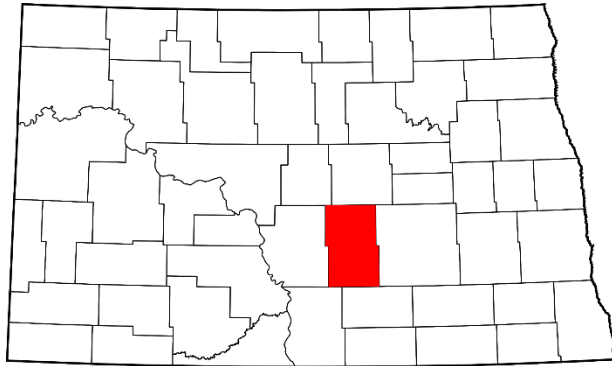


2021 Kidder County, North Dakota Multi-Jurisdictional Multi-Hazard Mitigation Plan



Kidder County, North Dakota

Plan Development Managed by:

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Appendices

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1. Introduction

Executive Summary

The updating of the Kidder County, N.D. Multi-Jurisdictional Multi-Hazard Mitigation Plan (MHMP) was conducted over a year period. It included the review of hazards, risks, vulnerabilities, and capabilities of the county, updating of vulnerable populations and areas, and development of a mitigation strategy for Kidder County accurately reflecting plan research and progress. The review of hazard impacts to the county is ongoing by county officials, as are the efforts to mitigate injuries and damages from natural hazards and man-made threats. The planning process and this plan allow the county's residents, businesses, stakeholders, and federal and state agencies to have input and to identify actions to assure the safety and protection of people and property. The mitigation strategy for Kidder County consists of projects for the county, incorporated cities, and townships. Specific mitigation projects were developed for all incorporated cities. See Table 6.1 for a breakdown of prioritization for all projects in the plan. A mitigation survey was administered during the planning process. **A total of 234 responses were received.**

The 13 natural hazards and man-made threats profiled in this plan include:

Natural Hazards

- Drought
- Fire (Urban/Structure and Wildland)
- Flood (Overland and Riverine)
- Geologic Hazards
- Infectious Disease – Animal, Human, and Plant
- Severe Summer Weather
- Severe Winter Weather
- Space Weather

Adversarial (Homeland Security) Threats

- Civil Disturbance
- Criminal, Terrorist or Nation-State Attack
- Cyberattack

Technological Threats

- Hazardous Material Release
- Transportation Incident

The following are the seven goals that were reviewed, updated and approved:

Goal 1: Improve and expand education and outreach programs to improve public awareness of hazards.

Goal 2: Improve and expand administrative and technical capability to mitigate hazards.

Goal 3: Improve and expand financial capability to mitigate hazards.

Goal 4: Improve and expand planning and regulatory capability to mitigate hazards.

Goal 5: Reduce impacts of hazards.

Goal 6: Improve resiliency of critical facilities and infrastructure.

Goal 7: Provide places of refuge and early warnings for the public and vulnerable populations to take protective action during hazard events.

To assist in the use, implementation, and updating of this document, the plan includes the federal and state plan approval letters and plan review of this update, and the adoption letters from each of the jurisdictions in Appendix 1. The chapters and appendices provide a history of the data reviewed and analyzed in the production process of the plan.

Jurisdictions

The impact and other issues from natural hazards and man-made threats varies between incorporated cities. Based on information gathered at each jurisdictional meeting, a problem statement was formed to summarize the needs of the community. The problem statement for Kidder County and each incorporated city is shown below.

Kidder County

Kidder County can be impacted by civil disturbance; criminal, terrorist or nation-state attack; cyberattack; drought; fire (urban and wildland); flood (overland and riverine); geologic hazard; hazardous material release, infectious disease, severe summer weather, severe winter weather, space weather and transportation incidents. Economic loss to the agriculture and livestock industry, and hunting/recreational industry from natural hazards impacts the county's economy. Blocked roads and frost heaving occurs annually from flooding, and severe summer weather and severe winter weather. The county is not enrolled in the National Flood Insurance Program (NFIP) and does not have a website. The county has been impacted by sudden and acute sheltering needs due to the presence of Interstate 94 during severe winter weather. Several outdoor recreation areas lack emergency sirens. The Kidder County Courthouse lacks a generator for backup power. With little to no capabilities to accomplish major projects independently, the city is dependent on outside sources for mitigation.

Improved drainage, implementation of flood control measures, establishment of a county website, joining the NFIP, upgrading of critical facilities and infrastructure, construction of additional storms shelters, installation of outdoor emergency sirens at recreational areas, installation of generators at critical facilities and infrastructure, and expansion of administrative and technical, education and outreach, financial, and planning and regulatory capabilities are a priority for Kidder County.

City of Dawson

The city of Dawson can be impacted by civil disturbance; criminal, terrorist or nation-state attack; cyberattack; drought; fire (urban and wildland); flood (overland and riverine); geologic hazard; hazardous material release, infectious disease, severe summer weather, severe winter weather, space weather and transportation incidents. Economic loss to the agriculture and livestock industry, and hunting/recreational industry from natural hazards in the county impacts the city's economy. The city's outdoor emergency siren is manually-activated. Blocked roads and frost heaving occurs annually from severe summer weather and severe winter weather. The city's city hall, fire hall, and lift station lack generators for backup power. An update to local planning and regulatory capabilities are needed with specific attention paid to flood ordinances to address hazard-prone areas with new and existing development. Due to flooding issues in the city, joining the National Flood Insurance Program (NFIP) should be researched. The city and fire department need equipment to maintain delivery of services. With little to no capabilities to accomplish major projects independently, the city is dependent on outside sources for mitigation.

Installation of permanent backup power sources; upgrade/expanding of the early outdoor warning system; an engineering study of frost heaving issues in and around the city; investment in equipment for the city and fire department to maintain delivery of services, and expansion of education and outreach, financial, and planning and regulatory capabilities are a priority for the city of Dawson.

City of Pettibone

The city of Pettibone can be impacted by civil disturbance; criminal, terrorist or nation-state attack; cyberattack; drought; fire (urban and wildland); flood (overland and riverine); geologic hazard; hazardous material release, infectious disease, severe summer weather, severe winter weather, space weather and transportation incidents. Economic loss to the agriculture and livestock industry, and hunting/recreational industry from natural hazards in the county impacts the city's economy. Blocked roads occur annually from severe summer weather and severe winter weather. The city's outdoor emergency siren is manually-activated. The risk to hazardous material release and transportation incidents is low due to the city not being located on Interstate 94. However, the city lacks a designated truck route or weight limits on roads providing access to the city. The city hall/fire hall lacks a generator for backup power. With little to no capabilities to accomplish major projects independently, the city is dependent on outside sources for mitigation.

Installation of permanent backup power sources; upgrade/expanding of the early outdoor warning system; identification of a designated truck route; and expansion of education and outreach, financial, and planning and regulatory capabilities are a priority for the city of Pettibone.

City of Robinson

The city of Robinson can be impacted by civil disturbance; criminal, terrorist or nation-state attack; cyberattack; drought; fire (urban and wildland); flood (overland and riverine); geologic hazard; hazardous material release, infectious disease, severe summer weather, severe winter weather, space weather and transportation incidents. Economic loss to the agriculture and livestock industry, and hunting/recreational industry from natural hazards and man-made threats in the county impacts the city's economy. The city's outdoor emergency siren is manually-activated and not compatible with radio equipment. Blocked roads occur annually from severe summer weather and severe winter weather. The city's sanitary sewer system experiences leaks causing overland flooding and shutting down of the system due to runoff and snowmelt from severe summer weather and severe winter weather. The city hall/city shop/community center/shelter, fire hall, lift station, and pump house lack generators for backup power. An update to local planning and regulatory capabilities are needed with specific attention paid to flood ordinances to address hazard-prone areas with new and existing development. The city and fire department need equipment to maintain delivery of services. With little to no capabilities to accomplish major projects independently, the city is dependent on outside sources for mitigation.

Installation of permanent backup power sources; upgrade/expanding of the early outdoor warning system; an engineering study to identify options to retrofit/upgrade the city's sanitary sewer system; investment in equipment for the city and fire department to maintain delivery of services, and expansion of education and outreach, financial, and planning and regulatory capabilities are a priority for the city of Robinson.

City of Steele

The city of Steele can be impacted by civil disturbance; criminal, terrorist or nation-state attack; cyberattack; drought; fire (urban and wildland); flood (overland and riverine); geologic hazard; hazardous material release, infectious disease, severe summer weather, severe winter weather, space weather and transportation incidents. Economic loss to the agriculture and livestock industry, and hunting/recreational industry from natural hazards in the county impacts the city's economy. Blocked roads and breaks to mains in the city's drinking/potable water system occur annually from severe summer weather and severe winter weather. The risk to hazardous material release and transportation incidents is high due to the city's location on Interstate 94. The city has also experienced mass sheltering needs due stranded motorists from severe winter weather. The city lacks a fire index sign. The county's ambulance hall and courthouse (located in the city), and the city hall, fire hall, lift station, and public school lack generators for backup power. With little to no capabilities to accomplish major projects independently, the city is dependent on outside sources for mitigation.

Installation of permanent backup power sources; a fire index sign; creation of a sheltering response plan and upgrading/expanding existing or construction of new shelters; an engineering study to identify options to retrofit/upgrade the city's drinking/potable water system; and expansion of education and outreach, financial, and planning and regulatory capabilities are a priority for the city of Steele.

City of Tappen

The city of Tappen can be impacted by civil disturbance; criminal, terrorist or nation-state attack; cyberattack; drought; fire (urban and wildland); flood (overland and riverine); geologic hazard; hazardous material release, infectious disease, severe summer weather, severe winter weather, space weather and transportation incidents. Economic loss to the agriculture and livestock industry, and hunting/recreational industry from natural hazards in the county impacts the city's economy. Blocked roads occur annually from overland flooding, severe summer weather, and severe winter weather; the city's sanitary sewer system is also impacted by these hazards. The risk to hazardous material release and transportation incidents is high due to the city located on Interstate 94. The city hall/city shop/community center/shelter, fire hall, and sanitary sewer system lack generators for backup power. With little to no capabilities to accomplish major projects independently, the city is dependent on outside sources for mitigation.

Installation of permanent backup power sources; engineering studies to improve stormwater drainage and to identify options to retrofit/upgrade the city's drinking/potable water system; and expansion of education and outreach, financial, and planning and regulatory capabilities are a priority for the city of Tappen.

City of Tuttle

The city of Tuttle can be impacted by civil disturbance; criminal, terrorist or nation-state attack; cyberattack; drought; fire (urban and wildland); flood (overland and riverine); geologic hazard; hazardous material release, infectious disease, severe summer weather, severe winter weather, space weather and transportation incidents. Economic loss to the agriculture and livestock industry, and hunting/recreational industry from natural hazards in the county impacts the city's economy. Blocked roads occur annually and the city's sanitary sewer system is constructed with tile and is inundated by flooding resulting from severe summer weather and severe winter weather. This impact can also contribute to the risk of infectious disease as uncontrolled raw sewage is a type of hazardous material release. The risk to

hazardous material release and transportation incidents is low due to the city not being located on Interstate 94 or railroad infrastructure. The city hall and fire hall lack generators for backup power. With little to no capabilities to accomplish major projects independently, the city is dependent on outside sources for mitigation.

Installation of permanent backup power sources; conducting of engineer study for retrofitting of city's sanitary sewer system (and subsequent grant opportunities for construction); and expansion of education and outreach, financial, and planning and regulatory capabilities are a priority for the city of Tuttle.

Background

The initial Kidder County Multi-Jurisdictional Multi-Hazard Mitigation Plan (MHMP) was developed and received approval from the Federal Management Agency (FEMA) in 2006 with an update 2014. Therefore, this plan update is the second update to the mitigation plan for Kidder County.

The MHMP Steering Committee understands that the plan must be dynamic and detailed to include the specific risks of threats and hazards to the county and its jurisdictions. Improvements, updates, and revisions will be made constantly to assure this plan continues to mitigate the potential losses and damages that can impact people and property in Kidder County.

Purpose

As defined by the Disaster Mitigation Act of 2000, hazard mitigation is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards. The Act of 2000 was an amendment to the Robert T. Stafford Disaster Relief and Emergency Assistance to authorize a program for pre-disaster mitigation, to streamline the administration of disaster relief, to control the Federal costs of disaster assistance, and for other purposes.

According to a study by the National Institute for Building Standards, pre-disaster mitigation saves an average of \$6 for every \$1 spent. Additionally, the Pew Research Center recently identified that North Dakota saves an average of \$6.55 for every \$1 spent on mitigation projects. Mitigation can range from infrastructure projects such as raising of roads, burying of power lines, or installation of generators for critical facilities and infrastructure, to public education and outreach programs.

The purpose of this plan is to fulfill federal, state, and local hazard mitigation planning responsibilities; to promote pre- and post-disaster mitigation measures, short and/or long range strategies that minimize suffering, loss of life, and damage to property resulting from hazardous or potentially hazardous conditions to which citizens and institutions within the county are exposed; to improve quality of life; and to eliminate or minimize conditions which would have an undesirable impact on our citizens, the economy, environment, and well-being of the county.

Objective

The objective of this plan is to establish a methodical process to assist in hazard and threat identification, impact evaluation, and action plan development to decrease the impacts from hazards where possible and to protect lives and property.

Scope

The scope of the Kidder County Multi-Jurisdictional Multi-Hazard Mitigation Plan is countywide. The plan is not necessarily limited to federal, state, or locally declared disasters or emergencies. Any time situations or incidents occur that produce a requirement for mitigation actions, activities, and strategies, etc.; they will be developed and incorporated into the Kidder County Multi-Jurisdictional Multi-Hazard Mitigation Plan.

DRAFT

3. County and Jurisdictions Profile and Inventory

Kidder County and Incorporated Jurisdictions Overview

Kidder County is in central North Dakota and is the 20th largest county in total land area of the 53 counties in the state encompassing 1,432.56 square miles, of which approximately 1,324.33 square miles of it is land areas (92.4 percent) and 108.23 square miles (7.6 percent) is water surface areas. The county is approximately forty-eight (48) miles from north to south and approximately thirty-two (32) miles from east to west at its widest points.

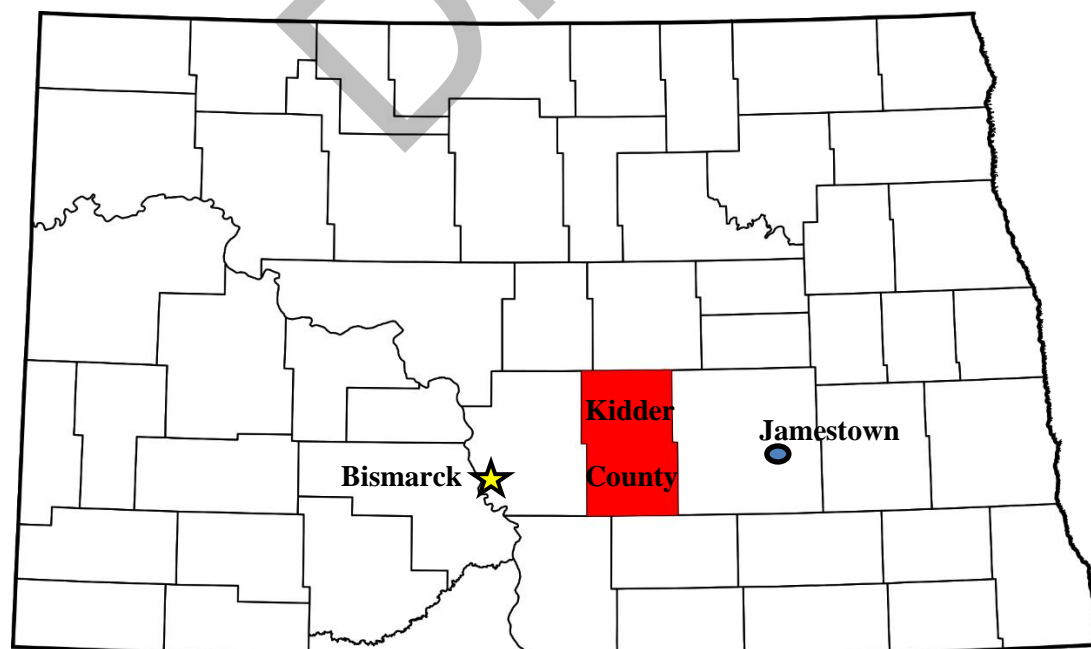
The 2010 population of the county is 2,435 people with an estimated 2019 population of 2,480, an increase of 1.8 percent. The population density is 1.7 people per square mile based on 2010 population figures. A general map of the county showing jurisdiction locations, transportation routes, airports, infrastructure, watersheds, and bodies of water can be found in Chapter 9, Maps.

The county is bordered on the northwest by Sheridan County, on the north by Wells County, on the east by Stutsman County, on the South by Logan County, and on the southwest and west by Emmons County. Interstate 94 and N.D. Highways 3 and 36 traverse the county.

Kidder County has 36 townships: Allen, Atwood, Baker, Buckeye, Bunker, Chestina, Clear Lake, Crown Hill, Crystal Springs, Excelsior, Frettim, Graf, Haynes, Lake Williams, North & South Manning, North & South Merkel, Northwest, Peace, Petersville, Pettibone, Pleasant Hill, Quinby, Rexine, Robinson, Sibley, Stewart, Tanner, Tappen, Tuttle, Valley, Vernon, Wallace, Weiser, Westford, Williams, and Woodlawn.

Figure 3.1 – Location of Kidder County in the State of North Dakota

Kidder County, highlighted in red is in central North Dakota between the city of Jamestown and the city of Bismarck, the state capitol.



The incorporated jurisdictions in the county included in this plan are Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle. Unincorporated communities include Crystal Springs, Ladoga, and Lake Williams.

Archaeological & Historic Sites

Information on archeological and historic sites is important for mitigation measures and overall planning to understand the extent and location of invaluable assets to a community that is at high risk to natural hazards and man-made threats.

Archaeological Sites

Historic Preservation in North Dakota: A Statewide Comprehensive Plan

The N.D. Historic Preservation Program is administered by the N.D. State Historic Preservation Office (SHPO) and compiled the Historic Preservation in North Dakota: A Statewide Comprehensive Plan, which is a central document in the state's Historic Preservation Program. It summarizes background information about the state's archeological, historical, and architectural properties. It identifies gaps in existing data and it enumerates research questions. Kidder County was included in the Jamestown River Study Unit 2016, but not sites are specifically located in Kidder County.

Historic Sites

In 2009, the theme of the ND Governor's History Conference was education. As part of that conference, the State Historical Society asked members of the public to help document the country school-houses in the state.

The following sites were identified in the County School House Project – Kidder County. These sites should be considered in mitigation planning due to their historic designation.

Name	ID
Barton School #8	32KD00112
Chestina Township School	32KD00128
Clear Lake School	32KD00129
Clear Lake Township School	32KD00113
Haynes Township School North	32KD00111
Haynes Township School	32KD00127
Kemmet School	32KD00125
Manning Township N. School #1	32KD00125
Merkle Township School	32KD00132
Northwest Township School	32KD00134
Stewart Township School	32KD00133
Wallace Township School	32KD00130
Weippert School	32KD00131
Weiser Township School	32KD00141
Westford Township School	32KD00126
White School	32KD00139

Source(s): N.D. Historical Society

Climate

The monthly average temperature, monthly average maximum temperature, monthly average minimum temperature, and average total precipitation are shown for Kidder County in Table 3.1. The monthly averages are based on information collected between 1981 and 2010 by the High Plains Regional Climate Center. The data was gridded using AM stations and was interpolated using a Natural Neighbor method to the 5km DEM grid.

- The average temperature ranges from 9.69 degrees in January to 69.08 degrees in July.
- The average maximum temperature ranges from 19.47 in January to 81.23 in July.
- The average minimum temperature ranges from -0.12 degrees in January to 56.84 degrees in July.
- Average total precipitation ranges from approximately 0.45 inches in January to 3.39 inches in June.

Table 3.1 – 1981 to 2010 Kidder County Average Monthly Climate Summaries

Kidder Co.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Temp (F)	9.69	14.33	26.33	41.70	53.91	63.17	69.08	67.62	56.96	43.37	27.29	13.67
Average Max. Temp (F)	19.47	24.14	36.02	53.95	66.18	74.63	81.23	80.66	69.71	55.31	36.99	22.78
Average Min. Temp (F)	-0.12	4.47	16.56	29.36	41.54	51.61	56.84	54.47	44.12	31.33	17.51	4.52
Average Total Precip. (in.)	0.45	0.43	0.81	1.16	2.62	3.39	3.19	2.11	1.92	1.50	0.64	0.47

Source(s): High Plains Regional Climate Center, University of Nebraska-Lincoln

Demographics

Information on population trends and projections, and vulnerable populations, for Kidder County is provided in the following section.

Population

Table 3.2 summarizes the population statistics for Kidder County. Population statistics for Kidder County for the years 1990, 2000, and 2010, and estimates for 2019, were obtained through the U.S. Census Bureau-Decennial Census and the American Community Survey. Population projections for 2020 and 2030 were calculated by applying previous decade population growth/decline statistics to 2010 population statistic and analyzing information in the 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP). Statistics on population trends and projections are needed to understand the distribution of people across the county. These statistics also highlight where potential future needs will be for emergency services based on population distribution growth and density.

The following are key points:

- The population of Kidder County has been decreasing for the past several decades due increased mechanization of the agriculture industry and declining household sizes. However, the population has remained stable in and around the city of Steele while decreasing in smaller jurisdictions and rural areas.
- Between 1990 and 2000, the county lost 17.4 percent in population (579 people), decreasing to 2,753, and lost another 11.6 percent in population (318 people) between 2000 and 2010, decreasing to 2,485. The county is expected to increase by an estimated 4.6 percent by 2030 (115) people) reaching a population of around 2,600
- The city of Steele comprises approximately 29.4 percent of Kidder County's population as of the 2010 U.S. Census, with its share anticipated to remain stable through 2020 U.S. Census.
- With a potential resurgence in energy development in the western portion of North Dakota, jobs and support services for this industry will disperse geographically. The local economy also added jobs in government, healthcare, education, manufacturing, professional services, retail, and wind and solar energy development. Thus, population growth and an increase in job opportunities is expected to accelerate in Kidder County over the next 10 years.

Table 3.2 – 1990 to 2030 Kidder County Population Statistics

Jurisdiction	1990	2000	2010	Percent Change 1990 to 2000	Percent Change 2000 to 2010	Est.	Projections	
						2019	2020	2030
Kidder County	3,332	2,753	2,435	-17.4 percent	-11.6 percent	2,480	2,485	2,600
City of Dawson	78	75	61	-3.8 percent	-18.7 percent	65	66	72
City of Pettibone	93	88	70	-5.4 percent	-20.5 percent	68	68	66
City of Robinson	87	71	37	-18.4 percent	-47.9 percent	46	47	59
City of Steele	762	761	715	-0.1 percent	-6.0 percent	711	710	750
City of Tappen	239	210	197	-12.1 percent	-6.2 percent	202	202	210
City of Tuttle	160	106	80	+3.2 percent	+0.9 percent	81	82	85
Remainder of Co.	1,913	1,442	1,275	-24.6 percent	-11.8 percent	1,307	1,310	1,358

Source(s): 2010 U.S. Decennial Census; 2013 to 2017 American Community Survey 5-Year Estimate; 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP); Nexus Planning & Consulting, LLC

Vulnerable Populations

According to the 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP), the 2016 American Community Survey estimates the population under the age of 5 in Kidder County at 150 (6.20 percent) and over 65 years at 503 (20.80 percent) of the county's total population.

Poverty

Statistics on poverty in Kidder County and incorporated jurisdictions are provided by the 2014-2018 American Community Survey, 5-Year Estimate from the U.S. Census Bureau. Information shown includes number and percent of the Kidder County population with incomes below and above the poverty level. Poverty statistics are important to understand where populations in poverty are living, which tend to be more vulnerable to natural hazards and man-made threats. Table 3.3 summarizes poverty statistics in Kidder County and incorporated jurisdictions. The following are key points.

- There are 246 who live below the poverty state consisting of approximately 10 percent of the county's population.
- The rate of poverty in Kidder County is lower than that of North Dakota, which was 10.9 percent in 2018.

Table 3.3 –2018 Poverty Kidder County, North Dakota

CONCENTRATED POVERTY KIDDER COUNTY & NORTH DAKOTA 2018		
	Kidder County	State of North Dakota
Total Population for whom Poverty Status is Determined	2,460	727,322
Number Below Poverty Level	246	79,270
Percent Below Poverty Level	10.0%	10.9%

Sources: 2014-2018 U.S. Census Bureau; American Community Survey; Maxfield Research & Consulting, LLC.

Economy

Agriculture is one of the main economic enterprises in Kidder County. Most of the farms in Kidder County are diversified and derive income from a mix of commodities. According to the 2017 Census of Agriculture for Kidder County, 64.1 percent of market value products sold (\$72,824) consists of crop sales while 35.9 percent (\$40,762) consists of livestock sales. Table 3.4 summarizes the 2007, 2012, and 2017 U.S.D.A. Census of Agriculture information for Kidder County.

The following are key points:

- The total number of farms decreased 19.3 percent from 590 in 2007 to 476 in 2017.
- The average farm size increased by 23.1 percent (295 acres) between 2007 and 2017.
- The total market value of products sold in Kidder County totaled \$113,586,000 in 2017, an increase of 24.5 percent from \$78,457,000 in 2007.
- Between 2007 and 2012, total government payments average per farm increased 33.1 percent from \$5,172,000 to \$4,079,000. The average payment per farm was \$6,882,000 in 2017.
- Other sectors of the economy are comprised mostly of agricultural-related industries, government, healthcare, education, manufacturing, professional services, and retail. Table 3.5 on the following page shows the major employers for the Bismarck-Tappen Metropolitan Statistical Area.

Table 3.4 – 2007 to 2017 U.S.D.A. Census of Agriculture – Kidder County, North Dakota

Kidder County, North Dakota					
	2017	2012	2007	Change 2017 to 2012	Change 2012 to 2007
Number of Farms	476	559	590	-14.8 percent	-5.3 percent
Land in Farms (Acres)	748,445	780,319	753,284	-4.1 percent	+3.6 percent
Avg. Farm Size (Acres)	1,572	1,396	1,277	+12.6 percent	+9.3 percent
Median Farm Size (Acres)	800	600	673	+33.3 percent	-10.8 percent
Market Value Products Sold (\$1,000s)					
Crop Sales	\$72,824	\$107,062	\$46,750	-32.0 percent	+129.0 percent
Livestock Sales	\$40,762	\$41,255	\$31,707	-1.2 percent	+30.1 percent
Avg. Per Farm (dollars)	\$238,627	\$265,326	\$132,977	-10.1 percent	+99.5 percent
TOTAL	\$113,586	\$148,317	\$78,457	-23.4 percent	+89.0 percent
Government Payments (\$1,000s)					
Number of Farms	393	473	521	-16.9 percent	-9.2 percent
Avg. Per Farm	\$6,882	\$4,079	\$5,172	+68.7 percent	-21.1 percent
Total Income from Farm-Related Sources (\$1,000s)					
Number of Farms	346	357	363	-3.1 percent	-1.7 percent
Avg. Per Farm	\$6,019	\$8,909	\$5,179	-32.4 percent	+72.0 percent

Source(s): U.S. Dept. of Agriculture, Census of Agriculture

Major Employers

BEK Communications is headquartered in the city of Steele and has 120 total employees. BEK has offices in the cities of Bismarck and Valley City. The total number of employees are not stationed at one office and rotate between all three.

The Coffee Cup Travel Plaza employs 20 full-time and 20 part-time as of January 2021.

Kidder County employs 19 full-time employees, four-part time employees, and three commissioners. The county also has numerous boards with members that meet when needed.

Kidder County Public Schools employs 39 teachers/administrators, nine support staff, and nine bus drivers.

Natural Resources

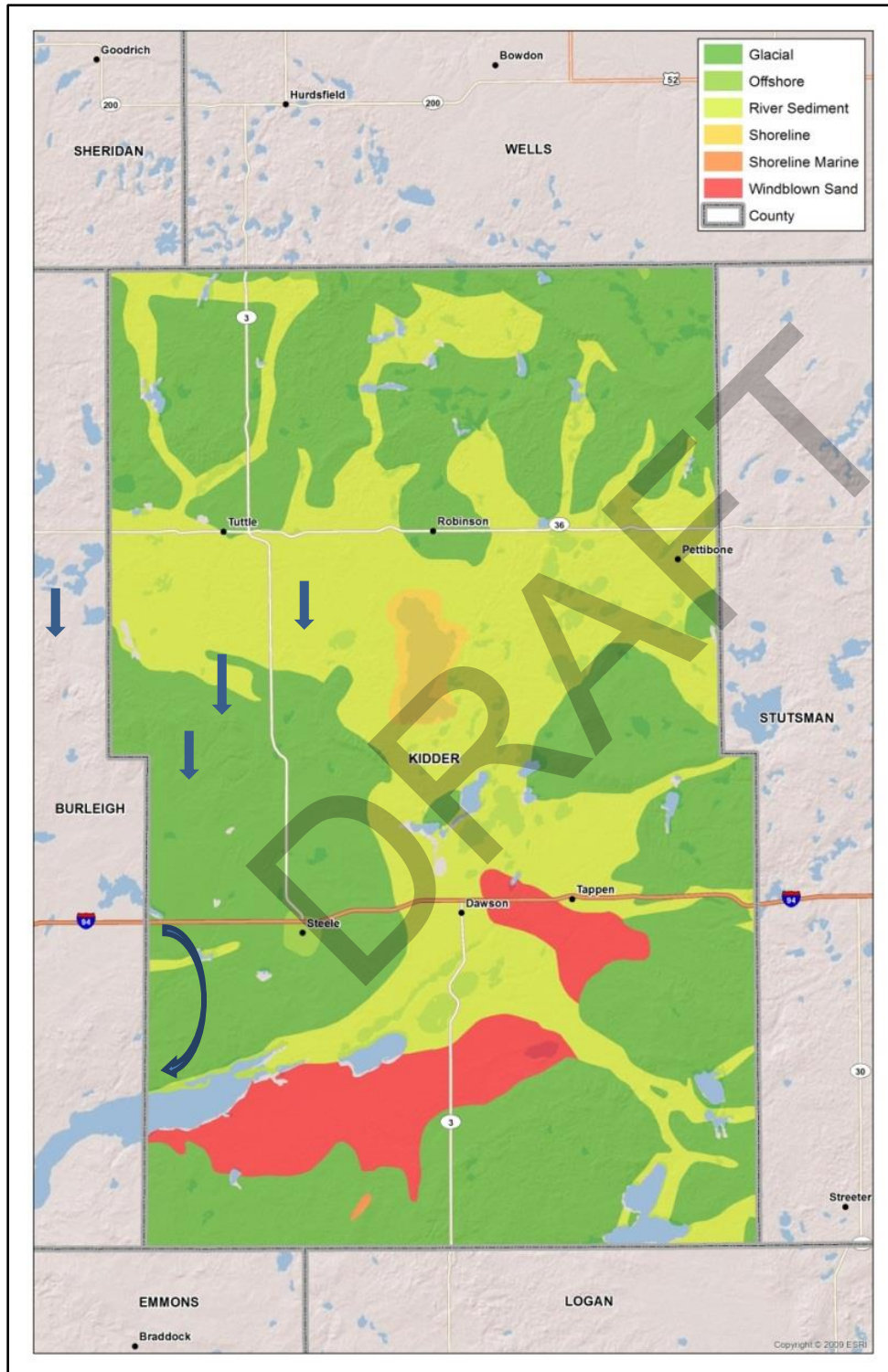
The following information on natural resources in Kidder County was taken directly from the 2014 Kidder County Mitigation Plan.

Geology, Topography, and Drainage

As the glaciers receded, large quantities of water flowed through central Kidder County eroding the glacial till and carving out small lakes that are dispersed from Northern Kidder County to the southwest to Long Lake. Long Lake extends into Burleigh County which eventually drains into McKenzie Slough, which is drained by Apple Creek, a tributary of the Missouri River. Some of these named lakes are Horsehead Lake, Lake Sibley, Lake Isabel, and Lake Etta. The yellow color on the map below depicts the

river and beach sediment deposited by the flowing water which drained into the Missouri River. The light green depicts hilly land which was caused by the glacial till deposits.

Figure 3.2 – Kidder County Geology, Topography, and Drainage Map



Note: The arrows depict glacial melt-water flow resulting in the outwash plain sediments.

Source(s): 2014 Kidder County MHMP; ND GIS Hub

The result of this geographical history is a varied terrain throughout the county. There are areas dispersed throughout the county especially in the eastern and western parts of the county that are quite hilly, described as knob and kettle terrain because of dead ice moraine. In this area numerous potholes or sloughs exist because in the short post-glaciation timeframe, rivers have not had time to form and the drainage is internal. In the central part of the county the landscape is quite flat because of the flowing glacier melt-water that resulting in an outwash plain which is for the most part quite level. The majority of Kidder County is drained internally into the potholes and lakes. Problems exist during wet periods in that the water bodies fill and overflow causing infrastructure damage. There exist areas with little or no drainage such as in the City of Tappen. Water flows down from the higher-level glacial moraine to the outwash plain through both surface drains and sub-surface aquifers and because of the flatness of the land it has nowhere to go causing flooding.

Watersheds

Watersheds are basin-like landforms defined by highpoints and ridgelines that descend into lower elevations. The form of the land dictates the flow of water from all streams and rainfall to a common outlet such as the outflow of a reservoir, mouth of a bay, or any point along a stream channel. The hydrography of Kidder County includes four watersheds summarized in Table 3.6. The following are key points describing each watershed. Square miles shown is for the entirety of the watershed and does not represent the extent of the watershed in Kidder County. Figures 3.3 and 3.4 illustrate the Hydrological Unit Code 8 and Hydrological Unit Code 10 watersheds in Kidder County, respectively

Table 3.6 – Kidder County, North Dakota Watersheds (HUC8)

Watershed	Hydrologic Unit Code (HUC8)	Square Miles

Source(s): N.D. State Water Commission, U.S. Geological Survey

Buildings and Infrastructure Overview

Information on publicly owned and privately-owned buildings and property, critical facilities and infrastructure, and public services in Kidder County is provided in the following section. This information is important to understand the value of buildings and property at risk, and resources available for each jurisdiction to use when mitigating natural hazards and man-made threats.

Publicly-Owned Buildings and Property

Table 3.7 summarizes information on the insurance coverage type and insurance limit valuation for publicly-owned buildings in Kidder County, North Dakota as of January 2021. Information on publicly-owned buildings is important in mitigation to understand the potential losses and what public assets are at risk to natural hazards and man-made threats. The insurance limit valuation and the combined total

includes the building property, personal-property and outdoor property. More detailed information can be obtained by contacting the Kidder County Auditor's Office.

The following are key points:

- There are seven publicly-owned buildings and property in Kidder County of which five are in the city of Steele, and one in the cities of Robinson and Tappen, respectively.

Table 3.7 – January 2021 Kidder County Publicly-Owned Buildings and Property

Kidder County, North Dakota	
Insurance Coverage Type	Insurance Limit Valuation (total, all properties)
Building Property	\$4,385,000
Personal Property	\$1,962,959
Outdoor Property	\$1,338
TOTAL	\$6,349,297

Source(s): Kidder County Auditor's Office; N.D. State Fire and Tornado Fund

Storm Shelters

Storm shelters provide area of refuges for people during incidents of natural hazards or man-made threats. Information on storm shelters is necessary in mitigation planning to help reduce or eliminate loss of life.

Table 3.8 shows information on storm shelters in Kidder County. Designated storm shelters in Kidder County can provide an area of refuge for approximately 100 percent of the county's population.

Additional buildings can be identified and retrofitted to increase the sheltering capacity of Kidder County. See Chapter 6, Mitigation Strategy for sheltering mitigation projects in Kidder County.

Table 3.8 – 2020 Kidder County Storm Shelters

Facility Name	City	Capacity	ADA Compliant	Pet Friendly
Dawson Community Center	Dawson	100	--	--
Kidder County Ambulance	Steele	50	--	--
Kidder County Ambulance	Steele	10	--	--
Robinson Public School	Robinson	400	--	--
Robinson Senior Center	Robinson	100	--	--
Steele City Hall	Steele	70	--	--
Steele Community Center	Steele	100	--	--
Steele Dawson Public School	Steele	1,375	--	--
Tappen City Hall	Tappen	60	--	--
Tappen Community Center	Tappen	100	--	--
Tappen Public School	Tappen	125	--	--
Tuttle Senior Citizens Center	Tuttle	100	--	--
Total Capacity		2,590		

Source(s): N.D. Dept. of Emergency Services, WebEOC

Jurisdiction Buildings and Services Provided

Tables 3.9 to 3.13 profile the housing units, services, jurisdictional buildings, emergency response services, and utilities of Kidder County and incorporated jurisdictions. An "X" indicates if the jurisdiction offers the utility or service (either through contract or employees) or possesses the building or

resource. Narratives detailing information for incorporated jurisdictions can be found in Chapter 8, Jurisdictions.

Structures

In addition to critical facilities and state-owned buildings, other structures such as residences and businesses in North Dakota are also threatened by natural hazards and man-made threats. Housing units show where populations are located. Table 3.9 shows the number of single-family, mobile home/boat/RV/van, and multifamily structures in Kidder County and incorporated jurisdictions. The 2013-2017 five-year estimate from the American Community Survey was used.

The following are key points:

- Single-family housing units comprise 77.5 percent of all housing units in Kidder County.
- Mobile homes comprise 17.4 percent of all housing units in Kidder County.
- Multifamily housing units comprise 5.1 percent of all housing units in Kidder County.

Table 3.9 – 2014 to 2018 Housing Units in Kidder County

Housing Units	County – outside cities	City of Dawson	City of Pettibone	City of Robinson	City of Steele	City of Tappen	City of Tuttle	TOTAL
Single-Family Homes	711	25	56	23	308	98	71	1,292
Mobile Homes/Boat/RV/Van	182	23	2	8	39	26	10	290
Multifamily Units	0	0	0	13	68	0	4	85
TOTAL	893	48	58	44	415	124	85	1,667

Source(s): 2014-2018 American Community Survey 5-Year Estimates

FEMA's HAZUS-MH Building Values

The 2018 North Dakota Enhanced Mitigation MAOP includes data on building exposure by county based on FEMA's Hazards US Multi-Hazard Earthquakes, Hurricanes, and Floods (HAZUS-MH) software. The software extracted building values for the entire state for residential, commercial, agricultural and religious buildings and facilities. The following are building values for Kidder County.

- Residential Building Exposure: \$411,284,000.00
- Commercial Building Exposure: \$63,154,000.00
- Agricultural Building Exposure: \$36,412,000.00
- Religious Building Exposure: \$13,184,000.00

Table 3.10 shows the services provided in the county and city jurisdictions.

1. Dakota Sanitation provides garbage collection to residents in rural areas of Kidder County. Dakota Sanitation does not provide garbage collection to the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle.
2. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not provide municipal garbage service.
3. Strom Sanitation provides garbage collection to the cities of Dawson, Pettibone, Robinson, Steele, and Tuttle.
4. Waste Management provides garbage collection services to the city of Tappen.
5. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not maintain inert landfills.
6. Kidder County and the city of Pettibone do not have a sanitary sewer system and therefore do not have lagoon cells. The cities of Dawson, Robinson, Steele, Tappen, and Tuttle have three, three, five, two, and two lagoon cells, respectively.
7. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not maintain municipal landfills.
8. Kidder County and the city of Pettibone do not have a sanitary sewer system and therefore do not have lift stations. The cities of Dawson, Robinson, Steele, Tappen, and Tuttle have one, one, two, one and one lift stations, respectively.
9. The Bismarck Tribune is available to residents of the city of Tappen but is not the official newspaper.
10. The Jamestown Sun is available to residents of the city of Tappen but is not the official newspaper.
11. The Steele Ozone & Kidder County Press is the official newspaper of Steele County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle.
12. Kidder County and the city of Pettibone do not have a sanitary sewer system. The cities of Dawson, Robinson, Steele, Tappen, and Tuttle have sanitary sewer systems.
13. Kidder County residents utilize septic systems in rural areas of the county. The city of Dawson has a sanitary sewer system consisting of each taxpayer having its own septic tank that ties into the city's sanitary sewer system. All residents in the city of Pettibone utilize septic systems. There are two septic systems in use in the city of Tuttle.
14. The storm water system for Kidder County consist of curb and gutter along highways, and some underground drainage pipes and drainage ditches in incorporated jurisdictions.
15. Residential and commercial properties in rural areas of Kidder County outside incorporated jurisdictions have individual wells. The city of Dawson has approximately 55 individual wells. Residents in the city of Pettibone utilize individual wells. The city of Steele has six individual wells in use.
16. Kidder County does not maintain any municipal wells. The cities of Robinson and Steele maintain municipal wells.
17. Private irrigation is utilized in greater Kidder County and the city of Steele.
18. South Central Regional Water District provides drinking/potable water to residents in rural areas of Kidder County and the cities of Dawson and Tappen.

19. Stutsman Rural Water District provides drinking/potable water to residents in rural areas of Kidder County.

Table 3.10 – Services Provided in Kidder County Jurisdictions

Services		Kidder Co.	City of Dawson	City of Pettibone	City of Robinson	City of Steele	City of Tappen	City of Tuttle
1	Garbage Collection: Dakota Sanitation	X						
2	Garbage Collection: Municipal Service							
3	Garbage Collection: Strom Sanitation	X	X	X	X	X		X
4	Garbage Collection: Waste Management	X					X	
5	Inert Landfill		X			X		X
6	Lagoon cells		3		3	5	2	2
7	Landfill							
8	Lift Station(s)		1		1	2	1	1
9	Newspaper: Bismarck Tribune	*	*	*	*	*	*	*
10	Newspaper: Jamestown Sun	*	*	*	*	*	*	*
11	Newspaper: Steele Ozone & Kidder County Press	X	X	X	X	X	X	X
12	Sanitary Sewer System		X		X	X	X	X
13	Septic Systems	X	60	X				2
14	Storm Water System	X	X	X	X	X	X	X
15	Water: Individual Well	X	55	X		6		
16	Water: Municipal Well				X	X		2
17	Water: Private Irrigation	X				X		
18	Water: South Central Regional Water District	X	X				X	
19	Water: Stutsman Rural Water District	X		X				

*Denotes services available to jurisdictions through other jurisdictions or private companies located in neighboring jurisdictions.

Table 3.11 shows the emergency response services and facilities in each jurisdiction. Due to the small size of some jurisdictions, services are provided by outside entities or jurisdictions.

1. Bowdon Ambulance provides ambulance services to residents in rural areas of Kidder County.
2. Gackle Ambulance provides ambulance services to residents in rural areas of Kidder County.
3. Kidder County Ambulance provides ambulance services to residents in rural areas of Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, and Tappen.
4. Medina Ambulance provides ambulance services to residents in rural areas of Kidder County.
5. Napoleon Ambulance provides ambulance services to residents in rural areas of Kidder County.
6. Wing Ambulance provides ambulance services to residents in rural areas of Kidder County and the city of Tuttle.
7. The Kidder County Ambulance Hall is in the city of Steele.
8. A crash rescue unit is available through the Steele Fire Department for residents in rural areas of Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle through mutual aid.

9. A crash rescue unit is available through the Braddock Fire Protection District for residents in rural areas of Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle through mutual aid.
10. The Dawson Fire Department provides fire protection services to residents in the city of Dawson and rural areas of Kidder County.
11. The Pettibone Fire Department provides fire protection services to residents in the city of Pettibone and rural areas of Kidder County.
12. The Napoleon Fire Department provides fire protection services to residents in rural areas of Kidder County.
13. The Robinson Fire Department provides fire protection services to residents in the city of Robinson and rural areas of Kidder County.
14. The Steele Fire Department provides fire protection services to residents in the city of Steele and rural areas of Kidder County.
15. The Streeter Fire Department provides fire protection services to residents in rural areas of Kidder County.
16. The Tappen City Rural Department provides fire protection services to residents in the city of Tappen rural areas of Kidder County.
17. The Tuttle Fire Department provides fire protection services to residents in the city of Tuttle in rural areas of Kidder County.
18. Each fire department in Kidder County maintains a fire hall.
19. Kidder County and the cities of Dawson, Pettibone, Robinson, and Tappen have quick response units.
20. The hazardous materials response unit with the Bismarck Fire Department is called when response to hazardous material incidents is necessary in Kidder County.
21. The hazardous materials response unit with the Jamestown Fire Department is available when response to hazardous material incidents is necessary in Kidder County.
22. CHI-St. Alexius Health - Bismarck is a hospital available to residents of Kidder County.
23. Jamestown Regional Medical Center - Jamestown is a hospital available to residents of Kidder County.
24. Sanford Hospital – Bismarck is a hospital available to residents of Kidder County.
25. The Steele Police Department provides law enforcement services to the city of Steele, and communities of greater Kidder County through mutual aid if necessary.
26. Kidder County Sheriff's Office provides law enforcement services residents of Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle.
27. The Kidder County Courthouse/Law Enforcement Center located in the city of Steele is the law enforcement center for the Kidder County Sheriff's Office.
28. Four Seasons Wellness is a medical clinic in the city of Steele and is available to residents of Kidder County and incorporated jurisdictions.
29. All specialty units for response purposes such as bomb squad, search and rescue, and S.W.A.T. are available from emergency services located in the cities of Bismarck, and Jamestown.
30. The N.D. Bureau of Criminal Investigation and the N.D. Highway Patrol are in the cities of Bismarck and Jamestown and provide services to Kidder County.

Table 3.11 – Kidder County Jurisdictional Emergency Response Services and Facilities

Emergency Response Services/Facilities		Kidder Co.	City of Dawson	City of Pettibone	City of Robinson	City of Steele	City of Tappen	City of Tuttle
1	Ambulance Service: Bowdon Ambulance Service	X						
2	Ambulance Service: Gackle Ambulance Service	X						
3	Ambulance Service: Kidder County Ambulance	X	X	X	X	X	X	
4	Ambulance Service: Medina Ambulance Service	X						
5	Ambulance Service: Napoleon Ambulance Service	X						
6	Ambulance Service: Wing Ambulance Service	X						X
7	Ambulance Hall	X				X		
8	Crash Rescue Unit: Steele Fire Department	X	X	X	X	X	X	X
9	Fire Department: Braddock Fire Protection District	X	*	*	*	*	*	*
10	Fire Department: Dawson Fire Protection District	X	X	*	*	*	*	*
11	Fire Department: Pettibone Rural Fire Department	X	*	X	*	*	*	*
12	Fire Department: Napoleon Fire Protection District	X	*	*	*	*	*	*
13	Fire Department: Robinson Rural Fire Department	X	*	*	X	*	*	*
14	Fire Department: Steele Fire Protection District	X	*	*	*	X	*	*
15	Fire Department: Streeter Fire Protection District	X	*	*	*	*	*	*
16	Fire Department: Tappen Fire District	X	*	*	*	*	X	*
17	Fire Department: Tuttle Fire Protection District	X	*	*	*	*	*	X
18	Fire Hall		X	X	X	X	X	X
19	First Response/Quick Response Units	X	X	X	X	*	X	*
20	Hazardous Materials Response Unit: Bismarck Fire Dept.	*	*	*	*	*	*	*
21	Hazardous Materials Response Unit: Jamestown Fire Dept.	*	*	*	*	*	*	*
22	Hospital: CHI-St. Alexius Health - Bismarck	*	*	*	*	*	*	*
23	Hospital: Jamestown Regional Medical Center	*	*	*	*	*	*	*
24	Hospital: Sanford - Bismarck	*	*	*	*	*	*	*
25	Law Enforcement: Steele Police Department	X	*	*	*	X	*	*
26	Law Enforcement: Kidder County Sheriff's Office	X	X	X	X	*	X	X
27	Law Enforcement Building: Kidder County LEC	X	*	*	*	X*	*	*
28	Medical Clinic: Four Seasons Wellness	X	*	*	*	X	*	*
29	Specialty Units: (Bomb Squad, Dive, Search & Rescue)	*	*	*	*	*	*	*
30	State Specialty Units: BCI or N.D. Highway Patrol	*	*	*	*	1	*	*

*Denotes emergency response services available to jurisdiction through another jurisdiction or private companies located in neighboring jurisdictions.

Table 3.12 shows the publicly-owned buildings in each jurisdiction by type. A majority of publicly owned buildings in Kidder County are in the city of Tappen, the county seat. Building marked with an asterisk (*) are considered publicly-owned by the county and located in a specific city, or the building is a shared resource with another community.

1. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have airports.

2. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have American Red Cross Shelters.
3. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have armory or American Legion Hall.
4. Kidder County has memorial halls in all incorporated jurisdictions except for Pettibone. The city hall for the city of Dawson serves as a memorial hall. The city hall for the city of Steele serves as a memorial hall. The former public schools in the cities of Robinson, Tappen, and Tuttle serve as the memorial hall.
5. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do have city halls.
6. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have city shops.
7. Kidder County has community centers in all incorporated jurisdictions except for Pettibone. The city hall for the city of Dawson serves as a community center. The city hall for the city of Steele serves as the community center. The former public schools in the cities of Robinson, Tappen, and Tuttle serve as the community centers.
8. Kidder County maintains county shops in the cities of Robinson and Tappen, and just outside the Steele city limits.
9. The Kidder County Courthouse is in the city of Steele.
10. The Kidder County Fairgrounds is in the city of Steele.
11. The U.S. Post Office has federal buildings in Kidder County in all incorporated jurisdictions except the city of Pettibone.
12. Kidder County has fire departments affiliated with each incorporated jurisdiction and maintains a fire hall.
13. Kidder County has golf courses near the city of Steele.
14. Kidder County Public Health provides public health services to Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle.
15. The N.D. Highway Department maintains a state shop in the city of Steele.
16. The Kidder County Courthouse/Law Enforcement Center in Steele serves as the law enforcement center for Kidder County Sheriff's Office and the cities of Dawson, Pettibone, Robinson, Robinson and Tuttle. The city of Steele has a police department with offices in city hall.
17. Kidder County has a county library. The library is in the city of Steele.
18. The city of Steele has a museum in the city's community center/city hall.
19. Kidder County maintains public parks at Lake Isabel. Public parks are maintained in the cities of Dawson, Pettibone, Steele, Robinson, Robinson and Tuttle.
20. The Kidder County Public School is in the city of Steele and is the only school instructing students in Kidder County. The former public school in Tappen is used for sporting and other extracurricular activities.
21. Kidder County and the cities of Dawson, Pettibone, Steele, Robinson, Robinson and Tuttle have public works departments.
22. Rural water does not maintain an office in Kidder County or incorporated jurisdictions.
23. The Kidder County Courthouse/Law Enforcement Center in Steele serves as the law enforcement center for Kidder County Sheriff's Office and the cities of Dawson, Pettibone, Robinson, Robinson and Tuttle. The city of Steele has a police department with offices in city hall.
24. The N.D. Highway Department does not maintain state shops other than highway in Kidder County

Table 3.12 – Kidder County Publicly-Owned Jurisdictional Buildings

Jurisdictional Buildings		Kidder County	City of Dawson	City of Pettibone	City of Robinson	City of Steele	City of Tappen	City of Tuttle
1	Airport							
2	American Red Cross Shelter							
3	Armory or American Legion					X		
4	Auditorium or Memorial Hall		X		X	X	X	X
5	City Hall		X	X	X	X	X	X
6	City Shop		X	X	X	X	X	X
7	Community Center		X	X	X	X	X	X
8	County Shop	X			X	X	X	
9	Courthouse	X				X		
10	Fairgrounds	X				X		
11	Federal Buildings	X	X			X		
12	Fire Hall		X	X	X	X	X	X
13	Golf Course	X				X		
14	Health Department	X	*	*	*	X	*	*
15	Highway Department (state)	X				X		
16	Law Enforcement Center	X	*	*	*	X*	X	*
17	Library	X				X		
18	Museum					X		
19	Park		X	X	X	X	X	X
20	Public School	X				X	X*	
21	Public Works	X	X	X	X	X	X	X
22	Rural Water District							
23	Sheriff's Office	X	*	*	*	X*	*	*
24	State Shop (other than highway)							
25	Storm Shelter	X	X	X	X	X	X	X
26	Swimming Pool	X				X		
27	Theater							
28	U.S.D.A. Farm Services Agency	X				X		
29	U.S. Post Office	X	X		X	X	X	X
30	University or Secondary Education							
31	Water Resource Board	X				X*		

X* denotes that the publicly-owned building is both listed under county and the city of Steele, the county seat, or another jurisdiction.

25. Kidder County has 12 storm shelters in incorporated jurisdictions. See Table 3.8 for a list of these shelters.
26. Kidder County has outdoor community swimming pools in the city of Steele.
27. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have theaters.
28. The U.S.D.A. has an office in Kidder County in the city of Steele.
29. The U.S. Post Office has federal buildings in Kidder County in all incorporated jurisdictions in the Kidder County except the city of Pettibone.

30. The Central Grassland Research Center is a secondary education facility located in southeast Kidder County. Additional distance-based learning options are available for public school students at the Kidder County Public School through Bismarck State College and the greater North Dakota University System.
 31. Kidder County has a water resource board which meets in the Kidder County Courthouse in the city of Steele.
1. Kidder County and the cities of Dawson, Pettibone, Steele, Robinson, Robinson and Tuttle have public works departments.
 2. Rural water does not maintain an office in Kidder County or incorporated jurisdictions.
 3. The Kidder County Courthouse/Law Enforcement Center in Steele serves as the law enforcement center for Kidder County Sheriff's Office and the cities of Dawson, Pettibone, Robinson, Robinson and Tuttle. The city of Steele has a police department with offices in city hall.
 4. The N.D. Highway Department does not maintain state shops other than highway in Kidder County
 5. Kidder County has 12 storm shelters in incorporated jurisdictions. See Table 3.8 for a list of these shelters.
 6. Kidder County has outdoor community swimming pools in the city of Steele.
 7. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have theaters.
 8. The U.S.D.A. has an office in Kidder County in the city of Steele.
 9. The U.S. Post Office has federal buildings in Kidder County in all incorporated jurisdictions in the Kidder County except the city of Pettibone.
 10. The Central Grassland Research Center is a secondary education facility located in southeast Kidder County. Additional distance-based learning options are available for public school students at the Kidder County Public School through Bismarck State College and the greater North Dakota University System.
 11. Kidder County has a water resource board which meets in the Kidder County Courthouse in the city of Steele.

Table 3.13 shows the utility providers for Kidder County and incorporated jurisdictions. Some providers for utilities, such as fuel oil and propane, are unknown as residents choose providers on an individual basis.

1. Bektel provides cable services to residents in Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle.
2. Satellite/DirecTV/Dish Network provides cable services to residents in Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle.
3. Kidder-Emmons Electric provides electricity to residents in Kidder County and the city of Steele.
4. Montana-Dakota Utilities provides electricity to residents in Kidder County and the cities of Dawson, Steele, and Tappen.
5. Northern Plains Electric Cooperative provides electricity to residents in Kidder County and the cities of Pettibone, Robinson, and Tuttle.
6. Fuel oil is provided by individual entities to residents in Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle.

Table 3.13 – Utility Providers Serving Kidder County and Incorporated Cities

Utility Providers		Kidder County	City of Dawson	City of Pettibone	City of Robinson	City of Steele	City of Tappen	City of Tuttle
1	Cable: Bektel	X	X	X	X	X	X	X
2	Cable: Satellite/DirecTV/Dish Network	X	X	X	X	X	X	X
3	Electricity: Kidder-Emmons Electric	X				X		
4	Electricity: Montana-Dakota Utilities	X	X			X	X	
5	Electricity: Northern Plains Electric Cooperative	X		X	X			X
6	Fuel Oil: Individual Providers	X	X	X	X	X	X	X
7	Internet: Bektel	X	X	X	X	X	X	X
8	Internet: Satellite/DirecTV/Dish Network	X	X	X	X	X	X	X
9	Natural Gas: Montana-Dakota Utilities	X	X			X	X	
10	Phone (cellular): AT&T, Smart Talk/Trac Phones, Verizon	X	X	X	X	X	X	X
11	Phone (landline): Bektel	X	X	X	X	X	X	X
12	Propane: Individual Providers	X	X	X	X	X	X	X
13	Water: Central Plains Water District	X						
14	Water: Individual Well	X	55			X	15	
15	Water: Municipal Well				X	X		X
16	Water: Private Irrigation	X				X		
17	Water: South Central Regional Water District	X	X				X	
18	Water: Stutsman Rural Water District	X		X				

* Denotes a utility provider that will be providing service in the future.

7. Bektel provides internet service to residents in Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle.
8. Satellite/DirecTV/Dish Network provides internet service to residents in Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle.
9. Montana-Dakota Utilities provides natural gas service residents in provides internet service to residents in Kidder County and the cities of Dawson, Steele, and Tappen.
10. Cellular phone service is provided by AT&T, Smart Talk/Trac Phones, and Verizon to residents in Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle.
11. Bektel provides landline phone service to residents in Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle.
12. Propane is provided by individual entities to residents in Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle.
13. Central Plains Water District provides drinking/potable water to residents in rural areas of Kidder County.
14. Residential and commercial properties in rural areas of Kidder County outside incorporated jurisdictions have individual wells. The city of Dawson has approximately 55 individual wells. Residents in the city of Pettibone utilize individual wells. The city of Steele has six individual wells in use.

15. Kidder County does not maintain any municipal wells. The cities of Robinson, Steele, and Tuttle maintain municipal wells.
16. Private irrigation is utilized in greater Kidder County and the city of Steele.
17. South Central Regional Water District provides drinking/potable water to residents in rural areas of Kidder County and the cities of Dawson and Tappen.
18. Stutsman Rural Water District provides drinking/potable water to residents in rural areas of Kidder County.

Transportation

Transportation systems are critical to continued economic operation of any jurisdiction. The mitigation strategy for Kidder County identifies mitigation measures specific to the county's transportation system in Kidder County. This section provides information to assist in accomplishing these mitigation measures.

Airports

There are no official airports in Kidder County. However, it should be noted that despite no commercial/official airports in Kidder County, many private airstrips are located throughout the county and are used for spraying of crops or other economic or agricultural purposes. The location and size of these airstrips is not available.

Bridges and Culverts and Roads

Bridges and roads are critical links in creating and maintaining a unified transportation system. Information on the condition and extent of bridges and roads in Kidder County assists local leaders in development mitigation projects prioritizing funding. See Chapter 9, Maps for maps of the road

Bridges and Culverts

The N.D. Dept. of Transportation classifies all bridges, regardless of jurisdiction oversight, as structurally deficient or functionally obsolete.

The classifications are as follows:

- **Structurally Deficient:** Bridge condition warrants attention and does not mean it is unsafe.
- **Functionally Obsolete:** Bridge does not meet certain design standards and has nothing to do with structural integrity of the bridge.
- **Scour-Critical:** Bridge foundation is determined to be unstable for the calculated scour conditions. Scour-critical bridges may be vulnerable during flooding.

According to the 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP), Kidder County has no bridges scoured from flooding.

Roads

The primary source of passenger transportation in Kidder County occurs on roads. Kidder County has an extensive county and township transportation system linking farms to the city markets, sources of consumer goods, and the county to the remainder of the state of North Dakota. The main county roads

and their surface are listed below. These roads are maintained by Kidder County. Roads critical in mitigation as road projects are some of the most complex projects to accomplish. See Chapter 9, Maps for maps of the road system in Kidder County.

Table 3.14 – Kidder County, North Dakota Road System

Road Name	General Location	Surface
50 th ST SE, 19 th Ave SE, 49 th ST SE, 31 st Ave SE, 51 st Ave SE	Baker Township, Manning South, and Bunker Townships	Gravel
26 th Ave SE	Manning South, Manning North, Woodlawn Townships	Gravel
44 th Ave SE, 43 rd Ave SE, 42 nd Ave SE	Graf, Tanner, Crystal Springs/Tappen Townships	Gravel
52 nd ST SE, 39 th Ave SE, 40 th Ave SE, 41 st Ave SE	Graf, Peace, Valley, Tappen, Westford, Buckeye, Lake Williams, Frettim, Wallace Townships	Gravel/Paved
47 th Ave SE	Graf, Tanner, Crystal Springs Townships	Gravel
45 th ST SE, 22 nd Ave SE, 43 rd ST SE, 23 rd Ave SE	Crown Hill, Pleasant Hill Townships	Gravel
39 th ST SE, 38 th ST SE, 37 th ST SE	Pleasant Hill, Woodlawn, Sibley, Tappen, Crystal Springs Townships	Gravel
20 th Ave NE, 31 st St SE, 19 th Ave SE, 21 st Ave SE	Pleasant Hill, Excelsior, Chestina, Tuttle, Kickapoo, Northwest Townships	Gravel
28 th Ave SE	Clear Lake, Atwood Townships	Gravel
33 rd Ave SE, 30 th St NE, 36 th Ave SE, 34 th Ave SE, 11 th ST SE, 33 rd Ave SE, 10 th St SE	Sibley, Vernon, Quinby/Buckeye, Robinson/Lake Williams, Merkel South, Merkel North Townships	Gravel
30 th Ave SE	Woodlawn/Sibley, Allen/Vernon, Quinby, Robinson Townships	Gravel/Paved
30 th ST SW	Westford/Buckeye, Williams/Weiser Townships	Gravel
45 th Ave SE, 27 th ST SE, 44 th Ave SE, 21 st ST SE, 46 th Ave SE	Weiser, Pettibone, Petersville, Rexine Townships	Gravel/Paved

Source(s): 2014 Kidder County Mitigation Plan; Kidder County Highway Department

- Interstate 94 is a part of the United States Interstate Highway System and traverses Kidder County from east to west. The state highway system in Kidder County consists of N.D. Highway 3 from north to south, and N.D. Highway 36 from east to west.

Railroad (Freight and Passenger)

The following information on freight railroad in Kidder County was provided by the 2040 North Dakota State Rail Plan regarding freight rail in Kidder County. The following information on passenger rail service was provided by Amtrak.

Freight. The Burlington Northern Santa Fe Railroad, Jamestown Subdivision is a 169.1-mile main live connecting with the Montana Division's Dickinson Subdivision main line at Mandan with the KO Subdivision main line at Surrey Junction, 31.2 miles west of Fargo. The rail line bisects Kidder County east-to-west in geographic proximity to Interstate 94. The following are key points:

- The rail line is part of the BNSF Twin Cities Division and has rail siding locations in Steele (MP 151.0 at 6,582 ft. in length) and unincorporated Driscoll (MP 161.9 at 8,260 ft. in length).

- The maximum operating speed is 60 m.p.h. for rail cars loaded under 100 tons, and 45 m.p.h. for rail cars loaded 100 tons and over.
- Maximum gross weight for the entire line is 286K.
- Permanent speed restrictions are located along the line.

Passenger. No passenger rail service is available in Kidder County.

New and Future Development

New and future developments for incorporated jurisdictions in Kidder County are discussed below. Development occurring over the last five years is listed for the small cities in Kidder County. Analyzing development trends is important for mitigation to understand where projects are needed, and funding is best allocated. Additional information for new and future development occurring over the last five years can be obtained by contacting the mayor or auditor of each city.

Kidder County

City of Dawson

New

- The city's sanitary sewer system lift station was retrofitted/upgraded with a new rail system to accommodate new auxiliary pumps in July 2020. The previous system was 35-years old and past its useful life.
- The bar/restaurant opened in 2014.
- A storage building on the south side of town was constructed in 2015/2016.
- The city has seen construction of approximately three new single-family homes in the last 3 years.
- The city constructed a multi-purpose outdoor recreational shelter to host city events in early 2020.

Future

- A new bar is planned to open, but as of December 2020, the city has not received any application for a liquor license.
- An investor from Bismarck has discussed construction of a four-unit apartment building. As of December 2020, the city has not received any additional information on this development

City of Pettibone

New

- The Pettibone Long Branch Bar/Tavern was constructed in 2017.
- The Harvester Café opened in 2015.
- A mixed-use building with housing in the front and a mechanical shop in the back started construction in 2018, but as of 2020 is still unfinished.
- A new sidewalk was constructed around the community center in 2020.

- Our Savior's Lutheran Church installed a new roof in 2020.

Future

- The only future development was a building permit issued for construction/expansion of a garage on a single-family residence.

City of Robinson

New

- The city of Robinson upgraded its drinking/potable water system in 2016;
- One new single-family home was constructed in 2014, and
- One new single-family home was constructed in 2016.

Future

- A single-family home is proposed for construction in 2021.
- The Robinson Fire Department is planning to construct a new fire hall in the next five years.

City of Steele

New

- Pifer's Auction constructed a new auction building in 2017.
- The Coffee Cup Travel Plaza constructed a new parking lot for semi-truck trailers across N.D. Highway 3 to the east of the facility in fall of 2020.
- A Dollar General Store was constructed beginning in 2018 and opened in 2019.
- Approximately 10 single-family homes have been constructed since 2014.

Future

- Farmer's and Merchant's is expanding to offer hardware and serve as a convenience store. The project should be done in 2021.

City of Tappen

New

- Construction of a building for U.S.A. Organics in 2017, with an expansion in 2020.
- I-94 Milling constructed a building in 2018.
- A new Kidder County Shop was constructed in 2018.
- The Tappen Elementary School closed in 2019.
- The city began receiving its drinking/potable water from South Central Rural Water District in 2018.

Future

- No future development was identified at this time.

City of Tuttle

New

- The 5309 Tavern opened in 2017.
- The former public school was sold and developed into the Tuttle Rural Innovation Corporation in 2018. Farms Foundation for Agriculture and Rural Resource Management and Sustainability opened its headquarters in the building in 2018/2019.

Future

- No future development was identified. The city needs to upgrade sanitary sewer equipment and is planning to make investments in the future. The city's water well also needs inspection and sealing work.

DRAFT

4. Threat and Hazard Identification and Risk Assessment (THIRA)

Kidder County has a history of damages to crops, livestock, people and property from natural hazards and man-made threats. In the updating of this plan, the Steering Committee, subject-matter experts (SMEs), jurisdictions, and county and city officials identified 13 natural hazards and man-made threats to be included and analyzed in this plan because risk analysis showed that mitigation, planning, response, and preparedness would assist in limiting injury, loss of life, and loss of property.

The following sections of this chapter detail the risk assessment for Kidder County, North Dakota for each of the 13 natural hazards and man-made threats.

The 13 natural hazards and man-made threats are:

- Civil Disturbance
- Criminal, Terrorist or Nation-State Attack
- Cyberattack
- Drought
- Fire (Urban/Structure and Wildland)
- Flood (Overland and Riverine)
- Geologic Hazards
- Hazardous Material Release
- Infectious Disease – Animal, Human & Plant
- Severe Summer Weather
- Severe Winter Weather
- Space Weather
- Transportation Incident

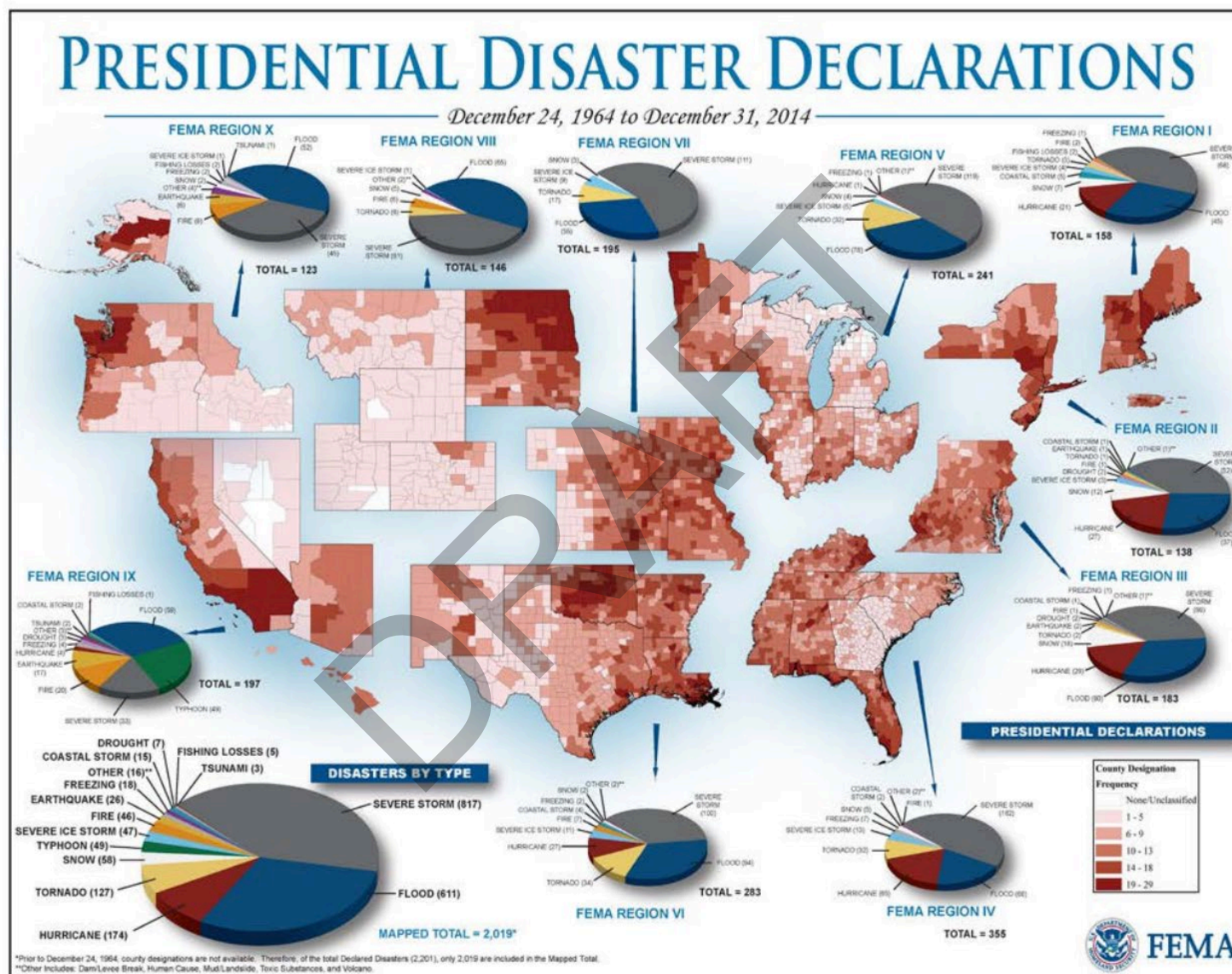
Kidder County history illustrates a considerable risk of damage from disasters. The FEMA Presidential Disaster Declaration map in Figure 5.1 shows that North Dakota, particularly counties in eastern and central portions of the state, are among areas in the nation with the most presidential disaster declarations in the past 50+ years. The frequency of declarations for severe summer and winter storms, and flooding, highlight the need for continued mitigation in Kidder County pertaining to these disasters.

Since 1953, Kidder County has had 20 Presidential Disaster Declarations. Table 5.1 shows that the declarations for Kidder County include flooding, snow melt, severe storms, and ground saturation. These declarations highlight the hazards that will result in losses in Kidder County, and the value of mitigation to reduce and/or eliminate losses to people and property.

The following are key points:

- Kidder County has been impacted by 15 flood, 11 severe storm(s), and 1 coastal storm (Hurricane Katrina Evacuation) since 1953 for a total of 23 declared disasters. Flooding accounts for or is a factor in 75 percent of disasters declared in Kidder County.
- Of the 20 disaster declarations involving Kidder County, 75 percent (15 disasters) have occurred between the months of April and July of any given year.
- No disasters declarations in the months of February, August, October, November, and December in Kidder County.
- The COVID-19 Pandemic and Flooding were the most recent Presidential Disaster Declarations for Kidder County occurring in 2020.

Figure 5.1 – December 24, 1964 to December 31, 2014 Presidential Disaster Declaration Frequency by FEMA Region



Source: Federal Emergency Management Agency

Table 5.1 – 1953 to 2020 Kidder County, North Dakota Presidential Disaster Declarations

Year	Disaster Description/Title	Disaster Number
1976	Drought	3016
1979	Severe Storms, Snowmelt, and Flooding	581
1993	Severe Storms and Flooding	1001
1994	Severe Storms, Flooding	1032
1995	Severe Storms, Flooding, and Ground Saturation	1050
1996	Severe Storms, Flooding, and Ice Jams	1118
1997	Severe Flooding, Severe Winter Storms, Snowmelt, Spring Rains	1174
1997	Severe Winter Storms and Blizzard Conditions	1157
1999	Severe Storms, Flooding, Snow, Ice, Ground Saturation, Landslides, Mudslides, and Tornadoes	1279
2000	Severe Storms, Flooding, and Ground Saturation	1334
2001	Severe Storms, Flooding, and Ground Saturation	1376
2005	Hurricane Katrina Evacuation	3247
2005	Severe Storms, Flooding, and Ground Saturation	1597
2009	Severe Storms and Flooding	1829
2010	Flooding	1907
2011	Flooding	1981
2013	Severe Storms and Flooding	4128
2020	COVID-19	3477
2020	COVID-19 Pandemic	4509
2020	Flooding	4475

Source: FEMA

Threat and Hazard Identification Risk Assessment (THIRA) Methodology

A risk assessment is process that collects information on the risk of natural hazards and man-made threats to incorporated jurisdictions, and assigns values to those risks to assist with:

1. Identifying and/or comparing courses of action
2. Developing priorities for future mitigation
3. Inform decision-making on creating a local mitigation strategy
 - Foundation for mitigation strategy development

The risk assessment provides factual basis for the proposed mitigation actions found in Chapter 6, Mitigation Strategy. An effective risk assessment helps create proposed mitigation actions by focusing resources on greatest potential risk. Table 5.2 on the following pages identifies the general impacts associated with each natural hazard and man-made threat. Impacts specific to incorporated jurisdiction is found in each hazard and threat profile in Chapter 4, Threat and Hazard Identification Risk Assessment and Chapter 8, Jurisdictions.

The risk assessment was conducted using the scoring and ranking process found following Table 5.2.

The resulting risk assessment score for each natural hazard and man-made threat is prioritized as follows: 1 to 5 is low, 6 to 10 is medium, and 11 to 15 is high.

Table 5.2 – Impacts of Natural Hazards and Man-made Threats

Impact	Civil Disturbance	Criminal, Terrorist or Nation-State Attack	Cyberattack	Dam Failure	Drought	Fire – Urban	Fire – Wildland	Flood	Geologic Hazard	Hazardous Material Release	Infectious Disease	Severe Summer Weather	Severe Winter Weather	Space Weather	Transportation Incident
Blocked Roads	X	X		X		X	X	X	X	X		X	X		X
Building Collapse	X	X		X		X	X	X	X			X	X		
Business Interruptions	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Crop Loss		X		X	X		X	X		X	X	X	X		
Delayed Emergency Response	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Disease Outbreak/Mass Infections	X	X		X	X			X			X	X	X		X
Downed Power Lines	X	X		X		X	X	X	X	X		X	X		X
Downed Trees				X	X	X	X	X	X			X	X		
Environmental Degradation	X	X		X	X		X	X	X	X	X	X	X		X
Evacuation (Full)	X	X	X	X		X	X	X		X	X	X	X		X
Evacuation (Localized)	X	X	X	X	X	X	X	X	X	X	X	X	X		X
Explosion	X	X	X	X		X	X	X		X		X	X	X	X
Financial Hardship (Private)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Financial Hardship (Public)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Flooding (Street)				X				X				X	X		
Flooding (Structure)				X				X				X	X		
Fuel Outage/Shortage	X	X	X	X	X	X	X	X	X	X		X	X		X
Government Interruptions	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
HAZMAT Release	X	X	X	X	X	X	X	X	X	X		X	X	X	X
Human Injury/Death	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Increased Fire Potential	X	X	X	X	X	X	X	X	X	X		X	X	X	X
Increased Public Safety Runs	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Infrastructure Degradation	X	X	X	X	X	X	X	X	X	X		X	X	X	X

Table 5.2 – Impacts of Natural Hazards and Man-made Threats – Continued

Impact	Civil Disturbance	Criminal, Terrorist or Nation-State Attack	Cyberattack	Dam Failure	Drought	Fire – Urban	Fire – Wildland	Flood	Geologic Hazard	Hazardous Material Release	Infectious Disease	Severe Summer Weather	Severe Winter Weather	Space Weather	Transportation Incident
Labor Shortages	X	X	X	X		X	X	X		X	X	X	X	X	X
Livestock Injury/Death	X	X		X	X		X	X	X	X	X	X	X		X
Loss of Communications	X	X	X	X		X	X	X		X		X	X	X	X
Loss of Digital/Technological Systems	X	X	X	X	X	X	X	X	X	X		X	X	X	X
Loss of Economy	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Loss/Overcrowded Medical Facilities	X	X	X	X	X	X	X	X		X	X	X	X	X	X
Loss/Overcrowded Veterinarian Facilities		X	X	X	X	X	X	X		X	X	X	X	X	
Loss of Potable Water		X	X	X	X			X	X	X	X	X	X	X	X
Loss of Power/Electricity Outage		X	X	X		X	X	X	X	X		X	X	X	
Loss of Transportation/Accessibility	X	X	X	X			X	X	X	X		X	X	X	X
Loss of Wildlife Habitat				X	X		X	X	X	X	X	X	X		
Mass Casualties	X	X	X	X		X	X	X	X	X	X	X	X	X	X
Mass Fatalities	X	X	X	X		X	X	X	X	X	X	X	X	X	X
Property Damage (Structure)	X	X	X	X	X	X	X	X	X	X		X	X	X	X
Property Damage (Equipment & Vehicle)	X	X	X	X	X	X	X	X	X	X		X	X	X	X
Public Distress/Social Discord	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
School Closure	X	X	X	X		X	X	X		X	X	X	X	X	X
Sewer Backup		X	X	X				X	X			X	X	X	
Sheltering of Displaced Populations	X	X		X		X	X	X	X	X	X	X	X	X	X
Soil Degradation/Erosion	X	X		X	X		X	X	X	X	X	X	X		X
Utility Outage/Shortage	X	X	X	X	X	X	X	X	X	X		X	X	X	X
Wildlife Injury/Death	X			X	X		X	X	X	X	X	X	X		X

Impact is what damage or losses the hazard causes in a community.

Scored 1	Negligible – less than 10% of the jurisdiction/people affected
Scored 2	Limited – 10% to 25% of jurisdiction/people affected
Scored 3	Critical – 25% to 50% of the jurisdiction/people affected
Scored 4	Catastrophic – More than 50% of the jurisdiction/people affected

Impact per hazard: Ranked _____. Why:

Frequency is how often the hazard occurs.

Scored 1	Unlikely – history of events shows less than 1% annual occurrence
Scored 2	Possible – history of events shows between 1% to 10% annual occurrence
Scored 3	Likely – history of events shows between 10% to 100% annual occurrence
Scored 4	Highly likely – history of events shows 100% annual occurrence

Frequency per hazard: Ranked _____. Why:

Likelihood is how probable it is that the hazard will happen.

Scored 1	Unlikely – less than 1% chance hazard will occur annually
Scored 2	Possible – 1% to 10% chance hazard will occur annually
Scored 3	Likely – 10% to 100% chance hazard will occur annually
Scored 4	Highly likely – Nearly 100% chance hazard will occur annually

Likelihood per hazard: Ranked _____. Why:

Vulnerability is the amount of:

1. Vulnerable areas: trailer courts, building construction, and blocked roads, etc.
2. Vulnerable population(s): individuals with special needs, elderly, day cares, and schools, etc.
3. Resources: equipment, services, or lack thereof that increases or decreases vulnerability

Who and what is affected? When and why? Identify specific areas of vulnerability. What you have or lack: equipment, vehicles, services available, shelters, buildings, and infrastructure.

Scored 1	Low vulnerability: Adequate resources in the jurisdiction to address any hazard
Scored 2	Moderate vulnerability: Various resources in the jurisdiction
Scored 3	High vulnerability: Few resources in the jurisdiction
Scored 4	Very high vulnerability: Little to no resources in the jurisdiction

Capability is the ability to protect itself against the hazard with resources (i.e. buildings, infrastructure, equipment, personnel, plans, technical, financial/tax base)

Scored 1	Low capability: Little to no ability of the jurisdiction for mitigation
Scored 2	Moderate capability: Few abilities of the jurisdiction for mitigation
Scored 3	High capability: Various abilities of the jurisdiction for mitigation
Scored 4	Very high capability: Adequate abilities of the jurisdiction for mitigation

Capability per hazard: Ranked _____. Why:

The formula to determine the total is: Impact plus Frequency plus Likelihood plus Vulnerabilities minus Capabilities equals Total. Higher total scores indicate more vulnerability and lower scores indicate less vulnerability.

Table 5.3 summarizes the risk assessment scoring of the natural hazards and man-made threats for Kidder County and incorporated city jurisdictions, and is also shown in Chapter 8, Jurisdictions.

Table 5.3 – Kidder County Jurisdiction Risk Assessment Scoring Summary

Risk Assessment		Jurisdiction: Kidder County, North Dakota				
Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Civil Disturbance	2	2	2	3	2	7
Criminal, Terrorist or Nation-State Attack	2	2	2	3	2	7
Cyberattack	4	2	2	3	1	10
Drought	4	3	4	4	2	13
Fire – Urban/Structure Collapse	4	2	4	3	3	10
Fire – Rural and Wildland	4	3	4	3	2	12
Flood	4	4	3	4	2	13
Geologic Hazard	1	1	1	1	4	0
Hazardous Material Release	4	3	3	4	1	13
Infectious Disease – Human	4	3	3	4	2	12
Infectious Disease – Animal & Plant	4	4	4	3	3	12
Severe Summer Weather	4	4	4	4	3	13
Severe Winter Weather	4	4	4	4	3	13
Space Weather	4	1	2	4	1	10
Transportation Accident	3	4	4	3	3	11

Risk Assessment		Jurisdiction: City of Dawson, North Dakota				
Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Civil Disturbance	1	1	2	4	1	7
Criminal, Terrorist or Nation-State Attack	4	1	2	4	1	10
Cyberattack	2	1	2	2	1	6
Drought	4	4	4	4	2	14
Fire – Urban/Structure Collapse	4	2	2	3	2	9
Fire – Rural and Wildland	4	2	2	3	2	9
Flood	4	4	4	4	1	15
Geologic Hazard	1	1	1	1	1	3
Hazardous Material Release	4	3	4	4	2	13
Infectious Disease	4	2	2	3	1	10
Severe Summer Weather	4	4	4	4	1	15
Severe Winter Weather	4	4	4	4	1	15
Space Weather	4	1	1	4	1	9
Transportation Accident	4	2	3	3	1	11

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 5.3 – Kidder County Jurisdiction Risk Assessment Scoring Summary - Continued

Risk Assessment		Jurisdiction: City of Pettibone, North Dakota				
<u>Hazard/Threat</u>	<u>Impact</u>	<u>Frequency</u>	<u>Likelihood</u>	<u>Vulnerability</u>	<u>Capabilities</u>	<u>Total</u>
Civil Disturbance	4	1	2	2	1	8
Criminal, Terrorist or Nation-State Attack	4	1	2	2	1	8
Cyberattack	2	2	2	2	1	7
Drought	4	3	4	4	2	13
Fire – Urban/Structure Collapse	4	2	4	3	2	11
Fire – Rural and Wildland	4	3	4	3	2	12
Flood	2	2	2	1	1	6
Geologic Hazard	1	1	1	1	1	3
Hazardous Material Release	4	2	3	2	2	9
Infectious Disease	4	2	4	3	1	12
Severe Summer Weather	4	4	4	2	1	13
Severe Winter Weather	4	4	4	2	1	13
Space Weather	4	1	4	4	1	12
Transportation Accident	4	2	3	2	1	10

Risk Assessment		Jurisdiction: City of Robinson, North Dakota				
<u>Hazard/Threat</u>	<u>Impact</u>	<u>Frequency</u>	<u>Likelihood</u>	<u>Vulnerability</u>	<u>Capabilities</u>	<u>Total</u>
Civil Disturbance	3	1	2	4	1	9
Criminal, Terrorist or Nation-State Attack	4	2	2	4	1	11
Cyberattack	2	2	2	4	1	9
Drought	4	2	4	4	2	12
Fire – Urban/Structure Collapse	4	2	4	4	1	13
Fire – Rural and Wildland	4	4	4	4	1	15
Flood	4	3	4	4	1	14
Geologic Hazard	1	1	1	1	1	3
Hazardous Material Release	4	2	2	2	1	9
Infectious Disease	4	3	4	4	1	14
Severe Summer Weather	4	4	4	4	1	15
Severe Winter Weather	4	4	4	4	1	15
Space Weather	4	2	2	4	1	11
Transportation Accident	4	3	2	4	1	12

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 5.3 – Kidder County Jurisdiction Risk Assessment Scoring Summary - Continued

Risk Assessment		Jurisdiction: City of Steele, North Dakota				
<u>Hazard/Threat</u>	<u>Impact</u>	<u>Frequency</u>	<u>Likelihood</u>	<u>Vulnerability</u>	<u>Capabilities</u>	<u>Total</u>
Civil Disturbance	2	1	2	2	1	6
Criminal, Terrorist or Nation-State Attack	3	2	2	3	1	9
Cyberattack	4	2	3	4	2	11
Drought	4	3	4	4	2	13
Fire – Urban/Structure Collapse	4	2	2	2	2	8
Fire – Rural and Wildland	3	4	4	2	2	11
Flood	3	2	4	3	2	10
Geologic Hazard	1	1	1	1	1	3
Hazardous Material Release	4	2	4	4	2	12
Infectious Disease	4	2	3	4	2	11
Severe Summer Weather	4	4	4	3	1	14
Severe Winter Weather	4	4	4	3	1	14
Space Weather	4	1	2	4	1	10
Transportation Accident	4	4	4	4	3	13

Risk Assessment		Jurisdiction: City of Tappen, North Dakota				
<u>Hazard/Threat</u>	<u>Impact</u>	<u>Frequency</u>	<u>Likelihood</u>	<u>Vulnerability</u>	<u>Capabilities</u>	<u>Total</u>
Civil Disturbance	1	1	2	2	1	5
Criminal, Terrorist or Nation-State Attack	3	1	2	4	1	9
Cyberattack	3	1	2	4	1	9
Drought	4	3	4	4	1	14
Fire – Urban/Structure Collapse	4	2	2	3	2	9
Fire – Rural and Wildland	4	2	4	2	2	10
Flood	4	4	4	4	1	15
Geologic Hazard	1	1	1	1	1	3
Hazardous Material Release	4	2	2	4	1	11
Infectious Disease	3	2	2	3	1	9
Severe Summer Weather	4	4	4	3	2	13
Severe Winter Weather	4	4	4	3	2	13
Space Weather	4	1	2	3	1	9
Transportation Accident	4	4	4	3	2	13

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 5.3 – Kidder County Jurisdiction Risk Assessment Scoring Summary - Continued

Risk Assessment		Jurisdiction: City of Tuttle, North Dakota				
<u>Hazard/Threat</u>	<u>Impact</u>	<u>Frequency</u>	<u>Likelihood</u>	<u>Vulnerability</u>	<u>Capabilities</u>	<u>Total</u>
Civil Disturbance	3	1	2	2	1	7
Criminal, Terrorist or Nation-State Attack	4	1	2	1	1	6
Cyberattack	2	1	2	1	1	5
Drought	4	2	4	4	1	13
Fire – Urban/Structure Collapse	4	3	2	2	2	9
Fire – Rural and Wildland	4	3	4	3	2	12
Flood	3	2	3	3	1	10
Geologic Hazard	1	1	1	1	1	3
Hazardous Material Release	4	2	2	2	1	9
Infectious Disease	3	4	3	3	1	12
Severe Summer Weather	4	4	4	3	2	13
Severe Winter Weather	4	4	4	3	2	13
Space Weather	4	1	2	4	1	10
Transportation Accident	4	2	3	2	1	10

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

4.1 Civil Disturbance

Including events arising due to political grievances, economic disputes or social discord, terrorism, or foreign agitators.

Characteristics

A civil disturbance is activity from large groups, organizations, or distraught individuals with potentially disastrous or disruptive results.

Seasonal Pattern	None. Extreme winter weather can limit or eliminate activity altogether.
Duration	Minutes/hours/days/weeks/months/potentially a year or more.
Speed of Onset	Little to no warning or several days/weeks.
Location	Total geographic extent of Kidder County – most likely targeting critical facilities such as the Kidder County Courthouse/Law Enforcement Center, or infrastructure such as Interstate 94 and chemical, energy, or oil and gas infrastructure. Culturally and environmentally sensitive areas can also be a target.

For more information regarding civil disturbance please reference the **2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)**. The plan can be accessed by following the link:

[2018 North Dakota Enhanced Mitigation Mission Area Operations Plan](#)

History

The following information on incidents of civil disturbance in Kidder County was provided by the Kidder County Auditor's Office, Kidder County Emergency Management, the Kidder County Sheriff's Office, and the Steele Police Department.

- Dakota Access Pipeline (DAPL). The protest began when a 1,134-mile long crude oil pipeline was proposed for installation across North Dakota and several other states, traversing under the Missouri River near the Standing Rock-Sioux Tribe Indian Reservation. The protest began as a peaceful and environmental-focused event but transitioned into a seven-month long unlawful protest on August 10, 2016, when individuals attempted to block access to construction activities associated with the pipeline. The protest resulted in acts of trespassing, vandalism, riots, fires set to hay bales and tires, intimidation tactics directed at local landowners as well as law enforcement and their families, poaching, theft, and killing of local livestock and other animals. Approximately 709 protesters were arrested during the event. It is estimated that up to 10,000 people attended the protest at its peak.
- Law enforcement agencies and officials in Kidder County were requested through mutual aid to provide personnel and assist with the event.

There have been no declared disasters or emergencies pertaining to a civil disturbance in Kidder County.

Probability

The probability of a hazard or threat is how likely it is it will happen. Civil disturbances are hard to predict but are most probable at or near large venues and locations of significance such as stadiums, government facilities like the Kidder County Courthouse/Kidder County Law Enforcement Center, or in the city of Steele.

Profile meeting participants ranked the probability of civil disturbance as likely meaning that there is between a 10 and 100 percent probability in the next year of an incident. It is likely civil disturbance will continue to occur at some point in the future in Kidder County and in North Dakota.

Extent/Magnitude

The extent/magnitude of a hazard or threat is expressed in the amount of damages or losses either actualized in a community or estimated based on known assets and levels of risk. Magnitude of a civil disturbance can vary from a small protest at a government facility or health care clinic to large-scale at industrial sites, state capitols, or culturally sensitive areas and sites. Profile meeting participants ranked the magnitude of a civil disturbance as catastrophic meaning more than 50 percent of the jurisdiction and its people can be affected.

Risk Assessment

Table 4.1.1 shows the risk assessment as determined by individual jurisdictions, the Steering Committee, and meeting participants at the profile meeting for civil disturbance. The risk assessment methodology can be found in the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA). The total in Table 4.1.1 represents the sum of each jurisdiction's impact, frequency, likelihood, and vulnerability to a hazard/threat less the jurisdiction's capabilities to respond to the hazard/threat.

Table 4.1.1 – Kidder County Civil Disturbance Risk Assessment Scored Chart Summary

Jurisdiction	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Kidder County	2	2	2	3	2	7
City of Dawson	1	1	2	4	1	7
City of Pettibone	4	1	2	2	1	8
City of Robinson	3	1	2	4	1	9
City of Steele	2	1	2	2	1	6
City of Tappen	1	1	2	2	1	5
City of Tuttle	3	1	2	2	1	7

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 4.1.2 provides information on the specific impact, frequency, likelihood, vulnerability, and capability of civil disturbance in Kidder County. A list of impacts identified as commonplace for natural hazards and man-made threats regardless of the jurisdiction is shown at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA).

Table 4.1.2 – Kidder County Civil Disturbance Risk Assessment

Impact	<ul style="list-style-type: none"> Blocked Roads Delayed Emergency Response HAZMAT Release Human Injury/Death Increased Public Safety Runs Loss/Overcrowded Medical Facilities Loss of Potable Water Mass Casualties/Fatalities <ul style="list-style-type: none"> Loss of private and/or public property <p>The following impacts were realized to Kidder County through mutual aid during the DAPL protest between October 3, 2016 and March 4, 2017:</p> <ul style="list-style-type: none"> Personnel Costs: \$36,949.98 Transportation Costs: \$5,788.11
Frequency	<ul style="list-style-type: none"> DAPL Protest Local law enforcement were threatened with arson of their personal homes in Kidder County from DAPL
Likelihood	<div> <div> <u>More Likely</u> <ul style="list-style-type: none"> Presence of pipelines transporting hazardous materials Increasing hostility and turmoil directed at the energy industry and major corporations Increasing political turmoil at the federal level Increase in development of oil and gas infrastructure and the potential for future pipelines in the state Social discord resulting from the COVID-19 pandemic Located on Interstate 94 </div> <div> <u>Less Likely</u> <ul style="list-style-type: none"> Sparse population County not located near a major metropolitan population, international airport, stadiums, or significant tourist attraction </div> </div>
Vulnerability	<div> <div> <u>More Vulnerable</u> <ul style="list-style-type: none"> Presence of pipelines transporting hazardous materials Increasing political turmoil at the federal level Increase in development of oil and gas infrastructure and the potential for future pipelines in the state Social discord resulting from the COVID-19 pandemic Funding of extreme groups by “Dark Money” from billionaires and crowd-funding websites Located on Interstate 94 Lack of local reserve manpower </div> <div> <u>Less Vulnerable</u> <ul style="list-style-type: none"> Sparse population County not located near a major metropolitan population, international airport, stadiums, or a significant tourist attraction </div> </div>
Capability	<ul style="list-style-type: none"> See Chapter 7 for a list of capabilities to address civil disturbance.

Vulnerabilities to Publicly-Owned Buildings and Property

Publicly-owned buildings and property are vulnerable to civil disturbances as any government building can be targeted. Facilities supporting functions key to daily operations of the county and incorporated jurisdictions, such as the Kidder County Courthouse/Law Enforcement Center, Kidder County Public School, Steele City Hall, or buildings supporting emergency services such as fire and ambulance halls, would be the most vulnerable to a civil disturbance. **The level of vulnerability depends on the activities performed at a specific facility or level of security at the facility.**

A summary of city and publicly-owned buildings is provided in Chapter 3, Profile and Inventory.

Vulnerabilities of Critical Facilities and Infrastructure

Like publicly-owned buildings and property, the vulnerability of critical facilities and infrastructure to civil disturbance is imminent. The Kidder County Courthouse/Law Enforcement Center, Kidder County Ambulance Hall, fire halls are critical facilities, and infrastructure such as electric power, water/wastewater facilities, railroads, and pipelines are also vulnerable to the threat.

Vulnerabilities to New and Future Development

Civil disturbances are nearly impossible to predict and, therefore, vulnerabilities to new and future development cannot be determined. However, large influxes of people in a short period of time into sparsely populated areas can be a source of civil disturbance and impact new development. In addition, new and future development that is located at or adjacent to politically or culturally sensitive areas, or constructed near environmentally sensitive areas, may be targeted by a civil disturbance.

Data Limitations and Other Key Documents

Due to the confidentiality of information pertaining to civil disturbances, law enforcement agencies were limited in the ability to share detailed information about incidents.

This plan incorporates data from the following documents and information from this plan will be incorporated in the update of the following documents.

- 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)
- Kidder County Evacuation and Shelter Plan
- Kidder County Local Emergency Operations Plan
- Kidder County Shelter and Mass Care Plan
- Kidder County Threat and Hazard Identification and Risk Assessment (THIRA)
- North Dakota Continuity of Operations Plan
- North Dakota Emergency Operations Plan, Terrorism Annex
- North Dakota Highway Patrol Operations Plan
- North Dakota State Disaster Recovery Plan
- North Dakota State Preparedness Report (SPR)
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)

4.2 Criminal, Terrorist, or Nation/State Attack

Including armed assault, biological, chemical, explosive, food/food production, nuclear, radiological, and vehicular attacks.

Characteristics

Any intentional adversarial human-caused incident, domestic or international, that causes mass casualties, large economic losses, or widespread panic. Universities, industry, government officials and buildings, power grids, telecommunication systems, dams, water supplies, and pipelines are potential terrorism targets. Another potential terrorist activity that must be considered is violence in the workplace.

Seasonal Pattern	None. More likely during political unrest or social discord.
Duration	Minutes/hours/days/weeks/months/potentially a year or more.
Speed of Onset	Little to no warning or several days/weeks.
Location	Total geographic extent of Kidder County – most likely targeting critical facilities such as the Kidder County Courthouse/Law Enforcement Center, or infrastructure such as Interstate 94 and chemical, energy, or oil and gas infrastructure. Culturally and environmentally sensitive areas can also be a target.

For more information regarding criminal, terrorist, or nation/state attack please reference the **2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)**. The plan can be accessed by following the link:

[2018 North Dakota Enhanced Mitigation Mission Area Operations Plan](#)

History

According to the following information on incidents of criminal, terrorist, or nation/state attack in Kidder County was provided by Kidder County Emergency Management, Kidder County Sheriff's Office, and the Steele Police Department.

- In September of 2018, a student at the Kidder County Public School threatened to blow up the school.

According to the 2018 N.D. Enhanced Mitigation MAOP, the following criminal, terrorist, or nation/state attack events occurred either in Kidder County or nearby. Table 4.2.1 shows vandalism and theft claims paid on critical facilities insured by the state in Kidder County between 1989 and 2018.

2018 N.D. Enhanced Mitigation MAOP

- On February 13, 1983, federal law enforcement officers went to Medina, North Dakota to arrest Gordon Kahl on a Texas warrant. Kahl farmed in Heaton, North Dakota, north of Medina. Kahl was a decorated war veteran and a tax protester who had served time for refusing to pay his taxes. The warrant accused him of violating his probation. On the morning of February 13, Gordon Kahl, his wife, Joan, his son Yorie Kahl, and two friends David Broer and Scott Faul, gathered at Dr. Clarence Martin's clinic in Medina to talk right-wing politics. After the meeting, Kahl's

group headed north out of Medina, toward home. They met a roadblock. Gordon and Yorie Kahl, Faul, and Broer got out of their cars. There was a brief verbal confrontation and gunfire erupted. Marshal Kenneth Muir and Deputy Marshal Robert Cheshire died. Two additional law enforcement officers and Yorie Kahl were hurt. Gordon Kahl vanished. Authorities caught up with him in June of 1983 near Smithville, Arkansas, where he died in a shootout and fire. Yorie Kahl and Faul are serving life sentences in the murders.

Gordon rented/owned land in Kidder County.

- Between January 2014 and October 2018, there have been forty-three Terrorist Screening Center (TSC) hits or encounters within North Dakota, in which the North Dakota SLIC provided support when requested. In the same period, the North Dakota SLIC has received hundreds of suspicious activity reports (SARs), of which two hundred and sixty-six of have been deemed to have a "possible nexus to terrorism."

Table 4.2.1 – 1989 to 2018 Vandalism and Theft Claims Paid on Critical Facilities Insured by State

	State Agencies	Adjutant General	State Universities	Local Governments	School Districts	Total
Kidder Co.	\$0	\$0	\$0	\$866	\$7,765	\$8,631

Source(s): 2018 N.D. Enhanced Mitigation MAOP; N.D. Department of Emergency Services

- Vandalism and theft claims paid on state facilities and other critical facilities insured by the state since 1989 resulted in zero paid to state agencies, zero paid to the adjutant general, zero paid to state universities, \$866 paid to local governments, and \$7,765 paid to school districts in Kidder County for a total of \$44,570.

There have been no declared disasters or emergencies pertaining to a criminal, terrorist, or nation/state attack in Kidder County.

Probability

The probability of a hazard or threat is how likely it is it will happen. Criminal, terrorist, or nation/state attacks are hard to predict but are most probable at or near jurisdictions with large, dense populations. According to the 2018 N.D. Enhanced Mitigation MAOP, Kidder County was 7th least-densely populated county in North Dakota with 1.8 persons per square mile.

During jurisdictional meetings, meeting participants said there is always a chance for an incident to occur at any time and no community is immune to the threat. However, the probability is much lower in jurisdictions without schools since schools in the United States have had numerous incidents over the past three decades.

Profile meeting participants ranked the probability of criminal, terrorist, or nation/state attack as possible meaning that there is between a one and 10 percent probability in the next year of an incident. It is likely a criminal, terrorist or nation-state attack will occur at some point in the future in Kidder County and in North Dakota.

Extent/Magnitude

The magnitude of a hazard or threat is the expressed in the amount of damage or losses either caused or could occur in a community. Magnitude of a criminal, terrorist or nation/state attack can vary from a high magnitude event such as one that affects the national or agricultural economy, or requires deployment of military personnel and drafting of soldiers, or smaller magnitude events such as specialized attacks on schools or businesses involving active-shooters, homemade bombs and/or hostages. An incident at a school of any kind could have a large magnitude.

Food. An adversarial threat to food is the potential for interruption within the production and distribution of food, and the potential for adulteration, obstruction of operation, or intentional damage to a facility or product. If successful, the extent/magnitude of this type of attack could be widespread and result in mass fatalities. With the economy of Kidder County largely based on agriculture and manufacturing, an incident involving the agriculture sector or at a manufacturing facility has the potential to be disastrous and large in magnitude if targeting food or hazardous chemicals. However, the likelihood is low, and the impact would be limited based on food inspection practices and other regulations.

Transportation systems. The most likely scenario would be impacts from an interruption of the transportation system. Transportation systems have far less oversight and regulations than food production and supply chains, and water treatment and infrastructure. This type of attack could impact a substantial area and result in the shutting down of regional commerce.

Infrastructure. A terrorist attack on existing pipelines, energy-related or agriculture-related infrastructure would likely cause a hazardous material release and/or fire and an explosion. The attack may result in significant environmental damage, depending on where the attack occurred and the overall impact to the existing infrastructure. This type of attack may also cause the shutting down of regional commerce that would have a spill-over effect into intrastate and national economic systems.

City water systems (including drinking/potable water delivery pipes and treatment plants) could also be targeted by criminal, terrorist, or nation/state activity through poisoning/contamination of water sources.

Risk Assessment

Table 4.2.2 shows the risk assessment as determined by individual jurisdictions and the Steering Committee for criminal, terrorist, or nation-state attack. The risk assessment methodology can be found in the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA). The total in Table 4.2.2 represents the sum of each jurisdiction's impact, frequency, likelihood, and vulnerability to a hazard/threat less the jurisdiction's capabilities to respond to the hazard/threat.

Table 4.2.3 provides information on the specific impact, frequency, likelihood, vulnerability and capability of criminal, terrorist, or nation-state attack in Kidder County. A list of impacts identified as commonplace for natural hazards and man-made threats regardless of the jurisdiction is shown at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA).

Table 4.2.2 – Kidder County Criminal, Terrorist or Nation-State Attack Risk Assessment Scored Chart Summary

Jurisdiction	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Kidder County	2	2	2	3	2	7
City of Dawson	4	1	2	4	1	10
City of Pettibone	4	1	2	2	1	8
City of Robinson	4	2	2	4	1	11
City of Steele	3	2	2	3	1	9
City of Tappen	3	1	2	4	1	9
City of Tuttle	4	1	2	1	1	6

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 4.2.2 represents the sum of each jurisdiction’s impact, frequency, likelihood, and vulnerability to a hazard/threat less the jurisdiction’s capabilities to respond to the hazard/threat.

Table 4.2.3 – Kidder County Criminal, Terrorist or Nation-State Attack Risk Assessment

Impact	<ul style="list-style-type: none"> Blocked Roads Delayed Emergency Response HAZMAT Release Human Injury/Death & Mass Casualties/Fatalities Increased Public Safety Runs Loss of Economy Loss/Overcrowded Medical Facilities Loss of Potable Water 	<ul style="list-style-type: none"> Disruption of services to maintain economic activity and daily life Harm to reputation of the county as a safe place to reside causing damage to economic growth and decline in school enrollments Potential exodus of people resulting in permanent population loss Shutting down of regional commerce indefinitely if an attack targets transportation – specifically bridges, dams, railroads Potential for mass casualties or widespread sickness if water or wastewater infrastructure was targeted
Frequency	<ul style="list-style-type: none"> In September of 2018, a student at the Kidder County Public School threatened to blow up the school. 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Increasing political turmoil at the federal level Increasing hostility and turmoil directed at oil and gas industry and major corporations Social media County produces commodities for use locally, nationally, and internationally 	<u>Less Likely</u> <ul style="list-style-type: none"> Sparse population County not located near a major metropolitan population, international airport, stadiums N.D. State and Local Intelligence Center (SLIC) Public safety communications (Public Safety Answering Points)
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Increasing political turmoil at the federal level Increasing hostility and turmoil directed at oil and gas industry and major corporations Social media County produces commodities for use locally, nationally, and internationally Limited law enforcement in rural areas of county Inadequate mental health services in the county and state Perception of individuals with mental challenges 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Sparse population County not located near a major metropolitan population, international airport, stadiums or N.D. State and Local Intelligence Center (SLIC) Public safety communications (Public Safety Answering Points) Better security has been implemented at public schools
Capability	<ul style="list-style-type: none"> See Chapter 7 for a list of capabilities to address criminal, terrorist, or nation-state attack. 	

Vulnerabilities to Publicly-Owned Buildings and Property

Publicly-owned buildings and property are vulnerable to criminal, terrorist or nation/state attacks as any government building can be targeted. Facilities supporting functions key to daily operations of the county, such as the Kidder County Courthouse/Law Enforcement Center, Steele City Hall, Kidder County Public School, U.S. Post Office or buildings supporting emergency services such as fire and ambulance halls, would be the most vulnerable to a criminal, terrorist or nation-state attack. **The level of vulnerability depends on the activities performed at a specific facility or level of security at the facility.**

A summary of city and publicly-owned buildings is provided in Chapter 3, Profile and Inventory.

Vulnerabilities of Critical Facilities and Infrastructure

Like publicly-owned buildings and property, the vulnerability of critical facilities and infrastructure to criminal, terrorist or nation-state attacks is imminent. The critical facilities and infrastructure most vulnerable are electric power, water/wastewater facilities, railroads, and pipelines.

Vulnerabilities to New and Future Development

Criminal, terrorist, or nation/state attacks are nearly impossible to predict and, therefore, vulnerabilities to new and future development cannot be determined. However, large influxes of people in a short period of time into sparsely populated areas can be a source of criminal, terrorist, or nation/state attack. In addition, new and future development that is located at or adjacent to politically or culturally sensitive areas, or constructed near environmentally sensitive areas, may cause controversy and be targeted by a criminal, terrorist, or nation-state attack.

Agriculture. The agricultural industry, with its increasing mechanization and industrialization, is not always located in urban areas, but are at risk to a criminal, terrorist, or nation/state attack.

Energy Development. The anticipated continuation of development of the oil and gas industry in the western portion of the state will result in transportation of energy products/materials, whether by pipeline, rail, or road, will also contribute to an increased risk of a criminal, terrorist, or nation/state attack due to past events and an increasing focus on political intervention and climate change.

Immigration. Illegal immigration to the United States by-way of Canada has increased and there is evidence of ISIS cells infiltrating and influencing people using this method of immigration. Due to the county's proximity to the Canadian border, this method of immigration may contribute to a criminal, terrorist, or nation/state attacks.

Population. The population density of North Dakota's major cities continues to increase as people leave rural areas in favor of urban lifestyles. This trend increases the vulnerability of cities to a criminal, terrorist or nation/state attack as higher density living situations are the primary target for this threat.

Data Limitations and Other Key Documents

The probability and vulnerabilities of a criminal, terrorist or nation/state attack is hard to quantify given its isolated nature and the little recorded history of its impact to North Dakota, until recent large-scale events such as the Dakota Access Pipeline protest in the western portion of the state.

This plan incorporates data from the following documents and information from this plan will be incorporated in the update of the following documents.

- 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)
- Kidder County Local Emergency Operations Plan
- Kidder County Threat and Hazard Identification and Risk Assessment (THIRA)
- North Dakota Continuity of Operations Plan
- North Dakota Emergency Operations Plan, Terrorism Annex
- North Dakota Highway Patrol Operations Plan
- North Dakota State Disaster Recovery Plan
- North Dakota State Preparedness Report (SPR)
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)

4.3 Cyberattack

An attack or hijack of information technology infrastructure critical to the functions controlled by computer networks such as: operating, financial, communications, and trade systems.

Characteristics

Any cyberattack that creates unrest, instability, or negatively impacts confidence of citizens/consumers can be considered cyber terrorism. According to N.D. Information Technology (NDIT), the seven common types are Advanced Persistent Threats, Distributed Denial of Service, Doxing, Malware, Media Threats, Password Phishing Attacks, and Socially Engineered Malware. The following information details the extent of cyberattack in Kidder County.

Seasonal Pattern	None. More frequent during Christmas/holidays and after final testing at schools. Increased activity is experienced during other hazardous events such as a pandemic (COVID-19).
Duration	Varies based on the type of attack method used. Seconds/minutes/hours/days/weeks/months/potentially a year or more.
Speed of Onset	Little to no warning or up to several days/weeks.
Location	Total geographic extent of Kidder County – most likely targeting information databases at critical facilities and infrastructure such as the Kidder County Courthouse/Law Enforcement Center, Kidder County Public School, chemical or oil and gas infrastructure, major employers, etc.

For more information regarding cyberattack please reference the **2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)**. The plan can be accessed by following the link:

[2018 North Dakota Enhanced Mitigation Mission Area Operations Plan](#)

History

According to the 2018 N.D. Enhanced Mitigation MAOP, the following Cyberattack events occurred either in Kidder County or the state.

- In December 2017, several North Dakota Counties experienced a Cryptominer Virus that was eating CPU. The virus infected 81 computers. The spread of the virus was stopped at the firewall level and the antivirus vendor performed cleanup and extended monitoring. NDIT assisted with eradication and remediation of the virus. The incident lasted for approximately one day.
- **Dakota Access Pipeline (DAPL)**. During the protest, personal information of law enforcement officers across the state who assisted in response to the protest was released with the intent to harass and/or intimidate them and their families. Doxing was the type of cyberattack used. There was also a significant increase in network traffic with intent to access state systems. This increased traffic required the state to increase its capacity with a larger firewall.

According to EMSISoft, a New Zealand-based blog focusing on malware protection, the following information on ransomware attacks occurred in the United States:

- In 2019, the U.S. was hit by an unprecedented and unrelenting barrage of ransomware attacks that impacted at least 966 government agencies, educational establishments and healthcare providers at a potential cost in excess of \$7.5 billion. The impacted organizations included 113 state and municipal governments and agencies, 764 healthcare providers, and 89 universities, colleges and school districts, with operations at up to 1,233 individual schools potentially affected.

The incidents were not simply expensive inconveniences; the disruption they caused put people's health, safety and lives at risk.

- Emergency patients had to be redirected to other hospitals;
- Medical records were inaccessible and, in some cases, permanently lost;
- Surgical procedures were canceled, tests were postponed and admissions halted;
- services were interrupted;
- Dispatch centres had to rely on printed maps and paper logs to keep track of emergency responders in the field;
- Police were locked out of background check systems and unable to access details about criminal histories or active warrants;
- Surveillance systems went offline;
- Badge scanners and building access systems ceased to work;
- Jail doors could not be remotely opened, and
- Schools could not access data about students' medications or allergies.

Other effects of the incidents included:

- Property transactions were halted;
- Utility bills could not be issued;
- Grants to nonprofits were delayed by months;
- Websites went offline;
- Online payment portals were inaccessible;
- Email and phone systems ceased to work;
- Driver's licenses could not be issued or renewed;
- Payments to vendors were delayed;
- Schools closed;
- Students' grades were lost, and
- Tax payment deadlines had to be extended.

Probability

The probability of a hazard or threat is how likely it is it will happen. Cyberattacks are hard to predict but most probable at all levels of government (federal, local, and state), private businesses employing large numbers of people, and organizations/institutions. According to the 2018 N.D. Enhanced Mitigation MAOP, due to widespread and growing use of technology and the prevalence of ever-changing cyberattack methods, the probability of cyberattacks are very high. Profile meeting participants ranked

the probability of cyberattack as highly likely meaning that there is a 100 percent probability in the next year of an attack, which does not always result in an incident.

Extent/Magnitude

The extent/magnitude of a hazard or threat is expressed in the amount of damages or losses either actualized in a community or estimated based on known assets and levels of risk. The magnitude of a cyberattack can vary from a loss of personal information such as an individual's pictures and music to high magnitude events such as one that affects the national or agricultural economy, or information systems of critical facilities and infrastructure. According to the 2018 N.D. Enhanced Mitigation MAOP, loss estimates for cyberattack incidents in North Dakota are not available. However, the following national cyberattacks provide insight into the potential impacts of the threat.

- The 2017 WannaCry ransomware attack caused \$4 billion in financial losses.
- The 2017 NotPetya attack caused an estimated \$300 million in economic losses for FedEx subsidiary TNT Express and another \$300 million in losses for shipping. The attack originated in Ukraine.
- Lloyd's of London, an insurance underwriter, developed a scenario for an attack on the Eastern Interconnection, which is one of two major electrical grids in the United States serving half the country. The economic loss of an attack was estimated at \$243 billion. The 2003 Northwest Blackout resulted in economic losses of between \$4 billion and \$10 billion.

Risk Assessment

Table 4.3.1 shows the risk assessment as determined by individual jurisdictions, the Steering Committee, and participants at the profile meeting for cyberattack. The risk assessment methodology can be found in the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA). The total in Table 4.3.1 represents the sum of each jurisdiction's impact, frequency, likelihood, and vulnerability to a hazard/threat less the jurisdiction's capabilities to respond to the hazard/threat.

Table 4.3.2 provides information on the specific impact, frequency, likelihood, vulnerability, and capability of cyberattack in Kidder County. A list of impacts identified as commonplace for natural hazards and man-made threats regardless of the jurisdiction is shown at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA).

Table 4.3.1 – Kidder County Cyberattack Risk Assessment Scored Chart Summary

Jurisdiction	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Kidder County	4	2	2	3	1	10
City of Dawson	2	1	2	2	1	6
City of Pettibone	2	2	2	2	1	7
City of Robinson	2	2	2	4	1	9
City of Steele	4	2	3	4	2	11
City of Tappen	3	1	2	4	1	9
City of Tuttle	2	1	2	1	1	5

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 4.3.2 – Kidder County Cyberattack Risk Assessment

Impact	<ul style="list-style-type: none"> • Delayed Emergency Response • HAZMAT Release • Increased Public Safety Runs • Government Interruptions • Loss of Communication Systems – Loss of 9-1-1 • Loss of Economy • Loss of Potable Water • Loss of Power • Mass Casualties/Fatalities • Loss/Overcrowded Medical Facilities <ul style="list-style-type: none"> • Increased and unforeseen public and private costs due to response and recovery requirements • Loss of websites and information for critical facilities • Shutting down of infrastructure systems resulting in loss of economy activity as technological systems are used in nearly all industries, both public and private • Targeting of emergency services personnel • Loss of public confidence in county government
Frequency	<ul style="list-style-type: none"> • Significant increase in network traffic with intent to access state systems This increased traffic required the state to increase its capacity with a larger firewall. • NDIT indicated an average of 5.7 million cyberattack attempts every month on the state level, but all do not result in an event/incident
Likelihood	<div> <div> <u>More Likely</u> <ul style="list-style-type: none"> • Digital economy with nation-wide banks and other institutions electronically linked to the state and county • Growing automation of daily tasks • Social media • Technological systems used in nearly all industries </div> <div> <u>Less Likely</u> <ul style="list-style-type: none"> • State installed larger firewall after DAPL protest – has a direct impact on county functions • Increased investment in security measures in private and public sectors (i.e. firewalls) • Ongoing investment in preventative education and enhanced countermeasures • NDIT and NDSLIC • Redundancies in state and county technology and power systems • Kidder County does local filtering of firewalls as a preventative measure </div> </div>

Table 4.3.2 – Kidder County Cyberattack Risk Assessment - Continued

Vulnerability	<div> <div> <p><u>More Vulnerable</u></p> <ul style="list-style-type: none"> • All state and local governments, businesses, and organizations/institutions that use digital/technological systems • Growing automation of daily tasks in individual's lives, and private and public sectors • Social media • Technological systems used in nearly all industries – including pipelines transportation hazardous materials • Kidder County Public Schools does not have a firewall • Increasing online interaction between young kids and total strangers/unknown actors • Illegal transfer of funds due to cyberattacks/phishing which can damage the financial well-being of a community </div> <div> <p><u>Less Vulnerable</u></p> <ul style="list-style-type: none"> • NDIT has a Cyberattack Incident Response Plan that covers Kidder County systems • State installed larger firewall after DAPL protest • Ongoing investment in preventative education and enhanced countermeasures • NDIT and NDSLIC • 66th Legislative Assembly of ND, Senate Bill 2110 to amend and reenact sections 54-50-01 and 54-59-05 of the N.D. Century Code. NDIT setting strategies and advising all branches of government for cyberattack and counter measures • Redundancies in state and county technology and power systems (Generator for Steele Water Treatment Plant) • The Kidder County Network has segmentation methods to keep networks logically separated • High regulation of banking and other industries to mitigate cyberattacks • K20W Initiative – training school-aged kids on cyber education </div> </div>
Capability	<ul style="list-style-type: none"> • See Chapter 7 for a list of capabilities to address cyberattack • NDIT Cyberattack Incident Response Plan • Kidder County Local Emergency Response Plan

Vulnerabilities to Publicly-Owned Buildings and Property

Publicly-owned buildings and property are vulnerable to cyberattack as all state and local governments, businesses, and organizations/institutions use digital/technological systems. As day-to-day and extended operations become more reliant on digital infrastructure to operate, the vulnerability to publicly-owned building and property will increase. Facilities supporting functions key to daily operations of the county, such as the Kidder County Courthouse/Law Enforcement Center, Kidder County Public School, and state agencies located in Kidder County would be the most vulnerable to a cyberattack.

A summary of publicly-owned buildings and property in Kidder County is provided in Chapter 3, Profile and Inventory.

Vulnerabilities of Critical Facilities and Infrastructure

Like publicly-owned buildings and property, the vulnerability of critical facilities and infrastructure to cyberattacks is imminent as all state and local governments, businesses, and organizations/institutions use digital/technological systems. Technological systems used by emergency services and branches of government such as GIS mapping or financial software, and utilities such as electric and natural gas, are types of critical facilities and infrastructure most at risk to a cyberattack. In addition, public works infrastructure for drinking/potable water and wastewater treatment systems are also vulnerable to the threat due to the use of SCADA systems.

Vulnerabilities to New and Future Development

Cyberattacks target digital information and technological systems and therefore should have little to no impact on new and future development. However, with the increasing use of internet-connected technological systems in American households and the world economy, the understanding of the vulnerability to new and future development is evolving/expanding.

Data Limitations and Other Key Documents

The probability and vulnerability of a cyberattack are hard to quantify given the multitude of plausible scenarios for an event. The threat has had little recorded history in North Dakota, until DAPL.

This plan incorporates data from the following documents. Information from this plan will be incorporated in the update of said documents.

- 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)
- Kidder County Public Schools Cyberattack Response Plan
- Kidder County Local Emergency Operations Plan
- North Dakota Continuity of Operations Plan
- North Dakota Cybersecurity Framework (NDCSF)
- North Dakota Emergency Operations Plan, Cyberattack Annex
- NDIT Security Incident Response Plan
- North Dakota State Disaster Recovery Plan
- North Dakota State Preparedness Report (SPR)
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)

4.4 Drought

Including precipitation levels well below normal and heat – temperatures higher than normal.

Characteristics

Drought is a deficiency in precipitation over an extended period, usually a season or more, resulting in a water shortage causing adverse impacts on vegetation, animals, and/or people. Drought is a temporary diversion from normal climatic conditions and is different than aridity, which is a permanent feature of climate in regions where low precipitation is the norm, as in a desert. Drought characteristics usually include precipitation levels well below normal and temperatures higher than normal.

According to the National Drought Mitigation Center, the following types of drought exist.

- **Meteorological drought** is usually an expression of precipitation's departure from normal over some period. These definitions are usually region-specific, and presumably based on a thorough understanding of regional climatology.
- **Agricultural drought** occurs when there is not enough soil moisture to meet the needs of a crop at any given time. Agricultural drought happens after meteorological drought but before hydrological drought. Agriculture is usually the first economic sector to be affected by drought.
- **Hydrological drought** refers to deficiencies in surface and subsurface water supplies. It is measured as streamflow and as lake, reservoir, and groundwater levels. There is a time lag between lack of rain and less water in streams, rivers, lakes, and reservoirs, so hydrological measurements are not the earliest indicators of drought. When precipitation is reduced or deficient over an extended period, this shortage will be reflected in declining surface and subsurface water levels.
- **Socioeconomic drought** occurs when physical water shortage starts to affect people, individually and collectively. Or, in more abstract terms, most socioeconomic definitions of drought associate it with the supply and demand of an economic good.

Seasonal Pattern	Primarily summer, but can occur in spring, fall, and winter
Duration	Weeks/months, up to a decade in severe cases
Speed of Onset	Slow and gradual
Location	Total geographic extent of Kidder County

The U.S. is vulnerable to the social, economic, and environmental impacts of drought. The over 100-year weather record of the U.S. indicates that there were three to four major drought events. Two of these, the 1930s Dust Bowl drought and the 1950s drought, each lasted five to seven years and covered large areas of the continental United States.

For more information regarding drought please reference the **2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)**. The plan can be accessed by following the link:

[2018 North Dakota Enhanced Mitigation Mission Area Operations Plan](#)

History

According to the National Climatic Data Center (NCDC), no occurrences of drought were reported in Kidder County between January 1, 1950, and December 31, 2020.

Information gathered from Steering Committee meetings indicated that while dryer periods have come and gone, the most recent drought of significant occurred in 1988/1989 and lasted until 1991/1992. Participants also noted a five-to 10-year cyclical pattern where dry conditions will persist for that period, then transition to more wet conditions.

2014 Kidder County Mitigation Plan

The following bullet points summarize the history of drought in Kidder County according to the 2014 FEMA-approved mitigation plan for the county.

- 1930s Dust Bowl: June 1929 was one of the driest on record in Kidder County, followed by continuing drought conditions throughout the 1930s. On July 6, 1936, North Dakota recorded its highest temperature of 121°F at Steele (National Weather Service). The “Dust Bowl,” as it is called, resulted in widespread drought conditions, soil erosion, and grasshopper infestations. This drought was exacerbated by poor farming practices, low market prices, and a depressed economy. Lessons learned during the 1930s drought stimulated the creation of governmental agencies to promote conservation, increased irrigation, and education stressing more flexible and diverse operations using improved management practices. The Federal Crop Insurance Program was established and institutions liberalized credit. The United States Department of Agriculture (USDA), the North Dakota State Agricultural Experiment Station System, and agricultural colleges and universities began an intensified research effort. This resulted in technologies for control of soil erosion, soil moisture conservation, higher yielding grain varieties that could better withstand dry conditions, improved fertilizers, and better farm management techniques.
- 1950s: The impact of drought in the early 1950s was less severe than the 1930s. The widespread financial distress, interstate migration, and regional disruption characteristic of the Dust Bowl era were largely absent. Strong emphasis was placed on water conservation and augmentation, weather modification research, weather prediction and control, groundwater recharge, irrigation and evaporation control.
- 1970s and 1980s: 1976 was the driest year in North Dakota and Kidder County since the 1930s according to the State Historical Society of North Dakota. The years 1984 to 1987 were very dry and the county was experiencing drought conditions. The cattle were without hay, sloughs dried up, dugouts were dry, and it was hard to get water to the cattle. In the late fall of 1987, rain brought relief to the county. In June 1988, it was the hottest June on record at every major station across North Dakota. There were 13 to 22 days with temperatures of 90 degrees or more. In the southwest and south-central sections, 7 to 10 of these days were 100 degrees or more. By 1988, the North Dakota Governor declared a statewide emergency because of the drought. Damages were not limited to agricultural losses. Public water systems and individual wells also began to dry up. Disaster damage in 1988 was estimated to be \$3.5 billion, not including the cost of indirect impacts. In the 1970s and 1980s, response to drought by state and federal governments

was characterized by provisions for livestock feed assistance, crop loss financial aid packages (deficiency and disaster payments), commodity stock adjustments, disaster credit and forbearance programs for agriculture producers and related small businesses, and some water-related assistance.

- 2000-2007: North Dakota soils were under some degree of drought and ruled for 78 consecutive months from December 2000 until mid-June 2007. The most severe drought occurred during July 2006 when 100 percent of the State experienced at least moderate drought status on the drought monitor scale.
- 2012: Most locations across Kidder County and central North Dakota experienced it as one of the top ten warmest years on record, drier than normal conditions, and a snowfall deficit of over 10 inches. Several locations had their warmest March average temperature on record. The average temperatures in March were 12 to 14 degrees Fahrenheit above normal. The drought conditions deteriorated throughout the summer and fall, with below normal precipitation and abnormally dry conditions. In August and September, there were very high and extreme fire dangers in portions of southcentral North Dakota. The west to northwest wind gusts were reported between 45 to 51 mph on several days. The drought conditions improved during November and December as the weather pattern transitioned into wetter than normal conditions.

2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)

The following bullet points summarize the history of drought in Kidder County per the 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP). A detailed hazard history for Kidder County can be found on a disc located at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA).

- Since 1930, North Dakota has suffered drought in the 1930s, 1950s, early 1960s, mid 1970s, early 1980s, 1988 through 1991, 2002 through 2004, 2006, 2008, 2012/2013, and 2017.
- A state-wide drought was declared in 1980, 1981, 2002, 2005, and 2012 impacting all counties in North Dakota.
- **Typically, presidential declarations pertaining to drought occur before secretarial declarations by the U.S.D.A. as secretarial declarations are not permitted without a presidential declaration. Since 1976, Kidder County has been included in 29 drought declared disasters or emergencies, of which 13 were state declared emergency orders, one was presidential, and 15 were U.S.D.A. Secretarial Declarations.**

Crop Loss

Crop loss from drought is tracked by the United States Department of Agriculture, Risk Management Agency (RMA). The RMA provides data on the crop type affected, damage cause description, determined acres, and indemnity amount. The damage-cause description identifies the cause of damage and the number of acres lost due to damage, and the indemnity amount identifies the total amount of the loss for the designated peril. **Between January 1, 2001 and December 31, 2017, Kidder County**

experienced 406 incidents of crop loss due to drought impacting 497,989.81 acres of crops totaling \$30,237,172.11 in losses.

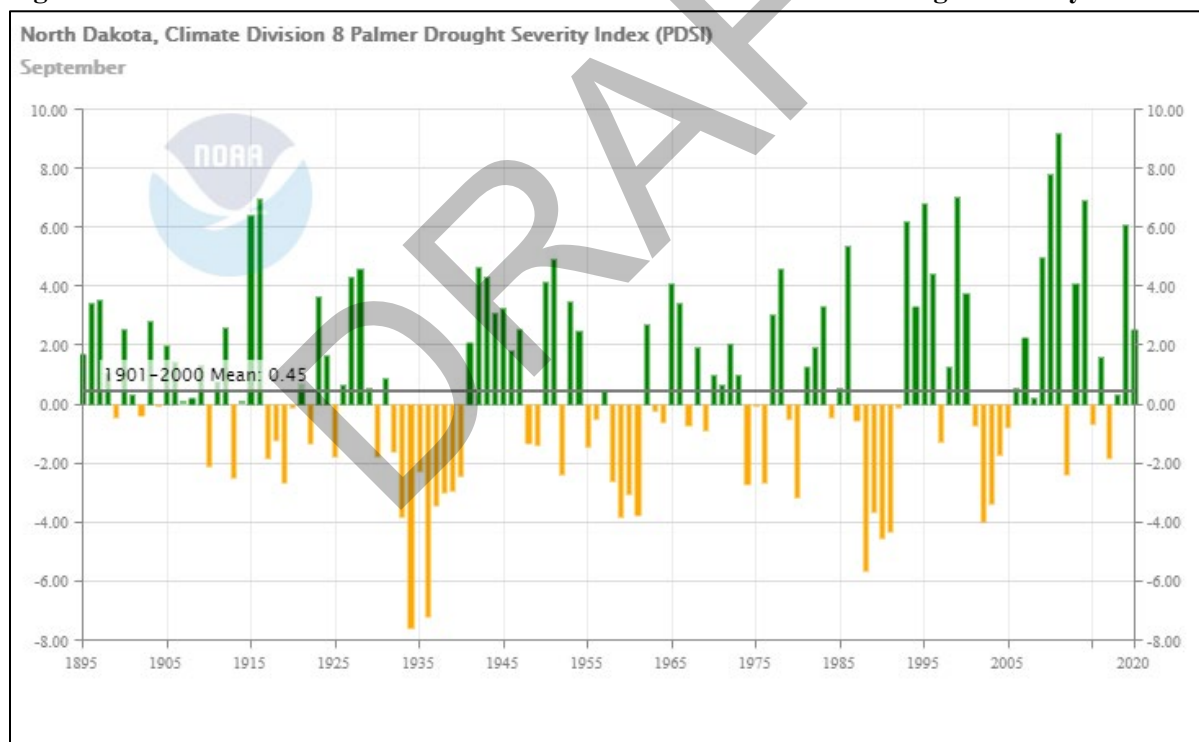
Palmer Drought Severity Index (PDSI)

The Palmer Drought Severity Index (PDSI) is an estimated measurement of dryness based on temperature and precipitation based available. It is a standardized index that generally spans -10 (dry) to +10 (wet). Maps of operational agencies like NOAA typically show a range of -4 to +4, but more extreme values are possible.

The PDSI has been reasonably successful at quantifying long-term drought. As it uses temperature data and a physical water balance model, it can capture the basic effect of global warming on drought through changes in potential evapotranspiration. Monthly PDSI values do not capture droughts on time scales less than about 12 months; more pros and cons are discussed in the Expert Guidance. Figure 4.4.1 is the PDSI and was provided by the North Dakota State Climatologist at North Dakota State University.

- According to PDSI, between 1895 and 2020 Kidder County experienced multi-year droughts in the 1930s, 1950s, 1980s, and 2000s.

Figure 4.4.1 – 1895 to 2020 North Dakota Climate Division 8 Palmer Drought Severity Index



Source(s): Palmer Drought Severity Index (PDSI); North Dakota State University

Probability

The probability of a hazard or threat is how likely it is it will happen. The probability of drought varies annually and is highly dependent on seasonal weather patterns. According to profile meeting participants,

the probability of drought in Kidder County is highly likely meaning that there is a 100 percent probability in the next year of a drought to a varying degree of severity. Drought is a naturally occurring phenomenon and, therefore, it is indisputable that a drought of significance will occur based on climatic patterns at some point in the future.

- **Based on 13 state declared emergency orders, one was presidential, and 15 were U.S.D.A. Secretarial Declarations pertaining to drought between 1976 and 2017, the probability of drought is approximately 67 percent in any given year.**
- With the local economy of small, incorporated cities in the county heavily reliant on the agriculture industry, the probability of drought can be measured by crop loss. According to crop loss data from the USDA-RMA, Kidder County experienced \$1,778,657.18 in annualized crop damage and 24 annual claims of indemnity between 2001 and 2017. **Therefore, the probability of crop loss from drought is calculated to be 100 percent.**

Extent/Magnitude

The extent/magnitude of a hazard or threat is expressed in the amount of damages or losses either actualized in a community or estimated based on known assets and levels of risk. Profile meeting participants indicated the magnitude or impact of drought in Kidder County as catastrophic meaning that more than 50 percent of the county, its people and property are affected if a drought of significance occurred. The following are key points from the state risk assessment in the 2018 N.D. Enhanced Mitigation MAOP.

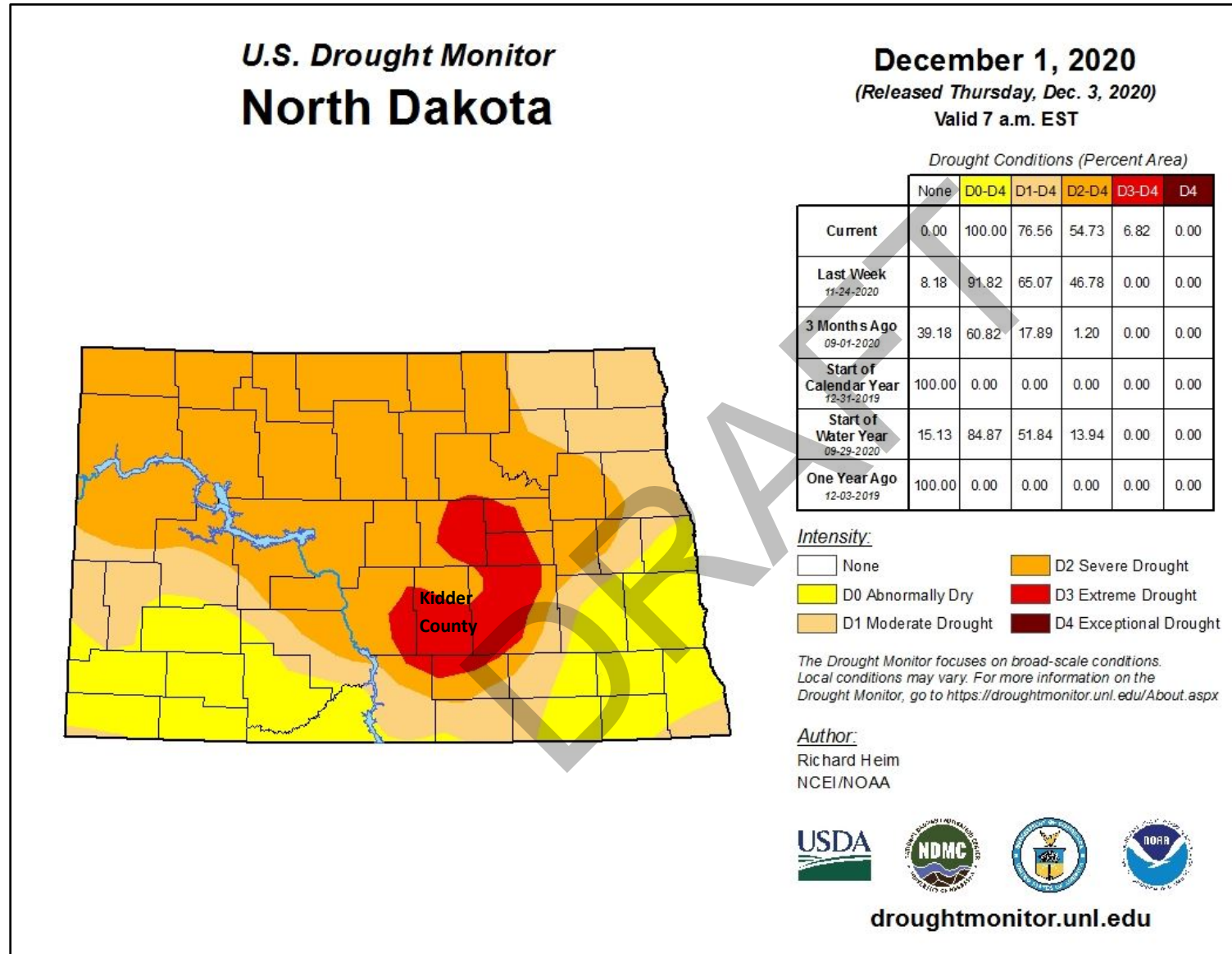
- Kidder County has a moderate overall vulnerability from drought based on \$29,772,312.00 in crop insurance paid between 2003 and 2017 due to impacts of drought resulting in annualized payments of \$1,984,820.80 in the same time frame.
- Annualized crop damage of \$2,230,132.00 between 2003 and 2017.

U.S. Drought Monitor (USDM). The USDM is a drought communication system managed by the National Drought Mitigation Center at the University of Nebraska-Lincoln updated every Thursday to show the location and intensity of drought across the United States. The USDM uses the following five-category system, labeled:

- Abnormally Dry or D0, (a precursor to drought, not actually drought);
- Moderate (D1);
- Severe (D2);
- Extreme (D3), and
- Exceptional (D4) Drought.

Drought categories show experts' assessments of conditions related to dryness and drought including observations of how much water is available in streams, lakes, and soils compared to usual amounts for the same time of year. U.S. Drought Monitor data go back to 2000. Figure 4.4.2 shows the status of drought conditions in North Dakota as of December 1, 2020. A substantial portion of Kidder County was classified as D3 or Extreme Drought while northernmost sections of the county were classified as D2 (Severe Drought)

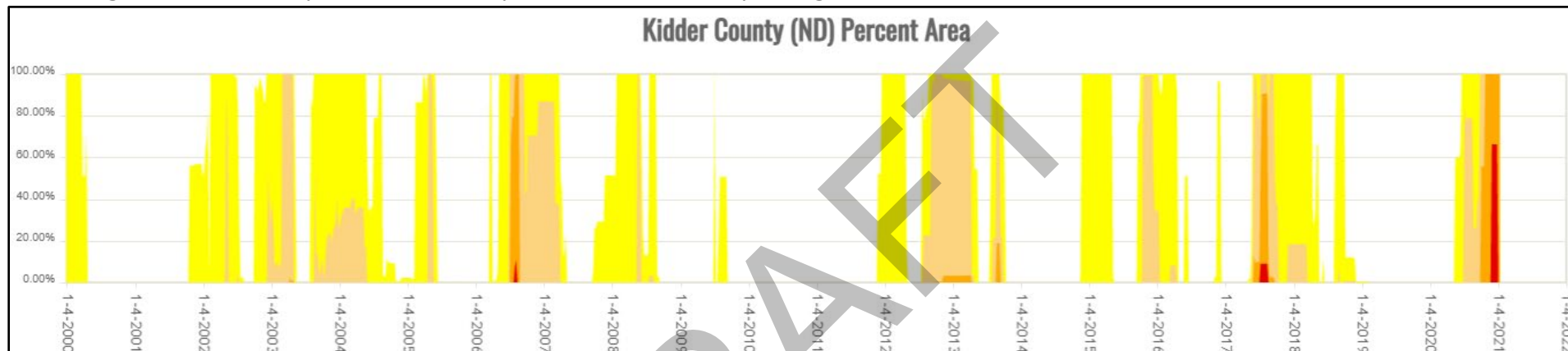
Figure 4.4.2 – December 1, 2020, U.S. Drought Monitor, North Dakota



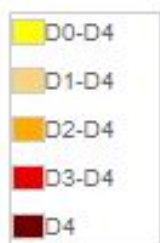
Source(s): U.S. Drought Monitor

Figure 4.4.3 shows the time series of drought for Kidder County from January 4, 2000, to January 4, 2021, and the percent of the county and its respective drought classification. The figure is shown to assist Kidder County in understanding the characteristics of local drought impacts. As seen in the figure, Kidder County has had abnormally dry conditions nearly every year with brief periods of moderate drought mixed with small instances of severe and extreme drought between 2006 and 2007, in the summer of 2017, and the winter of 2020/2021.

Figure 4.4.3 – January 4, 2000 to January 4, 2021 Kidder County Drought Time Series



Source(s): U.S. Drought Monitor



Risk Assessment

Table 4.4.1 shows the risk assessment as determined by individual jurisdictions, the Steering Committee, and meeting participants at the profile meeting for drought. The risk assessment methodology can be found in the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA). The total in Table 4.4.1 represents the sum of each jurisdiction's impact, frequency, likelihood, and vulnerability to a hazard/threat less the jurisdiction's capabilities to respond to the hazard/threat.

Table 4.4.1 – Kidder County Drought Risk Assessment Scored Chart Summary

Jurisdiction	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Kidder County	4	3	4	4	2	13
City of Dawson	4	4	4	4	2	14
City of Pettibone	4	3	4	4	2	13
City of Robinson	4	2	4	4	2	12
City of Steele	4	3	4	4	2	13
City of Tappen	4	3	4	4	1	14
City of Tuttle	4	2	4	4	1	13

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

A list of impacts identified as commonplace for natural hazards and man-made threats regardless of the jurisdiction is shown in Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA).

Table 4.4.2 provides information on the specific impact, frequency, likelihood, vulnerability, and capability of drought in Kidder County.

Table 4.4.2 – Kidder County Area Drought Risk Assessment

Impact	<ul style="list-style-type: none"> • Crop Loss • Loss of Economy • Loss of Livestock • Loss of Wildlife Habitat • Increase in Wildland Fire Potential • Water quality compromised from lakes and stock dams • Diminished soil quality – salinity will increase • Negative impact on mental health of producers and fire responders – “community impact” 	<ul style="list-style-type: none"> • Local producers forced to reduce herd sizes and restructuring of harvest usage • Population decline due to loss of jobs/economy • Annualized crop damage of \$2,230,132.00 between 2003 and 2017 (2018 State Enhanced Mitigation MAOP) • Between January 1, 2001 and December 31, 2017, Kidder County experienced 406 incidents of crop loss due to drought impacting approximately 497,989.81 acres totaling \$30,237,175.11 in losses.
Frequency	<ul style="list-style-type: none"> • Severe Drought of 1961/1962, 1988/1989 through 1991/1992, 2012/2013 • Summer of 2017, local producers forced to reduce portions of their herds • End of July through winter of 2016 – county reached severe drought status • Severe drought conditions winter 2020/2021 	<ul style="list-style-type: none"> • FSA activated the Livestock Forage Program in 2012 • Based on 13 state declared emergency orders, one was presidential, and 15 were U.S.D.A. Secretarial Declarations pertaining to drought between 1976 and 2017, the probability of drought is 67 percent in any given year.
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Dry/wet cycle every five to 10 years • Climatic patterns will result in an eventual drought of significance/lack of precipitation • Weather patterns becoming more irregular and extreme • Increased response times from fire dept due to volunteer roster 	<u>Less Likely</u> <ul style="list-style-type: none"> • Heavy precipitation
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Loss of economy from decreased wildlife & hunting • Agriculture economy • Elderly population • Flat terrain/open topography contributes to conditions • Pastureland adjacent to structures and city limits • Lack of water sources for drought relief and fire suppression in some jurisdictions 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Financial assistance programs made available by the state and federal government • Fire Index monitoring and mapping from NDDDES • Drought Monitor updating drought conditions on a weekly basis (every Thursday) • Advanced communications such as internet and TV • Incorporated jurisdictions with water towers

Table 4.4.2 – Kidder County Area Drought Risk Assessment

Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Presence of aquifers used for crop irrigation and wells use for rural water, individual use, and livestock – these can be depleted by drought • Soil composition contributes to drought conditions – high levels of sand depletes moisture quick • Presence of railroad that can exacerbate conditions with increased risk of fire 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Regional water systems - Expansion of rural water into small, incorporated jurisdictions and rural farmsteads • Individual crop maintenance practices such as no-till, minimal-till, and cover crops • Presence of CRP • Presence of aquifers for water supplies • N.D. Agriculture Weather Network
Capability	<u>Administrative and Technical</u> <ul style="list-style-type: none"> • Active county commission • Full-time emergency manager and 9-1-1 Coord. • NDSU Extension/Kidder County • Farm Service Agency (FSA) • Natural Resource Conservation Service (NRCS) • Contracts for engineering, planning, and grant writing • GIS services provided through state • County-wide mutual aid agreement(s) • U.S.D.A. Emergency Board • N.D. Agriculture Weather Network <u>Education and outreach</u> <ul style="list-style-type: none"> • NDSU Extension/Kidder County • Farm Service Agency (FSA) • Active emergency management department with education and outreach available on the department's website 	<u>Financial</u> <ul style="list-style-type: none"> • FSA has programs designed to financially assist farmers in times of need (FLP, LIP, LFAP – all cattle), and new program focusing on pasture ground • National Resources Conservation Service (ECP – all cattle) • U.S.D.A., Risk Management Agency crop insurance subsidized by federal government • U.S.D.A. Rural Development-REAP grants • Rural water district • Small Business Administration (SBA) <u>Planning and Regulatory</u> <ul style="list-style-type: none"> • N.D. State Fire Index • Kidder County Burn Bans • State implements burn bans • Farmers receiving USDA benefits required to have a highly erodible plan of operation in place • Drought management and water conservation plans at the state level • South Central Rural Water District/Stutsman Rural Water District – have drought management and water conservation plans in place

Vulnerabilities to Publicly-Owned Buildings and Property

Drought has not had a direct impact on buildings and property in Kidder County. Loss of water supply would influence the function of publicly-owned buildings. Disruptions in service and extended periods of closure may occur. Drought would threaten publicly-owned buildings and property from the increase in fire threat and the potential decrease in available water for fire suppression. A summary of publicly-owned buildings is provided in Chapter 3, Profile and Inventory.

Vulnerabilities of Critical Facilities and Infrastructure

Critical facilities that rely on water for operation and continued use are most vulnerable to drought. Large employers in the agriculture sector and manufacturing can be negatively affected by drought and are viewed as critical facilities, depending on the number of people they employ and the impact they have on local economies.

According to the 2018 ND Enhanced Mitigation MAOP, the largest water user in Kidder County in 2016 by reported use was rural water. Since rural water supplies are drawn from local bodies of water, drought would not have a significant impact on critical facilities and infrastructure such as government buildings, public schools, hospitals, correctional centers, and senior housing developments.

Vulnerabilities to New and Future Development

The greatest vulnerability from drought to new and future development would be underground water sources, the agriculture industry, and energy development. New development has the potential to diminish sources of water with increases in population and economic activity as municipal water is sourced from local bodies of water. Individuals with wells and septic systems are not regulated and are more susceptible to drought.

The agriculture sector is becoming increasingly precision-agricultural based with advanced technological systems, which can simultaneously increase the demand for water and the vulnerability of drought in Kidder County.

With the possibility of climate change, the state can expect drought conditions affecting certain counties and regions to occur more frequently. Drought will impact Kidder County with more frequency and increased severity.

Data Limitations and Other Key Documents

A data limitation for understanding impacts from drought is the difficulty in identifying the true extent of the drought in terms of time, or when a drought begins and when a drought concludes. Characteristics of drought are hard to distinguish between periods of dryer than normal conditions and cyclical weather patterns. Droughts tend to impact areas slowly and is not sudden like other hazards such as severe winter weather or flooding. In addition, impacts of drought are far reaching and tend to have a trickle-down effect on many sectors of the economy. Therefore, a process to determine near accurate loss estimates for drought is challenging, at best.

According to the Farm Services Agency, crop loss due to drought is calculated at harvest time due to planted acres determined at the beginning of the season. Therefore, the data could be skewed due to prior impacts from other hazards. Double check with an insurance agent and get their exact clarification.

The National Climatic Data Center also did not report any occurrences of drought in Kidder County between January 1, 1950, and May 31, 2020. **The drought of 1988/1989 through 1991/1992, which was a significant event in recent North Dakota history, was not listed as impacting Kidder County when hazard history was taken from the National Climatic Data Center.**

This plan incorporates data from the following documents. Information from this plan will be incorporated in the update of the following documents.

- 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)
- Kidder County Evacuation and Shelter Plan
- Kidder County Local Emergency Operations Plan
- Kidder County Shelter and Mass Care Plan
- Kidder County Threat and Hazard Identification and Risk Assessment (THIRA)
- North Dakota Continuity of Operations Plan
- North Dakota Drought Response Plan
- North Dakota Emergency Operations Plan, Drought Annex
- North Dakota State Disaster Recovery Plan
- North Dakota State Preparedness Report (SPR)
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)

4.6 Flood

Including closed basin, flash floods, groundwater seepage (interior flooding), ice jams, levee/floodwall failure, overland flooding and river flooding.

Characteristics

Flooding, as a natural hazard, has been a part of the county's conflict with nature throughout history and is defined as an overflow of water on land not normally covered by water. Floods are a natural phenomenon; however, flood hazards are often intensified by man-made interference with nature.

Seasonal Pattern	Seasonal. More frequent during spring and summer. Fall flooding occurs on very rare occasions. Spring and winter flooding can occur from ice jams in culverts and local bodies of water.
Duration	Several hours for flash flooding; up to 2 weeks or several months depending on severity for major overland and/or channel flooding.
Speed of Onset	Minutes for flash flooding. Between 12 and 24 hours warning for closed basin, overland and channel flooding.
Location	<p>Low-lying areas near or adjacent to bodies of water, or with inadequate drainage.</p> <p>Kidder County. Interstate 94.</p> <p><u>Dawson.</u> Surrounding county and township roads; intersection of Thompson St. and Fulton Ave; South Street east of N.D. Highway 3; a 700-foot stretch of Garfield St. west to Old Highway 10.</p> <p><u>Pettibone.</u> Surrounding rural and township roads. N.D. Highway 36 near Des Moines Lake.</p> <p><u>Robinson.</u></p> <ul style="list-style-type: none"> • 1st Avenue (in city limits) • County Road 71 near Horsehead Lake • 40th Ave SE adjacent to N.D. Highway 36 • 10th St. and 31st Ave SE in rural areas of the county near the city of Robinson • 18th St. between 33rd and 34th Ave SE • 11th St. between 31st and 34th Ave SE (three spots) • 22nd St. between County Road 71 and 34th Ave SE • Inundation of sanitary sewer system and lift station • Flooding of the city hall/city shop/community center/shelter <p><u>Steele.</u> County roads and surrounding township roads. Flash flooding occurs from heavy precipitation at the intersection of Mitchell Ave and Broadway St., streets on the northwest and parts of the southwest areas of the city; drainage ditch from 3rd Ave SE to 26th Ave SE.</p> <p><u>Tappen.</u> Surrounding rural and township roads; areas of the city south of the railroad; 3rd St. and Columbia Avenue.</p>

	<u>Tuttle</u> . Surrounding rural and township roads; a low-spot prone to flooding east of the city park on Doyle Street.
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For more information regarding flooding please reference the **2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)**. The plan can be accessed by following the link:

[2018 North Dakota Enhanced Mitigation Mission Area Operations Plan](#)

History

Table 4.6.1 summarizes the history of flooding in Kidder County and indicates seven reported instances of the hazard between March 21, 1997, and August 16, 2014; data was available between January 1, 1950 to December 31, 2020. This data does not include recent instances of flooding, which were included in presidential disaster declarations in 2019 and 2020.

Table 4.6.1 – Kidder County Flood Hazard History Summary

Flood					
Occurrences	Date Range	Fatalities	Injuries	Property Damage	Crop Damage
7	3/21/97 to 8/16/14	0	0	\$1,465,000.00	\$35,000.00

Source(s): National Climatic Data Center (NCDC), National Oceanic and Atmospheric Administration (NOAA)

Since 1953, Kidder County has had 20 Presidential Disaster Declarations, of which 15 included flooding. Profile meeting participants and the steering Committee indicated annual occurrences of flooding impacting critical facilities and infrastructure. A detailed hazard history for Kidder County can be found on a disc located at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment.

Table 4.6.2 2001 to 2013 Flood Public Infrastructure Damages

Disaster Number	Year	Number of Damaged Sites	Dollar Amount of Damages
DR 1376	2001	99	\$894,095
DR 1829	2009	158	\$2,204,093
DR 1907	2010	17	\$122,069
DR 1981	2011	45	\$1,516,188
DR 4128	2013	4	\$150,026

Source(s): 2014 Kidder County MHMP; ND Department of Emergency Services

Crop Loss. Crop loss from flood is tracked by the United States Department of Agriculture, Risk Management Agency (RMA). The RMA provides data on the crop type affected, damage cause description, determined acres and indemnity amount. The damage cause description identifies the cause of damage, determines acres identifies the number of acres lost due to damage, and the indemnity amount identifies the total amount of the loss for the designated peril. **Between January 1, 2001 and December 31, 2017, Kidder County experienced 11 incidents of crop loss due to flooding impacting approximately 1,385 acres of crops totaling \$542,714 in losses.**

2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)

According to the 2018 N.D. Enhanced Mitigation MAOP, the following historical flooding events have occurred in and impacted Kidder County.

- **2013 Rain Event.** This event was a result of severe storms combined with overland and riverine flooding which resulted in a record-breaking, four-week wet cycle that began on May 17, 2013, and ended June 16, 2013. A federal disaster was declared (DR-4128), including: Benson, Bottineau, Cavalier, Dunn, **Kidder**, McHenry, McKenzie, McLean, Mountrail, Nelson, Pembina, Pierce, Ramsey, Sheridan, Stark, Towner, Walsh, Ward and Wells counties, and the Spirit Lake Nation and the Turtle Mountain Band of Chippewa. This severe storm cycle, which began just one day after the incident period for FEMA- DR-4118-ND ended, produced heavy rainfall in excess of 10.5 inches in some areas and created a second catastrophic flood. Drainage areas and main stem rivers and tributaries that were already full from the spring flood rapidly overflowed which resulted in widespread overland flooding. Runoff forced evacuations, damaged 1,400 homes, placed 12 dams in northeast North Dakota at risk, and caused significant personal and public property damage. The late spring flood had already created a serious economic hardship for agricultural producers in terms of delayed planting. Overland and riverine flooding resulting from the May-June storm cycle once again inundated farmland, compounding losses to our state's leading industry.
- **August 17, 2014.** Several waves of heavy rain, with embedded non-severe thunderstorms with torrential rain, moved through western and central North Dakota. There was overland, stream, river and flash flooding, mainly over the southern half of the western and central parts of the state. The hardest hit areas were between Williston and Dickinson, and between Bismarck and Jamestown. Up to six inches of rain fell from Kintyre to Napoleon to Menoken. Up to 11 inches was indicated by radar and verified through ground truth rain gauge reports in the Dunn and Mercer County areas. Ten and a half inches of rain was reported nine miles south of Dunn Center, Dunn County. Damage was in the millions of dollars. Some counties had to close roads because of flooding. Weight limits were placed on other roads as the roadbeds softened. The rain was the result of a mid-level atmospheric circulation that moved very slowly across North Dakota. Flood watches were posted for parts of the area more than a day in advance and were followed by advisories and warnings. Several counties issued disaster declarations.
- **According to the National Centers for Environmental Information, as of 2018, Kidder County has experienced four flash flood events resulting in \$120,000 in property damage and \$35,000 in crop damage, and three flood events resulting in \$1,345,000 in property damage and no crop damage.**

Probability

The probability of a hazard or threat is how likely it is it will happen. Per Table 4.6.1, the probability of flooding in Kidder County is approximately 39 percent in any given year based on seven flood occurrences between 1997 and 2014.

Profile meeting participants and the Steering Committee indicated the probability of a flood in Kidder County as likely meaning that there is a high probability of a flood occurrence of a varying degree of severity in the next year or two. According to the 2018 N.D. Enhanced Mitigation MAOP, Kidder County is ranked high for flooding.

Figure. 4.6.1 is from the 2018 N.D. Enhanced Mitigation MAOP and shows the one-percent annual chance floodplain in North Dakota based on FEMA’s NFHL, which only shows areas with DFIRM data available. The one-percent annual chance floodplain is not present in Kidder County.

Extent/Magnitude

The extent/magnitude of a hazard or threat is expressed in the amount of damages or losses either actualized in a community or estimated based on known assets and levels of risk. Based on history of flooding in Table 4.6.1 and crop loss information from the USDA-RMA, Kidder County can anticipate approximately \$81,388,89 in property damages and **\$31,924 in crop losses annually.**

Profile meeting participants and the Steering Committee indicated the magnitude of a flood in Kidder County as catastrophic meaning that more than 50 percent of the jurisdiction, its people and property can be impacted.

HAZUS Analysis. A 100-year flood boundary HAZUS Analysis was completed for Kidder County as part of this mitigation plan update. Information from this analysis is critical in mitigating the impact of flood on Kidder County. This information will be incorporated into the county’s emergency operations plan and flood management plan. Figures 4.6.2 and 4.6.4 on the following pages show the maps for the 100-Year Flood Event Boundary for Kidder County and the cities of Dawson and Tappen.

The following are key points regarding the magnitude of a 100-year flooding event from the Kidder County HAZUS Analysis.

- \$17,892,584.66 in direct economic loss of agriculture products;
- No direct economic loss for transportation (all modes), and
- No utility infrastructure exposure or losses.

National Flood Insurance Program (NFIP)

Table 4.6.3 shows the communities participating in the National Flood Insurance Program. Communities that participate in the National Flood Insurance Program (NFIP) are required to adopt flood plain regulations that meet NFIP objectives:

- New buildings must be protected from flooding damages because of a 1-percent chance flood.
- New development must not cause an increase in flood damages to other property.

Table 4.6.3 – Participation in National Flood Insurance Program (NFIP) – Kidder County

Jurisdiction	CID #	Initial FHBM Identified	Initial FIRM Identified	Eff Map Date
Kidder County	--	--	--	--
City of Dawson	--	--	--	--
City of Pettibone	--	--	--	--
City of Robinson	--	--	--	--
City of Steele	380251	02/21/75	NA	(NSFHA)
City of Tappen	--	--	--	--
City of Tuttle	380041	11/29/74	01/03/01	(NSFHA)

Source: FEMA Community Status Book Report, North Dakota

- The DFIRMs for Kidder County can be found on a disc located at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment.
- A map of the watersheds of Kidder County is shown in Chapter 9, Maps.
- Chapter 6, Mitigation Strategy includes mitigation projects to enroll jurisdictions and encourage participation in the National Flood Insurance Program (NFIP). Mitigation Project PR-3 encourages enrollment and participation in the NFIP. Mitigation Project PR-4 encourages review of local ordinances to meet or exceed minimum federal and state requirements, comply with NFIP, and enroll in the Community Rating System.

NFIP Program Policies, Claims and Loss Payments

Per the NFIP, as of April 16, 2018, there are no policies in-force providing coverage in Kidder County since it is not enrolled in the NFIP.

NFIP Loss Statistics

Per the NFIP, between 1978 and April 16, 2018, no losses occurred in Kidder County since it is not enrolled in the NFIP.

NFIP Repetitive Loss Properties

Per FEMA, a repetitive loss (RL) property is any insurable building for which two or more claims of more than \$1,000 were paid by the National Flood Insurance Program (NFIP) within any rolling ten-year period, since 1978. The losses must be within 10 years of each other and be at least 10 days apart. A RL property may or may not be currently insured by the NFIP.

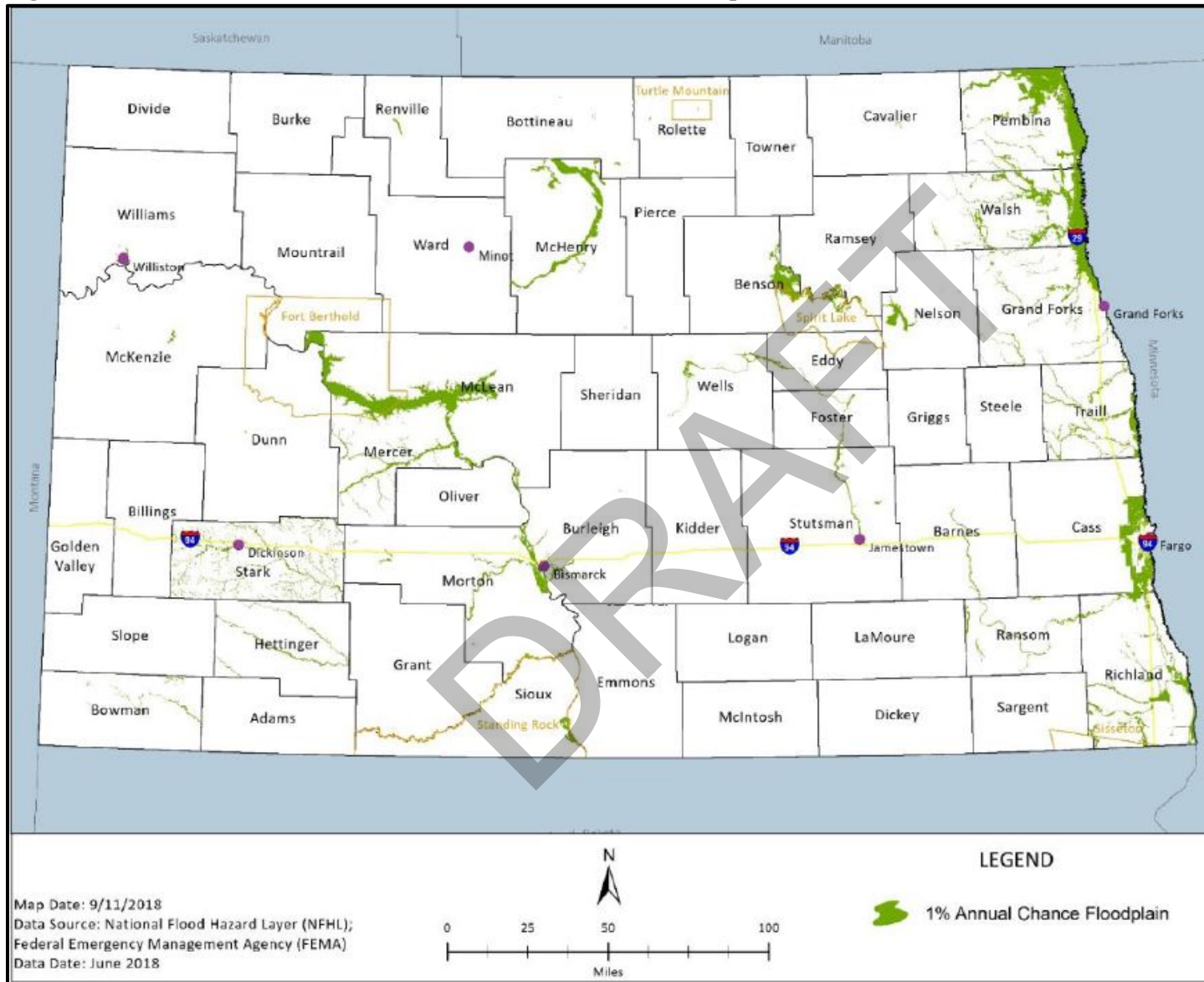
As October 2018, there are no repetitive loss properties were in Kidder County.

NFIP Severe Repetitive Loss Properties

A Severe Repetitive Loss (SRL) property is a residential property that has had at least four NFIP claim payments over \$5,000 each with two such claims occurring within any ten-year period, or residential property that has had at least two separate claim payments within any ten-year period that have cumulatively exceeded the value of the property.

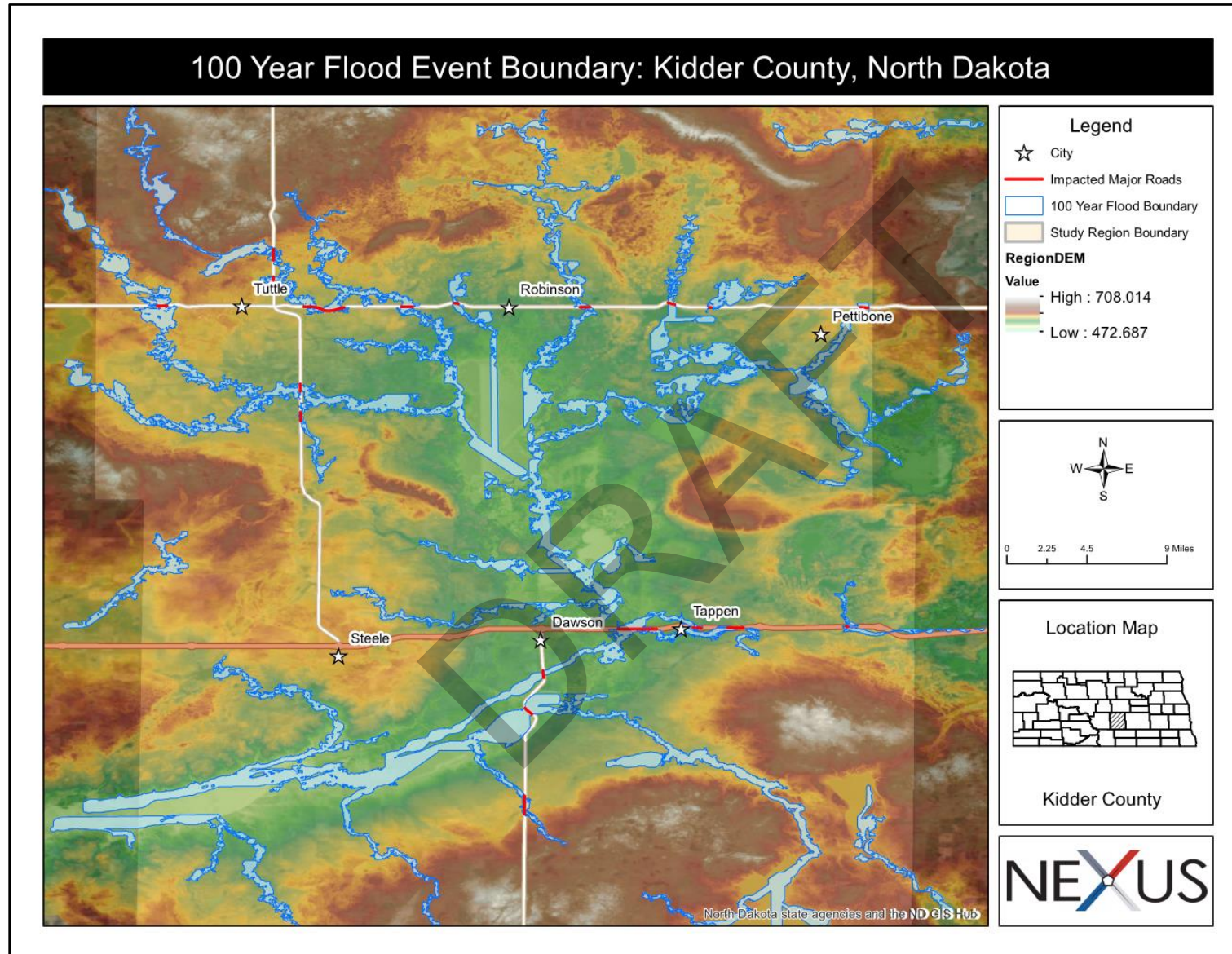
As October 2018, there are no severe repetitive loss properties were in Kidder County.

Figure 4.6.1 – 2019 North Dakota One-Percent Annual Chance Floodplain



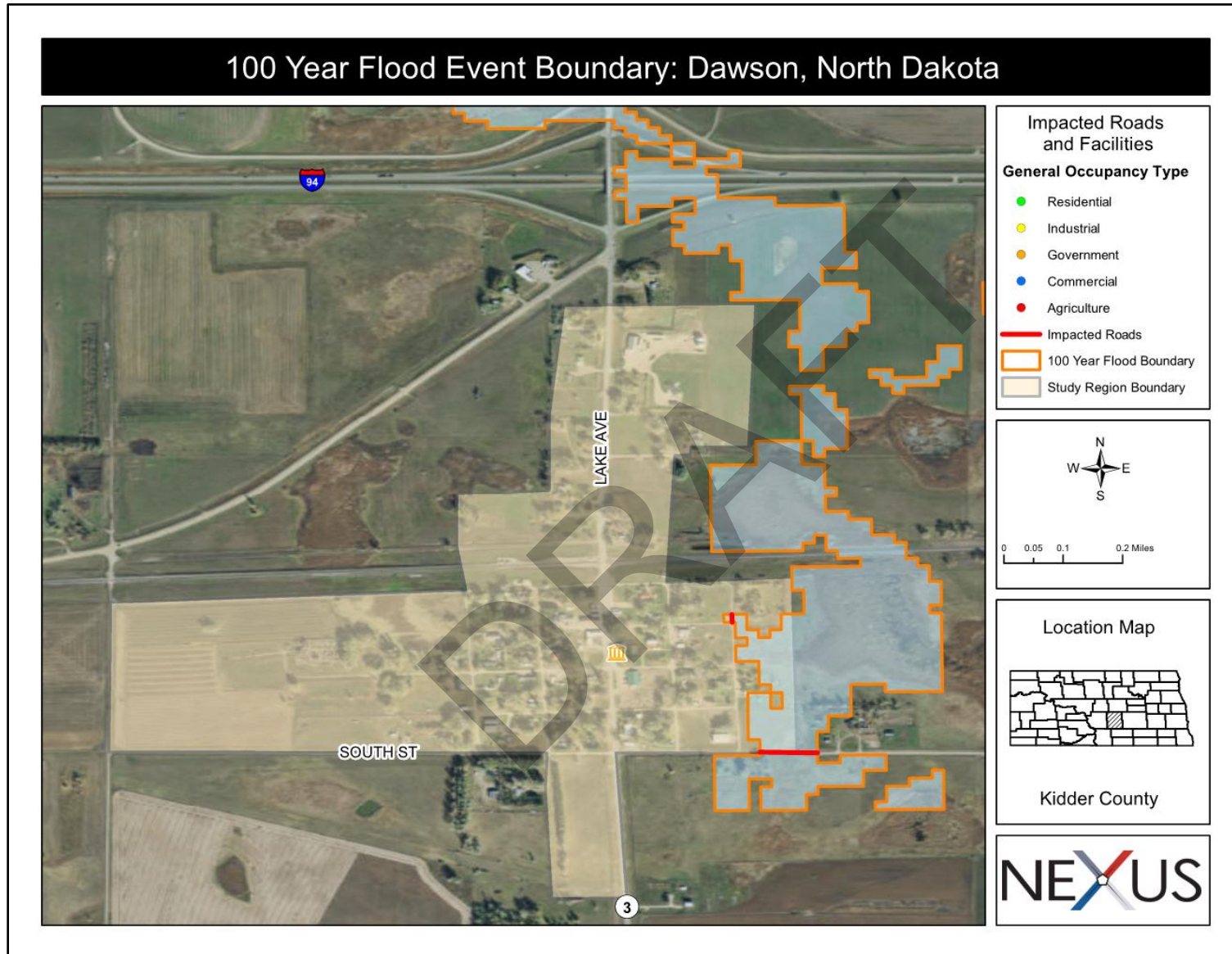
Source(s): 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)

Figure 4.6.2 – Kidder County 100-Year Flood Event Boundary



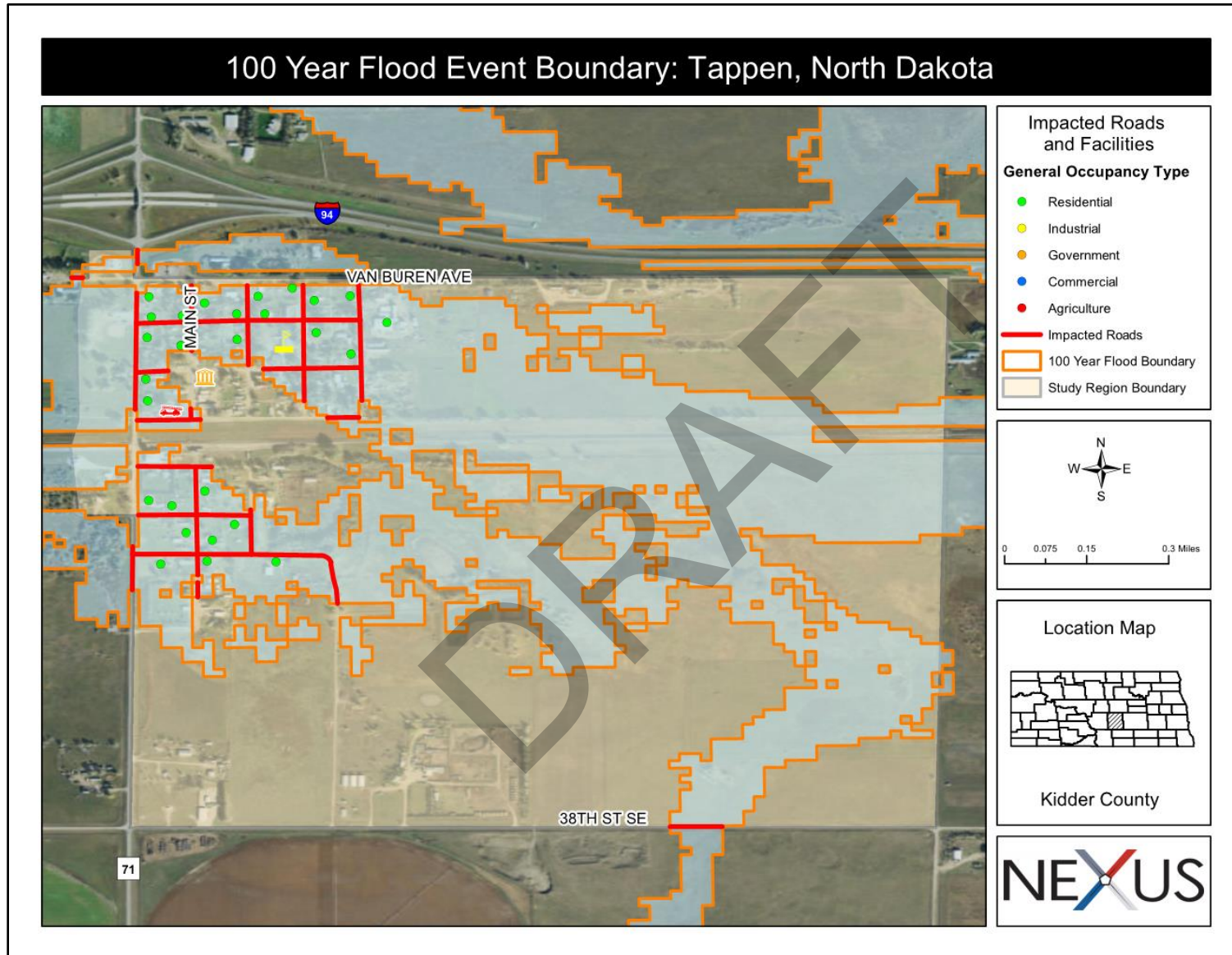
Source(s): Kidder County HAZUS Analysis, 100-Year Flood Event Boundary - Mountain Plains, LLC and Nexus Planning & Consulting, LLC

Figure 4.6.3 – City of Dawson 100-Year Flood Event Boundary



Source(s): Kidder County HAZUS Analysis, 100-Year Flood Event Boundary - Mountain Plains, LLC and Nexus Planning & Consulting, LLC

Figure 4.6.4 – City of Tappen 100-Year Flood Event Boundary



Source(s): Kidder County HAZUS Analysis, 100-Year Flood Event Boundary - Mountain Plains, LLC and Nexus Planning & Consulting, LLC

Risk Assessment

Table 4.6.3 shows the risk assessment as determined by individual jurisdictions, the Steering Committee, and meeting participants at the profile meeting for flood. The risk assessment methodology can be found in the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA). The total in Table 4.6.3 represents the sum of each jurisdiction's impact, frequency, likelihood and vulnerability to a hazard/threat less the jurisdiction's capabilities to respond to the hazard/threat.

Table 4.6.3 – Kidder County Flood Risk Assessment Scored Chart Summary

Jurisdiction	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Kidder County	4	4	3	4	2	13
City of Dawson	2	2	2	1	1	6
City of Pettibone	4	4	4	4	1	15
City of Robinson	4	3	4	4	1	14
City of Steele	3	2	4	3	2	10
City of Tappen	3	2	3	3	1	10
City of Tuttle	4	4	4	4	1	15

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 4.6.4 provides information on the specific impact, frequency, likelihood, vulnerability and capability of flood in Kidder County. A list of impacts identified as commonplace for natural hazards and man-made threats regardless of the jurisdiction is shown in Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA).

Table 4.6.4 – Kidder County Flood Risk Assessment

Impact	<p><u>Blocked Roads</u></p>	<p><u>HAZUS Analysis – 100-Year Flood Event</u></p> <ul style="list-style-type: none"> • \$17,892,584.66 in direct economic loss of agriculture products • No direct economic loss for transportation • No utility infrastructure exposure or losses <p><u>2018 State Plan</u></p> <ul style="list-style-type: none"> • According to the National Centers for Environmental Information, as of 2018, Kidder County has experienced four flash flood events resulting in \$120,000 in property damage and \$35,000 in crop damage, and three flood events resulting in \$1,345,000 in property damage and no crop damage.
Frequency	<ul style="list-style-type: none"> • Annual occurrences of localized flooding of streets in incorporated cities and county roads and bridges • Periodic flash flooding from heavy rains during the summer • 2019 and 2020 had 3 major flooding disasters 	<ul style="list-style-type: none"> • Kidder County can anticipate approximately \$81,388,89 in property damages and \$31,924 in crop losses annually. • 2013 rain event • August 27, 2014 storm • July 1993 flood • Spring of 1997 flood
Likelihood	<p><u>More Likely</u></p> <ul style="list-style-type: none"> • Rapid change of seasons resulting in excessive snow melt and drainage • Low spots on county/township roads and highways • Geography/topography: Numerous waterways converge at or near the center of Kidder County and then drains south and west into Burleigh County – See Figure 4.6.2 • The county is located in the center of the “Prairie Pot-Hole Region” 	<p><u>Less Likely</u></p> <ul style="list-style-type: none"> • Likelihood dependent local weather climate patterns • Installation of upgraded culverts and improvements to drainage through presidential disaster declaration

Table 4.6.4 – Kidder County Flood Risk Assessment - Continued

Vulnerability	<p><u>More Vulnerable</u></p> <ul style="list-style-type: none"> • Rapid change of seasons resulting in excessive snow melt and drainage • Low spots on county roads, highways, township roads • Geography/topography: Numerous waterways converge at or near the center of Kidder County and then drains south and west into Burleigh County – See Figure 4.6.2 • Lack of adequate flood insurance policies by local taxpayers under NFIP = large economic losses • Electrical substations: one northwest of Steele and the other southeast of Tappen • MDU substations in each city • Rural water booster station south of the city of Dawson • Kidder County not enrolled in the NFIP • Kidder County in the center of the “Prairie Pot-Hole Region” 	<p><u>Less Vulnerable</u></p> <ul style="list-style-type: none"> • Cities of Steele and Tuttle enrolled in NFIP • Flood ordinances in county and incorporated cities • No levee-protected areas in Kidder County • According to the 2018 N.D. Enhanced MAOP Kidder County no bridges scoured from flooding • Installation of upgraded culverts and improvements to drainage through presidential disaster declaration
Capability	<ul style="list-style-type: none"> • See Chapter 7 for a list of capabilities to address flooding. • NFIP – Steel and Tuttle • Kidder County has a flood operations/management plan that includes all incorporated jurisdictions. 	

Vulnerabilities to Publicly-Owned Buildings and Property

Vulnerabilities to publicly-owned buildings and property from floods are always present whether flooding is due to flash flooding, overland, basement, channel, or closed basin. Locations of publicly-owned buildings will largely determine vulnerabilities to channel and overland flooding. Basement flooding is mostly a site-specific issue (cities of Dawson, Robinson, and Tappen) occurring when mechanical systems fail, or high precipitation causes water tables to rise. The county shops in Robinson and Tappen are in flood inundation areas. The Kidder County Courthouse/Law Enforcement Center is not vulnerable to flooding. A summary of publicly-owned buildings is provided in Chapter 3, Profile and Inventory.

Vulnerabilities of Critical Facilities and Infrastructure

Damage to critical facilities and infrastructure such as drinking water and sewer systems, roadways and electric power lines can happen when flooding occurs. Drinking water and sewer systems can be shut down when power to lift stations and water treatment facilities are suspended, or the systems become overwhelmed. Roads can be washed out or blocked from overland flooding, which limits access for emergency services.

In Kidder County, profile meeting participants and the Steering Committee identified Interstate 94, BNSF Railroad, and drinking/potable water and wastewater infrastructure in all incorporated cities are impacted by flooding to varying severity.

An inventory of critical facilities and infrastructure and property is provided in Chapter 3, Profile and Inventory.

HAZUS Analysis

The road network in Kidder County has vulnerabilities to a 100-year flooding event. Based on the Kidder County 100-Year Flood Event HAZUS Analysis, the county can anticipate the following impacts to roads and infrastructure from flooding:

- Look at map and list here with the group.

Vulnerabilities to New and Future Development

New and future development is at high-risk to flooding if constructed in a floodplain. With projected increases in local economic activity and stabilized populations through 2030, more people will be vulnerable to flooding if development is not restricted from flood-prone areas. The 100-Year Flood Boundary in the HAZUS Analysis Maps for Kidder County and incorporated jurisdictions will help determine which areas are flood-prone and not suitable for development.

Data Limitations and Other Key Documents

This plan incorporates data from the following documents and information from this plan will be incorporated in the update of the following documents.

The hazard history from the National Climatic Data Center/National Oceanic Atmospheric Administration does not provide information on flood events prior to 1997. This lack of data may be due to inconsistencies in reporting between local and state governments with the federal government.

The lack of digitized records of public assistance provided to local governments from flood events.

- 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)
- 2020 Kidder County HAZUS Analysis, 100-Year Flood Event Boundary
- Kidder County Evacuation and Shelter Plan
- Kidder County Flood Management Plan (verbal)
- Kidder County and incorporated jurisdictions floodplain ordinances
- Kidder County Land Use Plan
- Kidder County Local Emergency Operations Plan
- Kidder County Shelter and Mass Care Plan
- Kidder County Threat and Hazard Identification and Risk Assessment (THIRA)
- N.D. Risk Assessment Mapping (RAM) Service (flood mapping software)
- North Dakota Continuity of Operations Plan
- North Dakota Emergency Operations Plan, Flood Annex
- North Dakota State Disaster Recovery Plan
- North Dakota State Preparedness Report (SPR)
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)

4.10 Severe Summer Weather

Including downbursts, extreme heat, hail, heavy rain, lightning, strong winds/straight-line winds, and tornadoes.

Characteristics

Summer storms are caused by atmospheric temperature imbalances. Thunderstorms develop as warm, moist air rises. These conditions will produce updraft and downdrafts that can reach velocities of 170 mph. Updrafts and downdrafts are the reason for gust fronts, heavy rain (flash severe summer weather), lightning, hail, and high winds. Downburst or straight-line winds can be as deadly as tornadoes. If a thunderstorm continues to intensify, a tornado may develop. A thunderstorm affects a relatively small area when compared to a winter storm. The typical thunderstorm is 15 miles in diameter and lasts an average of 30 minutes. Despite their small size, all thunderstorms are dangerous. Severe summer storms can result in loss of life, injuries, and damage to property and crops.

Seasonal Pattern	March to November
Duration	2 to 6 hours
Speed of Onset	6 to 24 hours warning
Location	Total geographic extent of Kidder County

Downbursts: Strong winds can form along the leading edge of a thunderstorm. Downburst winds occur when air is carried into a storm's updraft, cools rapidly, and comes rushing to the ground. These winds are forced horizontally when they reach the ground and can cause significant damage. These types of strong winds can also be referred to as straight-line winds.

Extreme Heat: According to information provided by FEMA, extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks. Heat kills by taxing the human body beyond its abilities.

Hail: Hail is frozen precipitation that forms and falls from cumulonimbus clouds. Hail occurs when strong rising currents of air within a storm, called updrafts, carry water droplets to a height where freezing occurs. The ice particles grow, finally becoming too heavy to be supported by the updraft and fall to the ground.

High wind: High wind events occur separately from tornadoes and severe thunderstorms. These winds typically develop with strong pressure gradients and gusty frontal passages. The closer and stronger two systems are, (one high pressure, one low pressure) the stronger the pressure gradient, and therefore, the stronger the winds are.

Lightning: Lightning develops when ice particles in a cloud move around, colliding with other particles. These collisions cause a separation of electrical charges. Positively charged ice particles rise to the top of the cloud and negatively charged ones fall to the middle and lower sections of the cloud. The negative charges at the base of the cloud attract positive charges at the surface of the Earth.

Tornado: A tornado is a violently rotating column of air extending from a thunderstorm to the ground. Most tornadoes develop from supercell thunderstorms. Supercell thunderstorms have a persistent rotating updraft and can form when there is sufficient vertical wind shear in the atmosphere. A funnel cloud is a rotating column of air extending out of a cloud base, but not yet touching the ground. Once a funnel cloud reaches the ground, it becomes a tornado. Tornadoes can create tremendous damage over a small area.

For more information regarding severe summer weather please reference the **2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)**. The plan can be accessed by following the link:

[2018 North Dakota Enhanced Mitigation Mission Area Operations Plan](#)

History

Table 4.10.1 summarizes the history of severe summer weather in Kidder County and indicates 229 instances of the hazard between January 1, 1950 to December 31, 2020. A detailed hazard history for Kidder County can be found on a disc located at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment.

Table 4.10.1 – Kidder County Severe Summer Weather Hazard History Summary

Severe Summer Weather					
Occurrences	Date Range	Fatalities	Injuries	Property Damage	Crop Damage
229	1/1/1950 to 12/31/2020	0	1	\$8,429,060.00	\$245,000.00

Source(s): National Climatic Data Center (NCDC); National Oceanic and Atmospheric Administration (NOAA)

- Kidder County experienced 229 occurrences of severe winter weather with one injury, \$8,429,060.00 in property damage, and \$245,000.00 in crop damage between January 1, 1950, and December 31, 2020.

Crop Loss. Crop loss from severe summer weather is tracked by the United States Department of Agriculture, Risk Management Agency (RMA). The RMA provides data on the crop type affected, damage cause description, determined acres and indemnity amount. The damage description identifies the cause of damage, determines acres identifies the number of acres lost due to damage, and the indemnity amount identifies the total amount of the loss for the designated peril. Cause of Loss categories included in severe summer weather include cold wet weather, excess moisture/precip/rain, hail, heat, hot wind, and wind/excess wind. **Between January 1, 2001 and December 31, 2017, Kidder County experienced 1,107 incidents of crop loss due to severe summer weather impacting approximately 291,744.81 acres of crops totaling \$30,430,400.60 in losses.**

An expanded electronic version of crop loss data is located on a disc located at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment.

Probability

Profile meeting participants and the Steering Committee indicated the probability of severe summer weather in Kidder County is highly likely, meaning that there is a 100 percent probability in the next year of an occurrence. Per Table 4.10.1, the following statistics on the probability of severe summer weather

in Kidder County is as follows:

- Probability of severe summer weather is 100 percent based on 229 occurrences between January 1, 1950 and December 31, 2020, or three severe summer weather events of significance annually.
- Kidder County experiences approximately \$118,719.16 in property damage and \$3,450.70 in crop damage annually.
- Approximately one injury has been reported between January 1, 1950, and December 31, 2020.

Per crop loss information obtained from the U.S. Dept. of Agriculture, Risk Management Agency (RMA), crop loss due to severe summer weather totals \$495,768.24 annually in Kidder County.

Extent/Magnitude

Profile meeting participants and the Steering Committee indicated the magnitude or impact of severe summer weather as catastrophic meaning as an estimated 50 percent or more of Kidder County could be affected. The magnitude of the severe summer weather ranges from large tornados and hail causing massive property and crop damage, power outages, and loss of critical facilities and infrastructure to localized flooding and fallen tree branches.

- According to the 2018 N.D. Enhanced Mitigation MAOP, FEMA recognizes four wind zones in the United States and North Dakota falls into Zones II and III. Winds speeds can reach up to 160 miles per hour in Zone II and 200 miles per hour in Zone III. No special wind regions are identified in North Dakota. Kidder County is split in half longitudinally between Zones II and III.

The following significant severe summer weather events were obtained from the National Climatic Data Center (NCDC):

- June 12, 1988. A Thunderstorm Wind event impacted Kidder County resulting in one injury and in \$250,000.00 in damages.
- August 31, 1997. A severe storm produced 4.5-inch diameter hail in the city of Steele.
- June 25, 1999. An F1 tornado impacted the city of Tuttle causing \$5,000,000.00 in property damages. The same storm produced wind speeds of 90 and 96 m.p.h. near the cities of Steele and Tuttle, respectively.
- June 25, 1999. A Thunderstorm Wind event impacted the city of Dawson resulting in \$175,000.00 in damages. This event also produced wind speeds of 70 m.p.h.
- July 17, 2001. An F2 tornado impacted areas near Lake Williams resulting in \$1,000,000.00 in property damages.
- July 8, 2018. A Thunderstorm Wind event impacted the city of Robinson and produced wind speeds of 80 m.p.h.

Risk Assessment

Table 4.10.2 shows the risk assessment as determined by individual jurisdictions, the Steering Committee, and meeting participants at the profile meeting for severe summer weather. The risk assessment methodology can be found in the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA). The total in Table 4.10.2 represents the sum of each jurisdiction's impact, frequency, likelihood, and vulnerability to a hazard/threat less the jurisdiction's capabilities to respond to the hazard/threat.

Table 4.10.2 – Kidder County Severe Summer Weather Risk Assessment Scored Chart Summary

Jurisdiction	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Kidder County	4	4	4	4	3	13
City of Dawson	4	4	4	4	1	15
City of Pettibone	4	4	4	2	1	13
City of Robinson	4	4	4	4	1	15
City of Steele	4	4	4	3	1	14
City of Tappen	4	4	4	3	2	13
City of Tuttle	4	4	4	3	2	13

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 4.10.3 provides information on the specific impact, frequency, likelihood, vulnerability, and capability of severe summer weather in Kidder County. A list of impacts identified as commonplace for natural hazards and man-made threats regardless of the jurisdiction is shown at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA).

Table 4.10.3 – Kidder County Severe Summer Weather Risk Assessment

Impact	<p><u>Blocked Roads</u></p> <ul style="list-style-type: none"> • Evacuation (Localized) • Human Injury/Death – heat exhaustion or from flying debris • Loss of Livestock • Loss of Crops • Loss of Power/Downed Power Lines • Property/Vehicle Damage – repair of roofing, siding, and drainage systems for homes, windows and paint for cars • Sewer Backup • Shelter-in-place • Strain to emergency services and responders if damage is widespread • Overland flooding in incorporated jurisdictions due to heavy rain, which can block roads/limit access and overwhelm sanitary sewer systems cause damage to the systems (Robinson, Tappen) • Unpaved streets in small jurisdictions can become damaged from rainfall and moisture 	<ul style="list-style-type: none"> • Direct hit from a tornado would be catastrophic • \$8,429,060.00 in property damage, and \$245,000.00 in crop damage between January 1, 1950, and December 31, 2020. • Approximately one injury reported between January 1, 1950 and December 31, 2020. • Temporary economic boost due to rebuilding/repairs of homes, businesses and other structures. • Between January 1, 2001 and December 31, 2017, Kidder County experienced 1,107 incidents of crop loss due to severe summer weather impacting approximately 291,744.81 acres of crops totaling \$30,430,400.60 in losses. • <u>June 25, 1999.</u> An F1 tornado impacted the city of Tuttle causing \$5,000,000.00 in property damages. The same storm produced wind speeds of 90 and 96 m.p.h. near the cities of Steele and Tuttle, respectively.
Frequency	<ul style="list-style-type: none"> • Annual occurrences of power loss from storms • Property damage from tornados/straight-line winds in summer 2017 • Windstorms occurring annually • Two or three significant storms producing damage to trees and property annually • See History section above 	<ul style="list-style-type: none"> • 229 occurrences between January 1, 1950 and December 31, 2020, or three severe summer weather events of significance annually • \$118,719.16 in property damage and \$3,450.70 in crop damage annually between January 1, 1950 and December 31, 2020.
Likelihood	<ul style="list-style-type: none"> • Climatic patterns will result in numerous annual occurrences of the hazard 	

Table 4.10.3 – Kidder County Severe Summer Weather Risk Assessment - Continued

Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • High elderly population • Peak periods of migrant workers residing in short-term/temporary housing during summer months • Lack of permanent generators at some critical facilities and infrastructure • Aging infrastructure (roads, water, electrical systems) • Small communities have experienced prolonged response from emergency services due to location and blocked roads occasionally • Lack of funding to improve previously low-traffic/small-scale roads as traffic volumes and vehicle sizes increase due to economic growth/activity (agriculture and wind) • Increase in permanent and temporary populations, and economic activity, will increase amount of people and community assets exposed to severe summer weather • Presence of pipelines, rail, and truck traffic carrying hazardous materials • Lack of storm shelters in smaller communities and rural areas of the county • Structural integrity of temporary housing • Staff limitations during events of significance for government and emergency services • Lack of ordinances regulating lighting of roadways and right-of-way encroachment • Lack of storm water systems in rural areas • Lightning strikes causing fires and damage to structures • Removal of shelterbelts leaves little to no protection to structures from severe summer weather • Lack of building code enforcement • Emergency sirens in place throughout the county are aging and need upgrading/investment • Lack of Reverse 9-1-1 at the county level 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Building Codes • Advanced warning/notification such as internet and TV • Switching of overhead power lines to underground – change to fiber-optic lines • More advanced warning systems and reverse 911 • Increased communication, cell phones, internet and TV • Increase in technological capabilities of tractors and farm equipment to warn farmers of severe storms • Emergency sirens are in place throughout the county • Education in schools has increased • Better predictions from the National Weather Service • Switch to no-till farming in some areas of the county reduces blowing of soil • Presence of public social media alerting
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Table 4.10.3 – Kidder County Severe Summer Weather Risk Assessment - Continued

Capability	<u>Administrative and Technical</u> <ul style="list-style-type: none"> • Active county commission • Contract for engineering, planning, and grant writing • GIS services provided by the state and county • Part-time emergency manager • Relies on state and federal agencies for emergency assistance • County has county-wide mutual aid agreement for emergency services • County road department staff • Public works department in the city of Steele and Kidder County • Kidder County Sheriff's Office • Steele Police Department • All county fire departments and ambulance services 	<u>Financial</u> <ul style="list-style-type: none"> • Funding provided through county commission, NDDOT, and state and federal sources • Utilizes financial assistance from FEMA for federally declared disasters
	<u>Education and Outreach</u> <ul style="list-style-type: none"> • Active emergency management department with education and outreach on county website and social media • Social Media • Education programs at local schools 	<u>Planning and Regulatory</u> <ul style="list-style-type: none"> • Maintains capital improvements project list and project funding sources • County and cities have zoning and ordinances in place to regulate development • County and cities have adopted building codes but lacks building code enforcement officer. Some townships have building code enforcement. • NDDOT design criteria and regulation guidelines for construction of and improvements to roads • County has full-time zoning administrator

Vulnerabilities to Publicly-Owned Buildings and Property

Publicly-owned buildings are susceptible to severe summer weather in many forms. Buildings are often constructed to withstand impacts from severe summer weather, but may not sustain high wind speeds, tornadoes, or large hail. Large hail can damage building roofs, break windows, injure people and/or result in fatalities. Depending on the size of the building and the role it plays in day-to-day operations, the vulnerability to severe summer weather can vary from nominal for larger structures such as the Kidder County Courthouse/Law Enforcement Center to severe for county shops in smaller cities, which are considerably less sturdy. A summary of publicly-owned buildings is provided in Chapter 3, Profile and Inventory.

Vulnerabilities of Critical Facilities and Infrastructure

Impacts to critical facilities such as water towers, roadways, publicly-owned buildings, and other specialty facilities like nursing homes and assisted living facilities, from severe summer weather are the same as publicly-owned buildings and property. In terms of infrastructure, overhead power lines are susceptible to wind and debris, which can disrupt electricity and cause power outages. Disruptions in water service can be caused by physical damage to water towers or lift stations, or a loss of power. Roadways can become blocked due to windblown debris and limit access for emergency services.

Vulnerabilities to New and Future Development

Building codes ensure buildings and structures are built adequately to better withstand severe summer weather. Kidder County and incorporated jurisdictions have adopted building codes but lack enforcement capabilities except for the city of Steele. Lack of building codes enforcement puts the county and cities more at risk to damage and impacts from severe summer weather as a result. Similarly, incorporated jurisdictions with a high number of trailer and mobile homes, which are more susceptible to severe weather, may experience more impacts from the hazard. An inventory of the household units by type in jurisdictions in Kidder County is shown in Chapter 3, Profile and Inventory. As populations grow, more people are at risk of injury and potential death from tornadoes, large hail, and windblown debris such as tree branches. Strengthening of buildings codes would mitigate impacts from the hazard. This mitigation project for the county can be found in Chapter 6, Mitigation Strategy.

Data Limitations and Other Key Documents

Residents often experience impacts from these hazards, such as broken windows on homes or damage to vehicles, they do not report. Weather data provided by NCDC, NOAA, and other agencies can be incomplete and reported damages can vary significantly from local sources. Fewer active storm spotters reduce the amount of reported weather information available to county emergency management.

Crop Loss. One of the Cause of Loss categories for crop loss data from the U.S.D.A.-RMA is titled Other (snow, lightning, etc.) combines elements of severe summer weather and severe winter weather. Therefore, crop loss data for any given jurisdiction is incomplete.

Livestock Indemnity Program (LIP). The LIP provides financial assistance to local producers that experience livestock losses. The program does not provide the cause of loss and, therefore, an accurate description of livestock loss from severe summer weather cannot be identified.

This plan incorporates data from the following documents and information from this plan will be incorporated in the update of the following documents.

- 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)
- Kidder County Local Emergency Operations Plan
- Kidder County Threat and Hazard Identification and Risk Assessment (THIRA)
- North Dakota Continuity of Operations Plan
- North Dakota Drought Mitigation Plan
- North Dakota Emergency Operations Plan, Severe Summer Weather Annex
- North Dakota State Disaster Recovery Plan
- North Dakota State Preparedness Report (SPR)
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)

DRAFT

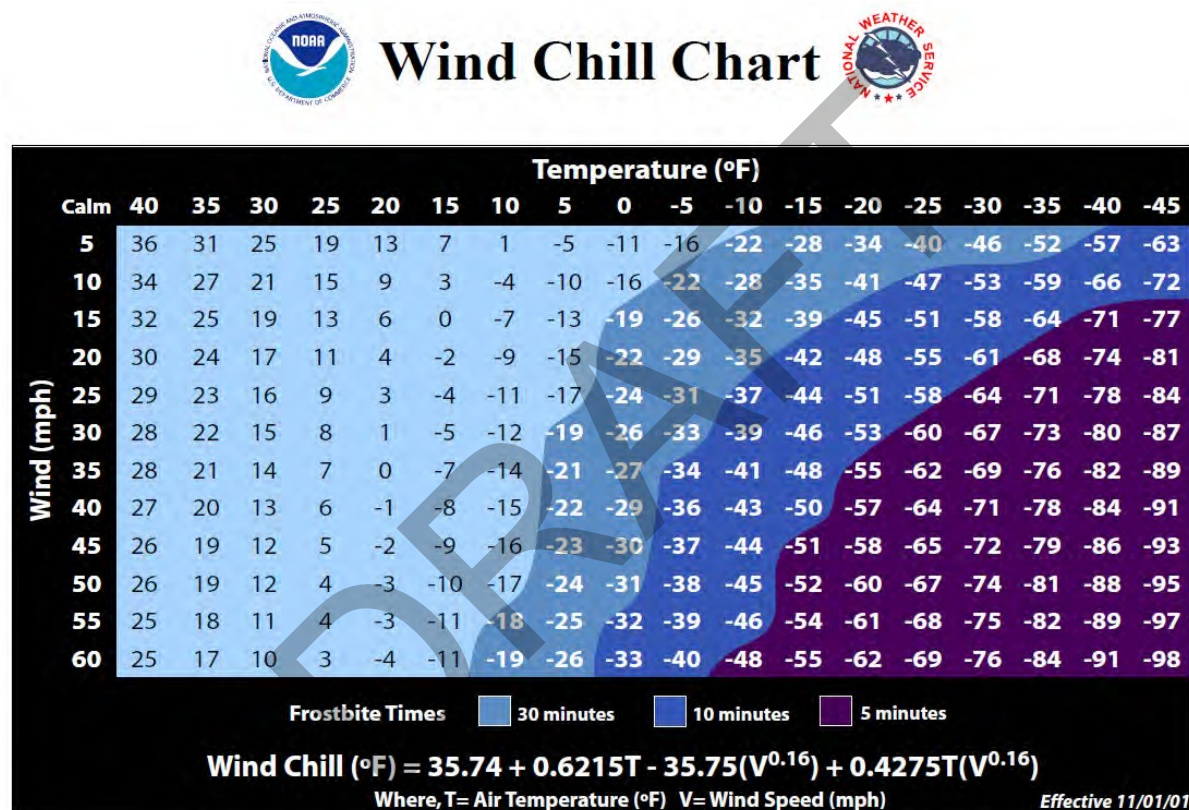
4.11 Severe Winter Weather

Including blizzards, extreme cold, heavy snow, ice storms, and recycled snow.

Characteristics

Winter storms have the capability to completely immobilize large areas of a state or several states simultaneously. Winter storms occur in several forms, such as heavy snowstorms, blizzards, and ice storms. Each in its own way is a potential killer of hundreds of people, livestock and wildlife, whenever the storm strikes. A brief explanation of each follows Figure 4.11.1.

Figure 4.11.1 – Wind Chill Chart



Source: National Weather Service

Blizzards are the most dramatic and dangerous winter storms. A blizzard has winds of 35 mph or more with snow and blowing snow reducing visibility to less than ¼ mile for at least 3 hours. Blizzards are usually characterized by low temperatures and by strong winds bearing substantial amounts of snow. Snowfall is usually present during the preliminary stages of the blizzard. However, most of the snow in a blizzard is in the form of fine, powdery particles of snow which are whipped up from the surface in such great density that at times the visibility is only a few yards, creating a blinding condition.

Extreme Cold includes prolonged periods of cold temperatures throughout the winter months. People are forced to limit time spent outdoors in extreme frigid conditions. When cold temperatures combine with wind, dangerous wind chill occurs. Wind chill describes how cold it feels and is based on heat loss

on exposed skin from wind and cold. The wind chill makes it feel much colder than the actual temperature.

Heavy Snowstorm is probably the most significant winter weather phenomenon. Snow can be continuous, intermittent, flurries or if showery in nature, snow squalls. Snow squalls are brief and intense for short durations and are comparable to summer rain showers. Blowing and drifting snow often occur together, due to strong-winds and falling or lose snow on the ground.

Ice Storms are freezing rain or drizzle occurs when surface temperatures are below freezing. The moisture falls in liquid form freezing upon impact, resulting in ice or glaze on exposed surfaces and is called an ice storm. Sleet sometimes incorrectly referred to as an ice storm; is frozen rain drops and ice pellets, which bounce when hitting the ground. Sleet does not stick to trees but enough can cause hazardous driving conditions. Heavy accumulations of ice can bring down trees, topple utility poles/power lines and communication towers; and can disrupt communications and power for days while utility companies repair extensive damage. Small accumulations of ice can be extremely dangerous to motorists and pedestrians because bridges and overpasses freeze before other surfaces.

Recycled Snow is the ongoing blowing and drifting of already accumulated snow from one or more snow events that continues to blow and drift for days and weeks. The blowing snow is raised above the surface and blows in quantities that reduce visibility, continuously form new drifts, and fills in plowed roads up to three or four times per day. It is the most significant winter weather phenomenon in the county.

Seasonal Pattern	October to April – will occur in May or June in rare instances
Duration	Hours/days/up to a week in severe cases
Speed of Onset	6 to 24 hours warning
Location	Total geographic extent of Kidder County

For more information regarding severe winter weather please reference the **2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)**. The plan can be accessed by following the link:

[2018 North Dakota Enhanced Mitigation Mission Area Operations Plan](#)

History

Table 4.11.1 summarizes the history of severe winter weather in Kidder County and indicates 114 instances of the hazard between January 1, 1950 and December 31, 2020. Kidder County experiences multiple severe winter weather events annually. A detailed hazard history for Kidder County can be found on a disc located at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment.

Table 4.11.1 – Kidder County Severe Winter Weather Hazard History Summary

Severe Winter Weather					
Occurrences	Date Range	Fatalities	Injuries	Property Damage	Crop Damage
114	1/1/1950 to 12/31/2020	0	9	\$4,990,000.00	NA

Note: The statistical occurrences of the data from the National Climatic Data Center were included in the query from January 1, 1950, to December 31, 2020. However, occurrence data did not begin until 1996.

Source(s): National Climatic Data Center (NCDC), National Oceanic and Atmospheric Administration (NOAA)

- Kidder County experienced 114 occurrences of severe winter weather with nine injuries, \$4,990,00.00 in property damage, and no crop damage between January 1, 1950, and December 31, 2020.

January 9, 1997. A major blizzard occurred resulting in \$1,530,000.00 in property damages.

April 4, 1997. A major blizzard/ice storm occurred resulting in \$1,500,000.00. **Did they get prolonged outages like Stutsman?**

March 11, 2011. A severe winter storm caused the closure of I-94 from Dickinson to Fargo resulting in several hundred motorists stranded along the highway. The North Dakota National Guard was activated to assist in the rescue of stranded motorists. Kidder County cities of Steele, Dawson, and Tappen sheltered over 500 people and neighboring Stutsman County sheltered an additional 500 people. Prior to the onset of the storm, normal travel was occurring and people were not prepared for the unpredicted severity of the storm.

Crop Loss. Crop loss from severe winter weather is tracked by the United States Department of Agriculture, Risk Management Agency (RMA). The RMA provides data on the crop type affected, damage cause description, determined acres and indemnity amount. The damage cause description identifies the cause of damage, determines acres identifies the number of acres lost due to damage, and the indemnity amount identifies the total amount of the loss for the designated peril. **Between January 1, 2001 and December 31, 2017, Kidder County experienced 142 incidents of crop loss due to severe winter weather impacting approximately 37,538.90 acres of crops totaling \$4,442,157.40.**

February 11, 2016. The ACDC concert in Fargo resulted in many attendees traveling through Kidder County on their way to the concert from their respective homes. An ice storm resulted in poor road conditions. Kidder County Emergency Management estimates approximately 35 to 40 motorists ended up in the ditch along Interstate 94 and needed towing services.

An expanded electronic version of crop loss data is located on a disc located at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment.

Probability

Profile meeting participants and the Steering Committee indicated the probability of severe winter weather in Kidder County is highly likely, meaning that there is a 100 percent probability in the next year the hazard will occur to some extent. Per Table 4.11.1, the following statistics on the probability of severe winter weather in Kidder County is as follows:

- Probability of severe winter weather in Kidder County is 100 percent based on 114 occurrences between January 1, 1950 to December 31, 2020, resulting in approximately one-to-two incidents of significance annually.
- Kidder County experiences approximately \$70,281.69 in property damage and no crop damage annually.
- Approximately nine injuries and no fatalities reported between January 1, 1950 and December 31,

2020.

Per crop loss information obtained from the U.S. Dept. of Agriculture, Risk Management Agency (RMA), crop loss due to severe summer weather totals \$261,303.38 annually in Kidder County.

Extent/Magnitude

Profile meeting participants and the Steering Committee indicated the magnitude or impact of severe winter weather as catastrophic meaning 50 percent or more of Kidder County and its people could be affected. The magnitude of the severe winter weather ranges from large blizzards with prolonged sub-zero temperatures causing widespread power outages and loss of critical facilities and infrastructure to localized icy road conditions with minor to major traffic accidents.

- **Prolonged power outages of up to six days have occurred due to severe ice storms in 1997.**
- March 11, 2011. Activation of the North Dakota National Guard to assist in the rescue of stranded motorists. Kidder County cities of Steele, Dawson, and Tappen sheltered over 500 people and neighboring Stutsman County sheltered an additional 500 people. Prior to the onset of the storm, normal travel was occurring and people were not prepared for the unpredicted severity of the storm.
- February 11, 2016. The ACDC concert in Fargo resulted in many attendees traveling through Kidder County on their way to the concert from their respective homes. An ice storm resulted in poor road conditions. Kidder County Emergency Management estimates approximately 35 to 40 motorists ended up in the ditch along Interstate 94 and needed towing services. Kidder County Ambulance reported 14 injuries.
- November 2018. The Kidder County Ambulance reported rescue of approximately 50 people due to severe winter weather. Those rescued were sheltered throughout the city of Steele. In all, 50 people were sheltered at the Kidder County Ambulance Hall and 10 were sheltered at the Steele Community Building.
- November 2019. A blizzard required the sheltering of 50 people at the Coffee Cup Travel Plaza and 15 people at the Cobblestone Hotel.

Risk Assessment

Table 4.11.2 shows the risk assessment as determined by individual jurisdictions, the Steering Committee, and meeting participants at the profile meeting for severe winter weather. The risk assessment methodology can be found in the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA). The total in Table 4.11.2 represents the sum of each jurisdiction's impact, frequency, likelihood, and vulnerability to a hazard/threat less the jurisdiction's capabilities to respond to the hazard/threat.

Table 4.11.2 – Kidder County Severe Winter Weather Risk Assessment Scored Chart Summary

Jurisdiction	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Kidder County	4	4	4	4	3	13
City of Dawson	4	4	4	4	1	15
City of Pettibone	4	4	4	2	1	13
City of Robinson	4	4	4	4	1	15
City of Steele	4	4	4	3	1	14
City of Tappen	4	4	4	3	2	13
City of Tuttle	4	4	4	3	2	13

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 4.11.3 provides information on the specific impact, frequency, likelihood, vulnerability, and capability of severe winter weather in Kidder County. A list of impacts identified as commonplace for natural hazards and man-made threats regardless of the jurisdiction is shown in Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA).

Vulnerabilities to Publicly-Owned Buildings and Property

Most structures remain unaffected by impacts from severe winter weather. Damage occurs from heavy snow, frozen pipes, power outages or potential damage to structural foundations from freezing and thawing of soil. Roof collapses are the biggest single-event on buildings and property resulting from heavy snow loads that can lead to the loss of life. Heavy snow can also block sewer vents on buildings and property, which can cause fatalities through sewer gas poisoning. A summary of publicly-owned buildings is provided in Chapter 3, Profile and Inventory.

Vulnerabilities of Critical Facilities and Infrastructure

The greatest issues for critical facilities and infrastructure resulting from severe winter weather impacts are inaccessibility due to blocked roads, and utility and power outages. The Kidder County Courthouse/Law Enforcement Center and the Kidder County School in Steele, and numerous critical facilities and infrastructure in incorporated jurisdictions and Kidder County should upgrade existing generators or install new generators to maintain power, if not done so already.

Power. Critical facilities with backup generators are better equipped to handle impacts from severe winter weather if loss of power does occur. Suspended power lines are highly susceptible to high winds and subsequent fallen tree branches, other debris or accumulation of ice, leading to power outages.

Restoration of power can take several days or a week. All jurisdictions in the county have experienced power outages during severe winter weather to varying degrees.

Road. The greatest issue for critical infrastructure and infrastructure is maintenance of the road system during severe winter weather. Emergency services can have trouble responding during power outages and are limited in responding to emergencies when roads are blocked from snow drifts. During blizzards or snowstorms, cars and trucks can become stranded if roads are blocked with heavy snow and ice. Response times for emergency services can also be prolonged and prevent access to communities. Prolonged closures of roads can threaten propane, fuel and food supplies, and medical supplies.

Sanitary Sewer. Sanitary sewer systems can fail causing sewer backup resulting in property damage if prolonged power loss occurs and lift stations fail.

Water. Disruptions in water service can be caused by physical damage to water towers or lift stations, or a loss of power. Delivery of water to jurisdictions can be interrupted by water main breakage resulting from freeze and thaw cycles.

Vulnerabilities to New and Future Development

New and future development could be seriously impacted by severe winter weather in jurisdictions that lack building codes and/or enforcement. Homes and businesses lacking the capability of supporting heavy snow loads could experience roof collapse. Jurisdictions without building codes should have improved construction to better withstand severe winter weather.

Built Environment. Street design also plays an important role in vulnerability to severe winter weather. New and future development developed in a “suburban style” manner containing curvilinear roads and cul-de-sacs are more susceptible to severe winter weather impacts. Snow removal on these roadways has proven difficult and raises the potential for blocked roads and limits access for emergency services. Maintaining a high level of connectivity, which is defined as how often streets or roadways intersect, can increase the ease of snow removal and lessen the impact of blocked roads and maintain access for emergency services.

Population. Increases in population further complicate matters when dealing with severe winter weather. An example of this would be higher numbers of people susceptible to vehicle accidents on icy or blocked roads, health hazards due to wind chill and extreme cold, etc. Conversely, increases in populations in existing jurisdictions may lessen the risk to impacts from severe winter weather as it leads to less isolated populations and increases the number of people reachable by emergency services during an emergency.

Table 4.11.3 – Kidder County Severe Winter Weather Risk Assessment

<p>Impact</p>	<p>Blocked Roads</p> <ul style="list-style-type: none"> • Delayed Emergency Response • Human Injury/Death • Livestock Loss • Loss of Power/Downed Power lines • Limited mobility of local employers and employees/general population • Saturation of roadways annually due to inadequate drainage of snow melt • Restricted access for emergency services from snow blocking roads • Loss of Economy • Increased isolation of elderly/rural residents/small communities • Severe low temperatures may increase utility costs • Increased cost for fuel for snow removal during large snow events • Highways can become icy reducing mobility speeds • Heavy snow causing spring melting and potential flooding • Disruption in economic activity and transportation routes moving goods and people, and provided services • Increased difficulty in mobility of general population may result in missed work or school • May contribute to shortage or outage of critical materials and infrastructure due to limited mobility from blocked roads and restrict delivery of commodities and products to the marketplace • Additional calls for emergency services may strain resources • Sheltering stranded people – March 11, 2011 <ul style="list-style-type: none"> • Put in avg household size and mobile home information • Kidder County experienced 114 occurrences of severe winter weather with nine injuries, \$4,990,00.00 in property damage, and no crop damage between January 1, 1950, and December 31, 2020. • Approximately nine injuries and no fatalities reported between January 1, 1950 and December 31, 2020. • Temporary economic boost due to rebuilding/repairs of homes, businesses and other structures.
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	<ul style="list-style-type: none"> All county and city roads are impacted by severe winter weather, depending on wind direction and quantity of snow received and duration of the incident
Frequency	<ul style="list-style-type: none"> Multiple occurrences of blizzard, extreme cold, and heavy snow annually Annual occurrences of power loss from ice storms March 11, 2011 blizzard resulting in mass sheltering March 2017 snowstorm resulted in blocked roads all over the county and in city limits Strong winds are commonplace Occurrences of blocked roads from heavy snow occurs frequently Probability of severe winter weather in Kidder County is 100 percent based on 114 occurrences between January 1, 1950 to December 31, 2020, resulting in approximately one-to-two incidents of significance annually. Kidder County experiences approximately \$70,281.69 in property damage and no crop damage annually
Likelihood	<ul style="list-style-type: none"> Climatic patterns will result in numerous annual occurrences of the hazard

Table 4.11.3 – Kidder County Severe Winter Weather Risk Assessment - Continued

Vulnerability	More Vulnerable	Less Vulnerable
	<ul style="list-style-type: none"> • High elderly population • Lack of permanent generators at some critical facilities and infrastructure • Aging infrastructure (roads, water, electrical systems) • Short staffing of local employers and employees/general population • Townships do not have equipment to clear roads and rely on farmers, Kidder County, and private contractors • Low-lying roads shut down from snow accumulation • Longer response times from emergency services • Stranded motorists • Some township roads become invisible signage for navigation due to fading and weather-related impacts • County lacks manpower/equipment to adequately respond to above average snow precipitation and accumulation • Increased removal of shelterbelts allows more ground blizzards • Improper placement of existing shelter belts adjacent to roadways contributes to blockage • Lack of storm water systems in some communities may contribute to overland flooding during spring thaw • Lack of building code enforcement • Emergency sirens in place throughout the county are aging and need upgrading/investment • Lack of Reverse 9-1-1 at the county level 	<ul style="list-style-type: none"> • Building Codes • Advanced warning/notification such as internet and TV • Switching of overhead power lines to underground – change to fiber-optic lines • Independent work ethic of local populations • Some township roads lack signage for navigation for emergency services and first responders in rural areas • County has adequate equipment for clearing roads during typical winter storm events • Better weather alerts and education of residents through internet, TV and cable • Presence of public social media alerting • City and County/State road departments will assist ambulances to calls in rural areas during incidents of severe winter weather

Table 4.11.3 – Kidder County Severe Winter Weather Risk Assessment - Continued

Capability	<u>Administrative and Technical</u> <ul style="list-style-type: none"> • Active county commission • Contract for engineering, planning, and grant writing • GIS services provided by the state and county • Part-time emergency manager • Relies on state and federal agencies for emergency assistance • County has county-wide mutual aid agreement for emergency services • County road department staff • Public works department in the city of Steele and Kidder County • Kidder County Sheriff's Office • Steele Police Department • All county fire departments and ambulance services 	<u>Financial</u> <ul style="list-style-type: none"> • Funding provided through county commission, NDDOT, and federal sources • Utilizes financial assistance from FEMA for federally declared disasters
	<u>Education and Outreach</u> <ul style="list-style-type: none"> • Active emergency management department with education and outreach on county website and social media • Social Media • Education programs at local schools 	<u>Planning and Regulatory</u> <ul style="list-style-type: none"> • Maintains capital improvements project list and project funding sources • County and cities have zoning and ordinances in place to regulate development • County and cities have adopted building codes but lacks building code enforcement officer. Some townships have building code enforcement. • NDDOT design criteria and regulation guidelines for construction of and improvements to roads • County has full-time zoning administrator

Data Limitations and Other Key Documents

Residents often experience impacts from these hazards, such as minor structural damage, increased utilities, loss of livestock, frozen water lines, but do not report.

Crop Loss. One of the Cause of Loss categories for crop loss data from the U.S.D.A.-RMA is titled Other (snow, lightning, etc.) combines elements of severe summer weather and severe winter weather. Therefore, crop loss data for any given jurisdiction is incomplete.

Livestock Indemnity Program (LIP). The LIP provides financial assistance to local producers that experience livestock losses. The program does not provide the cause of loss and, therefore, an accurate description of livestock loss from severe winter weather cannot be identified.

This plan incorporates data from the following documents and information from this plan will be incorporated in the update of the following documents.

- 2018 N.D. Enhanced Mitigation MAOP
- Kidder County Local Emergency Operations Plan
- Kidder County Threat and Hazard Identification and Risk Assessment (THIRA)
- North Dakota Continuity of Operations Plan
- North Dakota Emergency Operations Plan, Severe Winter Weather Annex
- North Dakota State Disaster Recovery Plan
- North Dakota State Preparedness Report (SPR)
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)

4.12 Space Weather

Conditions in space that affects Earth and its technological and infrastructure systems.

Characteristics

Space Weather is a consequence of activity on the sun, the Earth's magnetic field and atmosphere, and the Earth's location in the solar system. These storms originate from the sun and occur in space near Earth or its atmosphere. Disruptions are primarily categorized into three types of events: geomagnetic storm, solar flares, and solar radiation storms. The storms can affect critical facilities and infrastructure, and technology in many ways, including blackouts, high-frequency radio disruptions, and interference with satellite navigation.

Geomagnetic Storm is a major disturbance of Earth's magnetosphere that occurs when there is a very efficient exchange of energy from the solar wind into the space environment surrounding Earth.

Solar Flares are large eruptions of electromagnetic radiation from the sun lasting from minutes to hours. The sudden outburst of electromagnetic energy travels at the speed of light, therefore, any effect upon the sunlit side of Earth's exposed outer atmosphere occurs at the same time the event is observed.

Solar Radiation Storms occur when a large-scale magnetic eruption, often causing a coronal mass ejection (CME) and associated solar flare, accelerates charged particles in the solar atmosphere to very high velocities.

Seasonal Pattern	None.
Duration	Minutes. Secondary impacts could last hours, days, weeks, months or even years.
Speed of Onset	Immediate identification from NOAA Space Weather Prediction Center; 8 minutes to reach the Earth.
Location	Total geographic extent of Kidder County.

For more information regarding space weather please reference the **2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)**. The plan can be accessed by following the link:

[2018 North Dakota Enhanced Mitigation Mission Area Operations Plan](#)

History

According to the 2018 N.D. Enhanced Mission Area Operations Plan (MAOP), there are no recorded catastrophic space weather events impacting North Dakota. However, the following events from other locations provide insight.

- The nearest recorded event affected Montreal, Quebec, Canada on March 13, 1989, when a geomagnetic storm took out their commercial electric power for nine hours. The storm impacted six million people.
- The largest geomagnetic storm in modern recorded history is named the Carrington Event. The solar super storm occurred on September 1st and 2nd, 1859, and impacted telegraph systems across Europe and North America. Auroras were recorded as far south as the Caribbean in the northern hemisphere.

Probability

The probability of a hazard or threat is how likely it is it will happen. The probability of space weather is 100 percent as the hazard is a natural phenomenon uncontrollable by humans and will occur at some point in the future. The 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP) documented six occurrences impacting Earth. Profile meeting participants and the Steering Committee indicated the probability of space weather as possible, meaning that there is between a one and 10 percent chance of an occurrence in the next year.

Extent/Magnitude

The extent/magnitude of a hazard or threat is expressed in the amount of damages or losses either actualized in a community or estimated based on known assets and levels of risk. The extent/magnitude of space weather can range from minimal to catastrophic. The National Oceanic and Atmospheric Administration Space Weather Prediction Center has created scales to communicate impacts on people and technologies from the hazard to the public. The scales have numbered levels of one to five, like other measurement scales for natural hazards like tornadoes and hurricanes. The scales rate the severity of possible effects of space weather. The magnitude of a space weather event can range from extreme (radio blackout on the entire sunlit side of the earth or outages in maritime and aviation systems) to minor (slight degradation of radio communication or navigation signals).

Profile meeting participants indicated the magnitude or impact of space weather as catastrophic meaning 50 percent or more of Kidder County and its people could be affected.

Risk Assessment

Table 4.12.1 shows the risk assessment as determined by individual jurisdictions, the Steering Committee, and meeting participants at the profile meeting for space weather. The risk assessment methodology can be found in the beginning of Chapter 5, Threat and Hazard Identification Risk Assessment. The total in Table 4.12.1 represents the sum of each jurisdiction's impact, frequency, likelihood, and vulnerability to a hazard/threat less the jurisdiction's capabilities to respond to the hazard/threat.

Table 4.12.1 – Kidder County Space Weather Risk Assessment Scored Chart Summary

Jurisdiction	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Kidder County	4	1	2	4	1	10
City of Dawson	4	1	1	4	1	9
City of Pettibone	4	1	4	4	1	12
City of Robinson	4	2	2	4	1	11
City of Steele	4	1	2	4	1	10
City of Tappen	4	1	2	3	1	9
City of Tuttle	4	1	2	4	1	10

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 4.12.2 provides information on the specific impact, frequency, likelihood, vulnerability, and capability of space weather in Kidder County. A list of impacts identified as commonplace for natural hazards and man-made threats is shown in Chapter 4.

Table 4.12.2 – Kidder County Space Weather Risk Assessment

Impact	<ul style="list-style-type: none"> • Business Interruptions • Delayed Emergency Response • Explosion • Financial Hardship (Private and Public) • Government Interruptions • HAZMAT Release • Human Injury/Death • Increased Fire Potential • Increased Public Safety Runs • Infrastructure Degradation • Labor Shortages • Loss of Communications • Loss of Economy • Loss/Overcrowded Medical Facilities • Loss/Overcrowded Veterinarian Facilities • Loss of Potable Water 	<ul style="list-style-type: none"> • Loss of Power/Electricity Outage • Loss of Transportation Accessibility • Mass Casualties/Fatalities • Property Damage (Structure, Equipment & Vehicle) • Public Distress/Social Discord • School Closure • Sewer Backup • Sheltering of Displaced Populations • Utility Outage/Shortage • Loss of digital infrastructure at Kidder County Courthouse/Law Enforcement Center, Kidder County Public School and other specialty facilities such as nursing homes and senior housing facilities
Frequency	<ul style="list-style-type: none"> • Never a recorded occurrence in Kidder County or North Dakota 	<ul style="list-style-type: none"> • The nearest recorded event affected Montreal, Quebec, Canada on March 13, 1989, when a geomagnetic storm took out their commercial electric power for nine hours. The storm impacted six million people.
Likelihood	<ul style="list-style-type: none"> • Dependent on solar activity and the 11-year solar cycle 	<ul style="list-style-type: none"> • Likely to occur once every 500 years per the 2018 N.D. Enhanced Mitigation MAOP
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Advanced warning and notification such as internet and TV – over-reliance on these systems to support society • Increasing dependency of technological/digital systems in agriculture, private and public sectors 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Advanced warning and notification such as internet & TV • Local food production/households with gardens • Gas-powered backup generators for critical facilities and infrastructure
Capability	<ul style="list-style-type: none"> • See Chapter 7 for a list of capabilities to address space weather. 	

Vulnerabilities to Publicly-Owned Buildings and Property

The physical integrity of publicly-owned buildings would not be impacted directly from space weather, but secondary impacts such as loss of electric power or data/technological systems could affect operations. Secondary impacts resulting from loss of power include loss of heat during severe winter weather, which could result in frozen and burst water pipes causing widespread interior damage; sewer backups, and subsequent flooding, or loss of digital assets from damaged servers and other telecommunications infrastructure. Conversely, loss of power from a space weather event could compromise cooling systems during severe summer weather, which could result in server rooms overheating and shutting down either temporarily or permanently. The interdependency of electricity with the operation of publicly-owned buildings and property can lead to more complex issues and prolonged outages.

A summary of publicly-owned buildings and property in Kidder County is provided in Chapter 3, Profile and Inventory.

Vulnerabilities of Critical Facilities and Infrastructure

Critical facilities such as the Kidder County Courthouse/Law Enforcement Center, Kidder County Public School, and other specialty facilities such as nursing homes/assisted living facilities are vulnerable to space weather in a similar fashion to publicly-owned buildings and property. The Kidder County Courthouse/Law Enforcement Center have a specific vulnerability to space weather as prolonged outages of power and data/technological systems could compromise security and lead to a potential breakdown of order within the facility and endanger the city of Steele and greater Kidder County. Communication and utility infrastructure would also be disrupted from loss of power from space weather compromising the capabilities of emergency services and public and private sectors. The interdependency of electricity with the operation of critical facilities and infrastructure can lead to more complex issues and prolonged outages.

Vulnerabilities to New and Future Development

As populations grow, more people are at risk to impacts from space weather such as those described in vulnerabilities to publicly-owned buildings and property, and critical facilities and infrastructure. A breakdown of population trends and projections by jurisdiction in Kidder County is shown in Chapter 3, Profile and Inventory, and Chapter 8, Jurisdictions.

Installation of faraday cages/shields at specific locations and/or equipment such as digital/technological systems for buildings (both public and private) and sewer backup valves at critical facilities and infrastructure should be considered for new and future development, but also for existing publicly-owned buildings and property, and critical facilities and infrastructure. Investment in power grid system redundancies can also mitigate the impacts of space weather.

Data Limitations and Other Key Documents

Power and digital/technological system outages, whether brief or prolonged, occur on a regular basis across North Dakota and Kidder County. Since these events are not considered normal for critical facilities and infrastructure and are caused by other hazards such as severe summer or winter weather,

identification of the role space weather has is limited. An analysis of each critical facility and infrastructure would be needed to identify specific vulnerabilities from space weather.

This plan incorporates data from the following documents and information from this plan will be incorporated in the update of the following documents.

- 2018 N.D. Enhanced Mitigation MAOP
- Kidder County Local Emergency Operations Plan
- Kidder County Threat and Hazard Identification and Risk Assessment (THIRA)
- North Dakota Continuity of Operations Plan
- North Dakota Emergency Operations Plan, Space Weather Annex
- North Dakota State Disaster Recovery Plan
- North Dakota State Preparedness Report (SPR)
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)

DRAFT

4.13 Transportation Incident

Including aircraft, bicycle, boat, bus, motorcycle, pedestrian, railway, truck, automobile vehicle, and recreational vehicle (ATV, side-by-side, etc.) incidents.

Characteristics

A transportation incident is any small or large-scale aircraft, bicycle, boat, bus, motorcycle, pedestrian, railway, truck, automobile vehicle, and recreational vehicle (ATV, side-by-side, etc.) involving mass casualties. Mass casualties can be defined as an incident resulting in many deaths and/or injuries that reach a magnitude that overtaxes the response abilities of local resources. In most disasters, death and injury represent one of the hazard impacts. In transportation incidents, mass casualties and/or resulting evacuations or hazardous material releases are often the primary impact and focus of the event.

Transportation incidents occur with little or no warning. They involve many people and require special types of equipment and emergency medical personnel. Such incidents not only affect people with significant numbers of deaths/injuries, but also cause traffic problems, property damage, or even a hazardous material release and/or explosion. The probability is increased during winter storms, periods of poor visibility from snow, smoke, or dust; festivities with more opportunities for drinking and driving; and times of increased traffic volume. The agricultural and energy economy of the region also increases the opportunity for the release of hazardous materials in a transportation incident.

Seasonal Pattern	None. Prevalent with the agriculture and energy sectors.
Duration	Minutes/hours/days/weeks – depending on extent of the incident
Speed of Onset	Little to no warning
Location	Total geographic extent of the Kidder County with a focus on Interstate 94, N.D. Highways 3 and 36, county and township roads, and boating/recreational traffic on all existing bodies of water

For more information regarding transportation incident please reference the **2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)**. The plan can be accessed by following the link:

[2018 North Dakota Enhanced Mitigation Mission Area Operations Plan](#)

History

Per the profile meeting participants, traffic incidents with minor damage or injuries occur almost daily in Kidder County (primarily in and around the city of Steele and along Interstate 94). Incidents involving cars and farm equipment occur annually.

The Kidder County Sheriff's Office provided the following information regarding aircraft accidents in Kidder County:

- Late 1990s: A spray plane crashed adjacent to N.D. Highway 3 south of Lake Isabel after colliding with a power line.
- 2000/2001: Plane crash occurred just north of the Interstate 94 Exit 217 for access to the city of Pettibone. The crash resulted in two fatalities.

- In 2018, a spray plane crashed into a slough four miles north of the city of Tappen.
- In the late 1990s/early 2000s, a spray plane crash occurred in a slough four miles north of the city of Tappen.

The Kidder County Sheriff's Office provided the following information regarding railroad accidents in Kidder County:

- A coal train tipped over four miles west of the city of Steele in 1980.
- A county employee was operating the county's blade and was struck by a train in the early 1990s.
- A tractor/agriculture equipment collided with a train immediately west of the city of Steele in the early 1990s.
- A train derailed in the city of Steele adjacent to the fair barn in 1997.
- An individual parked a car on the railroad tracks a few miles west of the city of Steele in the early 2000s.
- A local resident was crossing the railroad tracks near the Kidder County shop in the early 2000s.
- A car collided with a train a mile west of the city of Dawson in 2001.
- A train derailment occurred two miles west of the city of Steele in 2010.
- A car collided with a train a mile west of the city of Dawson 2010.
- A vehicle and train collided at Interstate 94 Exit 221 near Crystal Springs in 2013.
- A train derailment occurred in the city of Steele in 2019.

Table 4.13.1 shows crash data provided by the N.D. Dept. of Transportation and is for crashes occurring on state highway and Interstate 94 in Kidder County between 2005 and 2019.

The following are key points from Table 4.13.1.

Table 4.13.1 – 2005 to 2019 Kidder County, N.D. Crash Summary

Year	Property Damage Only (PDO)	Injury Crashes	Total Injuries	Fatal Crashes	Total Fatalities	Total Crashes
2005	31	1	1	0	0	32
2006	93	22	30	0	0	115
2007	92	12	18	0	0	104
2008	90	8	10	1	1	99
2009	98	17	26	3	3	118
2010	104	20	25	1	1	125
2011	105	15	21	3	3	123
2012	90	15	25	1	1	106
2013	71	21	24	1	1	93
2014	47	17	30	1	1	65
2015	31	12	15	0	0	43
2016	47	23	31	2	2	72
2017	31	20	29	0	0	51
2018	51	12	17	0	0	0
2019	34	18	19	1	1	53
TOTAL	1,015	233	321	14	14	1,199

Source(s): N.D. Dept. of Transportation

- Between 2005 and 2019, Kidder County experienced 1,119 total crashes of which 1,015 were property damage only crashes, 233 were injury crashes resulting in 321 injuries, and 14 were fatal

crashes resulting in 14 fatalities.

- Approximately 84.7 percent of crashes were property-damage only between 2005 and 2019.
- On average, Kidder County experiences 68 property-damage only crashes, 16 injury crashes, 21 injuries, one fatal crash, and one fatality annually between 2005 and 2019, or 80 crashes annually.

Probability

The probability of a hazard or threat is how likely it is it will happen. Per the N.D. Dept. of Transportation, on average Kidder County 68 property-damage only crashes, 16 injury crashes, 21 injuries, one fatal crash, and one fatality annually between 2005 and 2019, or 80 crashes annually between.

The profile meeting participants indicated the probability of a vehicular transportation incident for Kidder County is highly likely, meaning that there is a 100 percent probability in the next year of an incident. Transportation incidents involving aircraft, trains, and other modes of transportation are occasional.

Extent/Magnitude

The extent/magnitude of a hazard or threat is expressed in the amount of damages or losses either actualized in a community or estimated based on known assets and levels of risk. Meeting participants at the profile meeting indicated the magnitude of a transportation incident for Kidder County would be catastrophic, meaning an incident would result in impacts to more than 50 percent of the jurisdiction's people, buildings, and property.

According to the 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP), Kidder County has a moderate-high vulnerability to transportation incidents due to the county being traversed by Interstate 94, N.D. Highways 3 and 36, and railroad infrastructure.

According to 2016 N.D. Dept. of Transportation Crash Summary, approximately 10 percent of Fatal crashes in the state occurred in urban locations and 90 percent of the fatal crashes occurred on rural roads. Kidder County was not among the top 10 counties with estimated injury and fatality costs for motor vehicle crashes in 2016. Figure 4.13.2 shows the location of fatal traffic crashes in Kidder County and greater North Dakota between 2013 and 2015.

Figure 4.13.1 illustrates transportation system in North Dakota.

Risk Assessment

Table 4.13.2 shows the risk assessment as determined by individual jurisdictions, the Steering Committee, and meeting participants at the profile meeting for transportation incident. The risk assessment methodology can be found in the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA). The total in Table 4.13.2 represents the sum of each jurisdiction's impact, frequency, likelihood and vulnerability to a hazard/threat less the jurisdiction's capabilities to respond to the hazard/threat.

Table 4.13.2 – Kidder County Transportation Incident Risk Assessment Scored Chart Summary

Jurisdiction	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Kidder County	3	4	4	3	3	11
City of Dawson	4	2	3	3	1	11
City of Pettibone	4	2	3	2	1	10
City of Robinson	4	3	2	4	1	12
City of Steele	4	4	4	4	3	13
City of Tappen	4	4	4	3	2	13
City of Tuttle	4	2	3	2	1	10

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 4.13.3 provides information on the specific impact, frequency, likelihood, vulnerability and capability of transportation incident in Kidder County. A list of impacts identified as commonplace for natural hazards and man-made threats regardless of the jurisdiction is shown in Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA).

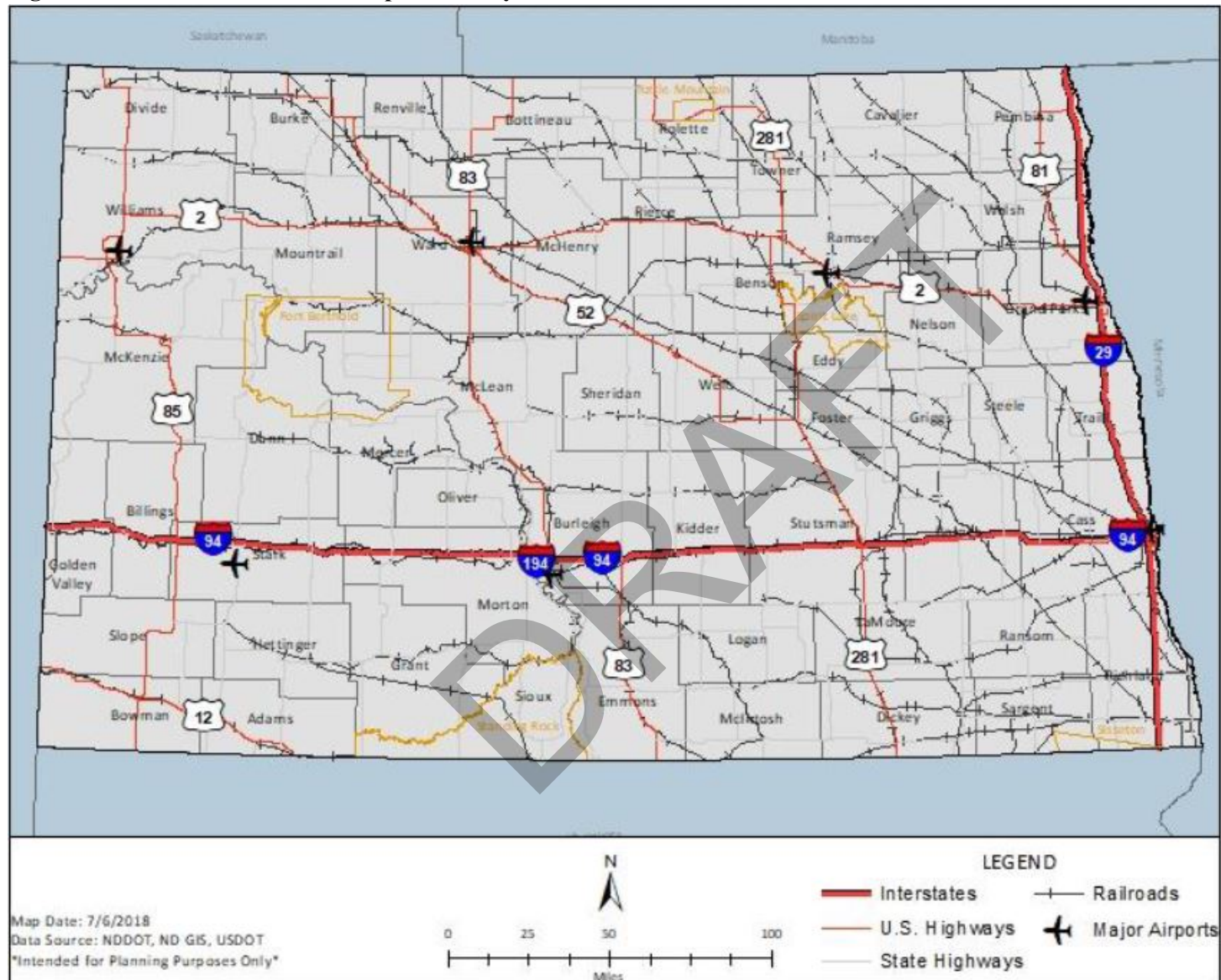
Vulnerabilities to Publicly Owned Buildings and Property

Publicly-owned buildings and property should not be affected by transportation incidents except in an instance where a train derails or a vehicle crashes into a building. However, any truck accident involving hazardous materials, train derailments, or aircraft accidents occurring in proximity of a publicly owned building or property could result in property damage, mass casualties/fatalities, or large-scale evacuations. Should an incident of this nature occur, damage could exceed hundreds of thousands or millions of dollars, depending on the building or property impacted. Buildings supporting key functions to daily county and incorporated jurisdiction operations most vulnerable include but are not limited to Kidder County Courthouse/Law Enforcement Center, Kidder County Public School, and buildings supporting emergency services such as fire stations. A transportation incident can result in power outages if occurring near and impacting power infrastructure. Power losses could result in the prolonged loss of service of publicly owned buildings and property. A summary of city and county-owned buildings and property in Kidder County is provided in Chapter 3, Profile and Inventory.

Vulnerabilities of Critical Facilities and Infrastructure

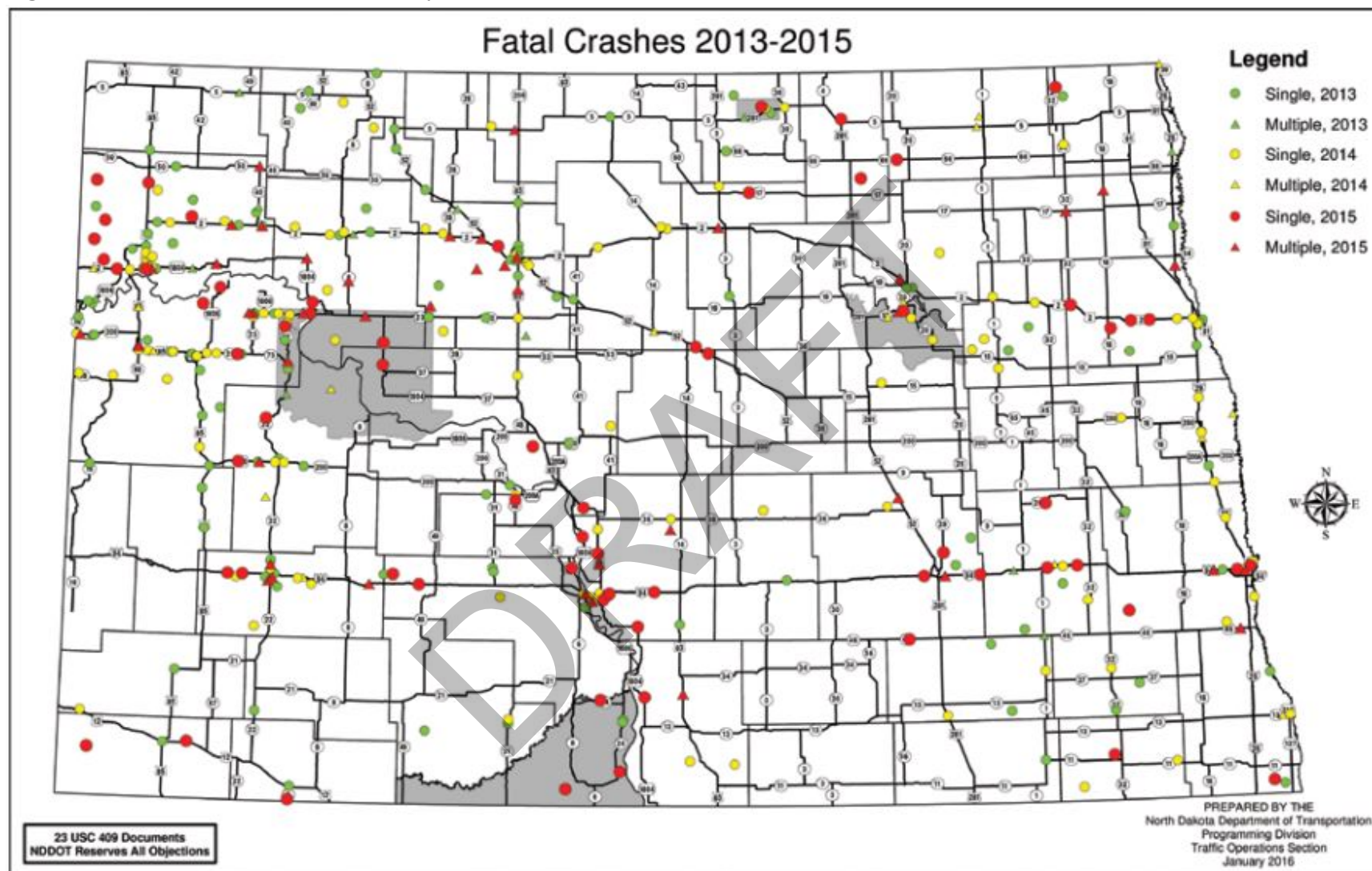
Critical facilities such as the Kidder County Courthouse/Law Enforcement Center and infrastructure such as water/wastewater treatment facilities and power grid infrastructure should not be affected by transportation incidents, except in rare occurrences. However, railroads or roads would be affected as this is where transportation incidents are likely to occur. Vulnerabilities could include a closure of a major transportation artery such as the interstate or railroad due to an incident, which can block access for emergency services, disrupt economic activity, and add strain onto other arteries in the overall transportation system. A transportation incident can result in power outages if occurring near and impacting power infrastructure. Power losses could result in the loss of critical facilities such as lift stations or water treatment plants.

Figure 4.13.1 – North Dakota Transportation System



Source(s): N.D. Dept. of Transportation

Figure 4.13.2– 2013 to 2015 Kidder County, N.D. Vehicle Accidents



Source(s): N.D. Dept. of Transportation

Table 4.13.3 – Kidder County Transportation Incident Risk Assessment

Impact	<ul style="list-style-type: none"> • Blocked roads from severe weather and at-grade railroad crossing with roads and highways • Explosion • HAZMAT Release • Human Injury/Death / Mass Casualties/Fatalities • Increased Fire Potential • Loss of Transportation/Accessibility 	<ul style="list-style-type: none"> • 321 injuries and 14 fatalities from vehicular crashes between 2005 and 2019 • Decrease in economic regional activity if impacting a major transportation artery for an extended period of time
Frequency	<ul style="list-style-type: none"> • Annual occurrences of boating accidents, car crashes, truck-related incidents, etc. • Four aircraft accidents and 11 incidents involving trains with cars or pedestrians from the early 1980s to present 	<ul style="list-style-type: none"> • 68 property-damage only crashes, 16 injury crashes, 21 injuries, one fatal crash, and one fatality annually between 2005 and 2019, or 80 crashes annually.
Likelihood	<p><u>More likely</u></p> <ul style="list-style-type: none"> • Presence of state highways, Interstate 94, railroads • High truck traffic with chemicals • High truck traffic from farm and agriculture related industry • Boating traffic on local bodies of water during the summer • per flight • DAPL pipeline court ruling could cause rail traffic to increase • Seasonal patterns: local weather conditions greatly impact the frequency of incidents 	<p><u>Less likely</u></p> <ul style="list-style-type: none"> • Railroad oil traffic decreased by 75 percent through the city of Steele and Kidder County once the Dakota Access Pipeline opened • Installation of railroad crossing guards • N.D. Highway 3 has had shoulder widening/improvements conducted in 2019

Table 4.13.3 – Kidder County Transportation Incident Risk Assessment - Continued

Vulnerability	<div> <div> <u>More vulnerable</u> <ul style="list-style-type: none"> • Presence of state highways, Interstate 94, railroads • High truck traffic with chemicals • High truck traffic from farm and agriculture related industry • Boating traffic on local bodies of water during the summer • per flight • DAPL pipeline court ruling could cause rail traffic to increase • Seasonal patterns: local weather conditions greatly impact the frequency of incidents • Presence of livestock industry in the county results in frequent incidents of transport involving livestock </div> <div> <u>Less vulnerable</u> <ul style="list-style-type: none"> • Railroad oil traffic decreased by 75 percent through the city of Steele and Kidder County once the Dakota Access Pipeline opened • Installation of railroad crossing guards • N.D. Highway 3 has had shoulder widening/improvements conducted in 2019 </div> </div>
Capability	<ul style="list-style-type: none"> • See Chapter 7 for a list of capabilities to address transportation incident.

Vulnerabilities to New and Future Development

New and future development could result in increased traffic related to commercial, industrial or residential development. Any additional traffic will increase the probability of minor, moderate, or major transportation incidents. The location of new and future development will determine the probability of future transportation incidents and should be conducive to nearby transportation infrastructure – i.e., industrial development near major highways or railroads, or commercial development near existing commercial corridors or transportation infrastructure with high visibility. Locations of new and future residential development conducive to transportation infrastructure is dependent on the local zoning code and proposed density of each respective development.

Data Limitations and Other Key Documents

This plan incorporates data from the following documents and information from this plan will be incorporated in the update of the following documents.

- 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)
- 2018 North Dakota Highway Safety Plan
- Kidder County Local Emergency Operations Plan
- Kidder County Threat and Hazard Identification and Risk Assessment (THIRA)
- North Dakota Continuity of Operations Plan
- North Dakota Dept. of Transportation Urban High Crash Locations Report
- North Dakota Emergency Operations Plan, Transportation Incident Annex
- North Dakota State Disaster Recovery Plan
- North Dakota Statewide Transportation Improvement Plan (STIP)
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)
- TransAction III, North Dakota's Statewide Strategic Transportation Plan

5. Future Conditions

The Federal Emergency Management Agency (FEMA) is now requiring inclusion of information on the long-term effects of climate change on identified hazards in state hazard mitigation plans. The 2021 Kidder County Multi-Jurisdictional Multi-Hazard Mitigation Plan is incorporating this requirement at the local level to remain in line with state leadership.

National Climate Assessment (NCA)

Developed by the U.S. Global Change Research Program (USGCRP) is a synthesis of climate knowledge, impacts, and trends across regions of the United States and various sectors to inform decision-making with respect to a changing climate. This synthesis also identifies resilience-building activities that can be incorporated at the local level through mitigation planning.

Changes in North Dakota Weather and Climate

According to the NCA information included in the 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP), the state of North Dakota will experience the following changes in climate patterns across the state:

- More days with precipitation over a half-inch;
- Longer dry spells (consecutive days without precipitation);
- Summer days with maximum temperatures over 95 degrees Fahrenheit will increase as well as summer nights with minimum temperatures over 65 degrees Fahrenheit;
- Increase in winter and spring precipitation, and
- Warming winters.

North Dakota's annual temperature increase over the previous 130 years is the fastest in the contiguous United States and is driven primarily by warming winters.

Anticipated Future Impacts

According to the NCA information included in the 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP), the following impacts for the state of North Dakota will influence the long-term vulnerability to natural hazards and will be realized if predictions on future conditions come to fruition:

- Increases in winter and spring precipitation may heighten chances of spring flooding leading to wetter soils to start growing season;
- Longer growing seasons but continued risk for late spring and early fall freezing;
- More days over 95 degrees Fahrenheit during the summer adding stress to livestock and increasing evaporation with subsequent drying of soils and degradation of plant life;
- Increase in demand for energy during the summer (air conditioning);
- Decrease in demand for energy during the winter (heating);
- Potential increase in invasive species including animals, fungi, insects, plants, and viruses, and
- Decrease in culturally significant animal and plant life in tribal communities.

Anticipated Future Impacts of Natural Hazards

A changing climate will affect more than just temperatures and precipitation levels. An increase in frequency and severity of extreme heat events and severe summer weather which will adversely affect public health, water resources, and the production of agriculture (crops and livestock). A changing climate will simultaneously increase the frequency and severity of extreme cold and severe winter weather which will also adversely impact public health and water resources, in addition to essential services. The average length of the growing seasons will increase by 12 days per century in North Dakota.

According to the 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP), the expected impact of climate change on the 14 natural hazards and man-made threats detailed in this plan are outlined below.

- **Civil Disturbance.** Increased risk to civil disturbances targeted toward the oil and gas industry in North Dakota from growing public concern over impacts from climate change.
- **Criminal, Terrorist, or Nation-State Attack.** No expected impact.
- **Cyberattack.** No expected impact.
- **Dam Failure.** The expected increase in intensity and severity of precipitation events may put more dams at risk to scenarios that exceed original design criteria of each respective dam. Aging dams are most at risk to this expected impact.
- **Drought.** According to the 2014 NCA, the “Northern Plains, including North Dakota, will remain vulnerable to periodic drought because of the projected increase in precipitation is expected to occur in the cooler months while increase temperatures will result in addition evapotranspiration during the summer months. The warming trend observed in North Dakota is expected to continue, which may contribute to an increase in the frequency and intensity of drought in the state.” Drought impacts on vulnerable water users such as the agriculture industry and municipal systems will be exacerbated. Overall, droughts are expected to be more frequency and intense, which will result in increased losses.
- **Fire (Urban Structure/Collapse).** No expected impact. However, water supplies use for fire suppression may be compromised and occurrences may increase as North Dakota expects an increase in wildland fires.
- **Fire (Wildland).** The top 10 years with the largest area burned have all occurred since 2000 in the state of North Dakota. The frequency of wildland fires will increase as will the risk due to increasing rural residential development in the Wildland-Urban Interface. In addition, as of October 4, 2017, 96% of fire departments in North Dakota are staffed with volunteers. As the frequency and intensity of wildfires increase, these volunteer firefighters may become stressed for resources and time to respond to these fires. Volunteer fire departments are losing personnel strength when firefighters retire and, in many cases, move to larger towns where medical care is more readily available.

- **Flood.** According to the 2014 NCA, winter and spring precipitation is projected to increase in the northern Great Plains region relative to a 1971 to 2000 average. This increase in precipitation may exacerbate flooding in North Dakota due to the increased amount, but also due to precipitation falling when the ground is frozen and unable to absorb moisture. The number of days with heavy precipitation is also likely to increase by mid-century. Overall, climate change is projected to increase precipitation in North Dakota.
- **Geologic Hazard.** Increased development pressure and the impacts of climate change may increase risk to state assets if they are constructed on areas prone to geologic hazards. Expansive soils and landslides are likely to increase due to the projected increase in precipitation.
- **Hazardous Material Release.** Although largely human-caused, climate change indirectly impacts this hazard. The frequency of hazardous material releases may coincide with increased occurrences of natural hazards such as wildland fires and floods due to the vulnerability of fixed facilities that store hazardous materials or waste.
- **Infectious Disease.** The state of North Dakota should expect an increased risk to infectious disease and pest infestations in the future. The two largest factors influencing future risk relate to how and where population growth (or withdraw) and development occurs.
- **Severe Summer Weather.** Uncertainty regarding changes in severe storms exists as the localized nature of the hazard is difficult to capture in climate models. However, it is expected that downpours will be exacerbated by climate change leading to an increase in flash flooding.
- **Severe Winter Weather.** Winter storms have increased in frequency and intensity since the 1950s. The tracks of storms has shifted northward over the United States. Winter and spring precipitation is expected to increase in North Dakota due to climate change. Liquid winter precipitation (indicated by ice storms) are more frequent. Increasing occurrences of winter storms that bring blizzard conditions, heavy snow, and ice will impact people and the local and state economy and will have an impact on critical facilities and infrastructure.
- **Space Weather.** No expected impact.
- **Transportation Incident.** Natural hazards can and do influence the probability and extent/magnitude of transportation incidents. Therefore, the changing nature of severe summer weather and severe winter weather from climate change will have an indirect impact on transportation incidents, primarily through hazardous road conditions. These conditions may put strain on existing emergency medical services and require an increase in sheltering capacities.

6. Kidder County, North Dakota Mitigation Strategy

Mitigation Purpose, Goals, and Projects

The Kidder County Multi-Jurisdictional Multi-Hazard Mitigation Plan includes a mitigation strategy consisting of seven goals and specific mitigation projects for each incorporated jurisdiction based on the risk assessment developed at Steering Committee and jurisdictional meetings.

The following are the seven goals that were reviewed, updated, and approved:

Goal 1: Improve and expand education and outreach programs to improve public awareness of hazards.

Goal 2: Improve and expand administrative and technical capability to mitigate hazards.

Goal 3: Improve and expand financial capability to mitigate hazards.

Goal 4: Improve and expand planning and regulatory capability to mitigate hazards.

Goal 5: Reduce and/or eliminate impacts of hazards.

Goal 6: Improve resiliency of critical facilities and infrastructure.

Goal 7: Provide places of refuge and early warnings for the public and vulnerable populations to take protective action during hazard events.

The mitigation strategy for Kidder County consists of 26 mitigation projects.

All-natural hazards and man-made threats were considered, and mitigation projects were formulated based on the potential or previous effects of hazards, the high probability of hazard or threat occurrences, the vulnerability of jurisdictions to hazards, and hazards each project can mitigate. The problem statement for Kidder County, which assisted in formulating specific mitigation actions to reduce the impacts of hazards, is shown before the mitigation actions.

Mitigation Project Development

The Steering Committee identified the following characteristics of each mitigation project and is included in each project profile:

- Description/benefit
- Hazard(s) addressed
- Affected jurisdiction
- Project status
- Priority
- Responsible agency
- Partners
- Timeframe for completion
- Cost
- Funding sources

Scoring and Prioritization

The Steering Committee also scored and ranked projects based on a FEMA process – STAPLEE – that allows a community to understand the support for a project; the potential costs in dollars, time and expertise; environmental impact; and the benefit of the project. The specific words in the acronym STAPLEE are social, technical, administrative, political, legal, economic, and environmental. Each project was scored using a one to five (1 to 5) scoring.

- A score of one (1) indicated a project is ineffective, not feasible and/or too costly;
- A score of three (3) was neutral, and
- A score of five (5) indicated the project was highly effective, feasible and/or a higher benefit compared to cost.

Each mitigation project included in the plan is valuable as it addresses needs specific to Kidder County and its jurisdictions. Due to a variety of constraints, not all projects can be implemented simultaneously and must be prioritized with the most critical projects being emphasized for implementation in the near term. However, the prioritization of each project can change over time to respond to changes in a community and to take advantage of resources that become available.

The Steering Committee prioritized each mitigation project on a very high, high, medium, and low designation based on scoring of the documentation, past experiences and professional judgement, and what projects are technically feasible to accomplish based on the capabilities of all jurisdictions. Table 6.1 summarizes the projects by priority by jurisdiction.

Table 6.1 – Prioritization of Mitigation Projects by Jurisdiction

Jurisdiction	Project Number by Prioritization			Very High
	Low	Medium	High	
Kidder County		AT-2, AT-6, EO-3, EO-5, EO-9, PR-5	AT-1, AT-2, AT-5, EO-2, 1, EO-2, EO-4, EO-6, E-8, PR-1, PR-2, PR-4, I-1	AT-3, AT-4, AT-7, F-1, PR-3, PR-6, PR-7, I-1
City of Dawson		5	3, 4	1, 2
City of Pettibone		2	1	
City of Robinson			2, 4, 5	1, 3
City of Steele	4	3, 4	2, 3, 5, 6, 7	1
City of Tappen			2, 3, 4, 5	1
City of Tuttle				1, 2

Projects with affected jurisdictions identified as ‘Kidder County and incorporated jurisdictions’ are shown in the table under Kidder County as these projects are assumed to be a county effort. Mitigation projects with jurisdictions specifically identified are represented in the respective jurisdiction profile located in Chapter 8, Jurisdictions.

Mitigation Project Titles

The title of each mitigation project corresponds with the category of mitigation capability it addresses: Administrative & Technical (AT), Education & Outreach (EO), Financial (F), and Planning and Regulatory (PR). A fifth category, Infrastructure (I), was created to identify projects involving construction activities and physical building efforts.

Acronyms and Definitions

The acronyms and definitions used in the responsible agency and partners section of each mitigation projects profile are described in Table 6.2.

Table 6.2 – Acronyms and Definitions of Responsible Agencies and Partners for Mitigation Projects

Acronym/Definition	Entity
ARS	U.S. Dept. of Agriculture, Agriculture Research Station
BOR	Bureau of Reclamation
CDBG	Community Development Block Grant
City Council(s)	Cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle
County Commission	Kidder County Commission
Emergency Management	Kidder County Office of Emergency Management
Emergency Services	Kidder County Ambulance; fire departments in Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle; Kidder County Sheriff's Office; Steele Police Department; specialty units (local, regional, state, and federal)
Engineering	Contracted municipal and/or county engineering, or private engineering firms
EPA	Environmental Protection Agency
Extension	NDSU/Kidder County Extension Service
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FRA	U.S. Dept. of Transportation, Federal Railroad Administration
FSA	U.S.D.A. - Farm Service Agency
Historical Society	State Historical Society of North Dakota
HUD	U.S. Dept. of Housing and Urban Development
IT	Kidder County Information Technology Department (contracted with NRG Technology Services)
Media	<p><u>Newspaper:</u> Steele Ozone/Kidder County Press</p> <p><u>Social Media:</u> Facebook pages of Kidder County Ambulance, NDSU/Kidder County Extension, Kidder County District Health Unit, and Steele Fire Department, and Kidder County Facebook page (managed by the Sheriff's Office)</p> <p><u>Radio Stations:</u> TED FM 98.3, Y-93, 1130 AM, 1600 AM, 95.5 AM, KSJB, KFYZ, Y-93</p> <p><u>Websites:</u> Kidder County (hosted through NDACo) and the City of Steele</p> <p><u>Television:</u> KXMB TV-17, KFYZ-TV, KXMB CBS, BEK Communications</p>
Medical Service Providers	<p><u>Hospitals:</u> CHI-St. Alexius – Bismarck, Jamestown Regional Medical Center, Sanford – Bismarck, Carrington Hospital</p> <p><u>Medical Clinics:</u> Four Seasons Wellness – Steele</p> <p><u>Public Health:</u> Kidder County District Health Unit (KCDHU)</p>

**Table 6.2 – Acronyms and Definitions of Responsible Agencies and Partners for Mitigation Projects
– Continued**

Acronym/Definition	Entity
NCDC	National Climatic Data Center
NDACo	N.D. Association of Counties
NDDA	N.D. Dept. of Agriculture
NDDC	N.D. Dept. of Commerce
NDDEQ	N.D. Dept. of Environmental Quality
NDDES	N.D. Dept. of Emergency Services
NDDH	N.D. Dept. of Health
NDDOT	N.D. Dept. of Transportation
NDGF	N.D. Game & Fish
NDGS	N.D. Geological Survey
NDIT/NRG	N.D. Information Technology/NRG Technology Services
NDLC	N.D. League of Cities
NDTOA	N.D. Townships Officers Association
NOAA	National Oceanic and Atmospheric Administration
NRCS	U.S.D.A. Natural Resources Conservation Service
NWS	National Weather Service
Planning & Zoning	Planning and Zoning Board, or County Commission & City Council(s)
Public Health	Kidder County District Health Unit (KCDHU)
PSC	Public Service Commission
Public Utilities	<u>Cable:</u> Bektel, Dish Network/DirecTV/Satellite <u>Electricity:</u> KEM Electric, Montana-Dakota Utilities, Northern Plains Electric Cooperative <u>Internet:</u> Bektel, Satellite/DirecTV/Dish Network <u>Natural Gas:</u> Montana-Dakota Utilities <u>Phone (cellular):</u> AT&T, Smart Talk/Trac Phones, Verizon <u>Phone (landlines):</u> Bektel <u>Waste (solid and water):</u> Dakota Sanitation, municipal services, Strom Sanitation, Waste Management <u>Water:</u> Individual wells, municipal wells, private irrigation systems, South Central Regional Water District, Stutsman Rural Water District
Public Schools	Kidder County Public School
Public Works	Kidder County Highway Department, city public works, county and city park boards/districts
Red Cross	American Red Cross
Regional Council	Lewis and Clark Regional Development Council
RD	U.S. Dept. of Agriculture – Rural Development
Social Services	Kidder County Social Services
SWC	N.D. State Water Commission
U.S.A.C.E.	U.S. Army Corps. of Engineers
USFS	U.S. Forest Service

Table 6.2 – Acronyms and Definitions of Responsible Agencies and Partners for Mitigation Projects – Continued

Acronym/Definition	Entity
VOAD (Voluntary Organizations Active in Disaster)	Adventist Community Services, American Red Cross, Catholic Charities, Church of Jesus Christ of Latter Day Saints, Citizen Corps, Civil Air Patrol, FirstLink, Legal Services of North Dakota, Lutheran Social Services Disaster Response, Mental Health American of ND, N.D. Emergency Management Association (NDEMA), MECHAMA – Jewish Response to Disaster, Presbytery of Northern Plains, Psychological Association, Radio Amateurs, RSVP+, The Salvation Army, Team Rubicon, Inc., United Church of Christ – Northern Plains Conference, United Methodist Disaster Response – Dakotas Conference, World Renew
Water Resource District	Kidder County Water Resource District

DRAFT

Problem Statements

Problem statements provide a concise description of the vulnerabilities of the jurisdiction to threats and hazards that should be addressed through mitigation actions. The specific mitigation actions to reduce the impacts of hazards are identified for each jurisdiction and are found after the problem statement. The problem statements and jurisdiction-specific mitigation projects can be found in Chapter 8, Jurisdictions.

Kidder County

Kidder County can be impacted by civil disturbance; criminal, terrorist or nation-state attack; cyberattack; drought; fire (urban and wildland); flood (overland and riverine); geologic hazard; hazardous material release, infectious disease, severe summer weather, severe winter weather, space weather and transportation incidents. Economic loss to the agriculture and livestock industry, and hunting/recreational industry from natural hazards impacts the county's economy. Blocked roads and frost heaving occurs annually from flooding, and severe summer weather and severe winter weather. The county is not enrolled in the National Flood Insurance Program (NFIP) and does not have a website. The county has been impacted by sudden and acute sheltering needs due to the presence of Interstate 94 during severe winter weather. Several outdoor recreation areas lack emergency sirens. The Kidder County Courthouse lacks a generator for backup power. With little to no capabilities to accomplish major projects independently, the city is dependent on outside sources for mitigation.

Improved drainage, implementation of flood control measures, establishment of a county website, joining the NFIP, upgrading of critical facilities and infrastructure, construction of additional storms shelters, installation of outdoor emergency sirens at recreational areas, installation of generators at critical facilities and infrastructure, and expansion of administrative and technical, education and outreach, financial, and planning and regulatory capabilities are a priority for Kidder County.

Kidder County Project AT-1: Expand administrative and technical mitigation capabilities.

Description/Benefit	Expand administrative and technical mitigation capabilities to improve county readiness and preparedness. <u>Administration:</u> Convert verbal mutual aid agreements to written mutual aid agreements, and continuously update where necessary. Provide continuous planning and zoning education to local engineer/inspection services. <u>Staff:</u> Education for county floodplain administrator/emergency management and inspection/building code enforcement. <u>Technical</u> <ul style="list-style-type: none">• Upgrade county fire index sign outside the Kidder County Courthouse and install new at strategic points• Install permanent generators – See Kidder County Project AT-4• Complete HAZUS Analysis for Kidder County and incorporated jurisdictions• Install and/or expand directional signage for emergency services and for truck/hazmat routes where needed• Install faraday cages/shields at technological/digital infrastructure systems at critical facilities and infrastructure• Install enhanced cybersecurity countermeasures (i.e., PA Traps/malware, multi-factor authentication, etc.) - specific attention should be paid to the recommendations made in N.D. Cybersecurity Maturity Assessment						
Hazards Addressed	All (Space Weather)						
Affected Jurisdictions	Kidder County and incorporated jurisdictions						
Project Status	Ongoing/New						
Priority	High						
Responsible Agency	City Council(s), County Commission, Emergency Management, Emergency Services, NDIT, Public Schools, Public Works, Public Utilities						
Partners	Extension, Planning & Zoning						
Completion Timeframe	Ongoing			Cost	Project-specific		
Funding Source	Local, state, federal grants. FEMA, Public Utilities, Regional Council, RD.						
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	3	5	3	3	5	29
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized		Plan Element			Process for Integration		
Kidder County LEOP Kidder County Mitigation Plan Kidder County THIRA		Capability Assessment, Hazard History, Risk Assessment			Solicit project scope of work or available options. Pursue grant funding or use local funds.		

Kidder County Project AT-2: Establish county alerting/early warning system and promote residents to sign up. Upgrade and expand early warning system(s) in incorporated cities where necessary.

Description/Benefit		Keep public informed on current general notifications, emergency notifications, and severe weather through utilization of FEMA’s IPAWS and/or NDDDES Everbridge contract, or a private service. Outdoor early warning system/sirens do not provide coverage to an adequate geographic expanse of the county. Upgrade existing manually-activated sirens to dispatch-activated sirens. There are no existing outdoor early warning sirens for gathering or recreational areas in the county outside incorporated cities. <u>Upgrade sirens:</u> Cities of Dawson, Pettibone, Robinson, Steele (relocation needed) <u>New:</u> Lake Five, Lake Sibley, Lake Isabel, Lake Etta					
Hazards Addressed		Flood, Hazardous Material Release, Severe Summer Weather, Fire (Wildland), All					
Affected Jurisdiction(s)		Kidder County and incorporated jurisdictions					
Project Status		New					
Priority		Medium/High					
Responsible Agency		City Council(s), County Commission, Emergency Management, Emergency Services, lake associations					
Partners		FEMA, NDDDES, Public Works					
Completion Timeframe		Ongoing	Cost	Siren: \$15,000 to \$25,000 per siren Mass Notification: Based on level of service			
Funding Source		9-1-1 funding (portion). State Homeland Security Grant Program. FEMA.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element			Process for Integration	
Kidder County LEOP Kidder County Mitigation Plan Kidder County THIRA			Capability Assessment, Hazard History, Risk Assessment			Develop specifications. Receive EHP approval. Pursue grant funding. Approval by county commission/city councils.	

Kidder County Project AT-3: Upgrade existing or purchase new equipment and infrastructure for emergency services and incorporated jurisdictions.

Description/Benefit		Purchase and/or install upgraded equipment for ambulance, fire and law enforcement. Improve administrative and technical capabilities of emergency services to mitigation the impact of hazards. A focus of emergency services should be to upgrade equipment to be GIS/GPS capable. Kidder County Ambulance: 800-megahertz trunk radio for SIRN 2020, new ambulance and replace two EKG machines (in the next five years) Steele Fire Department: 800-megahertz trunk radio for SIRN 2020, SCBAs, pumper truck and outer-gear Kidder County Sheriff's Office: 800-megahertz trunk radio for SIRN 2020, air-boat for patrolling the lakes, side-by-side, short-wave radios and repeater, Argo (amphibious vehicle), spare mobile unit Rural fire departments: 800-megahertz trunk radio for SIRN 2020, new pumper truck (all), high-angle rope rescue (low priority), SCBAs, new fire halls (all)					
Hazards Addressed		All hazards					
Affected Jurisdiction(s)		Kidder County and incorporated jurisdictions					
Project Status		New					
Priority		Very High					
Responsible Agency		Emergency Management, Emergency Services, Fire Districts, Ambulance Districts					
Partners		City Council(s), County Commission					
Completion Timeframe		1 to 2 years for radios and equipment 5+ years for vehicles and buildings			Cost	Project-specific	
Funding Source		Local, state, federal grants. CDBG, Emergency Services, FEMA, HUD, Public Utilities, RD, USFS. State Surplus.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	4	5	5	2	5	31
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element		Process for Integration		
Kidder County LEOP Kidder County Mitigation Plan Kidder County THIRA			Capability Assessment, Hazard History, Risk Assessment		Review by emergency services, cities, or county. Budget or apply for grant funding. Approval by board, county commission, or city council(s), and taxing districts.		

Kidder County Project AT-4: Install new permanent generators and/or upgrade existing permanent or portable generators at critical facilities and infrastructure. Build additional redundancies in power grid systems, where possible.

Description/Benefit	Upgrade existing generators or install new generators to establish permanent source of backup power to maintain continued operation of the following critical facilities and infrastructure. Additional redundancies in power grid systems are a high priority. <u>New for Kidder County (permanent):</u> Kidder County Courthouse, Kidder County Public School (100 KW), and Kidder County Ambulance <u>New for incorporated cities (permanent):</u> See Chapter 8, Jurisdictions for a list of permanent generators for each incorporated jurisdiction. <u>Upgrade (permanent):</u> City of Steele water pump/water treatment plant <u>Upgrade (portable):</u> Cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle.						
Hazards Addressed	All hazards						
Affected Jurisdiction(s)	Kidder County and incorporated jurisdictions						
Project Status	Ongoing and Continue						
Priority	Very High						
Responsible Agency	County Commission, City Council(s), Emergency Management, Emergency Services, Public Schools, taxing districts						
Partners	Medical Services Providers, Public Utilities, Public Works						
Completion Timeframe	Ongoing and Continue			Cost	Project-specific		
Funding Source	Public Utilities and RD. FEMA Building Resilient Infrastructure & Communities (BRIC). Homeland Security Grant Program.						
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	3	5	33
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized		Plan Element Utilized			Process for Integration		
Kidder County LEOP Kidder County Mitigation Plan Kidder County THIRA		Capability Assessment, Hazard History, Risk Assessment			Procure scope of work for project. Receive EHP Approval. Apply for grant funding.		

Kidder County Project AT-5: Establish permanent maintenance system for storm water systems/drainage ditches to reduce or eliminate occurrences of overland flooding.

Description/Benefit		Create drainage ditch/storm water maintenance system to control flow of runoff to eliminate blocked roads, maintain access for city/county residents and emergency services, and maintain continuous operation of public infrastructure. Establishment of a system will assist in reimbursement from state and federal sources for expenses incurred during emergency events. <u>Area(s) of concern:</u> Lake Isabel overfilling capacity into Lake Etta flooding residences – upgrade drainage system to move water more effectively in the county, Alkaline Lake and over to Lake Isabel and Lake Etta.					
Hazards Addressed		Flood (Overland), Infectious Disease, Severe Summer Weather, Severe Winter Weather					
Affected Jurisdiction(s)		Kidder County and incorporated jurisdictions					
Project Status		New					
Priority		High					
Responsible Agency		County Commission, Public Works, Water Resource District					
Partners		Emergency Management, Emergency Services, NRCS, SWC					
Completion Timeframe		End of 2021			Cost	Staff-time	
Funding Source		Local budgets					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	3	5	5	2	3	28
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element Utilized			Process for Integration	
Kidder County LEOP Kidder County Mitigation Plan Kidder County THIRA			Capability Assessment, Hazard History, Risk Assessment			Development of system by city/county public works. Approval and adoption by city councils, county commission, water resource district.	

Kidder County AT-6: Install Faraday Cages/Shields for digital/technological infrastructure systems at critical facilities and infrastructure.

Description/Benefit		A Faraday Cage or Shield is an enclosure used to block electromagnetic fields from technological/digital infrastructure systems. Due to increasing dependency of technological/digital systems in private and public sectors, a space weather event of significance could destroy all local government information resulting in a complete shutdown of government operations. The potential loss of technological/digital infrastructure could occur at, but is not limited to, the following critical facilities and infrastructure: Kidder County Ambulance, Kidder County Courthouse, Kidder County Public School, Steele City Hall and water pumps/water treatment plant, communication towers, generators, phone systems, correctional centers, medical facilities/clinics, public schools, substations, electrical grids, and other specialty facilities such as nursing homes and senior housing facilities.					
Hazards Addressed		Space Weather					
Affected Jurisdiction(s)		Kidder County and incorporated jurisdictions, where applicable					
Project Status		New					
Priority		Medium					
Responsible Agency		City Council(s), County Commission, Emergency Management, Emergency Services, respective IT departments					
Partners		Engineering, NDI					
Completion Timeframe		Ongoing			Cost	Project-specific	
Funding Source		Local budgets. State and federal grants.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	3	5	33
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element		Process for Integration		
Local Emergency Operations Plan Kidder County Mitigation Plan Kidder County THIRA			Capability Assessment, Hazard History, Risk Assessment		Development of specifications and receive approval from city council/county commission/agency/respective board. Apply for grant funding or fund independently.		

Kidder County AT-7: Create Local Hazard Incident Database.

Description/Benefit		Improve reporting and record keeping of incidents by matching data provided by the National Climatic Data Center (NCDC) with local newspaper articles and/or other documentation. Assist local emergency services in planning for preparedness and response. Assist local communities in identification of hazard-prone and repetitive loss areas.					
		Build detailed database of hazard history to provide statistics to support Kidder County local planning initiatives, and state and federal grant applications.					
Hazards Addressed		All					
Affected Jurisdiction(s)		Kidder County and incorporated jurisdictions					
Project Status		New					
Priority		Very High					
Responsible Agency		City Council(s), County Commission, Emergency Management, Emergency Services, Extension, Public Utilities					
Partners		Engineering, Public Health, Public Schools, Public Works, Water Resource District					
Completion Timeframe		Ongoing			Cost	Staff-time	
Funding Source		Local budgets. State and federal grants.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element		Process for Integration		
Local Emergency Operations Plan Kidder County Mitigation Plan Kidder County THIRA			Capability Assessment, Hazard History, Risk Assessment		Development of specifications and receive approval from city council/county commission/agency/respective board. Apply for grant funding or fund independently.		

Kidder County Project EO-1: Conduct education and outreach to improve household disaster preparedness through use of websites, social media, local media outlets, utility inserts, mailings, etc. Develop new websites and media outlets where necessary.

Description/Benefit	Continued education and outreach to keep households and vulnerable populations ready in case of a disaster. Special attention paid to maintaining and further developing severe weather awareness campaign, are you prepared information, shelter-in-place pamphlets, fire prevention, school safety, storm spotters' program, among others. Specific attention should be given to flooding, hazardous materials, severe weather, fire, and on truck routes and safe routes to school. Outreach and attention should be given to mass notification systems. Existing: <ul style="list-style-type: none">• <u>Newspaper:</u> Steele Ozone/Kidder County Press• <u>Social Media:</u> Facebook pages of Kidder County Ambulance, NDSU/Kidder County Extension, Kidder County District Health Unit, and Steele Fire Department, and Kidder County Facebook page (managed by the Sheriff's Office)• <u>Radio Stations:</u> Clear Channel Radio, Cumulus Radio, KFYZ, KSJB, Y-93• <u>Television:</u> BEK Communications• <u>Websites:</u> Kidder County (hosted through NDACo) and the City of Steele Develop new: Pursue additional traditional and social media platforms – Kidder County website.						
Hazards Addressed	All hazards						
Affected Jurisdiction(s)	Kidder County and incorporated jurisdictions						
Project Status	Ongoing and Continue/New						
Priority	High						
Responsible Agency	City Council(s), County Commission, Emergency Management, Public Schools						
Partners	Emergency Services, Extension, Media, Public Health, Public Utilities						
Completion Timeframe	Ongoing			Cost	Staff time. \$1,000 to 2,000 annually		
Funding Source	Local resources. State and federal grants.						
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized		Plan Element			Process for Integration		
Local Emergency Operations Plan Kidder County Hazard Mitigation Plan Kidder County THIRA		Capability Assessment, Hazard History, Risk Assessment			Develop and review by appropriate jurisdictions or agencies. Review by state's attorney. Distribute by mail and/or publish online.		

Kidder County Project EO-2: Increase awareness of methods for prevention of infectious disease.

Description/Benefit	Make public aware of risk of infectious diseases and methods for prevention in people, animals and crops for economic impact. Methods should focus on young and elderly populations, handwashing, influenza preparedness, and strategies used in agriculture-based economies such as pesticides, fungicides, herbicides and insecticides. New and future awareness should include education on social distancing and other measures to prevent the spread of coronaviruses.						
Hazards Addressed	Infectious Disease (All)						
Affected Jurisdiction(s)	Kidder County and incorporated jurisdictions						
Project Status	Ongoing and Continue						
Priority	High						
Responsible Agency	Extension, Public Health, Weed Board						
Partners	Emergency Management, Emergency Services, FSA, NDDA/State Veterinarian, NDDH, Medical Services Providers, RD, Stockmen’s Association, USDA						
Completion Timeframe	Ongoing				Cost	Project-specific	
Funding Source	Extension. Public Health. Local, state and federal budgets or grants.						
Values: 1 is low (negative impact and/or too costly) – Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element		Process for Integration		
Central Valley Health District (all plans) Local Emergency Operations Plan Kidder County Mitigation Plan Kidder County THIRA			Capability Assessment, Hazard History, Risk Assessment		Development by respective agency. Approval by county commission, city councils and emergency management. Distribute by mail and/or publish online.		

Kidder County Project EO-3: Develop influenza vaccination outreach program for school-aged children.

Description/Benefit	The influenza vaccination rate for school-aged children in Kidder County needs to be increased. Develop a program to increase this rate to 100 percent.						
Hazards Addressed	Infectious Disease (All)						
Affected Jurisdiction(s)	Kidder County, incorporated jurisdictions and unincorporated jurisdictions. Specific attention paid to Kidder County Public School and Golden Manor.						
Project Status	New						
Priority	Medium						
Responsible Agency	Public Health						
Partners	Emergency Management, Emergency Services, Medical Services Providers						
Completion Timeframe	Ongoing				Cost	Staff time and printing	
Funding Source	Public Health. Local, state and federal grants.						
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	3	5	5	5	33
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized		Plan Element			Process for Integration		
Kidder County District Health (all plans) Kidder County LEOP Kidder County Mitigation Plan Kidder County THIRA		Capability Assessment, Hazard History, Risk Assessment			Development by Custer Health. Approval by board, public schools and emergency management. Distribute.		

Kidder County Project EO-4: Develop and implement Livestock Outreach Program.

Description/Benefit		Water and Feed Quality Program. Test the safety of water and feed for livestock to reduce the loss of livestock due to poor and/or inadequate water quality. Program should focus on stock dams, well water, streams, rivers and watersheds. Crops, forage, and hay should be checked for nitrates.					
Hazards Addressed		Dam Failure, Drought, Flood, Infectious Disease, Severe Summer Weather, Severe Winter Weather					
Affected Jurisdiction(s)		Kidder County and incorporated jurisdictions					
Project Status		Ongoing and Continue/New					
Priority		High					
Responsible Agency		Extension, NRCS					
Partners		County Commission, City Council(s), Emergency Management, Producers, Stockmen’s Association, State Veterinarian					
Completion Timeframe		1 to 2 years/ongoing and continue			Cost	\$5,000.00/staff time	
Funding Source		NDSU/Kidder County Extension. County budget. Federal and state grants (pay for water and feed test equipment)					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized		Plan Element			Process for Integration		
Drought Management Plan (State of North Dakota) Kidder County LEOP Kidder County Mitigation Plan Kidder County THIRA		Capability Assessment, Hazard History, Risk Assessment			Development by NDSU/Kidder County Extension, NRCS, and SCD. Education and outreach process thereafter.		

Kidder County Project EO-5: Increase awareness of drought tolerant practices and soil conservation methods in farming and ranching, and municipalities.

Description/Benefit	Make public aware of crop programs, and drought tolerant practices and soil conversation methods in farming and ranching. Educating the public on rationing/restrictions on livestock feed and water usage. Prevent loss of crops and livestock during drought. Information for municipalities should focus on water conservation practices.						
Hazards Addressed	Drought, Fire (Wildland), Severe Summer Weather, Severe Winter Weather						
Affected Jurisdiction(s)	Kidder County and incorporated jurisdictions						
Project Status	Ongoing and Continue						
Priority	Medium						
Responsible Agency	Extension Service, FSA, NRCS						
Partners	Emergency Management, Bureau of Reclamation, city & county governments, grain elevators, fire departments/districts, insurance agents, SWC, USACE						
Completion Timeframe	Ongoing			Cost	Specific to individual awareness programs		
Funding Source	Local resources. North Dakota State University. NRCS. Rural Development. State and federal grants.						
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized		Plan Element			Process for Integration		
Bovine Emergency Response Plan (BERP) Drought Management Plan (State of North Dakota) Kidder County LEOP Kidder County Mitigation Plan Kidder County THIRA		Capability Assessment, Hazard History, Risk Assessment			Development by Extension. Approval by county commission, city councils and emergency management. Distribute.		

Kidder County Project EO-6: Conduct continuous preventative education to increase awareness of cyberattack threats.

Description/Benefit	Make public aware of risk of cyberattacks such as Advanced Persistent Threats, Distributed Denial of Service, Doxing, Media Threats, Password Phishing Attacks, Socially Engineered Malware and Unpatched Software. Specific attention should be paid to the framework developed and included in the K20W Initiative. Kidder County: Currently conducts informal education through guides, e-mails, and in-person training on what to look for in cyberattacks. Develop formal education methods through vendors. Kidder County Public School: Conduct an annual education program to staff and students through an outside vendor, which brings in staff to host a seminar.						
Hazard/Threat Addressed	Cyberattack						
Affected Jurisdiction(s)	Kidder County and incorporated jurisdictions						
Project Status	New						
Priority	High						
Responsible Agency	County Commission, Kidder County Public School Board						
Partners	Emergency Management, Emergency Services, NDIT, NRG						
Completion Timeframe	Ongoing			Cost	Project-specific		
Funding Source	Local, state and federal grants. Local budgets.						
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	3	5	5	3	5	31
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized		Plan Element			Process for Integration		
Kidder County LEOP Kidder County Mitigation Plan Kidder County THIRA		Capability Assessment, Hazard History, Risk Assessment			Development by Kidder County and Kidder County Public School. Approval by county commission, city councils, emergency management, and public-school districts. Distribute.		

Kidder County Project EO-8: Make public aware of risk of shortage or outage of critical materials or infrastructure and encourage citizens to be proactive and self-sufficient.

Description/Benefit	Make public aware of risk of shortage of critical materials and/or infrastructure and encourage citizens to be self-sufficient. Educate residents on the importance of shelter-in-place, stocking of food, water, and medical supplies, fuel for heating, backup power generation, etc.						
Hazards Addressed	All						
Affected Jurisdiction(s)	Kidder County and incorporated jurisdictions						
Project Status	Ongoing and continue						
Priority	High						
Responsible Agency	Emergency Management, Emergency Services, Public Schools, Social Services						
Partners	County Commission, City Councils, Extension, Food Pantries, Media, NDDDES, NDDH, Public Health, Public Utilities, Volunteer Organizations Aiding in Disaster (VOAD)						
Completion Timeframe	Ongoing			Cost	TBD		
Funding Source	Local budgets. State and federal grants. Private sector.						
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized		Plan Element			Process for Integration		
Kidder County District Health (all plans) State Vulnerable Populations Plan Kidder County LEOP Kidder County Mitigation Plan Kidder County THIRA		Capability Assessment, Hazard History, Risk Assessment			Development by Emergency Management, Public Health, Public Schools, and Public Utilities. Approval by county commission, city councils, school boards. Distribute.		

Kidder County Project EO-9: Encourage farmers and the public to have insurance to protect from crop and property losses from hazards.

Description/Benefit	Benefit to crop insurance, residential conservation practices, and property insurance. Protect the personal assets of businesses and citizens risk to natural hazards and threats.						
Hazards Addressed	Drought, Fire (Wildland), Flood, Severe Summer Weather, Severe Winter Weather, Urban Fire/Structure Collapse, (All)						
Affected Jurisdiction(s)	Kidder County and incorporated jurisdictions						
Project Status	Ongoing and continue						
Priority	Medium (High)						
Responsible Agency	Banking industry, Extension, FSA, NRCs, private insurance companies						
Partners	County Commission, Emergency Management (NFIP), agricultural producers						
Completion Timeframe	Ongoing			Cost	\$0 for a local PSA; \$1,000 to \$3,000/week for substantial outreach		
Funding Source	Local budgets. State and federal grants. Private sector.						
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	4	3	3	3	5	28
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized		Plan Element			Process for Integration		
Kidder County District Health (all plans) State Vulnerable Populations Plan Kidder County LEOP Kidder County Mitigation Plan Kidder County THIRA		Capability Assessment, Hazard History, Risk Assessment			Development by Emergency Management, Public Health, Public Schools, and Public Utilities. Approval by county commission, city councils, school boards. Distribute.		

Kidder County F-1: Expand and improve existing or implement new financial mitigation capabilities.

Description/Benefit	Expand financial mitigation capabilities to generate funds for completion of mitigation projects. To reflect changes in development and mitigate areas impacted by hazards through impact fees. <ul style="list-style-type: none">• Create and implement impact fees for new development.• Restructure and improve building/zoning permit fees on a continuous basis.• Establish Kidder County Capital Improvement Fund – expand existing building fund• Restructure and increase utility fees (water, sanitary sewer) based on projected future infrastructure maintenance costs and necessary capital improvements.• Research additional revenue generators such as an electricity utility fee, wheel tax, etc.						
Hazards Addressed	All						
Affected Jurisdiction(s)	Kidder County and incorporated jurisdictions						
Project Status	New						
Priority	Very High						
Responsible Agency	County Commission and City Council(s)						
Partners	Emergency Management, Emergency Services, NDAC, NDLC, Planning & Zoning, Public Utilities						
Completion Timeframe	Ongoing				Cost	Staff-time	
Funding Source	Local budgets and staff time.						
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
2	5	4	1	1	4	5	22
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element		Process for Integration		
City Council(s) and County Commission Planning Commission			Capability Assessment, Hazard History, Risk Assessment		Research effectiveness. Approval and adoption by county commission and city councils.		

Kidder County Project PR-1: Assure Kidder County, North Dakota has FEMA-Approved Mitigation Plan.

Description/Benefit	Continuous assessment of vulnerabilities to the county and incorporated jurisdictions, and update of hazards and impacts, monitoring of mitigation project implementation and progress. Update plan on a continuing basis between plan update grant applications. See Chapter 10 and Appendix 8 of this plan.						
Hazards Addressed	All						
Affected Jurisdiction(s)	Kidder County and incorporated jurisdictions						
Project Status	New						
Priority	High						
Responsible Agency	County Commission, Emergency Management						
Partners	Emergency Services, Extension, Planning & Zoning, Public Health, Public Works, SWC, Water Resource District						
Completion Timeframe	4 to 5 years			Cost	\$25,000 to \$50,000 (update of plan)		
Funding Source	Local budgets. FEMA’s BRIC or HMGP programs.						
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized		Plan Element			Process for Integration		
Hazard Mitigation Plan (all other existing mechanisms)		All elements			Adoption by county commission and city councils. Approval NDDDES and FEMA.		

Kidder County PR-2: Update/expand existing and/or create new planning and regulatory capabilities to address existing and new development to strengthen local planning processes.

Description/Benefit		Build the planning and regulatory capability of Kidder County and incorporated jurisdictions by updating existing and/or expand and create new plans, policies, and ordinances. To ensure new and existing structures adhere to building standards to withstand impacts from hazards, and new development is located outside hazardous areas. Specific research should be conducted to address building codes and inspection, continuity of operations, comprehensive planning, community fire/wildfire protection, crew camps, drought management, flood ordinances, <u>hazardous materials</u>, impact fees, pandemic response plan/disaster preparedness plan/ site plan review requirements, storm water management, and water conservation. All district health plans must be updated periodically. Additional consideration should be given to prioritize sewer backup valves when upgrading existing or building new development. Redundancies in the power grid systems should be encouraged. Specific attention should be paid to tie-down procedures for temporary buildings. A list of plans, policies, codes and ordinances needing to be updated or created for Kidder County and incorporated jurisdictions are bolded in text narratives and are found in Chapter 7, Capability Assessment.					
Hazards Addressed		All					
Affected Jurisdiction(s)		Kidder County and all incorporated jurisdictions					
Project Status		New					
Priority		High					
Responsible Agency		City Council(s), County Commission, Planning & Zoning, Townships					
Partners		Emergency Management, Emergency Services, NDACo, NDDDES, NDLC, Public Works, RD					
Completion Timeframe		Ongoing		Cost	\$0 to \$100,000 / Staff-time		
Funding Source		Local budgets. Local, state and federal grants. Private sector.					
Values: 1 is low (negative impact and/or too costly) – Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	4	3	4	4	2	5	27
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element			Process for Integration	
All			Capability Assessment, Hazard History, Risk Assessment			Development of specifications. Approval and adoption by county commission and city councils.	

Kidder County PR-3: Encourage jurisdictional participation in the National Flood Insurance Program (NFIP).

Description/Benefit		Ensure economic resiliency. Residents with property at risk would be insured. Ensure continuous review and updating or implementation of flood ordinances and flood control measures. Join the NFIP altogether.					
Hazards Addressed		Flood (overland and riverine), Severe Summer Weather, Severe Winter Weather					
Affected Jurisdiction(s)		Kidder County and the cities of Dawson and Tappen					
Project Status		New					
Priority		Very High					
Responsible Agency		County Commission, City Council(s), Emergency Management, Planning & Zoning, Townships					
Partners		SWC, Water Resource Board, ND Township Officers Association					
Completion Timeframe		Ongoing		Cost	\$0 to \$1,000 / staff time		
Funding Source		Local staff-time. FEMA. SWC.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	3	3	4	5	30
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element Utilized		Process for Integration		
Flood Ordinances National Flood Insurance Program Kidder County LEOP – flood ops. annex Kidder County Mitigation Plan Kidder County THIRA			Capability Assessment, Hazard History, Risk Assessment		Approval and adoption by county commission and city councils		

Kidder County PR-4: Encourage jurisdictions to review local flood ordinances to meet or exceed minimum federal and state requirements, comply with the NFIP (once enrolled) and enroll in the Community Rating System.

Description/Benefit		To ensure Kidder County and incorporated jurisdictions meet or exceed the NFIP and/or to prepare for enrollment in the NFIP. StormReady recognition would decrease the cost.					
Hazards Addressed		Flood (overland and riverine), Severe Summer Weather, Severe Winter Weather					
Affected Jurisdiction(s)		Cities of Pettibone, Robinson, Steele, Tuttle. City of Tappen (review of flood ordinances only).					
Project Status		Ongoing and continue					
Priority		High					
Responsible Agency		County Commission, City Council(s), Emergency Management, Planning & Zoning, Townships					
Partners		Emergency Services, FEMA, insurance agents NDACo, NDDes, NDLC, SWC, ND Township Officers Association					
Completion Timeframe		Ongoing		Cost	\$0 to \$1,000 / staff time		
Funding Source		Local staff-time. FEMA. SWC.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	3	3	4	5	30
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element Utilized		Process for Integration		
Flood Ordinances National Flood Insurance Program Kidder County LEOP – flood ops. annex Kidder County Mitigation Plan Kidder County THIRA			Capability Assessment, Hazard History, Risk Assessment		Approval and adoption by county commission and city councils.		

Kidder County PR-5: Create post-disaster debris management plan and update on an annual basis.

Description/Benefit		Provide temporary staging site for disposal of waste from structures to improve resiliency and recovery efforts and maintain quality of life. Establishment of a management plan increases disaster reimbursement from FEMA by five percent.					
Hazards Addressed		All					
Affected Jurisdiction(s)		Kidder County and incorporated jurisdictions					
Project Status		Ongoing and Continue					
Priority		Medium					
Responsible Agency		County Commission, City council(s), Emergency Management, KCHD, townships					
Partners		City & county public works depts., Emergency Services, engineering firms, NDDH, private landowners, regional council					
Completion Timeframe		1 year			Cost	\$0 to \$3,000/staff-time	
Funding Source		Local budgets.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	4	2	4	2	27
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element			Process for Integration	
Kidder County District Health (all plans) Planning Commission Kidder County LEOP Kidder County Mitigation Plan			Capability Assessment, Hazard History, Risk Assessment			Organize and update annual review. Approval and adoption by county commission and city councils.	

Kidder County PR-6: Create Bovine Emergency Response Plan (BERP).

Description/Benefit	Gives first responders a standard operating procedure on how to mitigate issues pertaining bovine losses from natural hazards or man-made threats. The plan also assures public safety first and foremost, first responder safety, and animal well-being. Research should be conducted on Canadian regulations to ensure those measures are included in the plan. A portion of the plan should address response to animals suffering from neglect.		
Hazards Addressed	Civil Disturbance, Drought, Fire (Wildland), Flood, Hazardous Material Release, Infectious Disease, Severe Summer Weather, Severe Summer Weather, Transportation Incident.		
Affected Jurisdiction(s)	Kidder County and incorporated jurisdictions		
Project Status	New/Ongoing and Continue		
Priority	High		
Responsible Agency	Emergency Management, Extension, emergency services (ambulance, fire, law enforcement), local producers and/or veterinarians		
Partners	N.D. Dept. of Agriculture, N.D. State Vet Office, wrecker services		
Completion Timeframe	Ongoing	Cost	Staff-time to update plan annually \$75 to \$100 per person to develop new
Funding Source	Central Grasslands Research Extension Center (Lisa Peterson). N.D. Beef Commission. Local budgets. State and local extension offices. Local producers and/or veterinarians.		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	3	3	4	30

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

<u>Planning Mechanisms Utilized</u>	<u>Plan Element</u>	<u>Process for Integration</u>
Kidder County LEOP Kidder County Mitigation Plan Kidder County THIRA	Capability Assessment, Hazard History, Risk Assessment	Schedule training and education event with Central Grasslands Research Extension Center. Develop draft plan and finalize. Integrate into local emergency operations plan, emergency services and response protocols.

Kidder County PR-7: Update Kidder County Local Emergency Operations Plan (LEOP) on an annual basis.

Description/Benefit		The Kidder County Local Emergency Operations Plan (LEOP) needs annual updates to reflect changes in response needs, staff changes, and risk to natural hazards and man-made threats. Specific information should be included to address backup generators, and address equipment positioned to respond to wildland fires.					
Hazards Addressed		All					
Affected Jurisdiction(s)		Kidder County and incorporated jurisdictions					
Project Status		New					
Priority		Very High					
Responsible Agency		County Commission, City Council(s), Emergency Management, Emergency Services, Public Works					
Partners		NDDDES, Public Health, Public Utilities, SWC, Water Resource Board					
Completion Timeframe		Annually			Cost	Staff time	
Funding Source		Local budgets.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element			Process for Integration	
Kidder County LEOP Kidder County Mitigation Plan Kidder County THIRA			Capability Assessment, Hazard History, Risk Assessment			Utilize the Kidder County LEPC or Mitigation Plan Steering Committee to update annually. Approval and adoption by county commission and city councils.	

Kidder County Project I-1: Retrofit and/or upgrade bridges, culverts, stormwater pipes, railroads, and road grades to withstand natural hazards and prevent blockage to maintain access for emergency services.

Description/Benefit		Increase resiliency of bridges, culverts, stormwater pipes, railroads, and roads to maintain transportation to assure economic vitality and access for emergency services. The following roads (listed by township route first and road/street second) are impacted by overland flooding issues and need to barricade roads to divert traffic until the flooding subsides: A detailed description of each bridge, culvert and road is shown on the following page and in Chapter 4.4, Flood.					
Hazards Addressed		Drought, Fire (Wildland), Flood (overland and riverine), Hazardous Material Release, Severe Summer Weather, Severe Winter Weather					
Affected Jurisdiction(s)		Kidder County and incorporated jurisdictions					
Project Status		Ongoing and Continue/New					
Priority		Very High					
Responsible Agency		County Commission, Emergency Management, Emergency Services, Townships					
Partners		FHWA, FRA, NDDOT, Public Works, Water Resource Board					
Completion Timeframe		Ongoing		Cost	Project-specific		
Funding Source		FHWA, FRA and NDDOT. FEMA Hazard Mitigation, Section 406. State and federal grants.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	3	3	31
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element		Process for Integration		
2020 Kidder County HAZUS Analysis Kidder County LEOP Kidder County Mitigation Plan N.D. Dept. of Transportation State Transportation Improvement Plan (STIP) Capital Improvement Plan			Capability Assessment, Hazard History, Risk Assessment		Develop engineering specifications. Secure funding. Approval and adoption by county commission and city councils.		

Kidder County Project I-1: Retrofit and/or upgrade bridges, culverts, stormwater pipes, railroads, and roads grades to withstand natural hazards and prevent blockage to maintain access for emergency services.

See Chapter 4.4, Flood for the HAZUS Analysis identifying specific locations.

Bridges

Culverts:

Pipes (stormwater)

Railroad

Road Retrofits and/or Grade Raises

Underpasses: no underpasses were identified.

DRAFT

Kidder County Project I-2: Construct new storm shelters/community safe rooms or retrofit existing structures to reduce the risk to vulnerable populations and the public.

Description/Benefit	Provide safe area of refuge for permanent residents, temporary populations, and seasonal/recreational populations from severe weather. Reduce/eliminate loss of life from hazards and man-made threats. Upgrade existing shelters to be fully ADA compliant and pet friendly. Construct new storm shelters/community safe room in jurisdictions currently lacking a storm shelter/safe room. More information on community shelters can be found through the following link: https://www.fema.gov/media-library/assets/documents/5090 <u>March 11, 2011.</u> A severe winter storm caused the closure of I-94 from Dickinson to Fargo resulting in several hundred motorists stranded along the interstate. The N.D. National Guard was activated to assist in the rescue of stranded motorists. Kidder County and the cities of Steele, Dawson, and Tappen sheltered over 500 people and neighboring Stutsman County sheltered an additional 500 people. Prior to the onset of the storm, normal travel was occurring and people were not prepared for the unpredicted severity of the storm. <u>Upgrade:</u> City community centers, Kidder County Ambulance Hall, Kidder County Public School, Tuttle Blue Hall <u>New:</u> Tappen Public School, old Robinson Public School, old Tuttle Public School						
Hazards Addressed	All						
Affected Jurisdiction(s)	Kidder County and incorporated jurisdictions						
Project Status	New						
Priority	High						
Responsible Agency	County Commission, City Council(s), Emergency Management, Emergency Services						
Partners	NDDDES, Red Cross, Social Services, private housing/community owners, Kidder-Emmons Senior Center						
Completion Timeframe	Ongoing			Cost	\$75,000.00 to \$150,000.00 per shelter		
Funding Source	Local, state and federal grants. FEMA Building Resilient Infrastructure and Communities (BRIC) Program.						
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	3	3	4	30
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element		Process for Integration		
Kidder County LEOP Kidder County Mitigation Plan Kidder County THIRA			Capability Assessment, Hazard History, Risk Assessment		Approval by county commission, city councils, and private house/community owners		

7.1 County/City Jurisdiction Mitigation Capability Assessment

Capability for mitigation is divided into four categories: administrative and technical, education and outreach, financial, and planning and regulatory.

- Table 7.1.1 highlights **administrative and technical** capabilities.
- Table 7.1.2 highlights **education and outreach** capabilities.
- Table 7.1.3 highlights **financial** capabilities.
- Table 7.1.4 highlights **planning and regulatory** capabilities.
- Table 7.1.5 shows the **utilization of planning mechanisms** in Kidder County by hazard and mitigation project.

Sources for mitigation funding are shown in Chapter 7.2, Mitigation Funding Sources.

Current planning mechanisms, and the process for integration of the mitigation plan into planning mechanisms, are discussed after Table 7.1.4 and before Table 7.1.5. The process to integrate the mitigation plan into existing planning mechanisms for each jurisdiction is shown in the respective jurisdiction profile in Chapter 8, Jurisdictions following the mitigation capability assessment. Information in the tables is outlined as follows:

1. Boxes checked with an “X” indicate the jurisdiction possesses the capability; while boxes left blank indicate the jurisdiction is lacking the capability.
2. An asterisk (*) indicates a capability that can be obtained through the county, contracted services, or an outside entity.
3. A ^ denotes a mitigation capability in progress.

Narratives following each table detail the capabilities of Kidder County. Narratives for incorporated jurisdictions are found in Chapter 8, Jurisdictions. Information on the capabilities of each jurisdiction was gathered at committee meetings and interviews during the planning process. **Bolded narratives identify mitigation projects.**

Each identified resource in the four mitigation capability categories can be used to implement mitigation strategies and access funding for projects. A definition of each mitigation capability category is provided.

- **Administrative and Technical:** Identification of administrative and technical capabilities, which includes staff and their skills and tools for mitigation planning to implement specific mitigation actions.
- **Education and Outreach:** Identification of education and outreach programs, and methods already in place to implement mitigation activities and communicate hazard-related information.
- **Financial:** Identification of access to or eligibility to use funding resources for hazard mitigation for jurisdictions.
- **Planning and Regulatory:** Jurisdictional plans, policies, codes, and ordinances adopted and in place that prevent and reduce the impacts of hazards.

Table 7.1.1 shows the administrative and technical capabilities of the Kidder County and incorporated jurisdictions. A box marked with an “X” indicates the jurisdiction has or has access to the administrative or technical capability for mitigation. An asterisk (*) denotes an administrative and technical capability that can be obtained through the county for incorporated jurisdictions, or contracted services or an outside entity for the county.

Administration

1. Kidder County has an active county commission. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle have active city councils.
2. **Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle have an active local emergency planning committee (LEPC).**
3. **Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle have an active mitigation planning committee through the county LEPC.**
4. **Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle have joint powers agreements (mutual aid) with incorporated jurisdictions and neighboring counties. An updated mutual aid agreement is needed with Sheridan County.**
5. **Kidder County has staff capable of mitigation activities. County staff includes the extension office, auditor's office, tax equalization, emergency management, sheriff's office, library, and public health.**
6. Kidder County does not have a park board. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle have park boards.
7. Kidder County has a planning commission through the Kidder County Commission. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle have planning commissions through their city councils.
8. Kidder County has a zoning administrator. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle have zoning administrators through their city councils.
9. Kidder County has a planning and zoning board. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle have planning commissions through their city councils.
10. Kidder County has a water resource board. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle have a water resource board through Kidder County.
11. Kidder County has a weed board. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle have a weed board through Kidder County.

Staff

1. Kidder County has a part-time 9-1-1 coordinator. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle receive 9-1-1 coordination through Kidder County.
2. **Kidder County and the cities of Dawson, Pettibone, Robinson, Tappen, and Tuttle do not have a building official/inspector/board. The city of Steele has a building inspector.**
3. Community planner/planning services are available to Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle through the regional council or other contracted services.
4. Kidder County has a part-time emergency manager. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle receive emergency management services through Kidder County.

5. Kidder County has law enforcement services through the Kidder County Sheriff's Office. Ambulance protection is provided to Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle through Kidder County Ambulance. The city of Steele has its own police department. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle each has its own fire department.
6. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle does not have a full-time engineer on-staff. Engineering services are provided by contract.
7. Kidder County has a floodplain administrator. The Kidder County Water Board serves as the floodplain administrator for the county. The auditor serves as the flood plain administrator for the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle
8. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle can obtain GIS services through the county's contract with Sidwell Company.
9. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle have staff with grant writing and administration capability.
10. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle receive public health services through Kidder County Public Health Department.
11. The Kidder County Highway/Road Department serves as the public works department. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle each have its own public works employee(s).
12. Kidder County has a full-time Sheriff and two deputies. The city of Steele has a full-time police chief.

Technical

1. **Emergency services in Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle are not GIS/GPS capable. Emergency services personnel use app-based services on their mobile devices.**
2. Kidder County does not have any manually-activated emergency sirens outside of incorporated city jurisdictions. The cities of Dawson, Pettibone, and Robinson have manually-activated sirens, while the cities of Steele, Tappen, and Tuttle do not.
3. Kidder County does not have any dispatch-activated emergency sirens outside of incorporated city jurisdictions. The cities of Steele, Tappen, and Tuttle have dispatch-activated sirens, while the cities of Dawson, Pettibone, and Robinson do not.
4. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not maintain municipal fire breaks.
5. Kidder County does not have a fire index sign. A fire index sign used to be located outside the Kidder County Courthouse in the city of Steele. The sign was damaged in an auto accident and was not re-installed.
6. **Kidder County does not have a county-wide fire department and therefore does not have a fire ISO rating. The fire ISO rating for fire departments in the county are**
7. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have Firewise Certification.

Table 7.1.1 – Administrative and Technical Capabilities – Kidder County, ND

Administrative and Technical Mitigation Capability		Kidder Co.	City of Dawson	City of Pettibone	City of Robinson	City of Steele	City of Tappen	City of Tuttle
Administration								
1	County/City Council or Commission	X	X	X	X	X	X	X
2	Local Emergency Planning Committee (LEPC)	X	*	*	*	*	*	*
3	Mitigation Planning Committee	X	*	*	*	*	*	*
4	Mutual Aid Agreements	X	X	X	X	X	X	X
5	Other Staff for Administration	X	X	X	X	X	X	X
6	Park Board		X	X	X	X	X	X
7	Planning Commission	X	*	*	*	X	*	*
8	Planning and Zoning Administrator	X	X	X	X	X	X	X
9	Planning and Zoning Board	X	*	*	*	X	*	*
10	Water Resource Board	X	*	*	*	*	*	*
11	Weed Board	X	*	*	*	*	*	*
Staff								
1	911 Coordinator/Director and User Board	X	*	*	*	*	*	*
2	Chief Building Official/Inspector/Board	X	*	*	*	X	*	*
3	Community Planner/Planning Services	*	*	*	*	*	X	*
4	Emergency Management/Local Coordinators	X	X*	X*	X*	X*	X*	X*
5	Emergency Services (ambulance, fire, law enforcement)	X*	X*	X*	X*	X*	X*	X*
6	Engineering Services	X	*	*	*	X	X	*
7	Floodplain Administrator	X	X	X	X	X	X	X
8	GIS Coordinator	X	*	*	*	*	*	*
9	Grant Writing & Administration Staff	X	X	X	X	X	X	X
10	Public Health	X	*	*	*	*	*	*
11	Public Works and/or Road Department	X	X	X	X	X	X	X
12	Sheriff	X	*	*	*	*	*	*
Technical								
1	Emergency Services GIS/GPS capable	X						
2	Emergency Siren (manually-activated)		1	1	1			3
3	Emergency Siren (radio-activated)					1	1	
4	Fire Break							
5	Fire Index Sign					X		
6	Fire ISO Rating					06/6x		
7	Firewise Certification							
8	Generator (permanent)					2		
9	Generator (portable)	1	1	1	1	3	1	1
10	HAZUS Analysis	X	X	X	X	X	X	X
11	Infrastructure Maintenance Programs	X	X	X	X	X	X	X
12	Navigation Signs for Emergency Services	X	X	X	X	X	X	X
13	Reporting of Data to Emergency Manager	X	X	X	X	X	X	X
14	StormReady Certification							
15	Warning Systems/Services		X	X	X	X	X	X

*Denotes administrative and technical capability that can be obtained through the county, contracted services, or an outside entity.

^ Denotes capability in progress.

8. **Kidder County does not have any permanent generators. The county needs a permanent generator for its courthouse, public school and ambulance hall in the city of Steele. The city of Steele has permanent generators at the city's water pumps/ water treatment plant and care center. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle need permanent generators. See Chapter 6, Mitigation Strategy (project AT-4 or Chapter 8, Jurisdictions for a list of generators needed for each incorporated jurisdiction.**
9. **Kidder County has one large (17 kW) portable generator at the county shop in the city of Robinson. The city of Steele has portable generators at the ambulance hall, fire hall, and city hall. The cities of Dawson, Pettibone, Robinson, Tappen, and Tuttle each have a portable generator.**
10. Kidder County has a HAZUS Analysis. The analysis is specific to Kidder County and the cities of Dawson and Tappen.
11. The Kidder County Highway/Road Department and the respective public works department in the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle conduct infrastructure maintenance on an as-needed basis and/or as-requested.
12. **Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle has navigation signs for emergency services. However, any sign that faces the south needs replacement due to impacts from severe weather, sun bleaching, etc.**
13. N.D. State Radio, city councils, and emergency services (ambulance, fire, law enforcement) report hazard data to county emergency management.
14. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle does not have StormReady Certification.
15. **Kidder County does not have an early warning system. The early warning system in the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle consist of outdoor early warning sirens.**

Table 7.1.2 shows the education and outreach capabilities of the Kidder County and incorporated jurisdictions. A box marked with an "X" indicates the jurisdiction has or has access to the education and outreach capability for mitigation. An asterisk (*) denotes an education and outreach capability that can be obtained through the county for incorporated jurisdictions, or contracted services or an outside entity for the county.

1. Events in the Kidder County where education and outreach can be conducted include: Kidder County Fair, Dawson 4th of July Celebration, Ducks Unlimited, Robinson Truck Pull, Tappen Harvest Fest, Tuttle Days, Steele Craft Fest, KEM Electric Annual Meeting, BEK Cooperative Annual Meeting, family carnival at the Kidder County Public School, and Kidder County Back-to-School Day.
2. Kidder County conducts continuous education and outreach through its social media presence to county residents and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle.
3. Non-profit organizations/citizen's groups providing public education and outreach in Kidder County include, but are not limited, to emergency services (ambulance, fire, law enforcement), church groups, Kidder-Emmons Senior Center, Golden Manor, Kidder County Sportsmen's Club, and Tuttle Wildlife.
4. Kidder County did not identify any 'Other' education and outreach capabilities in addition to those listed in categories 3 and 4.

5. Private Entities providing education and outreach to Kidder County include Montana-Dakota Utilities, Williston Basin Pipeline, NuStar Pipeline, and NoDak Mutual. Pipeline companies host an annual pipeline safety awareness training for local emergency services.
6. Public Entities providing public education include, but are not limited to, incorporated city councils and emergency services, Kidder County Emergency Management, Kidder County Sheriff's Office, Kidder County Social Services, Kidder County Public Health, NDSU/Kidder County Extension, and city councils. The N.D. Dept. of Agriculture in conjunction with the N.D. Highway Patrol conducts anhydrous ammonia training to the public and private industries. Kidder County receives public information and outreach from the state of North Dakota and the federal government.
7. The Kidder County Local Emergency Planning Committee (LEPC) is a public-private partnership providing education and outreach to Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle. Farm Safety Week is hosted by Farm Bureau and the Kidder County Ambulance.
8. Public schools conduct an annual storm and fire awareness program in conjunction with local emergency services. The Kidder County Sheriff's Office also provides education and outreach to public schools. Fire departments in Kidder County conduct Fire Safety Prevention Week. Farm Safety Week is hosted by Farm Bureau and the Kidder County Ambulance.
9. Kidder County maintains a Facebook page through the Sheriff's Office. The NDSU/Kidder County Extension maintains a Facebook page. Kidder County District Health Unit (KCDHU) maintains a Facebook page. Kidder County Ambulance maintains a Facebook page. The Steele Fire Department also maintains a Facebook page.
- 10. Kidder County and the cities of Dawson, Pettibone, Robinson, Tappen, and Tuttle do not maintain websites with hazard education and outreach media. The city of Steele does maintain a website with hazard education and outreach media.**

Table 7.1.2 – Education and Outreach Capabilities – Kidder County, ND

Education and Outreach Mitigation Capability		Kidder Co.	City of Dawson	City of Pettibone	City of Robinson	City of Steele	City of Tappen	City of Tuttle
1	County/City Events	X	X	X	X	X	X	X
2	County Emergency Management	X	*	*	*	*	*	*
3	Non-Profit Organizations/Citizen Groups	X	X			X		
4	Other							
5	Private Entities	X						
6	Public Entities	X	X			X		
7	Public-Private Partnerships	X	X	*	*	X	*	*
8	School Programs	X				X		
9	Social Media	X	*	*	*	X	*	*
10	Website with Hazard Education					X		

*Denotes education and outreach mitigation capability available to the jurisdiction through the county, contracted services, or an outside entity.

^ Denotes capability in progress.

Table 7.1.3 shows the financial capabilities of the Kidder County and incorporated jurisdictions. A box marked with an “X” indicates the jurisdiction has or has access to the financial capability for mitigation. An asterisk (*) denotes a financial capability that can be obtained through the county for incorporated jurisdictions, or contracted services or an outside entity for the county.

Table 7.1.3 – Financial Capabilities – Kidder County, ND

Financial Mitigation Capability		Kidder County	City of Dawson	City of Pettibone	City of Robinson	City of Steele	City of Tappen	City of Tuttle
1	Authority to Levy Taxes for Specific Purposes (sales tax or special assessments)	X	X	X	X	X	X	X
2	Building Permits					X		
3	Capital Improvements Fund					X		
4	Comm. Dev. Block Grant (CDBG)	X	X			X		
5	Electric Utility Fee							
6	General Obligation Bond/Special Tax Bond	X	X			X		
7	Impact Fees for New Development							
8	Other							
9	Private Entities or Activities							
10	Property Tax	X	X	X	X	X	X	X
11	Sanitary Sewer Utility Fee		X		X	X	X	X
12	State Funding Programs	X	X	X	X	X	X	X
13	Storm Water Utility Fee							
14	Water Utility Fee				X	X		X

* Denotes financial mitigation capability available to the jurisdiction through the county, contracted services, or an outside entity. ^ Denotes capability in progress.

- Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle have the authority to levy taxes for specific purposes, such as sales tax or special assessments, to raise revenue if warranted. A vote is required to pass any new taxes.
- Kidder County and the cities of Dawson, Pettibone, Robinson, Tappen, and Tuttle do not issue building permits. The city of Steele issues building permits.**
- Kidder County does not have a capital improvements fund/line items in local budgets.**
- The Kidder County qualifies for funding through the Community Development Block Grant (CDBG) as it meets the low-to-moderate income requirement. Eligibility status of the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle can be obtained by contacting the South Central Dakota Regional Council in Jamestown.
- Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have electric utility fees.
- Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle issues general obligation bonds and/or special tax bonds to raise revenue, if warranted.
- Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have impact fees for new development.**

8. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle did not identify any “Other” financial mitigation capabilities such as a road district, street maintenance or wheel tax.
9. No private entities or activities were identified as financial capabilities for mitigation activities for Kidder County and the cities of Dawson, Pettibone, Robinson, Tappen, and Tuttle.
10. Property taxes are the primary source of revenue for Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle.
- 11. Kidder County does not have sanitary sewer utility fees outside incorporated jurisdictions. Most county residents utilize septic systems. Regulation of these systems is conducted by the N.D. Dept. of Health and local public health. The cities of Dawson, Robinson, Steele, Tappen, and Tuttle have sanitary sewer utility fees. The city of Pettibone does not have sanitary sewer utility fees as residents maintain septic systems.**
12. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle have access to state funding programs.
13. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have a storm water utility fee.
14. Kidder County and the cities of Dawson, Pettibone, and Tappen do not assess water utility fees as they do not maintain municipal drinking/potable water systems. The cities of Robinson, Steele and Tuttle have water utility fees as they maintain municipal drinking/potable water systems.

Table 7.1.4 shows the planning and regulatory capabilities of the Kidder County and incorporated jurisdictions. Boxes marked with an “X” indicate the jurisdiction has the planning and regulatory capability. An asterisk (*) indicates a capability that can be obtained through the county, contracted services, or an outside entity.

1. Kidder County and the cities of Pettibone, Robinson, and Tuttle do not have an abandoned building/nuisance ordinance. The cities of Dawson, Steele, and Tappen have abandoned building/nuisance ordinances.
- 2. Kidder County and the cities of Dawson, Pettibone, Robinson, Tappen, and Tuttle have adopted state building codes but lack enforcement. The city of Steele has adopted state building codes and have enforcement.**
- 3. Kidder County and the cities of Dawson, Pettibone, Robinson, Tappen, and Tuttle do not issue building permits. The city of Steele issues building permits. The cost of each permit is project-specific.**
4. Kidder County Emergency Management issues burn bans when necessary. The Kidder County Commission manages burn bans and is the decision-maker for lifting bans.
- 5. Kidder County and the cities of Dawson, Pettibone, Robinson, Tappen, and Tuttle do not have a capital improvement plan/fund. The city of Steele has a capital improvement plan/fund.**
- 6. Kidder County and the cities of Dawson, Pettibone, Robinson, Tappen, and Tuttle do not have a chief building official/inspector/board. The city of Steele has a building inspector.**
7. Kidder County has a commercial animal feed operation ordinance. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have commercial animal feed operation ordinances.
- 8. Kidder County has a community wildfire protection plan. The cities of Dawson, Pettibone, Robinson, Steele, Tappen and Tuttle are included in this plan. The plan needs updating.**

9. **Kidder County and the city of Steele have comprehensive plans that need updating. The cities of Dawson, Pettibone, Robinson, Tappen, and Tuttle do not have comprehensive plans.**
10. **Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have written continuity of operations plans.**
11. **Kidder County and the cities of Dawson, Pettibone, Robinson, Tappen, and Tuttle does not have a crew camp ordinance. The city of Steele has a crew camp ordinance.**
12. **Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have drought management plans.**
13. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle have easements.
14. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have an economic development plan.
15. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have any dams with emergency action plans.
16. Kidder County has an emergency operations plan. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle are included in the county's plan.
17. Kidder County Public Health maintains an evacuation and shelter plan. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle are included in the county's plan.
18. **Kidder County does not have FEMA Flood maps and is not enrolled in the National Flood Insurance Program (NFIP). The cities of Steele and Tappen are enrolled and have flood maps. The county needs building permits before it can join the NFIP.**
19. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have a flood insurance study.
20. **Kidder County has a flood operations/management plan that is an annex of the county's emergency operations plan. The county's flood operations/management plan includes the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle.**
21. **Kidder County and the cities of Dawson, Pettibone, Robinson, and Tuttle do not have flood ordinances. The cities of Steele and Tappen have flood ordinances.**
22. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have a flood risk management feasibility study.
23. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have a grain bin ordinance. KEM Electric has regulations for setbacks of grain bins from power lines and other infrastructure.
24. **Kidder County has a multi-jurisdictional multi-hazard mitigation plan that is updated every five years. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle are included in this plan.**
25. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle have a hazardous materials flow study through the N.D. Dept. of Emergency Services. The BNSF Railroad also have a hazardous materials flow study that is available upon request.
26. **Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have impact fees for new development.**
27. Kidder County and the cities of Dawson, Steele, and Tappen have land use plans in its zoning ordinances. The cities of Pettibone, Robinson, and Tuttle do not have land use plans.

Table 7.1.4 – Planning and Regulatory Capabilities – Kidder County, ND

Planning and Regulatory Mitigation Capability		Kidder County	City of Dawson	City of Pettibone	City of Robinson	City of Steele	City of Tappen	City of Tuttle
1	Abandoned Building/Nuisance Ordinance		X			X	X	
2	Building Codes	X	X	X	X	X	X	X
3	Building Permits					X		
4	Burn Bans	X	*	*	*	*	*	*
5	Capital Improvement Plan/Fund					X		
6	Chief Building Official/Inspector/Board					X		
7	Commercial Animal Feed Operation Ordinance	X						
8	Community Fire/Wildfire Protection Plan	X	*	*	*	*	*	*
9	Comprehensive Plan	X				X		
10	Continuity of Operations Plan							
11	Crew Camp Ordinance					X		
12	Drought Management Plan							
13	Easements	X	X	X	X	X	X	X
14	Economic Development Plan							
15	Emergency Action Plans (Dams)							
16	Emergency Operations Plan	X	*	*	*	X*	*	*
17	Evacuation and Shelter Plan	X	*	*	*	*	*	*
18	FEMA Flood Map					X	X	
19	Flood Insurance Study							
20	Flood Operations/Management Plan	X	*	*	*	*	*	*
21	Flood Ordinance					X	X	
22	Flood Risk Management Feasibility Study							
23	Grain Bin Ordinance	X	*	*	*	*	*	*
24	Hazard Mitigation Plan	X	*	*	*	*	*	*
25	Hazardous Material Flow Study	X	*	*	*	*	*	*
26	Impact Fees							
27	Land Use Plan	X	X			X		
28	Local Emergency Operations Plan	X	*	*	*	*	*	*
29	National Flood Insurance Program (NFIP)							
30	Noise Control Ordinance		X			X		
31	Pandemic Influenza Response Plan	X	*	*	*	*	*	*
32	Planning Commission	X	X	X	X	X	X	X
33	Point of Dispensing (POD) Plan	X	*	*	*	*	*	*
34	Rural Development Guide							
35	Shelter and Mass Care Plan	X	*	*	*	*	*	*
36	Site Plan Review Requirements					X		
37	Storm Water Management Plan					X		
38	Strategic Plan							
39	Subdivision Ordinance	X						
40	Transportation Plan	X	*	*	*	X*	*	*
41	Water Conservation Plan							
42	Zoning	X	X			X	X	

*Denotes planning and regulatory mitigation capability available through the county, contracted services, or an outside entity. ^ Denotes capability in progress.

28. Kidder County has a local emergency operations plan. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle are included in the county's plan.
29. **Kidder County is not enrolled and does not participate in the National Flood Insurance Program (NFIP). The cities of Steele and Tappen are enrolled and have flood maps. The county needs building permits before it can join the NFIP. The cities of Dawson, Pettibone, Robinson, and Tuttle are not enrolled in the NFIP. The city of Dawson should consider enrolling in the NFIP.**
30. Kidder County and the cities of Pettibone, Robinson, Tappen, and Tuttle do not have a noise control ordinance. The cities of Dawson and Steele have noise control ordinances.
31. **Kidder County Public Health maintains a pandemic influenza response plan. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle are included in the county's plan.**
32. The Kidder County has a planning and zoning commission. The city councils for the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle serve as the planning and zoning commission.
33. **Kidder County Public Health maintains a point of dispensing (POD) plan. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle are included in the county's plan.**
34. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have a rural development guide.
35. **Kidder County Public Health maintains a shelter and mass care plan. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle are included in the county's plan.**
36. Kidder County and the cities of Dawson, Pettibone, Robinson, Tappen, and Tuttle does not have site plan review requirements. The city of Steele has site plan review requirements.
37. Kidder County and the cities of Dawson, Pettibone, Robinson, Tappen, and Tuttle does not have a storm water management plan. The city of Steele has a storm water management plan.
38. **Kidder County and the cities Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have a strategic plan.**
39. Kidder County has a subdivision ordinance in its zoning ordinances. The cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have subdivision ordinance in its zoning ordinances.
40. Kidder County and the cities of Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle has a transportation plan through the N.D. Dept. of Transportation. The city of Steele has its own transportation plan within its comprehensive plan.
41. **Kidder County and the cities Dawson, Pettibone, Robinson, Steele, Tappen, and Tuttle do not have a water conservation plan.**
42. Kidder County and the cities of Dawson, Steele, and Tappen have zoning ordinances. The cities of Pettibone, Robinson, and Tuttle do not have zoning ordinances.

Supplemental Planning and Regulatory Capabilities

Strategic plans for jurisdictions aside from incorporated cities such as townships can be used for mitigation purposes. In addition to strategic plans, townships that have zoning in place, including a zoning commission and a zoning administrator, can use zoning for mitigation purposes.

Integration of Mitigation Plan into Planning Mechanisms

To integrate the requirements of the mitigation plan into jurisdiction-specific planning mechanisms, such as comprehensive or capital improvement plans, incorporated cities will need to identify their current planning mechanisms, which elements of the mitigation plan to incorporate, and the method for doing so. The tables shown above in this chapter identify the current planning mechanisms for each county and incorporated city in the Kidder County. Detailed narratives regarding these planning mechanisms are discussed for the counties in this chapter, but are shown in Chapter 8, Jurisdictions for incorporated cities.

The jurisdiction profiles in Chapter 8 will also supplement existing jurisdiction-specific plans for most all incorporated cities. However, all incorporated cities have some type of planning mechanism, such as building codes, ordinances and/or zoning. Those cities without plans (excluding planning mechanisms) will participate in county-wide planning initiatives such as the Kidder County Emergency Operations Plan by providing risk assessment data or consider mitigation plan goals and mitigation strategies when updating zoning or implementing subdivision ordinances.

Current planning mechanisms, the mitigation plan elements incorporated and the method for incorporation are discussed after each mitigation project in Chapter 6, Mitigation Strategy and Chapter 8, Jurisdictions.

7.2 Mitigation Funding Sources

Funding sources from mitigation can come from a variety of resources. The following funding sources for the Federal Emergency Management Agency (FEMA) and other outlets are outlined below. These sources can fund and administer mitigation projects in addition to the local capabilities of the county and city jurisdictions. In addition to the financial capabilities of Kidder County, the following local, regional, state and federal entities can be used to obtain funding for mitigation.

- Ambulance Districts;
- Electric Cooperatives;
- Extension Service;
- Federal Emergency Management Agency (FEMA);
- Fire Districts;
- N.D. Dept. of Public Health;
- N.D. Dept. of Emergency Services;
- Park Districts;
- School Districts;
- Townships, and
- Utility providers.

FEMA Funding Sources

Hazard Mitigation Grant Program (HMGP). The HMGP is a post-disaster mitigation program. It is made available to states by FEMA after each Federal disaster declaration. The HMGP can provide up to 75 percent funding for hazard mitigation measures. The HMGP can be used to fund cost-effective projects that will protect public or private property in an area covered by a federal disaster declaration or that will reduce the likely damage from future disasters. Examples of projects include acquisition and demolition of structures in hazard prone areas, flood-proofing or elevation upgrades to reduce future damage, minor structural improvements and development of state or local standards. Projects must fit into an overall mitigation strategy for the area identified as part of a local planning effort. All applicants must have a FEMA-approved Multi-Jurisdictional Multi-Hazard Mitigation Plan (this plan).

Applicants who are eligible for the HMGP are state and local governments, certain nonprofit organizations or institutions that perform essential government services, and Indian tribes and authorized tribal organizations. Individuals or homeowners cannot apply directly for the HMGP; a local government must apply on their behalf.

Flood Mitigation Assistance (FMA) Program. The FMA combines the previous Repetitive Flood Claims and Severe Repetitive Loss Grants into one grant program. FMA provides funding to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the NFIP. The FMA is funded annually; no federal disaster declaration is required. Only NFIP insured homes and businesses are eligible for mitigation in this program. Funding for FMA is very limited and, as with the HMGP, individuals cannot apply directly for the program. Applications must come from local governments or other eligible organizations. The federal cost share for an FMA project is 75 percent. At least 25 percent of the total eligible costs must be provided by a non-federal source. Of this 25 percent, no more than half

can be provided as in-kind contributions from third parties. At minimum, a FEMA-approved local flood mitigation plan is required before a project can be approved. FMA funds are distributed from FEMA to the state.

FEMA, Pre-Disaster Mitigation Competitive (PDMC) Grant Program. The PDM program is an annually funded, nationwide, competitive grant program. No disaster declaration is required. Federal funds will cover 75 percent of a project's cost up to \$3 million. As with the HMGP and FMA, a FEMA-approved local Hazard Mitigation Plan is required to be approved for funding under the PDM program.

FEMA, Readiness, Response and Recovery Directorate, Fire Management Assistance Grant Program. This program provides grants to states, tribal governments and local governments for the mitigation, management and control of any fire burning on publicly (non-federal) or privately-owned forest or grassland that threatens such destruction as would constitute a major disaster. The grants are made in the form of cost sharing with the federal share being 75 percent of total eligible costs. Grant approvals are made within 1 to 72 hours from time of request.

Fire Prevention and Safety Grants. The Fire Prevention and Safety Grants (FP&S) are part of the Assistance to Firefighters Grants, and are administered by FEMA. FP&S Grants support projects that enhance the safety of the public and firefighters from fire and related hazards. The primary goal is to target high-risk populations and reduce injury and prevent death. Eligibility includes fire departments, national, regional, state, and local organizations, Native American tribal organizations, and/or community organizations recognized for their experience and expertise in fire prevention and safety programs and activities. Private non-profit and public organizations are also eligible. Interested applicants are advised to check the website periodically for announcements of grant availability. More information:

<https://www.fema.gov/welcome-assistance-firefighters-grant-program>

Other Mitigation Funding Sources

Grant funding is available from a variety of federal and state agencies for training, equipment, and hazard mitigation activities. Several of these programs are described below.

Program 15.228: Wildland Urban Interface Community and Rural Fire Assistance. [This program](#) is designed to implement the National Fire Plan and assist communities at risk from catastrophic wildland fires. The program provides grants, technical assistance, and training for community programs that develop local capability, including: Assessment and planning, mitigation activities, and community and homeowner education and action; hazardous fuels reduction activities, including the training, monitoring or maintenance associated with such hazardous fuels reduction activities, on federal land, or on adjacent nonfederal land for activities that mitigate the threat of catastrophic fire to communities and natural resources in high risk areas; and, enhancement of knowledge and fire protection capability of rural fire districts through assistance in education and training, protective clothing and equipment purchase, and mitigation methods on a cost share basis.

Secure Rural Schools and Community Self-Determination Act - Title III- County Funds. The Self-Determination Act has recently been reauthorized and now includes specific language regarding the Firewise Communities program. Counties seeking funding under Title III must use the funds to perform work under the Firewise Communities program. Counties applying for Title III funds to implement Firewise activities can assist in all aspects of a community's recognition process, including conducting or assisting with community assessments, helping the community create an action plan, assisting with an

annual Firewise Day, assisting with local wildfire mitigation projects, and communicating with the state liaison and the national program to ensure a smooth application process. Counties that previously used Title III funds for other wildfire preparation activities such as the Fire Safe Councils or similar would be able to carry out many of the same activities as they had before. However, with the new language, counties would be required to show that funds used for these activities were carried out under the Firewise Communities program. More information: <https://tinyurl.com/67dthhg>

Community Planning Assistance for Wildfire. Established in 2015 by Headwaters Economics and Wildfire Planning International, Community Planning Assistance for Wildfire (CPAW) works with communities to reduce wildfire risks through improved land use planning. CPAW is a grant-funded program providing communities with professional assistance from foresters, planners, economists and wildfire risk modelers to integrate wildfire mitigation into the development planning process. All services and recommendations are site-specific and come at no cost to the community. More information: <http://planningforwildfire.org/what-we-do/>

Urban and Community Forestry (UCF) Program. A cooperative program of the U.S. Forest Service that focuses on the stewardship of urban natural resources. With 80 percent of the nation's population in urban areas, there are strong environmental, social, and economic cases to be made for the conservation of green spaces to guide growth and revitalize city centers and older suburbs. UCF responds to the needs of urban areas by maintaining, restoring, and improving urban forest ecosystems on more than 70 million acres. Through these efforts the program encourages and promotes the creation of healthier, more livable urban environments across the nation. These grant programs are focused on issues and landscapes of national importance and prioritized through state and regional assessments. More information: <http://www.fs.fed.us/managing-land/urban-forests/ucf>

Western Wildland Urban Interface Grants. The National Fire Plan (NFP) is a long-term strategy for reducing the effects of catastrophic wildfires throughout the nation. The Division of Forestry's NFP Program is implemented within the Division's Fire and Aviation Program through the existing USDA Forest Service, State & Private Forestry, State Fire Assistance Program.

Congress has provided increased funding assistance to states through the U.S. Forest Service State and Private Forestry programs since 2001. The focus of much of this additional funding was mitigating risk in WUI areas. In the West, the State Fire Assistance funding is available and awarded through a competitive process with emphasis on hazard fuel reduction, information and education, and community and homeowner action. This portion of the National Fire Plan was developed to assist interface communities manage the unique hazards they find around them. Long-term solutions to interface challenges require informing and educating people who live in these areas about what they and their local organizations can do to mitigate these hazards.

The 10-Year Comprehensive Strategy focuses on assisting people and communities in the WUI to moderate the threat of catastrophic fire through the four broad goals of improving prevention and suppression, reducing hazardous fuels, restoring fire-adapted ecosystems, and promoting community assistance. The Western States Wildland Urban Interface Grant may be used to apply for financial assistance towards hazardous fuels and educational projects within the four goals of: improved prevention, reduction of hazardous fuels, restoration of fire-adapted ecosystems and promotion of community assistance. Information: <https://www.westernforesters.org/wui-grants>

U.S. Fish & Wildlife Service, Rural Fire Assistance Grants. Each year, the U.S. Fish & Wildlife Service (FWS) provides Rural Fire Assistance (RFA) grants to neighboring community fire departments

to enhance local wildfire protection, purchase equipment, and train volunteer firefighters. Service fire staff also assist directly with community projects. These efforts reduce the risk to human life and better permit FWS firefighters to interact and work with community fire organizations when fighting wildfires. The Department of the Interior (DOI) receives an appropriated budget each year for an RFA grant program. The maximum award per grant is \$20,000. The DOI assistance program targets rural and volunteer fire departments that routinely help fight fire on or near DOI lands. More information: http://www.fws.gov/fire/living_with_fire/rural_fire_assistance.shtml

Fire Management Assistance Program. This program is authorized under Section 420 of the Stafford Act. It allows for the mitigation, management, and control of fires burning on publicly or privately-owned forest or grasslands that threaten destruction that would constitute a major disaster. More information: <http://www.fema.gov/fire-management-assistance-grant-program>

NOAA Office of Education Grants. The Office of Education supports formal, informal and non-formal education projects and programs through competitively awarded grants and cooperative agreements to a variety of educational institutions and organizations in the United States. More information: <http://www.noaa.gov/office-education/grants>

NRCS Environmental Quality Incentives Program (EQUIP). The Environmental Quality Incentives Program, administered through the NRCS, is a cost-share program that provides financial and technical assistance to agricultural producers to plan and implement conservation practices that improve soil, water, plant, animal, air and related natural resources on agricultural land and non-industrial private forestland. Owners of land in agricultural or forest production or persons who are engaged in livestock, agricultural or forest production on eligible land and that have a natural resource concern on that land may apply to participate in EQUIP. Eligible land includes cropland, rangeland, pastureland, non-industrial private forestland and other farm or ranch lands. EQUIP is another funding mechanism for landowner fuel reduction projects. More information: <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/equip/>

U.S. Department of Agriculture, Community Facilities Loans and Grants. Provides grants (and loans) to cities, counties, states and other public entities to improve community facilities for essential services to rural residents. Projects can include fire and rescue services; funds have been provided to purchase fire-fighting equipment for rural areas. No match is required. More information: http://www.usda.gov/wps/portal/usda/usdahome?navid=GRANTS_LOANS

General Services Administration, Sale of Federal Surplus Personal Property. This program sells property no longer needed by the federal government. The program provides individuals, businesses and organizations the opportunity to enter competitive bids for purchase of a wide variety of personal property and equipment. Normally, there are no restrictions on the property purchased. More information: <http://www.gsa.gov/portal/category/21045>

Hazardous Materials Emergency Preparedness Grants. Grant funds are passed through to local emergency management offices and HazMat teams having functional and active LEPC groups. More information: <http://www.phmsa.dot.gov/hazmat/grants>

U.S. Department of Homeland Security. Enhances the ability of states, local and tribal jurisdictions, and other regional authorities in the preparation, prevention, and response to terrorist attacks and other disasters, by distributing grant funds. Localities can use grants for planning, equipment, training and exercise needs. These grants include but are not limited to areas of Critical Infrastructure Protection

Equipment and Training for First Responders, and Homeland Security Grants. More information: <http://www.dhs.gov/>

Community Development Block Grants (CDBG). The U.S. Department of Commerce administers the CDBG program which are intended to provide low and moderate-income households with viable communities, including decent housing, as suitable living environment, and expanded economic opportunities. Eligible activities include community facilities and improvements, roads and infrastructure, housing rehabilitation and preservation, development activities, public services, economic development, planning, and administration. Public improvements may include flood and drainage improvements. In limited instances, and during the times of “urgent need” (e.g. post disaster) as defined by the CDBG National Objectives, CDBG funding may be used to acquire a property located in a floodplain that was severely damaged by a recent flood, demolish a structure severely damaged by an earthquake, or repair a public facility severely damaged by a hazard event. CDBG funds can be used to match FEMA grants. More Information:

<http://www.hud.gov/offices/cpd/communitydevelopment/programs/>

Building Blocks for Sustainable Communities. The EPA Office of Sustainable Communities sometimes offers grants to support activities that improve the quality of development and protect human health and the environment. When these grants are offered, they will always be announced on www.grants.gov.

8. Jurisdictions

This chapter serves as a mini “Plan Within the Plan” and includes the following information for each incorporated city jurisdiction in Kidder County:

1. Profile and Inventory

- Location
- Population & Vulnerable Population
- Housing Units and Household Size
- Businesses
- New and Future Development

2. Risk Assessment

- Score Summary
- Hazard Scoring Notes

3. Mitigation Strategy

- Problem Statement
- Mitigation Projects

4. Mitigation Capabilities

- Capability Definitions

5. Integration into Planning Mechanisms

6. Plan Maintenance

This information provides the basis for the risk assessment shown in each jurisdiction profile. Comparative statistics of each jurisdiction in Kidder County are shown in Chapter 4, Profile and Inventory.

The incorporated cities in Kidder County are shown alphabetically in the following chapter.

- 8.1: City of Dawson
- 8.2: City of Pettibone
- 8.3: City of Robinson
- 8.4: City of Steele
- 8.5: City of Tappen
- 8.6: City of Tuttle

8.1 City of Dawson, North Dakota

The following profile includes information specific to the city of Dawson for mitigation planning purposes. The information included is as follows:

- Profile and Inventory;
- Risk Assessment;
- Hazard Scoring Notes;
- Mitigation Projects, and
- Capabilities for Mitigation.

Integration into Planning Mechanisms

The process for integration of the mitigation plan into existing planning mechanisms is discussed at the bottom of each mitigation project in section 8.1.3, in section 8.1.4, and in Chapter 6, Mitigation Strategy.

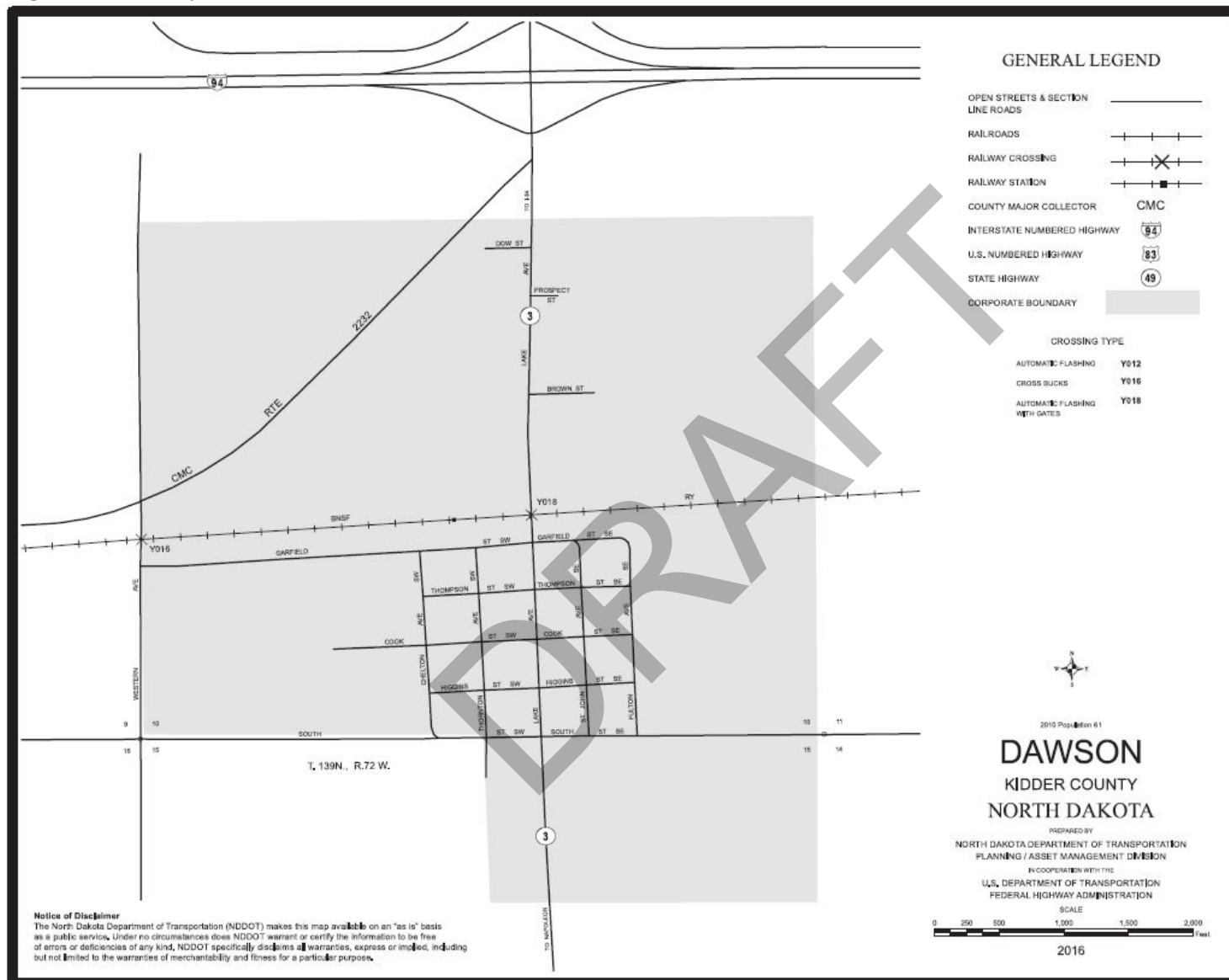
Plan Maintenance

Plan maintenance is shown in section 8.1.6.

Critical Facilities and Infrastructure

Figure 8.1.1 is a map of the city of Dawson provided by the N.D. Dept. of Transportation.

Figure 8.1.1 – City of Dawson, North Dakota



Source(s): N.D. Dept. of Transportation

8.1.1 Profile and Inventory

The location, total population, vulnerable populations, housing units and household size, businesses, critical facilities and infrastructure, new and future development, services, jurisdictional buildings, emergency response services and utilities are shown for the city of Dawson. Detailed narratives follow each section heading to profile the city.

Detailed information on public buildings, services provided, emergency response services and utilities can be found in Chapter 3, Profile and Inventory.

Location

The city of Dawson is in central North Dakota located at the intersection of Interstate 94 and N.D. Highway 3 approximately 45 miles east of the city of Bismarck, the state capital.

Population

Table 8.1.1 shows population trends for the city of Dawson from 1920 to 2010, with an estimate for 2019.

Per the 2010 U.S. Decennial Census, the city of Dawson has a population of 61 people, which is a decrease of 14 people (18.7 percent) from 75 people in 2000.

Table 8.1.1 – 1920 to 2010 City of Dawson, North Dakota Population Statistics

1920	1930	1940	1950	1960	1970	1980	1990	2000	2010	2019 (est.)
298	306	263	280	206	131	144	78	75	61	65

Source(s): U.S. Decennial Census; American Community Survey, 5-Year Estimates

Vulnerable Populations

Age. Per the 2014 to 2018 American Community Survey 5-Year Estimate, the population of the city of Dawson consists of four individuals under the age of 20 and 11 individuals age 65 and older.

Daycares. There are no daycares in the city of Dawson.

Poverty. Per the 2014 to 2018 American Community Survey 5-Year Estimate, there are two female-headed nonfamily households in the city of Dawson that live below the poverty line.

Public Schools. The Dawson-Sibley Public School closed its middle school and high school in the early 1960s. The school remained kindergarten, third, and fourth grade until early 1990s. Children living in the city of Dawson and surrounding area attend the Kidder County School in the city of Steele.

Senior Housing Developments/Care Centers. There are no age-restricted, senior housing developments, or care centers in the city of Dawson.

Housing Units and Household Size

The 2014 to 2018 American Community Survey 5-Year Estimate shows there is a total of 48 housing units in the city consisting of 25 single-family homes, 23 mobile/RV homes, and no multifamily homes.

The 2014 to 2018 American Community Survey 5-Year Estimate shows there are 22 households in the city of Dawson resulting in an average household size of 1.77 people.

Businesses

There are no major employers in the city of Dawson. Businesses in the city include one bar/restaurant, grocery store/gas station, an agricultural/chemical consulting firm, post office, a massage therapy studio, and the Dakota Outback, a bed-and-breakfast consisting of three refurbished/renovated older homes. Additional information on businesses and economic development in the city of Dawson or can be obtained by contacting Steele Betterment.

New and Future Development

The following development has occurred since the 2014 mitigation plan.

New

- The city's sanitary sewer system lift station was retrofitted/ upgraded with a new rail system to accommodate new auxiliary pumps in July 2020. The previous system was 35-years old and past its useful life.
- The bar/restaurant opened in 2014.
- A storage building on the south side of town was constructed in 2015/2016.
- The city has seen construction of approximately three new single-family homes in the last 3 years.
- The city constructed a multi-purpose outdoor recreational shelter to host city events in early 2020.

Future

- A new bar is planned to open, but as of December 2020, the city has not received any application for a liquor license.
- An investor from Bismarck has discussed construction of a four-unit apartment building. As of December 2020, the city has not received any additional information on this development.

Buildings, Critical Facilities and Infrastructure, and Services Provided

The following section profiles the housing units, services, emergency response services, jurisdictional buildings, and utilities of the city of Dawson. Tables 3.10 to 3.13 in Chapter 3, Profile and Inventory show a complete inventory of this information for Kidder County and incorporated jurisdictions. An "X" indicates if the jurisdiction offers the utility or service (either through contract or employees) or possesses the building or resource. Narratives detailing information for the county and incorporated jurisdictions accompany each table.

Structures. Housing units show where populations are located. Table 3.9 in Chapter 3, Profile and Inventory shows the number of single-family, mobile home structures, and multifamily and in Kidder County and incorporated jurisdictions. The following are key points for the city of Dawson:

- There are 25 single-family housing units comprising 52.1 percent of all housing units in the city of Dawson.
- There are 23 Mobile/Boat/RV/Van homes comprising 47.9 percent of all housing units in the city of Dawson.
- There are no Multifamily housing units in the city of Dawson.

Services. The following services are provided in the city of Dawson.

- Strom Sanitation provides garbage collection services to the city of Dawson.
- The city of Dawson has an inert landfill.
- The city of Dawson has its own sanitary sewer system consisting of one lift station and three lagoon cells.
- The Steele Ozone and Kidder County Press is the official newspaper of the city of Dawson.
- South Central Regional Water District provides drinking/potable water to the city of Dawson. City residents also utilize individual wells.

Emergency Response Services. The following emergency response services were identified in the city of Dawson.

- Kidder County Ambulance provides ambulance services to the city of Dawson.
- Dawson Rural Fire Protection District provides fire protection services to the city of Dawson.
- The Kidder County Sheriff's Office provides law enforcement services to the city of Dawson.
- The city of Dawson is equidistant from hospitals in the cities of Bismarck and Jamestown.
- Kidder County District Health Unit is in the city of Steele and provides public health services to the city of Dawson.

Critical Facilities. The following facilities were identified as critical in the city of Dawson.

- Dawson City Hall
- Dawson Fire Hall
- U.S. Post Office

Infrastructure. The following infrastructure was identified as critical in the city of Dawson.

- The city of Dawson has a sanitary sewer with three lagoon cells and a lift station. The system consists of each taxpayer having its own septic tank that ties into the city's sanitary sewer system.
- The drinking/potable water system consists of approximately 47 individual wells in addition to residents being served by South Central Regional Water District.
- The city of Dawson has an inert landfill.
- The city of Dawson is located at the intersection of Interstate 94 and N.D. Highway 3.

8.1.2 Risk Assessment and Hazard Scoring Notes

Table 8.1.2 summarizes the risk assessment scoring of the city of Dawson. The risk assessment and hazard scoring notes for each hazard specific to the city are shown in Table 8.1.3. Risk assessment notes for impact, frequency, likelihood and vulnerability ubiquitous for jurisdictions in Kidder County are found in Chapter 4, Threat and Hazard Identification Assessment in each respective hazard profile.

Table 8.1.2 – City of Dawson Jurisdiction Risk Assessment Scoring Summary

Risk Assessment Jurisdiction: City of Dawson						
<u>Natural Hazard</u>	<u>Impact</u>	<u>Frequency</u>	<u>Likelihood</u>	<u>Vulnerability</u>	<u>Capabilities</u>	<u>Total</u>
Drought	4	4	4	4	2	14
Fire – Urban/Structure Collapse	4	2	2	3	2	9
Fire – Wildland (Rural)	4	2	2	3	2	9
Flood	4	4	4	4	1	15
Geologic Hazard	1	1	1	1	1	3
Infectious Disease	4	2	2	3	1	10
Severe Summer Weather	4	4	4	4	1	15
Severe Winter Weather	4	4	4	4	1	15
Space Weather	4	1	1	4	1	9
<u>Adversarial Threats</u>						
Civil Disturbance	1	1	2	4	1	7
Criminal, Terrorist or Nation-State Attack	4	1	2	4	1	10
Cyberattack	2	1	2	2	1	6
<u>Technological Threats</u>						
Dam Failure	NA	NA	NA	NA	NA	NA
Hazardous Material Release	4	3	4	4	2	13
Transportation Incident	4	2	3	3	1	11

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 8.1.3 – City of Dawson Jurisdiction Risk Assessment

	Civil Disturbance	
Impact	<ul style="list-style-type: none"> Blocked Roads Business Interruptions Delayed Emergency Response Financial Hardship/Strain (public) 	<ul style="list-style-type: none"> HAZMAT Release – oil trains and natural gas pipeline Human Injury/Death Property Damage (Structure) Property Damage (Vehicle)
Frequency	<ul style="list-style-type: none"> Never an occurrence of a major incident 	<ul style="list-style-type: none"> DAPL protesters were not active in the city
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Presence of energy pipelines Presence of railroad infrastructure Lack of local active/continuous law enforcement coverage 	<u>Less Likely</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions Sparse population
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Presence of energy pipelines Presence of railroad infrastructure Lack of local active/continuous law enforcement coverage 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions Sparse population

Table 8.1.3 – City of Dawson Jurisdiction Risk Assessment – Continued

Criminal, Terrorist, Nation-State Attack	
Impact	<ul style="list-style-type: none"> Blocked Roads Business Interruptions Delayed Emergency Response Financial Hardship/Strain (public) HAZMAT Release Human Injury/Death Property Damage (Structure) Property Damage (Vehicle) Threats to city water supply Mass Casualties/Fatalities Loss of Communication Systems Disease Outbreak/Mass Infections
Frequency	<ul style="list-style-type: none"> No occurrences Miscellaneous property damage occurring in the city on an occasional basis
Likelihood	<div> <div> <u>More Likely</u> <ul style="list-style-type: none"> Presence of energy pipelines Presence of railroad infrastructure Lack of local active/continuous law enforcement coverage </div> <div> <u>Less Likely</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions Sparse population </div> </div>
Vulnerability	<div> <div> <u>More Vulnerable</u> <ul style="list-style-type: none"> Presence of energy pipelines Presence of railroad infrastructure Lack of local active/continuous law enforcement coverage </div> <div> <u>Less Vulnerable</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions Sparse population </div> </div>

Table 8.1.3 – City of Dawson Jurisdiction Risk Assessment – Continued

	Cyberattack	
Impact	<ul style="list-style-type: none"> Business Interruptions Delayed Emergency Response Financial Hardship/Strain (public) HAZMAT Release Human Injury/Death School Closure Loss of Communication Systems Identity Theft – loss of wages and/or assets 	
Frequency	<ul style="list-style-type: none"> Never an occurrence of a major attack 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Small town with lack of technological infrastructure to defend against cyber attacks Presence of energy pipelines Presence of railroad infrastructure Cellular Tower located 1.5 miles east of city limits 	<u>Less Likely</u> <ul style="list-style-type: none"> Lack of major financial institutions or communication infrastructure No public school City Auditor's Office conducts business on paper and maintains hard copy records
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Small town with lack of technological infrastructure to defend against cyber attacks Presence of energy pipelines Presence of railroad infrastructure Cellular Tower located 1.5 miles east of city limits Elderly population relying largely on landlines for communication purposes, remote medical care and equipment monitoring 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Lack of major financial institutions or communication infrastructure No public school City Auditor's Office conducts business on paper and maintains hard copy records

Table 8.1.3 – City of Dawson Jurisdiction Risk Assessment - Continued

	Drought	
Impact	<ul style="list-style-type: none"> • Crop Loss • Loss of Economy • Loss of Livestock • Loss of Wildlife Habitat (decreased wildlife populations) • Increase in Wildland Fire Potential 	<ul style="list-style-type: none"> • Water quality compromised from stock dams • Diminished soil quality – salinity will increase • Negative impact on mental health of producers and fire responders – “community impact” • Local producers forced to sell off herds which can last for several years • Population loss as people moved away due to loss of economy
Frequency	<ul style="list-style-type: none"> • Severe Drought of 1961/1962, 1988/1989 to 1991/1992 • Summer of 2017, local producers forced to sell off portions of their herds 	<ul style="list-style-type: none"> • End of July through winter of 2016 – county reached severe drought status • Severe drought in summer/fall of 2020
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Dry/wet cycle every five to eight years • Climatic patterns will result in an eventual drought of significance • Lack of precipitation 	<u>Less Likely</u> <ul style="list-style-type: none"> • Heavy precipitation
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Wildlife & hunting economy • Agriculture economy • Elderly population • Flat terrain/open topography contributes to conditions • Pastureland adjacent to structures and city limits • City does not have a water tower • City does not have a fire index sign 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Financial assistance programs made available by the state and federal government • Burn Ban by county emergency management • Fire Index monitoring and mapping from NDDes • Advanced communications such as internet and TV •

Table 8.1.3 – City of Dawson Jurisdiction Risk Assessment - Continued

Fire – Urban Fire/Structure Collapse	
Impact	<ul style="list-style-type: none"> • Building Collapse • Delayed Emergency Response • Evacuation (Localized) • Explosion • HAZMAT Release • Human Injury/Death • Increase Fire Potential • Property damage on a significant scale if impacting downtown structures
Frequency	<ul style="list-style-type: none"> • Occurrences of structures/vehicles being impacted every five years
Likelihood	<div> <div> <u>More Likely</u> <ul style="list-style-type: none"> • Age of structures on main street/N.D. Highway 3 • Increased use of electric heaters • Outdated electric wiring in older homes and structures • Outdated heating systems • Railroad infrastructure traversing city limits </div> <div> <u>Less Likely</u> <ul style="list-style-type: none"> • Building codes • Better building standards and maintenance of structures • Smoke detectors in public buildings and private homes/businesses • Well-equipped fire department with trained volunteers </div> </div>
Vulnerability	<div> <div> <u>More Vulnerable</u> <ul style="list-style-type: none"> • Age of structures • Increased use of electric heaters • Outdated electric wiring in older homes and structures • Outdated heating systems • Fire Hall does not have a permanent or portable generator • Prolonged response times due to limited fire staff during the daytime • Dawson Fire Department lacks a pumper truck – only has two grass rigs • City Auditor's Office conducts business on paper and maintains hard copy records • Railroad infrastructure traversing city limits </div> <div> <u>Less Vulnerable</u> <ul style="list-style-type: none"> • Building codes • Better building standards and maintenance of structures • Smoke detectors in public buildings and private homes/businesses • Well-equipped fire department with trained volunteers </div> </div>

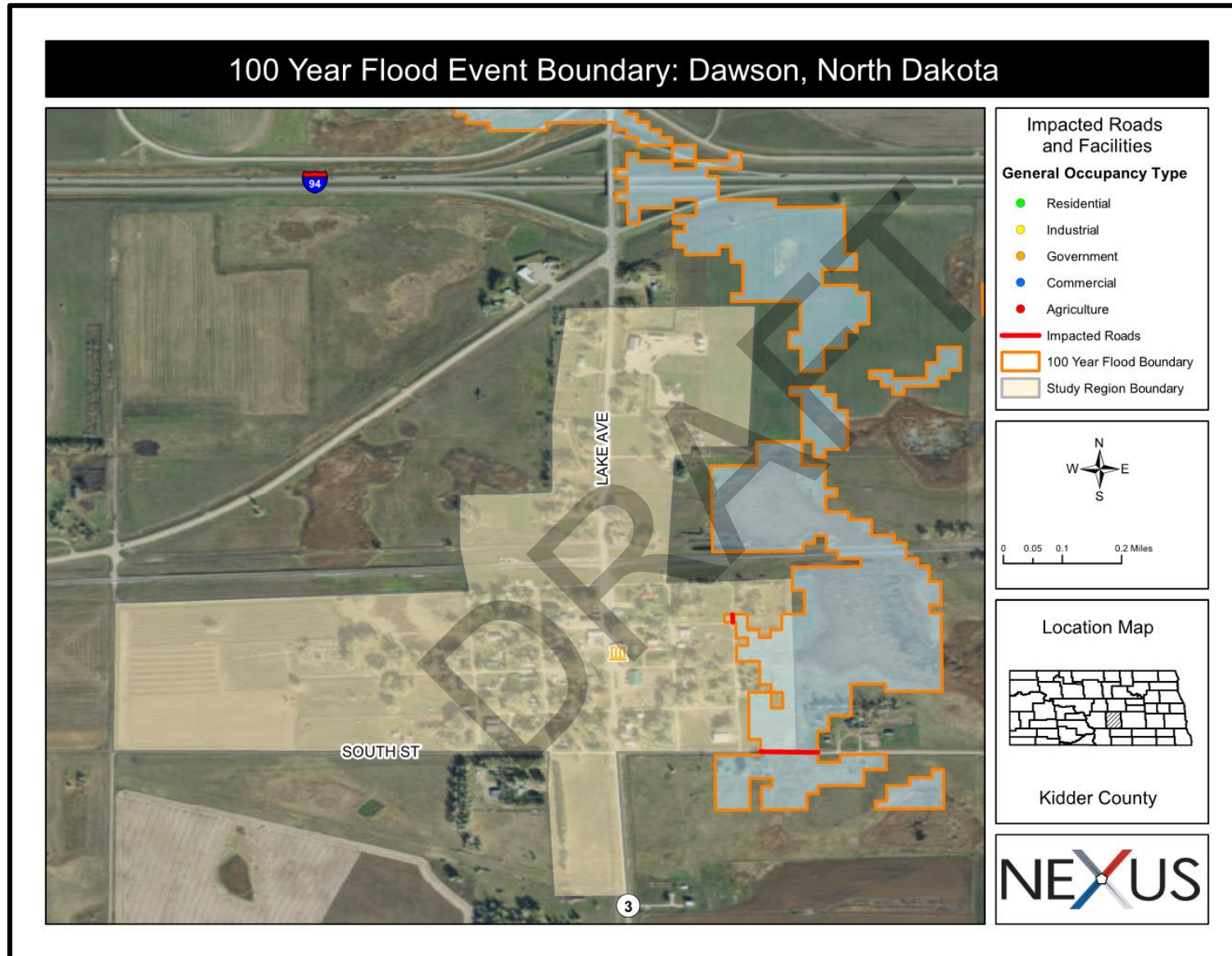
Table 8.1.3 – City of Dawson Jurisdiction Risk Assessment – Continued

	Fire – Rural & Wildland	
Impact	<ul style="list-style-type: none"> Building Collapse Crop Loss Delayed Emergency Response Evacuation (Localized) Explosion Increase Fire Potential Loss of Power/Downed Power Lines Mass Casualties Losses could be on a significant scale if impacting a major producer or farmstead Loss of farm equipment and assets Loss of Livestock 	
Frequency	<ul style="list-style-type: none"> Significant fire once every five years Approximately four wildland fires occurring annually Controlled burns becoming out of control approximately 25 percent of the time 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Agricultural burn-off High winds annually and dry conditions – when present Pastureland adjacent to structures and city limits Severe summer weather with significant lightning Railroad infrastructure traversing through city limits 	<u>Less Likely</u> <ul style="list-style-type: none"> Removal of CRP near city limits Summer and winter weather with heavy precipitation
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Agricultural burn-off High winds annually and dry conditions – when present Pastureland adjacent to structures and city limits Severe summer weather with significant lightning Large fire district – strained coverage/resources Railroad infrastructure traversing through city limits Lack of fire breaks around city limits 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Removal of CRP Summer and winter weather with heavy precipitation MOUs with neighboring fire departments Burn bans by county emergency management for areas outside city limits

Table 8.1.3 – City of Dawson Jurisdiction Risk Assessment – Continued

	Flood	
Impact	<ul style="list-style-type: none"> • Blocked Roads: Surrounding county and township roads, intersection of Thompson St. and Fulton Ave, and South Street east of N.D. Highway 3, a 700-foot stretch of Garfield St. west to Old Highway 10 • Delayed Emergency Response • Flooding (Highway & Structure) • Human Injury/Death • Property Damage / Sewer Backup • Runoff from buildings causes overland flooding 	<u>2020 100-Year Flood Event HAZUS Analysis</u> <ul style="list-style-type: none"> • No displaced people • No building losses • No contents losses • No inventory losses • \$19,000 in relocation losses • \$4,000 in capital related losses • \$1,784,000 in wage losses • No rental income losses
Frequency	<ul style="list-style-type: none"> • Bi-annual occurrences of localized flooding of nearby township roads and highways • Annual occurs of flooding on the west side of town south of Garfield St. 	<ul style="list-style-type: none"> • Flash flooding occurs from heavy precipitation
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Rapid change of seasons resulting in excessive snow melt • High water table 	<u>Less Likely</u> <ul style="list-style-type: none"> • Dry seasons and low precipitation • City performs storm water drainage maintenance
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Rapid change of seasons resulting in excessive snow melt • High water table • Local topography of the city with closed basins • City is not enrolled in the NFIP • City does not have flood ordinances 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Alternate routes were identified for townships roads • City performs storm water drainage maintenance • The city's sanitary sewer system lift station was retrofitted/upgraded with a new rail system to accommodate new auxiliary pumps in July 2020.

Figure 8.1.2 – City of Dawson 100-Year Flood Event Boundary



Source(s): Kidder County HAZUS Analysis, 100-Year Flood Event Boundary, Mountain Plains, LLC and Nexus Planning & Consulting, LLC

Table 8.1.3 – City of Dawson Jurisdiction Risk Assessment – Continued

	Geologic Hazard	
Impact	<ul style="list-style-type: none"> • Delayed Emergency Response • Human Injury/Death • Loss of Economy 	<ul style="list-style-type: none"> • Loss of Power • Property Damage
Frequency	<ul style="list-style-type: none"> • No incidents involving geologic hazards in or near city limits 	
Likelihood	<u>More Likely</u>	<u>Less Likely</u> <ul style="list-style-type: none"> • No Abandoned Mine Lands located near city limits • No expansive or shifting soils • PSC has an AML reclamation project aimed at recovering AMLs – work has been done
Vulnerability	<u>More Vulnerable</u>	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • No Abandoned Mine Lands located near city limits • No expansive or shifting soils • PSC has an AML reclamation project aimed at recovering AMLs – work has been done

Table 8.1.3 – City of Dawson Jurisdiction Risk Assessment – Continued

	Hazardous Material Release	
Impact	<ul style="list-style-type: none"> Blocked Roads Delayed Emergency Response / Increased Fire Potential Environmental Degradation Evacuation (localized) Explosion Human Injury/Death Loss of Economy Loss of Potable Water Loss of Power Property Damage Increased risk of HAZMAT release and/or transportation incidents due to increased oil train traffic and trucks 	
Frequency	<ul style="list-style-type: none"> Small incidents of leaking anhydrous tanks bi-annually Never any major spills reported Never a pipeline leak Coal train derailed in early 2000s in the middle of city limits 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Transportation of chemicals by truck through city limits Storage of chemicals/fertilizers in city limits and on farmsteads in large tanks near city limits Presence of energy pipelines Railroad infrastructure traversing through city limits City located on Interstate 94 Increase in oil trains in fall of 2020 	<u>Less Likely</u> <ul style="list-style-type: none"> Private companies have HAZMAT certifications Zoning and building codes Decrease in oil trains (from a frequency of one per hour) once the DAPL opened in 2017
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Agriculture economy and related industries Transportation of chemicals by truck through city limits Storage of chemicals/fertilizers in city limits and on farmsteads in large tanks near city limits Presence of energy pipelines No hospital or medical clinic in city limits Manual-activated emergency siren Railroad infrastructure traversing through city limits City located on Interstate 94 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Designated truck route in the city of Dawson Fire departments have some HAZMAT training WBI has training every other year Manual-activated emergency siren

Table 8.1.3 – City of Dawson Jurisdiction Risk Assessment – Continued

	Infectious Disease	
Impact	<ul style="list-style-type: none"> • Crop Loss • Human Injury/Death • Livestock Loss • Loss of Economy • Mass Casualties 	<ul style="list-style-type: none"> • Strain on local medical resources (ambulance) • Loss of medical staff due to sickness • Loss of Potable Water • Financial cost to public health resources
Frequency	<ul style="list-style-type: none"> • Annual occurrences of death, primarily among the elderly • Occurrence of disease - 1 in 3 for people annually • Annual occurrences of influenza cases in the local population 	<ul style="list-style-type: none"> • The COVID-19 Pandemic of 2020 resulted in mass quarantine and sheltering of the local population and temporary closure of businesses
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Growing elderly population • Small population of children without immunization • Agriculture economy • Dependent on weather for animals and crops • Transporting of animals across state lines – N.D. Highway 3 is a major transportation route for local and Canadian livestock traffic 	<u>Less Likely</u> <ul style="list-style-type: none"> • Advanced communications such as internet and tv • Public health and employment regulations for public facilities
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Growing elderly population • Small population of children without immunization • Agriculture economy • Transporting of animals across state lines – N.D. Highway 3 is a major transportation route for local and Canadian livestock traffic • No hospital or medical clinic • No vet clinic in city limits 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Advanced communications such as internet and tv • Public health and employment regulations for public facilities • Immunizations & medications of local population • No care center in the city • No public school

Table 8.1.3 – City of Dawson Jurisdiction Risk Assessment – Continued

	Severe Summer Weather	
Impact	<ul style="list-style-type: none"> • <u>Blocked Roads:</u> Surrounding county and township roads, intersection of Thompson St. and Fulton Ave, and South Street east of N.D. Highway 3, a 700-foot stretch of Garfield St. west to Old Highway 10 • Evacuation (Localized) • Human Injury/Death – heat exhaustion • Sewer Backup • Shelter-in-place • Vehicle Damage • Loss of Livestock • Loss of Crops • Loss of Power/Downed Power Lines - • Property Damage – repair of roofing, siding and drainage systems for homes 	
Frequency	<ul style="list-style-type: none"> • Property damage from tornados/straight-line winds in summer 2017 and 2019 • Windstorms occurring annually • Annual occurrences of hailstorms • Two or three significant storms producing damage to trees and property annually • Two major tornados struck the town in the 1930s and 1940s resulting in economic and population loss 	
Likelihood	<ul style="list-style-type: none"> • Climatic patterns will result in numerous annual occurrences of the hazard 	
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • High elderly population • Presence of mobile homes • Aging infrastructure (roads and electrical systems) • Lack of permanent generator at city hall, fire hall, and lift station • Lack of building code enforcement • Manual-activated emergency siren • Railroad infrastructure traversing through city limits • City located on Interstate 94 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Advanced warning and notification such as internet and TV • Adopted building codes • Manual-activated emergency siren • No public school • City has a portable generator • The city's sanitary sewer system lift station was retrofitted/upgraded with a new rail system to accommodate new auxiliary pumps in July 2020.

Table 8.1.3 – City of Dawson Jurisdiction Risk Assessment – Continued

	Severe Winter Weather	
Impact	<ul style="list-style-type: none"> <u>Blocked Roads:</u> Surrounding county and township roads, intersection of Thompson St. and Fulton Ave, and South Street east of N.D. Highway 3, a 700-foot stretch of Garfield St. west to Old Highway 10 Evacuation (Localized) Human Injury/Death – wind chill Property Damage – repair of roofing, siding and drainage systems for homes Loss of Crops Loss of Livestock Loss of Power/Downed Power Lines Sewer Backup Shelter-in-place Vehicle Damage Infrastructure Degradation – frost heaving causing roads to buckle resulting in closure 	
Frequency	<ul style="list-style-type: none"> March 2017 snowstorm resulted in blocked roads throughout the city Spring snowstorm of 2019 Annual occurrences of power loss from storms Two or three significant blizzards producing damage to trees and property annually Annual occurrences of frost heaving impacting city streets, primarily southside of Thorton Ave, and Garfield St. and St. John Ave Spring of 2019 – one-quarter mile of South St. was impacted by frost heaving 	
Likelihood	<ul style="list-style-type: none"> Climatic patterns will result in numerous annual occurrences of the hazard 	
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> High elderly population Presence of mobile homes Aging infrastructure (roads and electrical systems) Lack of permanent generator at city hall, fire hall and lift station Lack of building code enforcement Manual-activated emergency siren Railroad infrastructure traversing through city limits City located on Interstate 94 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Advanced warning and notification such as internet and TV Adopted building codes Manual-activated emergency siren No public school City has a portable generator The city's sanitary sewer system lift station was retrofitted/upgraded with a new rail system to accommodate new auxiliary pumps in July 2020.

Table 8.1.3 – City of Dawson Jurisdiction Risk Assessment – Continued

	Space Weather
Impact	<ul style="list-style-type: none"> • Loss of operation of the city hall, fire hall, lift station, etc. • Loss/outage of medical devices at private residences • Property damage from sewer backups due to loss of lift station
Frequency	<ul style="list-style-type: none"> • Never a recorded occurrence in Kidder County or North Dakota
Likelihood	<ul style="list-style-type: none"> • Dependent on solar activity and the 11-year solar cycle • Likely to occur once every 500 years per the 2018 N.D. Enhanced Mitigation MAOP
Vulnerability	<div> <div> <u>More Vulnerable</u> <ul style="list-style-type: none"> • Agriculture economy • All critical facilities and infrastructure that require electricity for operation • Advanced communication systems (internet, TV, etc.) • Lack of permanent generator at city hall, fire hall and lift Station </div> <div> <u>Less Vulnerable</u> <ul style="list-style-type: none"> • Local food production/households with gardens • City Auditor's Office conducts business on paper and maintains hard copy records </div> </div>

Table 8.1.3 – City of Dawson Jurisdiction Risk Assessment – Continued

	Transportation Incident	
Impact	<ul style="list-style-type: none"> Blocked roads from inadequate road clearing Human Injury/Death Increased Fire Potential Loss of Transportation/Accessibility Mass Casualties/Fatalities Delayed Emergency Response HAZMAT Release Livestock Loss Business Interruptions Property Damage Could be catastrophic if involving a school bus filled with children and a truck carrying hazardous materials 	
Frequency	<ul style="list-style-type: none"> Annual occurrences of accidents involving cars and/or farm equipment A payloader collided with a train west of the city in 2007 Coal train derailed in early 2000s in the middle of city limits 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Intoxicated drivers High truck traffic from agriculture-related traffic Railroad infrastructure traversing through city limits City located on Interstate 94 	<u>Less Likely</u> <ul style="list-style-type: none"> No commercial passenger airport Decrease in oil trains (from a frequency of one per hour) once the DAPL opened in 2017
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Intoxicated drivers High truck traffic from agriculture-related traffic No hospital or medical clinic Railroad infrastructure traversing through city limits City located on Interstate 94 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> No commercial passenger airport Presence of designated truck routes through city limits

8.1.3 Mitigation Strategy

The Kidder County Multi-Jurisdictional Multi-Hazard Plan Update includes a mitigation strategy consisting of seven goals in Chapter 6. The following problem statement and mitigation projects address the mitigation needs of the city of Dawson. It should be noted that some mitigation projects that pertain to all jurisdictions are included to encourage county-wide collaboration.

Problem Statement

The city of Dawson can be impacted by civil disturbance; criminal, terrorist or nation-state attack; cyberattack; drought; fire (urban and wildland); flood (overland and riverine); geologic hazard; hazardous material release, infectious disease, severe summer weather, severe winter weather, space weather and transportation incidents. Economic loss to the agriculture and livestock industry, and hunting/recreational industry from natural hazards in the county impacts the city's economy. The city's outdoor emergency siren is manually-activated. Blocked roads and frost heaving occurs annually from severe summer weather and severe winter weather. The city's city hall, fire hall, and lift station lack generators for backup power. An update to local planning and regulatory capabilities are needed with specific attention paid to flood ordinances to address hazard-prone areas with new and existing development. Due to flooding issues in the city, joining the National Flood Insurance Program (NFIP) should be researched. The city and fire department need equipment to maintain delivery of services. With little to no capabilities to accomplish major projects independently, the city is dependent on outside sources for mitigation.

Installation of permanent backup power sources; upgrade/expanding of the early outdoor warning system; an engineering study of frost heaving issues in and around the city; investment in equipment for the city and fire department to maintain delivery of services, and expansion of education and outreach, financial, and planning and regulatory capabilities are a priority for the city of Dawson.

City of Dawson Project 1: Install permanent generators at critical facilities and infrastructure.

Description/Benefit		Test existing generators and create regularly scheduled maintenance system. The city has a portable generator that needs updating Install new generators to establish permanent source of backup power to maintain continued operation of the following critical facilities and infrastructure. <u>Install New</u> <ul style="list-style-type: none">• Dawson Fire Hall• Lift station					
Hazards Addressed		All hazards					
Affected Jurisdiction(s)		City of Dawson					
Project Status		New					
Priority		Very High					
Responsible Agency		City Council, Public Works, Emergency Services					
Partners		Emergency Management, Public Utilities					
Completion Timeframe		2 to 3 years			Cost	Project-specific	
Funding Source		Public Utilities, Regional Council, RD. FEMA Pre-Disaster Mitigation Grant Program (PDM). State Homeland Security grants.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element Utilized			Process for Integration	
Kidder County Hazard Mitigation Plan Kidder County Local Emergency Operations Plan			Capability Assessment, Hazard History, Risk Assessment			Include in city and/or fire department’s budget. Apply for grant funding or purchase directly using existing sales tax revenue or budgets. Approval city council or board.	

City of Dawson Project 2: Upgrade manually-activated outdoor emergency siren.

Description/Benefit	The city’s outdoor emergency siren is manually activated and needs to be upgraded to provide radio-activation capabilities.						
Hazards Addressed	All						
Affected Jurisdiction(s)	City of Dawson						
Project Status	New						
Priority	Very High						
Responsible Agency	City Council/Planning and Zoning, Emergency Services						
Partners	County Commission, NDAC, NDLC, Regional Council						
Completion Timeframe	2 to 3 years				Cost	Staff time and equipment costs	
Funding Source	Local budgets. N.D. League of Cities. State Homeland Security Grants. NDDDES.						
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element		Process for Integration		
Kidder County Hazard Mitigation Plan Kidder County Local Emergency Operations Plan			Capability Assessment, Hazard History, Risk Assessment		Include in city and/or fire department’s capital improvement plan. Apply for grant funding or purchase directly using existing sales tax revenue or budgets. Approval city council or board.		

City of Dawson Project 3: Conduct engineering study to mitigate frost heaving.

Description/Benefit		Annual occurrences of frost heaving impacting city streets, primarily southside of Thorton Ave, Garfield St., and St. John Ave. A quarter-mile of South St. was impacted by frost heaving in 2019.					
Hazards Addressed		Flood, Severe Summer Weather, Severe Winter Weather					
Affected Jurisdiction(s)		City of Dawson					
Project Status		New					
Priority		High					
Responsible Agency		City Council, Public Works					
Partners		County Commission, NDAC, NDLC, Regional Council, private contractors					
Completion Timeframe		2 to 3 years			Cost	Project-specific	
Funding Source		Local budgets. N.D. League of Cities.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	4	5	3	3	30
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element			Process for Integration	
Kidder County Local Emergency Operations Plan Kidder County Mitigation Plan Kidder County THIRA			Capability Assessment, Hazard History, Risk Assessment			City solicits three engineering proposals from qualified firms. Select appropriate firm based on proposals. Apply for grant funding. Execute project. Submit reimbursements and close-out grant.	

City of Dawson Project 4: Expand existing/develop new planning and regulatory capabilities to address existing and new development to strengthen local planning processes.

Description/Benefit		The city of Dawson is inundated by flooding on an annual basis. The city lacks flood ordinances to regulate development in flood-prone areas. The city is also not a part of the National Flood Insurance Program (NFIP). The city lacks zoning or a comprehensive plan. Additional consideration should be given to prioritize sewer backup valves when upgrading existing or building new development. Redundancies in the power grid systems should be encouraged. Specific attention should be paid to tie-down procedures for temporary buildings. A list of plans, policies, codes and ordinances needing to be updated or created for Kidder County and incorporated jurisdictions are bolded in text narratives and are found in Chapter 7, Capability Assessment.					
Hazards Addressed		All					
Affected Jurisdiction(s)		City of Dawson					
Project Status		New					
Priority		High					
Responsible Agency		City Council(s), Planning & Zoning					
Partners		County Commission, Emergency Management, Emergency Services, NDACo, NDDES, NDLC, Public Works, RD					
Completion Timeframe		Ongoing		Cost	\$0 to \$5,000 / Staff-time		
Funding Source		Local budgets. Local, state and federal grants. Private sector.					
Values: 1 is low (negative impact and/or too costly) – Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	3	3	3	4	28
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element		Process for Integration		
All			Capability Assessment, Hazard History, Risk Assessment		Development of specifications. Review of legal counsel. Approval and adoption by county commission and city councils.		

City of Dawson Project 5: Purchase new fire suppression equipment for emergency services and provide training, and research options for new fire hall/shelter.

Description/Benefit	The Dawson Fire Protection District lacks equipment to respond to incidents of fire. A focus should be to purchase GIS/GPS capable equipment. <u>Dawson Fire Protection District</u> <ul style="list-style-type: none">• Self-Contained Breathing Apparatus (SCBAs)• Pumper Truck• HAZMAT Training• New fire hall with sheltering capabilities <u>City of Dawson</u> <ul style="list-style-type: none">• Skidsteer						
Hazards Addressed	Fire (Urban and Wildland). All hazards.						
Affected Jurisdiction(s)	City of Dawson						
Project Status	New						
Priority	High						
Responsible Agency	City Council(s), Emergency Services						
Partners	Emergency Management						
Completion Timeframe	Ongoing			Cost	Project-specific		
Funding Source	Local, state, federal grants. CDBG, Emergency Services, FEMA, HUD, Public Utilities, RD, USFS.						
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	4	3	5	2	4	28
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized		Plan Element			Process for Integration		
Kidder County Local Emergency Operations Plan Kidder County Mitigation Plan Kidder County THIRA		Capability Assessment, Hazard History, Risk Assessment			Review by emergency services, cities, or county. Budget or apply for grant funding. Approval by board, county commission, or city council(s), and taxing districts.		

City of Dawson Project 6: Fill in basements of homes and structures to reduce or eliminate the impacts of flooding.

Description/Benefit		Severe flooding due to high water tables in 1999 and 2000 resulted in mitigation funding to fill basements of structures in the city. Staff at the N.D. Dept. of Emergency Services (NDDDES) recall seeing water hoses leading from every residential home and structure in the city of Dawson. The basement of the local grocery store was filled-in.					
Hazards Addressed		Flood, Infectious Disease, Severe Summer Weather, Severe Winter Weather					
Affected Jurisdiction(s)		City of Dawson					
Project Status		New					
Priority		High					
Responsible Agency		City Council(s), Emergency Management, Emergency Services					
Partners		County Commission, FEMA, NDDDES					
Completion Timeframe		Ongoing			Cost	Project-specific	
Funding Source		Local, state, federal grants. NDDDES. FEMA’s BRIC, FMA or HMGP Programs.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	3	3	5	31
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element			Process for Integration	
Kidder County LEOP Kidder County Mitigation Plan Kidder County THIRA			Capability Assessment, Hazard History, Risk Assessment			Identify remaining structures with basements. Work with property owners and compile grant funding application.	

8.1.4 Mitigation Capability Assessment

Capability for mitigation is divided into four categories: administrative and technical, education and outreach, financial, and planning and regulatory. Each identified resource in the four categories can be used to implement mitigation strategies and access funding for projects. **Tables comparing the mitigation capabilities of the city of Dawson with all other jurisdictions in Kidder County can be found below and in Chapter 7, County Mitigation Capability Assessment.**

- Administrative and Technical: Identification of administrative and technical capabilities, which include staff, their skills and tools for mitigation planning to implement specific mitigation actions.
- Education and Outreach: Identification of education and outreach programs, and methods already in place to implement mitigation activities and communicate hazard-related information.
- Financial: Identification of access to or eligibility to use funding resources for hazard mitigation for jurisdictions.
- Planning and Regulatory: Jurisdictional plans, policies, codes, and ordinances adopted and in place that prevent and reduce the impacts of hazards.

City of Dawson Mitigation Capabilities Summary

The following mitigation capabilities were identified as commonplace among all hazard and threats upon completion of the risk assessment for the city of Dawson. More detailed information about the mitigation capabilities of the city of Dawson in relation to Kidder County and all other incorporated jurisdictions can be found in Chapter 7, Mitigation Capability Assessment.

Dawson Fire Department	Advanced communications: Internet & TV
Kidder County Ambulance	2018 N.D. Enhanced Mitigation MAOP
MOUs	Farm Services Agency
Kidder Co. LEOP	NDSU/Kidder Co. Extension
Kidder Co. Emergency Mgmt.	NDDES Fire Index Monitoring
Kidder County District Health Unit	NDDOT Statewide Highway/Transportation Plan
Kidder Co. Sheriff's Office	

8.1.5 Integration of Mitigation Plan into Planning Mechanisms

Integration of the plan into current planning mechanisms is critical in mitigation to communicate the needs of each jurisdiction to achieve an all-inclusive mitigation strategy. The process for integration of the mitigation plan is included after each mitigation project, which shows the planning mechanism utilized, the plan element used for integration and the process for integration.

8.1.6 Plan Maintenance

An important aspect of any useable plan is the maintenance and upkeep of the document. At any given time, planning, risk analysis, updating the situation assessment, research, coordinating, disaster response

or other activity is occurring. Plan maintenance ensures the plan will remain useful in the county for many years. A mitigation action progress report form to conduct plan maintenance is in Chapter 10 of this plan.

DRAFT

8.2 City of Pettibone, North Dakota

The following profile includes information specific to the city of Pettibone for mitigation planning purposes. The information included is as follows:

- Profile and Inventory;
- Risk Assessment;
- Hazard Scoring Notes;
- Mitigation Projects, and
- Capabilities for Mitigation.

Integration into Planning Mechanisms

The process for integration of the mitigation plan into existing planning mechanisms is discussed at the bottom of each mitigation project in section 8.2.3, in section 8.2.4, and in Chapter 6, Mitigation Strategy.

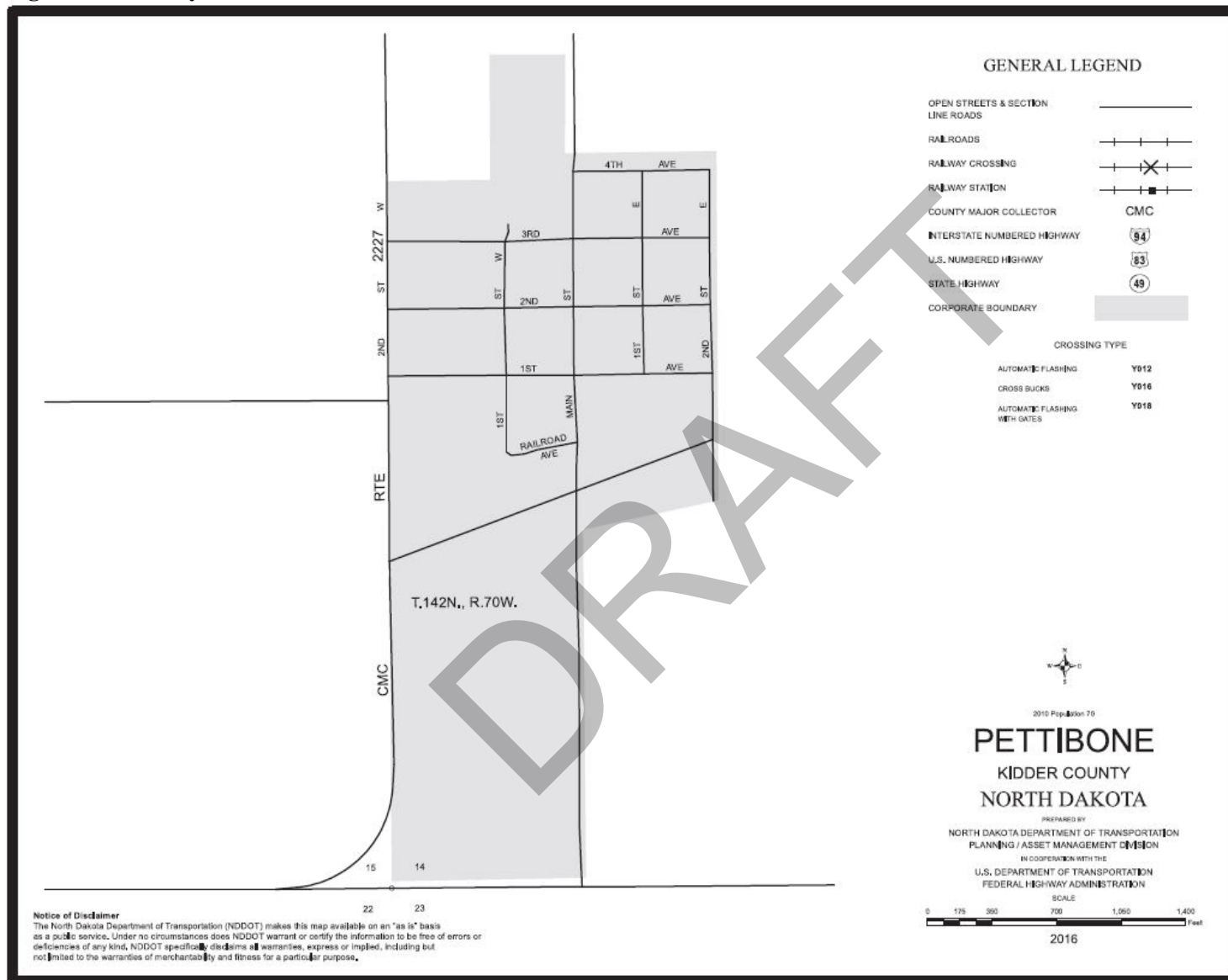
Plan Maintenance

Plan maintenance is shown in section 8.2.6.

Critical Facilities and Infrastructure

Figure 8.2.1 is a map of the city of Pettibone provided by the N.D. Dept. of Transportation.

Figure 8.2.1 – City of Pettibone, North Dakota



Source(s): N.D. Dept. of Transportation

8.2.1 Profile and Inventory

The location, total population, vulnerable populations, housing units and household size, businesses, buildings, critical facilities and infrastructure, services provided, and new and future development are shown for the city of Pettibone. Detailed narratives follow each section heading to profile the city.

Detailed information on public buildings, services provided, emergency response services and utilities can be found in Chapter 3, Profile and Inventory.

Location

The city of Pettibone is in central North Dakota located on N.D. Highway 36 in northeastern Kidder County approximately 75 miles east-northeast of the city of Bismarck, the state capitol.

Population

Table 8.2.1 shows population trends for the city of Pettibone from 1920 to 2010, with an estimate for 2019.

Per the 2010 U.S. Decennial Census, the city of Pettibone has a population of 70 people, which is a decrease of 18 people (20.5 percent) from 88 people in 2000.

Table 8.2.1 – 1920 to 2010 City of Pettibone, North Dakota Population Statistics

1920	1930	1940	1950	1960	1970	1980	1990	2000	2010	2019 (est.)
--	--	--	--	205	173	127	93	88	70	68

Source(s): U.S. Decennial Census; American Community Survey, 5-Year Estimates

Vulnerable Populations

Age. Per the 2014 to 2018 American Community Survey 5-Year Estimate, the population of the city of Pettibone consists of 14 individuals under the age of 20 and 18 individuals age 65 and older.

Daycares. There are no daycares in the city of Pettibone.

Poverty. Per the 2014 to 2018 American Community Survey 5-Year Estimate, there are five households in city of Pettibone that live below the poverty line.

Public Schools. There are no public schools in the city of Pettibone. The public school closed in the early 1990s.

Senior Housing Developments/Care Centers. There are no age-restricted, senior housing developments, or care centers in the city of Pettibone.

Housing Units and Household Size

The 2014 to 2018 American Community Survey 5-Year Estimate shows there is a total of 58 housing units in the city consisting of 56 single-family homes, two mobile/RV homes, and no multifamily homes.

The 2014 to 2018 American Community Survey 5-Year Estimate shows there are 50 households in the city of Pettibone resulting in an average household size of 1.82 people.

Businesses

Pettibone Long Branch, Farmer's Union, and Arena Welding are the major employers in the city of Pettibone.

New and Future Development

The following development has occurred since the 2014 mitigation plan.

New

- The Pettibone Long Branch Bar/Tavern was constructed in 2017.
- The Harvester Café opened in 2015.
- A mixed-use building with housing in the front and a mechanical shop in the back started construction in 2018, but as of 2020 is still unfinished.
- A new sidewalk was constructed around the community center in 2020.
- Our Savior's Lutheran Church installed a new roof in 2020.

Future

- The only future development was a building permit issued for construction/expansion of a garage on a single-family residence.

Buildings, Critical Facilities and Infrastructure, and Services Provided

The following section profiles the housing units, services, emergency response services, jurisdictional buildings, and utilities of the city of Pettibone. Tables 3.10 to 3.13 in Chapter 3, Profile and Inventory show a complete inventory of this information for Kidder County and incorporated jurisdictions. An "X" indicates if the jurisdiction offers the utility or service (either through contract or employees) or possesses the building or resource. Narratives detailing information for the county and incorporated jurisdictions accompany each table.

Structures. Housing units show where populations are located. Table 3.9 in Chapter 3, Profile and Inventory shows the number of single-family, mobile home structures, and multifamily and in Kidder County and incorporated jurisdictions. The following are key points for the city of Pettibone:

- There are 56 single-family housing units comprising 96.6 percent of all housing units in the city of Pettibone.
- There are two Mobile/Boat/RV/Van homes comprising 3.4 percent of all housing units in the city of Pettibone.
- There are zero Multifamily housing units in the city of Pettibone.

Services. The following services are provided in the city of Pettibone.

- Strom Sanitation provides garbage collection services to the city of Pettibone.
- The city of Pettibone does not have an inert landfill.
- The city of Pettibone does not have a sanitary sewer system. Residents utilize septic systems.

- The Steele Ozone and Kidder County Press is the official newspaper of the city of Pettibone.
- Stutsman Rural Water District drinking/potable water to the city. Some city residents also utilize individual wells and private irrigation.

Emergency Response Services. The following emergency response services were identified in the city of Pettibone.

- Kidder County Ambulance provides ambulance services to the city of Pettibone.
- Pettibone Fire Protection District provides fire protection services to the city of Pettibone.
- The Kidder County Sheriff's Office provides law enforcement services to the city of Pettibone through mutual aid.
- The nearest hospital to the city of Pettibone is the Jamestown Regional Medical Center in Jamestown.
- There is no medical clinic in the city of Pettibone.
- Kidder County District Health Unit is in the city of Steele and provides public health services to the city of Pettibone.

Critical Facilities. The following facilities were identified as critical in the city of Pettibone.

- Pettibone City Hall/City Shop/Shelter
- Pettibone Fire Protection District Fire Hall
- U.S. Post Office

Infrastructure. The following infrastructure was identified as critical in the city of Pettibone.

- The city of Pettibone does not have a sanitary sewer system. Residents utilize septic systems.
- The city of Pettibone does not have a municipal drinking/potable water system. Stutsman County Rural Water District provides drinking/potable to some city residents via their individual wells, while other residents just utilize wells.
- The city of Pettibone is located on N.D. Highway 36.
- There is no railroad infrastructure traversing the city of Pettibone. The railroad was decommissioned in the early 1990s.

8.2.2 Risk Assessment and Hazard Scoring Notes

Table 8.2.2 summarizes the risk assessment scoring of the city of Pettibone. The risk assessment and hazard scoring notes for each hazard specific to the city are shown in Table 8.2.3. Risk assessment notes for impact, frequency, likelihood and vulnerability ubiquitous for jurisdictions in Kidder County are found in Chapter 4, Threat and Hazard Identification Assessment in each respective hazard profile.

Table 8.2.2 – City of Pettibone Jurisdiction Risk Assessment Scoring Summary

Risk Assessment Jurisdiction: City of Pettibone						
<u>Natural Hazard</u>	<u>Impact</u>	<u>Frequency</u>	<u>Likelihood</u>	<u>Vulnerability</u>	<u>Capabilities</u>	<u>Total</u>
Drought	4	3	4	4	2	13
Fire – Urban/Structure Collapse	4	2	4	3	2	11
Fire – Wildland (Rural)	4	3	4	3	2	12
Flood	2	2	2	1	1	6
Geologic Hazard	1	1	1	1	1	3
Infectious Disease	4	2	4	3	1	12
Severe Summer Weather	4	4	4	2	1	13
Severe Winter Weather	4	4	4	2	1	13
Space Weather	4	1	4	4	1	12
<u>Adversarial Threats</u>						
Civil Disturbance	4	1	2	2	1	8
Criminal, Terrorist or Nation-State Attack	4	1	2	2	1	8
Cyberattack	2	2	2	2	1	7
<u>Technological Threats</u>						
Dam Failure	NA	NA	NA	NA	NA	NA
Hazardous Material Release	4	2	3	2	2	9
Transportation Incident	4	2	3	2	1	10

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 8.2.3 – City of Pettibone Jurisdiction Risk Assessment

	Civil Disturbance	
Impact	<ul style="list-style-type: none"> Blocked Roads Business Interruptions Delayed Emergency Response Financial Hardship/Strain (public) 	<ul style="list-style-type: none"> HAZMAT Release Human Injury/Death Property Damage (Structure) Property Damage (Vehicle)
Frequency	<ul style="list-style-type: none"> Never an occurrence of a major incident 	<ul style="list-style-type: none"> DAPL protesters were not active in the city
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Lack of local active/continuous law enforcement coverage 	<u>Less Likely</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions Sparse population
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Lack of local active/continuous law enforcement coverage 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions Sparse population

Table 8.2.3 – City of Pettibone Jurisdiction Risk Assessment – Continued

Criminal, Terrorist, Nation-State Attack	
Impact	<ul style="list-style-type: none"> Blocked Roads Business Interruptions Delayed Emergency Response Disease Outbreak/Mass Infections Financial Hardship/Strain (public) HAZMAT Release Human Injury/Death Loss of Communication Systems Mass Casualties/Fatalities Property Damage (Structure) Property Damage (Vehicle)
Frequency	<ul style="list-style-type: none"> No occurrences Miscellaneous property damage occurring in the city on an occasional basis City council members indicated a break-in at Farmer's Union and the local bar in 2015
Likelihood	<div> <div> <u>More Likely</u> <ul style="list-style-type: none"> Lack of local active/continuous law enforcement coverage </div> <div> <u>Less Likely</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions Lack of major travel artery (Interstate 94) No railroad infrastructure traverses city limits </div> </div>
Vulnerability	<div> <div> <u>More Vulnerable</u> <ul style="list-style-type: none"> Lack of local active/continuous law enforcement coverage </div> <div> <u>Less Vulnerable</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions Lack of major travel artery (Interstate 94) No railroad infrastructure traverses city limits </div> </div>

Table 8.2.3 – City of Pettibone Jurisdiction Risk Assessment – Continued

	Cyberattack	
Impact	<ul style="list-style-type: none"> • Business Interruptions • Delayed Emergency Response • Financial Hardship/Strain (public) • HAZMAT Release 	<ul style="list-style-type: none"> • Human Injury/Death • Identity Theft – loss of wages and/or assets Loss of Communication Systems • School Closure
Frequency	<ul style="list-style-type: none"> • Never an occurrence of a major attack 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Small town with lack of technological infrastructure to defend against cyber attacks 	<u>Less Likely</u> <ul style="list-style-type: none"> • Lack of major financial institutions or communication infrastructure • Lack of a public school
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Small town with lack of technological infrastructure to defend against cyber attacks • Elderly population relying largely on landlines for communication purposes, remote medical care and equipment monitoring 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Lack of major financial institutions or communication infrastructure • Lack of a public school

Table 8.2.3 – City of Pettibone Jurisdiction Risk Assessment - Continued

	Drought	
Impact	<ul style="list-style-type: none"> • Crop Loss • Loss of Economy • Loss of Livestock • Loss of Wildlife Habitat (decreased wildlife populations) • Increase in Wildland Fire Potential 	<ul style="list-style-type: none"> • Water quality compromised from stock dams • Diminished soil quality – salinity will increase • Negative impact on mental health of producers and fire responders – “community impact” • Local producers forced to sell off herds which can last for several years • Population loss as people moved away due to loss of economy
Frequency	<ul style="list-style-type: none"> • Severe Drought of 1961/1962, 1988/1989, to 1991/1992 • Summer of 2017, local producers forced to sell off portions of their herds 	<ul style="list-style-type: none"> • End of July through winter of 2016 – county reached severe drought status • Severe drought in summer/fall of 2020
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Dry/wet cycle every 10 years • Climatic patterns will result in an eventual drought of significance • Lack of precipitation 	<u>Less Likely</u> <ul style="list-style-type: none"> • Heavy precipitation
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Loss of economy from decreased wildlife & hunting • Agriculture economy • Elderly population • Flat terrain/open topography contributes to conditions • Pastureland adjacent to structures and city limits 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Financial assistance programs made available by the state and federal government • Burn Ban by county emergency management • Fire Index monitoring and mapping from NDDes • Advanced communications such as internet and TV

Table 8.2.3 – City of Pettibone Jurisdiction Risk Assessment - Continued

	Fire – Urban Fire/Structure Collapse	
Impact	<ul style="list-style-type: none"> Building Collapse Delayed Emergency Response Evacuation (Localized) Explosion Human Injury/Death Increase Fire Potential Property damage on a significant scale if impacting downtown structures 	
Frequency	<ul style="list-style-type: none"> Occurrences of structures/vehicles being impacted every 10 years A garage fire occurred in 2019 Annual occurrences of fires involving farm equipment 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Close spacing of downtown structures Age of structures Increased use of electric heaters Outdated electric wiring in older homes and structures Outdated heating systems 	<u>Less Likely</u> <ul style="list-style-type: none"> Building codes Better building standards and maintenance of structures Smoke detectors in public buildings and private homes/businesses Well-equipped fire department with trained volunteers No railroad infrastructure traversing city limits
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Close spacing of downtown structures Age of structures Increased use of electric heaters Outdated electric wiring in older homes and structures Outdated heating systems Fire Hall does not have a permanent generator Prolonged response times due to limited fire staff during the daytime 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Building codes Better building standards and maintenance of structures Smoke detectors in public buildings and private homes/businesses Well-equipped fire department with trained volunteers No railroad infrastructure traversing city limits City hall/fire hall has a portable generator

Table 8.2.3 – City of Pettibone Jurisdiction Risk Assessment – Continued

	Fire – Rural & Wildland	
Impact	<ul style="list-style-type: none"> Building Collapse Crop Loss Delayed Emergency Response Evacuation (Localized) Explosion Increase Fire Potential Loss of Power/Downed Power Lines Mass Casualties Losses could be on a significant scale if impacting a major producer or farmstead Loss of farm equipment and assets Loss of Livestock 	
Frequency	<ul style="list-style-type: none"> Significant fire once every 5 years Approximately four to five wildland fires occurring annually Controlled burns can become out of control 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Agricultural burn-off High winds annually and dry conditions – when present Pastureland adjacent to structures and city limits Severe summer weather with significant lightning 	<u>Less Likely</u> <ul style="list-style-type: none"> Removal of CRP near city limits Summer and winter weather with heavy precipitation No railroad infrastructure traversing through city limits
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Agricultural burn-off High winds annually and dry conditions – when present Pastureland adjacent to structures and city limits Severe summer weather with significant lightning Large fire district – strained coverage/resources Lack of fire breaks around city limits Manually-activated emergency siren 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Removal of CRP near city limits Summer and winter weather with heavy precipitation MOUs with neighboring fire departments Burn bans by county emergency management for areas outside city limits Many people in the local population have backup water tanks No railroad infrastructure traversing through city limits Manually-activated emergency siren City hall/fire hall has a portable generator

Table 8.2.3 – City of Pettibone Jurisdiction Risk Assessment – Continued

	Flood	
Impact	<ul style="list-style-type: none"> • <u>Blocked Roads:</u> Surrounding rural and township roads, N.D. Highway 36 near Des Moines Lake • Delayed Emergency Response • Flooding (Highway & Structure) • Human Injury/Death • Property Damage 	<ul style="list-style-type: none"> • Runoff from buildings causes overland flooding on Main Street
Frequency	<ul style="list-style-type: none"> • Annual occurrences of localized flooding of nearby township roads and highways 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Rapid change of seasons resulting in rapid snow melt 	<u>Less Likely</u> <ul style="list-style-type: none"> • Dry seasons and low precipitation • Topography of the city does not contribute to overland flooding
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Rapid change of seasons resulting in rapid snow melt • Closed basin topography in areas of the county • City is not enrolled in the NFIP • City does not have flood ordinances • N.D. Highway 36 at Des Moines Lake is inundated by overland flooding and becomes blocked 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Alternate routes were identified for townships roads • Topography of the city does not cause overland flooding • City hall/fire hall has a portable generator • City lacks sanitary sewer system and is not vulnerable to sewer backups

Table 8.2.3 – City of Pettibone Jurisdiction Risk Assessment – Continued

	Geologic Hazard	
Impact	<ul style="list-style-type: none"> Delayed Emergency Response Human Injury/Death Loss of Economy Loss of Power Property Damage 	
Frequency	<ul style="list-style-type: none"> No incidents involving geologic hazards in or near city limits 	
Likelihood	<u>More Likely</u>	<u>Less Likely</u> <ul style="list-style-type: none"> No Abandoned Mine Lands located near city limits PSC has an AML reclamation project aimed at recovering AMLs – work has been done in other parts of the state
Vulnerability	<u>More Vulnerable</u>	<u>Less Vulnerable</u> <ul style="list-style-type: none"> No Abandoned Mine Lands located near city limits PSC has an AML reclamation project aimed at recovering AMLs – work has been done in other parts of the state

Table 8.2.3 – City of Pettibone Jurisdiction Risk Assessment – Continued

	Hazardous Material Release	
Impact	<ul style="list-style-type: none"> Blocked Roads Delayed Emergency Response Environmental Degradation Evacuation (localized) Explosion Human Injury/Death Increased Fire Potential Loss of Economy Loss of Potable Water Loss of Power Property Damage 	
Frequency	<ul style="list-style-type: none"> Small incidents of leaking anhydrous have been reported in the past Never any major spills reported 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Transportation of chemicals by truck through city limits Storage of chemicals/fertilizers in city limits and on farmsteads in large tanks near city limits Zoning and building codes 	<u>Less Likely</u> <ul style="list-style-type: none"> Private companies have HAZMAT certifications No railroad infrastructure traversing through city limits City not located on Interstate 94 No public school No anhydrous plant near city limits No energy pipelines
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Transportation of chemicals by truck through city limits Storage of chemicals/fertilizers in city limits and on farmsteads in large tanks near city limits No hospital or medical clinic in city limits Lack of designated truck routes and weight limits through city limits Manually-activated emergency siren 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Fire departments have frequent HAZMAT training Manually-activated emergency siren Kidder County Ambulance and Pettibone Fire Dept. No railroad infrastructure traversing through city limits City not located on Interstate 94 No public school No anhydrous plant near city limits No energy pipelines City hall/fire hall has a portable generator

Table 8.2.3 – City of Pettibone Jurisdiction Risk Assessment – Continued

	Infectious Disease	
Impact	<ul style="list-style-type: none"> • Crop Loss • Human Injury/Death • Livestock Injury/Death • Loss of Economy • Mass Casualties 	<ul style="list-style-type: none"> • Strain on local medical resources (ambulance) • Loss of Potable Water • Financial cost to public health resources • Loss of medical staff due to sickness
Frequency	<ul style="list-style-type: none"> • Annual occurrences of death, primarily among the elderly • Occurrence of disease - 1 in 3 for people annually • Annual occurrences of influenza cases in the local population 	<ul style="list-style-type: none"> • The COVID-19 pandemic of 2020 resulted in mass quarantine and sheltering of the local population and temporary closure of businesses
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Growing elderly population • Small population of children without immunization • Agriculture economy • Dependent on weather for animals and crops • Transporting of animals across state lines 	<u>Less Likely</u> <ul style="list-style-type: none"> • Advanced communications such as internet and tv • Public health and employment regulations for public facilities
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Growing elderly population • Small population of children without immunization • Agriculture economy • Transporting of animals across state lines • No hospital or medical clinic in city limits 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Advanced communications such as internet and tv • Public health and employment regulations for public facilities • Immunizations & medications of local population • No public school • City lacks sanitary sewer system and is not vulnerable to sewer backups from loss of power

Table 8.2.3 – City of Pettibone Jurisdiction Risk Assessment – Continued

	Severe Summer Weather	
Impact	<ul style="list-style-type: none"> • <u>Blocked Roads:</u> Surrounding rural and township roads • Downed Trees • Evacuation (Localized) • Human Injury/Death – heat exhaustion • Shelter-in-place • Vehicle Damage • Livestock Injury/Death 	
Frequency	<ul style="list-style-type: none"> • Windstorm events occurring annually • Annual occurrences of hailstorms • Two or three significant storms producing damage to trees and property annually 	<ul style="list-style-type: none"> • Loss of Crops • Loss of Power/Downed Power Lines • Property Damage – repair of roofing, siding and drainage systems for homes • Damage to electrical equipment from lightning
Likelihood	<ul style="list-style-type: none"> • Climatic patterns will result in numerous annual occurrences of the hazard 	
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • High elderly population • Presence of mobile homes • Aging infrastructure (roads and electrical systems) • Lack of municipal building code enforcement • Lack of permanent generator at city hall/fire hall • Manually-activated emergency siren • N.D. Highway 36 at Des Moines Lake is inundated by overland flooding and becomes blocked 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Advanced warning and notification such as internet and TV • Adopted building codes • Manually-activated emergency siren • No railroad infrastructure traversing through city limits • City not located on Interstate 94 • No energy pipelines • City hall/fire hall has a portable generator • City lacks sanitary sewer system and is not vulnerable to sewer backups from loss of power

Table 8.2.3 – City of Pettibone Jurisdiction Risk Assessment – Continued

	Severe Winter Weather	
Impact	<ul style="list-style-type: none"> • <u>Blocked Roads:</u> Snow drifts occur all over town and County Road 70 into town from N.D. Highway 36 • Evacuation (Localized) • Human Injury/Death – wind chill • Loss of Crops • Loss of Livestock • Loss of Power/Downed Power Lines • Property Damage – repair of roofing, siding and drainage systems for homes • Shelter-in-place • Vehicle Damage 	
Frequency	<ul style="list-style-type: none"> • Annual occurrences of power loss from storms • Annual occurrences of blocked roads • Annual occurrences of wind events • Two or three significant blizzards producing damage to trees and property annually • March 2017 snowstorm resulted in blocked roads throughout the city • Spring snowstorm of 2019 • Major blizzard in fall of 2018 • Sheltering of travelers at the Pettibone Community Center in 2018 	
Likelihood	<ul style="list-style-type: none"> • Climatic patterns will result in numerous annual occurrences of the hazard • Impacts can be expected county-wide 	
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • High elderly population • Presence of mobile homes • Lack of municipal building code enforcement • Lack of permanent generator at city hall/fire hall • Manually-activated emergency siren • Surge in sheltering needs during blizzards due to city's location near Interstate 94 • N.D. Highway 36 at Des Moines Lake is inundated by snow drifts and becomes blocked 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Advanced warning and notification such as internet and TV • Adopted building codes • Manually-activated emergency siren • No railroad infrastructure traversing through city limits • City not located on Interstate 94 • No energy pipelines • City hall/fire hall has a portable generator • City lacks sanitary sewer system and is not vulnerable to sewer backups from loss of power

Table 8.2.3 – City of Pettibone Jurisdiction Risk Assessment – Continued

	Space Weather
Impact	<ul style="list-style-type: none"> • Loss of operation of the city hall/fire hall, etc. • Loss/outage of medical devices at private residences
Frequency	<ul style="list-style-type: none"> • Never a recorded occurrence in Kidder County or North Dakota
Likelihood	<ul style="list-style-type: none"> • Dependent on solar activity and the 11-year solar cycle • Likely to occur once every 500 years per the 2018 N.D. Enhanced Mitigation MAOP
Vulnerability	<div> <div> <u>More Vulnerable</u> <ul style="list-style-type: none"> • Agriculture economy • All critical facilities and infrastructure that require electricity for operation • Advanced communication systems (internet, TV, etc.) • Lack of permanent generator at city hall/fire hall </div> <div> <u>Less Vulnerable</u> <ul style="list-style-type: none"> • Local food production/households with gardens • No public school </div> </div>

Table 8.2.3 – City of Pettibone Jurisdiction Risk Assessment – Continued

	Transportation Incident	
Impact	<ul style="list-style-type: none"> Blocked roads from inadequate road clearing Human Injury/Death Increased Fire Potential Loss of Transportation/Accessibility Mass Casualties/Fatalities Delayed Emergency Response HAZMAT Release Livestock Loss Business Interruptions Property Damage Could be catastrophic if involving a school bus filled with children and a truck carrying hazardous materials 	
Frequency	<ul style="list-style-type: none"> Annual occurrences of accidents involving cars and/or farm equipment 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Intoxicated drivers High truck traffic from agriculture-related traffic Lack of designated truck routes through city limits 	<u>Less Likely</u> <ul style="list-style-type: none"> No commercial passenger airport No railroad infrastructure traversing through city limits City not located on Interstate 94
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Intoxicated drivers High truck traffic from agriculture-related traffic No hospital or medical clinic in city limits Lack of designated truck routes and weight limits through city limits 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> No commercial passenger airport No railroad infrastructure traversing through city limits City not located on Interstate 94

8.2.3 Mitigation Strategy

The Kidder County Multi-Jurisdictional Multi-Hazard Plan Update includes a mitigation strategy consisting of seven goals in Chapter 6. The following problem statement and mitigation projects address the mitigation needs of the city of Pettibone. It should be noted that some mitigation projects that pertain to all jurisdictions are included to encourage county-wide collaboration.

Problem Statement

The city of Pettibone can be impacted by civil disturbance; criminal, terrorist or nation-state attack; cyberattack; drought; fire (urban and wildland); flood (overland and riverine); geologic hazard; hazardous material release, infectious disease, severe summer weather, severe winter weather, space weather and transportation incidents. Economic loss to the agriculture and livestock industry, and hunting/recreational industry from natural hazards in the county impacts the city's economy. Blocked roads occur annually from severe summer weather and severe winter weather. The city's outdoor emergency siren is manually-activated. The risk to hazardous material release and transportation incidents is low due to the city not being located on Interstate 94. However, the city lacks a designated truck route or weight limits on roads providing access to the city. The city hall/fire hall lacks a generator for backup power. With little to no capabilities to accomplish major projects independently, the city is dependent on outside sources for mitigation.

Installation of permanent backup power sources; upgrade/expanding of the early outdoor warning system; identification of a designated truck route; and expansion of education and outreach, financial, and planning and regulatory capabilities are a priority for the city of Pettibone.

City of Pettibone Project 1: Install permanent generators at critical facilities and infrastructure.

Description/Benefit		Test existing generators and create regularly scheduled maintenance system. Install new generators to establish permanent source of backup power to maintain continued operation of the following critical facilities and infrastructure, with facilities having the option to serve as a shelter.					
		<u>Install New</u> <ul style="list-style-type: none">• Pettibone City Hall/Fire Hall					
Hazards Addressed		All hazards					
Affected Jurisdiction(s)		City of Pettibone					
Project Status		Ongoing and Continue					
Priority		High					
Responsible Agency		City Council, Public Works, Emergency Services					
Partners		Emergency Management, Public Utilities					
Completion Timeframe		2 to 3 years			Cost	Project-specific	
Funding Source		Public Utilities, Regional Council, RD. FEMA Building Resilient Infrastructure and Communities (BRIC). State Homeland Security grants.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
<u>Planning Mechanisms Utilized</u>			<u>Plan Element Utilized</u>			<u>Process for Integration</u>	
Kidder County Hazard Mitigation Plan Kidder County Local Emergency Operations Plan			Capability Assessment, Hazard History, Risk Assessment			Include in city's or fire department's budget. Apply for grant funding or purchase directly using existing budgets. Approval by city council or board.	

City of Pettibone Project 2: Upgrade manually-activated outdoor emergency siren.

Description/Benefit		The city’s outdoor emergency siren is manually activated and needs to be upgraded to provide radio-activation capabilities.					
Hazards Addressed		All					
Affected Jurisdiction(s)		City of Pettibone					
Project Status		New					
Priority		Medium					
Responsible Agency		City Council, Emergency Services					
Partners		County Commission, NDAC, NDLC, Regional Council					
Completion Timeframe		2 to 3 years			Cost	Staff time. Cost specific to radio/siren needs.	
Funding Source		Local budgets. N.D. League of Cities. State Homeland Security Grants.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element		Process for Integration		
Kidder County Local Emergency Operations Plan Kidder County Mitigation Plan			Capability Assessment, Hazard History, Risk Assessment		Include in city’s or fire department’s budget. Apply for grant funding or purchase directly using existing sales tax revenue. Approval by city council.		

8.2.4 Mitigation Capability Assessment

Capability for mitigation is divided into four categories: administrative and technical, education and outreach, financial, and planning and regulatory. Each identified resource in the four categories can be used to implement mitigation strategies and access funding for projects. **Tables comparing the mitigation capabilities of the city of Pettibone with all other jurisdictions in Kidder County can be found below and in Chapter 7, County Mitigation Capability Assessment.**

- Administrative and Technical: Identification of administrative and technical capabilities, which include staff, their skills and tools for mitigation planning to implement specific mitigation actions.
- Education and Outreach: Identification of education and outreach programs, and methods already in place to implement mitigation activities and communicate hazard-related information.
- Financial: Identification of access to or eligibility to use funding resources for hazard mitigation for jurisdictions.
- Planning and Regulatory: Jurisdictional plans, policies, codes, and ordinances adopted and in place that prevent and reduce the impacts of hazards.

City of Pettibone Mitigation Capabilities Summary

The following mitigation capabilities were identified as commonplace among all hazard and threats upon completion of the risk assessment for the city of Pettibone. More detailed information about the mitigation capabilities of the city of Pettibone in relation to Kidder County and all other incorporated jurisdictions can be found in Chapter 7, Mitigation Capability Assessment.

2018 N.D. Enhanced Mitigation MAOP	Kidder Co. Sheriff's Office
Advanced communications: Internet & TV	MOUs
Farm Services Agency	NDDDES Fire Index Monitoring
Kidder County Ambulance	NDDOT Statewide Highway/Transportation Plan
Kidder Co. LEOP	NDSU/Kidder Co. Extension
Kidder Co. Emergency Mgmt.	Pettibone Fire Department
Kidder County District Health Unit	Pettibone City Council

8.2.5 Integration of Mitigation Plan into Planning Mechanisms

Integration of the plan into current planning mechanisms is critical in mitigation to communicate the needs of each jurisdiction to achieve an all-inclusive mitigation strategy. The process for integration of the mitigation plan is included after each mitigation project, which shows the planning mechanism utilized, the plan element used for integration and the process for integration.

8.2.6 Plan Maintenance

An important aspect of any useable plan is the maintenance and upkeep of the document. At any given time, planning, risk analysis, updating the situation assessment, research, coordinating, disaster response

or other activity is occurring. Plan maintenance ensures the plan will remain useful in the county for many years. A mitigation action progress report form to conduct plan maintenance is in Chapter 10 of this plan.

DRAFT

8.3 City of Robinson, North Dakota

The following profile includes information specific to the city of Robinson for mitigation planning purposes. The information included is as follows:

- Profile and Inventory;
- Risk Assessment;
- Hazard Scoring Notes;
- Mitigation Projects, and
- Capabilities for Mitigation.

Integration into Planning Mechanisms

The process for integration of the mitigation plan into existing planning mechanisms is discussed at the bottom of each mitigation project in section 8.3.3, in section 8.3.4, and in Chapter 6, Mitigation Strategy.

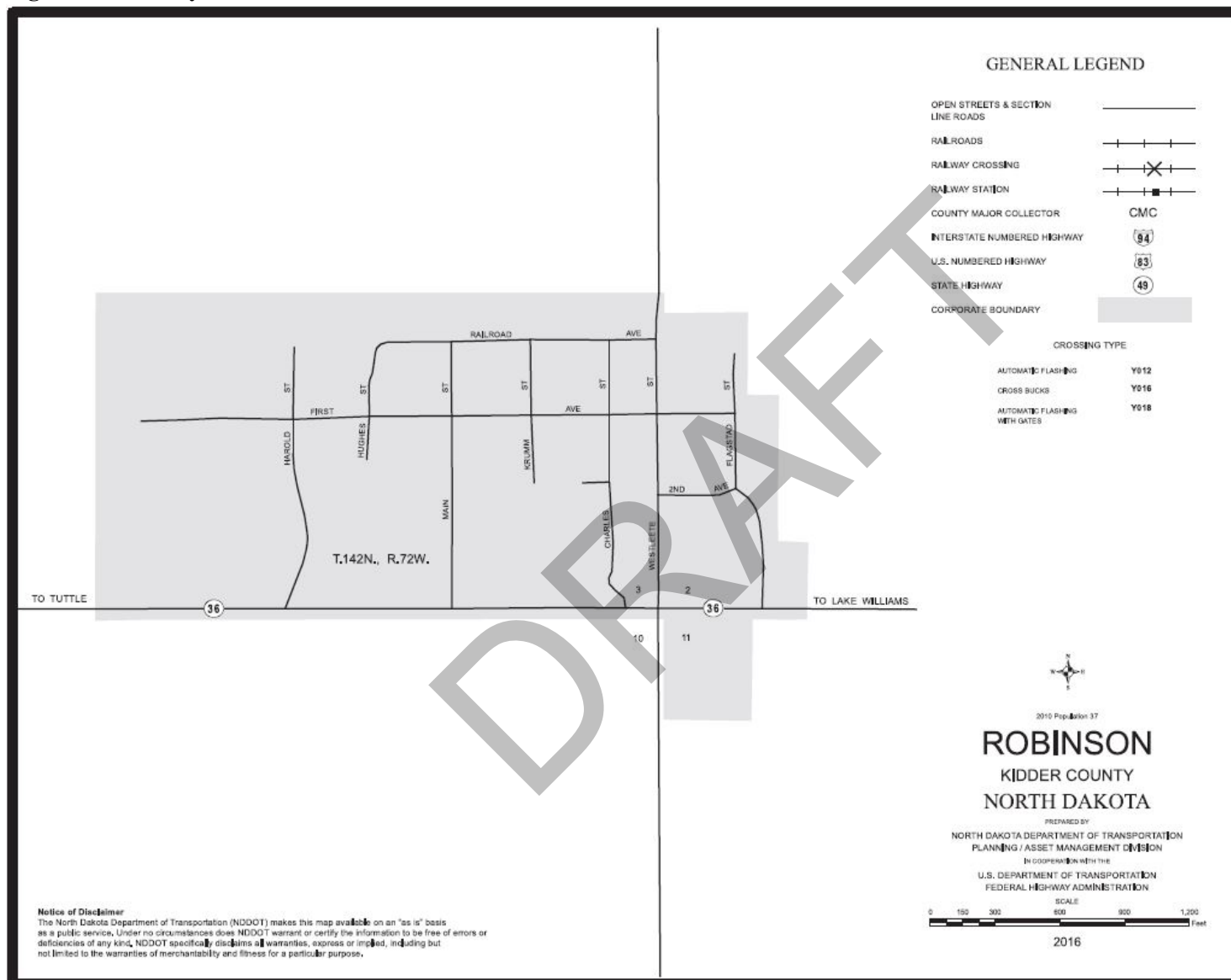
Plan Maintenance

Plan maintenance is shown in section 8.3.6.

Critical Facilities and Infrastructure

Figure 8.3.1 is a map of the city of Robinson provided by the N.D. Dept. of Transportation.

Figure 8.3.1 – City of Robinson, North Dakota



Source(s): N.D. Dept. of Transportation

8.3.1 Profile and Inventory

The location, total population, vulnerable populations, housing units and household size, businesses, buildings, critical facilities and infrastructure, services provided, and new and future development are shown for the city of Robinson. Detailed narratives follow each section heading to profile the city.

Detailed information on public buildings, services provided, emergency response services and utilities can be found in Chapter 3, Profile and Inventory.

Location

The city of Robinson is in central North Dakota located on N.D. Highway 36 in north-central Kidder County approximately 70 miles northeast of the city of Bismarck, the state capitol.

Population

Table 8.3.1 shows population trends for the city of Robinson from 1920 to 2010, with an estimate for 2019.

Per the 2010 U.S. Decennial Census, the city of Robinson has a population of 37 people, which is a decrease of 34 people (47.9 percent) from 71 people in 2000.

Table 8.3.1 – 1920 to 2010 City of Robinson, North Dakota Population Statistics

1920	1930	1940	1950	1960	1970	1980	1990	2000	2010	2019 (est.)
--	185	160	166	155	125	129	87	71	37	46

Source(s): U.S. Decennial Census; American Community Survey, 5-Year Estimates

Vulnerable Populations

Age. Per the 2014 to 2018 American Community Survey 5-Year Estimate, the population of the city of Robinson consists of four individuals under the age of 20 and 16 individuals age 65 and older, comprising 12.9 percent and 51.6 percent of the population, respectively.

Daycares. There are no daycares in the city of Robinson.

Poverty. Per the 2014 to 2018 American Community Survey 5-Year Estimate, there are five households in city of Robinson that live below the poverty line.

Public Schools. There are no public schools in the city of Robinson. The high school closed in 1998. The elementary school was open until 2015/2016.

Senior Housing Developments/Care Centers. There are no age-restricted, senior housing developments, or care centers in the city of Robinson.

Housing Units and Household Size

The 2014 to 2018 American Community Survey 5-Year Estimate shows there is a total of 44 housing units in the city consisting of 23 single-family homes, eight mobile/RV homes, and 13 multifamily homes.

The 2014 to 2018 American Community Survey 5-Year Estimate shows there are 21 households in the city of Robinson resulting in an average household size of 1.48 people.

Businesses

First Security Bank West, Robinson Café, Hanson's Bar, U.S. Post Office, Kidder County Shop and Flath Trucking are the only employers in the city of Robinson.

New and Future Development

The following development has occurred since the 2014 mitigation plan.

New

- The city of Robinson upgraded its drinking/potable water system in 2016;
- One new single-family home was constructed in 2014, and
- One new single-family home was constructed in 2016.

Future

- A single-family home is proposed for construction in 2021.
- The Robinson Fire Department is planning to construct a new fire hall in the next five years.

Buildings, Critical Facilities and Infrastructure, and Services Provided

The following section profiles the housing units, services, emergency response services, jurisdictional buildings, and utilities of the city of Robinson. Tables 3.10 to 3.13 in Chapter 3, Profile and Inventory show a complete inventory of this information for Kidder County and incorporated jurisdictions. An "X" indicates if the jurisdiction offers the utility or service (either through contract or employees) or possesses the building or resource. Narratives detailing information for the county and incorporated jurisdictions accompany each table.

Structures. Housing units show where populations are located. Table 3.9 in Chapter 3, Profile and Inventory shows the number of single-family, mobile home structures, and multifamily and in Kidder County and incorporated jurisdictions. The following are key points for the city of Robinson:

- There are 23 single-family housing units comprising 52.3 percent of all housing units in the city of Robinson.
- There are eight Mobile/Boat/RV/Van homes comprising 18.1percent of all housing units in the city of Robinson.
- There are 13 Multifamily housing units comprising 29.5 percent of all housing units in the city of Robinson.

Services. The following services are provided in the city of Robinson.

- Strom Sanitation provides garbage collection services to the city of Robinson.
- The city of Robinson does not have an inert landfill.

- The city of Robinson has a sanitary sewer system with three lagoon cells and one lift station.
- The Steele Ozone and Kidder County Press is the official newspaper of the city of Robinson.
- The city of Robinson maintains a municipal system to provide drinking/potable water city residents.

Emergency Response Services. The following emergency response services were identified in the city of Robinson.

- Kidder County Ambulance provides ambulance services to the city of Robinson. The city also has one first responder.
- Robinson Fire Protection District provides fire protection services to the city of Robinson.
- The Kidder County Sheriff's Office provides law enforcement services to the city of Robinson through mutual aid.
- The nearest hospital to the city of Robinson would be in the cities of Bismarck, Harvey, or Jamestown.
- There is no medical clinic in the city of Robinson.
- Kidder County District Health Unit is in the city of Steele and provides public health services to the city of Robinson.

Critical Facilities. The following facilities were identified as critical in the city of Robinson.

- Kidder County Shop
- Robinson City Hall/City Shop/Community Center/Shelter
- Robinson Fire Protection District Fire Hall
- U.S. Post Office

Infrastructure. The following infrastructure was identified as critical in the city of Robinson.

- The city of Robinson has a sanitary sewer system with three lagoon cells and one lift station.
- The city of Robinson receives its drinking/potable water from its own municipal system.
- The city of Robinson is located on N.D. Highway 36.
- Railroad infrastructure does not traverse city limits.

8.3.2 Risk Assessment and Hazard Scoring Notes

Table 8.3.2 summarizes the risk assessment scoring of the city of Robinson. The risk assessment and hazard scoring notes for each hazard specific to the city are shown in Table 8.3.3. Risk assessment notes for impact, frequency, likelihood and vulnerability ubiquitous for jurisdictions in Kidder County are found in Chapter 4, Threat and Hazard Identification Assessment in each respective hazard profile.

Table 8.3.2 – City of Robinson Jurisdiction Risk Assessment Scoring Summary

Risk Assessment Jurisdiction: City of Robinson						
<u>Natural Hazard</u>	<u>Impact</u>	<u>Frequency</u>	<u>Likelihood</u>	<u>Vulnerability</u>	<u>Capabilities</u>	<u>Total</u>
Drought	4	2	4	4	2	12
Fire – Urban/Structure Collapse	4	2	4	4	1	13
Fire – Wildland (Rural)	4	4	4	4	1	15
Flood	4	3	4	4	1	14
Geologic Hazard	1	1	1	1	1	3
Infectious Disease	4	3	4	4	1	14
Severe Summer Weather	4	4	4	4	1	15
Severe Winter Weather	4	4	4	4	1	15
Space Weather	4	2	2	4	1	11
<u>Adversarial Threats</u>						
Civil Disturbance	3	1	2	4	1	9
Criminal, Terrorist or Nation-State Attack	4	2	2	4	1	11
Cyberattack	2	2	2	4	1	9
<u>Technological Threats</u>						
Dam Failure	NA	NA	NA	NA	NA	NA
Hazardous Material Release	4	2	2	2	1	9
Transportation Incident	4	3	2	4	1	12

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 8.3.3 – City of Robinson Jurisdiction Risk Assessment

	Civil Disturbance	
Impact	<ul style="list-style-type: none"> Blocked Roads Business Interruptions Delayed Emergency Response Financial Hardship/Strain (public) 	<ul style="list-style-type: none"> HAZMAT Release Human Injury/Death Property Damage (Structure) Property Damage (Vehicle)
Frequency	<ul style="list-style-type: none"> Never an occurrence of a major incident 	<ul style="list-style-type: none"> DAPL protesters were not active in the city
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Lack of local active/continuous law enforcement coverage 	<u>Less Likely</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions Sparse population Lack of railroad infrastructure Lack of energy pipelines
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Lack of local active/continuous law enforcement coverage 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions Sparse population Lack of railroad infrastructure Lack of energy pipelines

Table 8.3.3 – City of Robinson Jurisdiction Risk Assessment – Continued

	Criminal, Terrorist, Nation-State Attack	
Impact	<ul style="list-style-type: none"> Blocked Roads Business Interruptions Delayed Emergency Response Disease Outbreak/Mass Infections Financial Hardship/Strain (public) HAZMAT Release Human Injury/Death 	<ul style="list-style-type: none"> Loss of Communication Systems Mass Casualties/Fatalities Property Damage (Structure) Property Damage (Vehicle) City's drinking/potable water system could be contaminated
Frequency	<ul style="list-style-type: none"> No occurrences in recent years Miscellaneous property damage/break-ins to abandoned property occurring in the city on an occasional basis 	<ul style="list-style-type: none"> In the early 1970s, a guy shot and killed his wife on farmstead three miles northwest of the city.
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Lack of local active/continuous law enforcement coverage 	<u>Less Likely</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions Lack of railroad infrastructure Lack of energy pipelines
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Lack of local active/continuous law enforcement coverage City's drinking/potable water system drawing water from an underground aquifer Presence of local bank with minimal security measures 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions Lack of railroad infrastructure Lack of energy pipelines No public school

Table 8.3.3 – City of Robinson Jurisdiction Risk Assessment – Continued

	Cyberattack	
Impact	<ul style="list-style-type: none"> • Business Interruptions • Delayed Emergency Response • Financial Hardship/Strain (public) • Government Interruptions • HAZMAT Release 	<ul style="list-style-type: none"> • Human Injury/Death • Identity Theft – loss of wages and/or assets • Loss of Communication Systems • School Closure
Frequency	<ul style="list-style-type: none"> • Never an occurrence of a major attack 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Small town with lack of technological infrastructure to defend against cyber attacks • Two cell phone towers located four miles west of the city 	<u>Less Likely</u> <ul style="list-style-type: none"> • Lack of major financial institutions • Lack of a public school
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Small town with lack of technological infrastructure to defend against cyber attacks • Elderly population relying largely on landlines for communication purposes, remote medical care, and equipment monitoring • Radio tower located at fire hall that provides communication to fire department and first responders 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Lack of major financial institutions • Lack of a public school • City records are mostly on paper

Table 8.3.3 – City of Robinson Jurisdiction Risk Assessment - Continued

	Drought	
Impact	<ul style="list-style-type: none"> • Crop Loss • Loss of Economy • Loss of Livestock • Loss of Wildlife Habitat (decreased wildlife populations) • Increase in Wildland Fire Potential • Water quality compromised from bodies of water and stock dams • Diminished soil quality – salinity will increase • Negative impact on mental health of producers and fire responders – “community impact” • Local producers forced to reduce herd sizes and restructuring of harvest usage • Population decline due to loss of jobs/economy 	
Frequency	<ul style="list-style-type: none"> • Severe Drought of 1961/1962, 1988/1989 to 1991/1992 • Summer of 2017, local producers forced to sell off portions of their herds • End of July through winter of 2016 – county reached severe drought status • Severe drought starting in July and lasting through winter of 2020/2021 	
Likelihood	<div> <div> <u>More Likely</u> <ul style="list-style-type: none"> • Dry/wet cycle every 10 years • Climatic patterns will result in an eventual drought of significance • Lack of precipitation </div> <div> <u>Less Likely</u> <ul style="list-style-type: none"> • Heavy precipitation </div> </div>	
Vulnerability	<div> <div> <u>More Vulnerable</u> <ul style="list-style-type: none"> • Loss of economy from decreased wildlife & hunting • Agriculture economy • Elderly population • Flat terrain/open topography contributes to conditions • Pastureland adjacent to structures and city limits • City drinking/potable water system draws form an underground aquifer • Lack of water tower </div> <div> <u>Less Vulnerable</u> <ul style="list-style-type: none"> • Financial assistance programs made available by the state and federal government • Burn Ban by county emergency management • Fire Index monitoring and mapping from NDDes • Advanced communications such as internet and TV </div> </div>	

Table 8.3.3 – City of Robinson Jurisdiction Risk Assessment - Continued

Fire – Urban Fire/Structure Collapse	
Impact	<ul style="list-style-type: none"> • Building Collapse • Delayed Emergency Response • Evacuation (Localized) • Explosion • Human Injury/Death • Increase Fire Potential • Property damage on a significant scale if impacting downtown structures and other structures in the city
Frequency	<ul style="list-style-type: none"> • Occurrences of structures/vehicles being impacted every 15 to 20 years • Annual occurrences of fires in rural areas involving farm equipment • In the mid-1990s, a single-family home was lost to fire.
Likelihood	<div> <div> <u>More Likely</u> <ul style="list-style-type: none"> • Age of structures • Increased use of electric heaters • Outdated electric wiring in older homes and structures • Outdated heating systems • Presence of unkept structures in city limits </div> <div> <u>Less Likely</u> <ul style="list-style-type: none"> • Building codes • Better building standards and maintenance of structures • Smoke detectors in public buildings and private homes/businesses • Well-equipped fire department with trained volunteers • Lack of natural gas service to city residents • Lack of railroad infrastructure traversing city limits </div> </div>
Vulnerability	<div> <div> <u>More Vulnerable</u> <ul style="list-style-type: none"> • Age of structures • Increased use of electric heaters • Outdated electric wiring in older homes and structures • Outdated heating systems • Presence of unkept structures in city limits • City hall/city shop/community center and fire hall do not have permanent generators • Prolonged response times due to limited fire staff during the daytime • Fire Department has lack of equipment to suppress a structure fire </div> <div> <u>Less Vulnerable</u> <ul style="list-style-type: none"> • Building codes • Better building standards and maintenance of structures • Smoke detectors in public buildings and private homes/businesses • Well-equipped fire department with trained volunteers • The city of Robinson has a portable generator • Lack of natural gas service to city residents • Lack of railroad infrastructure traversing city limits </div> </div>

Table 8.3.3 – City of Robinson Jurisdiction Risk Assessment – Continued

Fire – Rural & Wildland	
Impact	<ul style="list-style-type: none"> • Building Collapse • Crop Loss • Delayed Emergency Response • Evacuation (Localized) • Explosion • Increase Fire Potential • Loss of Power/Downed Power Lines • Loss of Livestock • Loss of Wildlife Habitat • Mass Casualties • Property Damage (Structure & Vehicle) • Losses could be on a significant scale if impacting a major producer or farmstead • Loss of farm equipment and assets
Frequency	<ul style="list-style-type: none"> • Approximately three significant fire occurring annually • Controlled burns can become out of control 50 percent of the time on an annual basis • A major grass fire occurred spring of 2020 impacting 100 acres occurred six miles northeast of the city • A major grass fire occurred in 2005/2006 at Sibley Hills (between Robinson and Steele) impacting 5,000+ acres • In 2015, a major grass fire impacting 200 acres about 15 miles northeast of the city
Likelihood	<p><u>More Likely</u></p> <ul style="list-style-type: none"> • Agricultural burn-off • High winds annually and dry conditions – when present • Pastureland adjacent to structures and city limits • Severe summer weather with significant lightning <p><u>Less Likely</u></p> <ul style="list-style-type: none"> • Removal of CRP near city limits • Summer and winter weather with heavy precipitation • No railroad infrastructure traversing city limits
Vulnerability	<p><u>More Vulnerable</u></p> <ul style="list-style-type: none"> • Agricultural burn-off • High winds annually and dry conditions – when present • Pastureland adjacent to structures and city limits • Severe summer weather with significant lightning • Large fire district – strained coverage/resources • Lack of fire breaks around city limits • City Hall and Fire Hall does not have a permanent generator • Fire Department has lack of equipment to suppress a wildland fire <p><u>Less Vulnerable</u></p> <ul style="list-style-type: none"> • Removal of CRP near city limits • Summer and winter weather with heavy precipitation • MOUs with neighboring fire departments • Burn bans by county emergency management for areas outside city limits • Radio-activated emergency siren • City of Robinson has a portable generator • No railroad infrastructure traversing city limits

Table 8.3.3 – City of Robinson Jurisdiction Risk Assessment – Continued

	Flood	
Impact	<u>Blocked Roads:</u> <ul style="list-style-type: none"> • 1st Avenue (in city limits) • County Road 71 near Horsehead Lake • 40th Ave SE adjacent to N.D. Highway 36 • 10th St. and 31st Ave SE in rural areas of the county • 18th St. between 33rd and 34th Ave SE • 11th St. between 31st and 34th Ave SE (three spots) • 22nd St. between County Road 71 and 34th Ave SE 	<ul style="list-style-type: none"> • Delayed Emergency Response • Flooding (Highway & Structure) • Flooding of township roads • Human Injury/Death • Loss of Power • Property damage to basements from ground seepage/flooding • Inundation of city sanitary sewer system: Overland flooding occurs after heavy precipitation due to the lift station sized for 4,000 gallons a day. In 2019, the lift station exceeded 50,000 gallons in one day, and continued for 25 days.
Frequency	<ul style="list-style-type: none"> • Annual occurrences of localized flooding of nearby township roads and highways • Overland flooding from high water tables impacting city streets every five years • Annual occurrences of flooding on 31st Ave SE 	<ul style="list-style-type: none"> • Flooding to the city's community center gym in 2019 due to heavy rains and leaks in the city's sanitary sewer system.
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Rapid change of seasons resulting in excessive snow melt • Heavy precipitation 	<u>Less Likely</u> <ul style="list-style-type: none"> • Dry seasons and low precipitation • General topography contributes to overland flooding as there are low-lying areas with poor drainage
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Rapid change of seasons resulting in excessive snow melt • Closed basin topography in areas of the county and adjacent to the city of Robinson • City is not enrolled in the NFIP • City does not have flood ordinances • City Hall and Fire Hall does not have a permanent generator • Sanitary sewer system has leaks, which causes flooding 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Alternate routes were identified for some (not all) townships roads • General topography contributes to overland flooding as there are low-lying areas with poor drainage • City of Robinson has a portable generator

Table 8.3.3 – City of Robinson Jurisdiction Risk Assessment – Continued

	Geologic Hazard	
Impact	<ul style="list-style-type: none"> Blocked Roads Delayed Emergency Response Human Injury/Death 	<ul style="list-style-type: none"> Loss of Economy Loss of Power Property Damage
Frequency	<ul style="list-style-type: none"> No incidents involving geologic hazards in or near city limits 	
Likelihood	<u>More Likely</u>	<u>Less Likely</u> <ul style="list-style-type: none"> No Abandoned Mine Lands located near city limits PSC has an AML reclamation project aimed at recovering AMLs – work has been done in other parts of the state
Vulnerability	<u>More Vulnerable</u>	<u>Less Vulnerable</u> <ul style="list-style-type: none"> No Abandoned Mine Lands located near city limits PSC has an AML reclamation project aimed at recovering AMLs – work has been done in other parts of the state

Table 8.3.3 – City of Robinson Jurisdiction Risk Assessment – Continued

	Hazardous Material Release	
Impact	<ul style="list-style-type: none"> Blocked Roads Delayed Emergency Response Environmental Degradation Evacuation (localized) Explosion Human Injury/Death Increased Fire Potential Loss of Economy Loss of Power and/or Potable Water Property Damage 	
Frequency	<ul style="list-style-type: none"> Never any major spills reported Two anhydrous ammonia tanks tipped over in early 2019, but did not leak 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Transportation of chemicals by truck through city limits Storage of chemicals/fertilizers in city limits and on farmsteads in large tanks near city limits 	<u>Less Likely</u> <ul style="list-style-type: none"> Private companies have HAZMAT certifications No public school No railroad infrastructure traversing city limits Lack of energy pipelines
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Transportation of chemicals by truck through city limits Storage of chemicals/fertilizers in city limits and on farmsteads in large tanks near city limits No hospital or medical clinic in city limits City Hall and Fire Hall lack permanent generators Manual-activated emergency siren Trucks do not obey speed zone through city limits BEK Communication has a building in city limits with backup batteries for their communication system Fire departments have not had HAZMAT training Water treatment plant pump house has chlorine storage Manual-activated emergency siren 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Manual-activated emergency siren Kidder County Ambulance and Robinson Fire Dept. No public school City of Robinson has a portable generator No railroad infrastructure traversing city limits Lack of energy pipelines

Table 8.3.3 – City of Robinson Jurisdiction Risk Assessment – Continued

	Infectious Disease	
Impact	<ul style="list-style-type: none"> Business Interruptions Crop Loss Government Interruptions Human Injury/Death Livestock Injury/Death Loss of Economy Mass Casualties/Fatalities Strain on local medical resources (ambulance) Loss of Potable Water Financial cost to public health resources Loss of medical staff due to sickness School Closure People pumping water from basements into city streets from ground seepage 	
Frequency	<ul style="list-style-type: none"> Annual occurrences of death, primarily among the elderly Occurrence of disease - 1 in 3 for people annually Annual occurrences of influenza cases in the local population The COVID-19 pandemic of 2020 resulted in mass quarantine and sheltering of the local population and temporary closure of businesses. 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Growing elderly population Small population of children without immunization Agriculture economy Dependent on weather for animals and crops Transporting of animals across state lines 	<u>Less Likely</u> <ul style="list-style-type: none"> Advanced communications such as internet and tv Public health and employment regulations for public facilities
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Growing elderly population Small population of children without immunization Agriculture economy Transporting of animals across state lines No hospital or medical clinic in city limits City has a sanitary sewer system has leaks and needs upgrading 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Advanced communications such as internet and tv Public health and employment regulations for public facilities Immunizations & medications of local population No public school

Table 8.3.3 – City of Robinson Jurisdiction Risk Assessment – Continued

	Severe Summer Weather	
Impact	<u>Blocked Roads:</u> <ul style="list-style-type: none"> • 1st Avenue (in city limits) • County Road 71 near Horsehead Lake • 40th Ave SE adjacent to N.D. Highway 36 • 10th St. and 31st Ave SE in rural areas of the county • 18th St. between 33rd and 34th Ave SE • 11th St. between 31st and 34th Ave SE (three spots) • 22nd St. between County Road 71 and 34th Ave SE 	<ul style="list-style-type: none"> • Downed Trees • Evacuation (Localized) • Human Injury/Death – heat exhaustion • Shelter-in-place • Livestock Injury/Death • Loss of Crops • Loss of Power/Downed Power Lines • Property Damage – repair of roofing, siding and drainage systems for homes • Damage to electrical equipment from lightning • Vehicle Damage
Frequency	<ul style="list-style-type: none"> • Windstorm events occurring annually • Annual occurrences of hailstorms • Two or three significant storms producing damage to trees and property annually • Property damage from tornados/straight-line winds in summer 2017 and 2019 	<ul style="list-style-type: none"> • Flood waters from high water tables and heavy precipitation inundated the sanitary sewer system in 2019 • City's community center gym was impacted by flooding in 2019
Likelihood	<ul style="list-style-type: none"> • Climatic patterns will result in numerous annual occurrences of the hazard 	

Vulnerability	<p><u>More Vulnerable</u></p> <ul style="list-style-type: none"> • High elderly population • Presence of mobile homes • Aging infrastructure (roads and electrical systems) • Lack of municipal building code enforcement • No hospital or medical clinic in city limits • Lack of permanent generator at city hall and fire hall • City sanitary sewer system has leaks and is inundated by flood waters resulting from heavy precipitation • High water table • City does not have skidsteer and/or payloador for removal of debris • Manual-activated emergency siren 	<p><u>Less Vulnerable</u></p> <ul style="list-style-type: none"> • Advanced warning and notification such as internet and TV • Adopted building codes but lack enforcement • Manual-activated emergency siren • City of Robinson has a portable generator • No railroad infrastructure traversing city limits • No energy pipelines
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Table 8.3.3 – City of Robinson Jurisdiction Risk Assessment – Continued

	Severe Winter Weather	
Impact	<u>Blocked Roads:</u> <ul style="list-style-type: none"> 1st Avenue (in city limits) County Road 71 near Horsehead Lake 40th Ave SE adjacent to N.D. Highway 36 10th St. and 31st Ave SE in rural areas of the county 18th St. between 33rd and 34th Ave SE 11th St. between 31st and 34th Ave SE (three spots) 22nd St. between County Road 71 and 34th Ave SE 	<ul style="list-style-type: none"> Evacuation (Localized) Human Injury/Death – wind chill Loss of Crops Loss of Livestock Loss of Power/Downed Power Lines Property Damage – repair of roofing, siding and drainage systems for homes Shelter-in-place Vehicle Damage
Frequency	<ul style="list-style-type: none"> Annual occurrences of power loss from storms Annual occurrences of blocked roads from drifting snow Annual occurrences of wind events Two or three significant blizzards producing damage to trees and property annually Major blizzard in fall of 2015 	<ul style="list-style-type: none"> March 2017 snowstorm resulted in blocked roads throughout the city and county Major blizzard in fall of 2018 Spring and fall snowstorms of 2019 Windstorm event January 13 to 15th, 2021 Windstorm event January 20, 2021
Likelihood	<ul style="list-style-type: none"> Climatic patterns will result in numerous annual occurrences of the hazard 	<ul style="list-style-type: none"> Impacts can be expected county-wide
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> High elderly population Presence of mobile homes Lack of municipal building code enforcement No hospital or medical clinic in city limits Lack of permanent generator at city hall and fire hall City sanitary sewer system has leaks and is inundated by flood waters resulting from heavy precipitation High water table City does not have skidsteer and/or payloader for removal of debris Manual-activated emergency siren 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Advanced warning and notification such as internet and TV Adopted building codes but lack enforcement Manual-activated emergency siren City of Robinson has a portable generator No railroad infrastructure traversing city limits No energy pipelines

Table 8.3.3 – City of Robinson Jurisdiction Risk Assessment – Continued

	Space Weather
Impact	<ul style="list-style-type: none"> • Loss of operation of the city hall and fire hall, etc. • Loss/outage of medical devices at private residences • Loss of Power • Loss of Critical Facilities and Infrastructure
Frequency	<ul style="list-style-type: none"> • Never a recorded occurrence in Kidder County or North Dakota
Likelihood	<ul style="list-style-type: none"> • Dependent on solar activity and the 11-year solar cycle • Likely to occur once every 500 years per the 2018 N.D. Enhanced Mitigation MAOP
Vulnerability	<div> <div> <u>More Vulnerable</u> <ul style="list-style-type: none"> • Agriculture economy • All critical facilities and infrastructure that require electricity for operation • Advanced communication systems (internet, TV, etc.) • Lack of permanent generator at city hall and fire hall </div> <div> <u>Less Vulnerable</u> <ul style="list-style-type: none"> • Local food production/households with gardens • No public school • Advanced communication systems (internet, TV, etc.) • City of Robinson has a portable generator </div> </div>

Table 8.3.3 – City of Robinson Jurisdiction Risk Assessment – Continued

	Transportation Incident	
Impact	<ul style="list-style-type: none"> Business Interruptions Blocked Roads Delayed Emergency Response HAZMAT Release Human Injury/Death Increased Fire Potential Loss of Livestock Loss of Transportation/Accessibility Mass Casualties/Fatalities Property Damage Could be catastrophic if involving a school bus filled with children and a truck carrying hazardous materials 	
Frequency	<ul style="list-style-type: none"> Annual occurrences of accidents involving cars and/or farm equipment A major incident occurs annually on Interstate 94 resulting in one or more fatalities 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Intoxicated drivers High truck traffic from agriculture-related traffic Speeding truck traffic through city limits disobeying the speed zone Slow-moving agriculture equipment 	<u>Less Likely</u> <ul style="list-style-type: none"> No commercial passenger airport No railroad infrastructure traversing city limits No energy pipelines
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Intoxicated drivers High truck traffic from agriculture-related traffic Speeding truck traffic through city limits disobeying the speed zone Slow-moving agriculture equipment County Road 71 traversing Horsehead Lake 31st Ave SE 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> No commercial passenger airport No railroad infrastructure traversing city limits No energy pipelines

8.3.3 Mitigation Strategy

The Kidder County Multi-Jurisdictional Multi-Hazard Plan Update includes a mitigation strategy consisting of seven goals in Chapter 6. The following problem statement and mitigation projects address the mitigation needs of the city of Robinson. It should be noted that some mitigation projects that pertain to all jurisdictions are included to encourage county-wide collaboration.

Problem Statement

The city of Robinson can be impacted by civil disturbance; criminal, terrorist or nation-state attack; cyberattack; drought; fire (urban and wildland); flood (overland and riverine); geologic hazard; hazardous material release, infectious disease, severe summer weather, severe winter weather, space weather and transportation incidents. Economic loss to the agriculture and livestock industry, and hunting/recreational industry from natural hazards and man-made threats in the county impacts the city's economy. The city's outdoor emergency siren is manually-activated and not compatible with radio equipment. Blocked roads occur annually from severe summer weather and severe winter weather. The city's sanitary sewer system experiences leaks causing overland flooding and shutting down of the system due to runoff and snowmelt from severe summer weather and severe winter weather. The city hall/city shop/community center/shelter, fire hall, lift station, and pump house lack generators for backup power. An update to local planning and regulatory capabilities are needed with specific attention paid to flood ordinances to address hazard-prone areas with new and existing development. The city and fire department need equipment to maintain delivery of services. With little to no capabilities to accomplish major projects independently, the city is dependent on outside sources for mitigation.

Installation of permanent backup power sources; upgrade/expanding of the early outdoor warning system; an engineering study to identify options to retrofit/upgrade the city's sanitary sewer system; investment in equipment for the city and fire department to maintain delivery of services, and expansion of education and outreach, financial, and planning and regulatory capabilities are a priority for the city of Robinson.

City of Robinson Project 1: Install permanent generators at critical facilities and infrastructure.

Description/Benefit		Test existing generators and create regularly scheduled maintenance system. Install new generators to establish permanent source of backup power to maintain continued operation of the following critical facilities and infrastructure, with facilities having the option to serve as a shelter. The Robinson City Hall/City Shop/Community Center/Shelter has been pre-wired for a portable generator through homeland security grant funding. The city’s lift station needs to be pre-wired for permanent or portable generator capabilities.					
		<u>Install New</u> <ul style="list-style-type: none">• Robinson City Hall/City Shop/Community Center/Shelter• Robinson Fire Protection District Fire Hall• Robinson sanitary sewer lift station• Robinson drinking/potable water system pump house/water plant					
Hazards Addressed		All hazards					
Affected Jurisdiction(s)		City of Robinson					
Project Status		Ongoing and Continue/New					
Priority		Very High					
Responsible Agency		City Council, Public Works, Emergency Services					
Partners		Emergency Management, Public Utilities					
Completion Timeframe		2 to 3 years			Cost	Project-specific	
Funding Source		Public Utilities, Regional Council, RD. FEMA Building Resilient Infrastructure and Communities (BRIC). State Homeland Security grants.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
<u>Planning Mechanisms Utilized</u>			<u>Plan Element Utilized</u>			<u>Process for Integration</u>	
Kidder County Hazard Mitigation Plan Kidder County Local Emergency Operations Plan			Capability Assessment, Hazard History, Risk Assessment			Include in city’s or fire department’s budget. Apply for grant funding or purchase directly using existing budgets. Approval by city council or board.	

City of Robinson Project 2: Purchase new, upgraded outdoor emergency siren to complete radio-activation capabilities for the city's early outdoor warning system.

Description/Benefit		The city’s outdoor emergency siren is manually activated and needs to be upgraded to provide radio-activation capabilities. The fire department has radios capable to accomplish radio-activation of the emergency siren, but the siren itself is outdated and cannot support this.					
Hazards Addressed		All					
Affected Jurisdiction(s)		City of Robinson					
Project Status		New					
Priority		High					
Responsible Agency		City Council, Emergency Services					
Partners		County Commission, Emergency Management, NDAC, NDLC, Regional Council					
Completion Timeframe		1 to 2 years			Cost	Staff time. Cost specific to radio/siren needs.	
Funding Source		Local budgets. 9-1-1 Funds. N.D. League of Cities. State Homeland Security Grants.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	4	5	34
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized		Plan Element			Process for Integration		
Kidder County Local Emergency Operations Plan Kidder County Mitigation Plan		Capability Assessment, Hazard History, Risk Assessment			Include in city’s or fire department’s budget. Apply for grant funding or purchase directly using existing sales tax revenue. Approval by city council.		

City of Robinson Project 3: Conduct engineering study to develop a scope of work to upgrade/retrofit the city's sanitary sewer system.

Description/Benefit		The city’s sanitary sewer system is past its useful-life and possess numerous leaks that floods the city. The system can become inundated with water from heavy precipitation (summer or winter). The leaks have flooded the city’s community center gym, blocked roads in city limits, and flooded numerous basements.					
Hazards Addressed		Flood, HAZMAT, Infectious Disease, Severe Summer Weather, Severe Winter Weather					
Affected Jurisdiction(s)		City of Robinson					
Project Status		New					
Priority		Very High					
Responsible Agency		City Council					
Partners		County Commission, NDAC, NDLC, Regional Council, private contractors					
Completion Timeframe		1 to 2 years			Cost	Project-specific	
Funding Source		Local budgets. N.D. League of Cities. FEMA’s Building Resilient Infrastructure and Communities (BRIC) Grant Program. U.S.A.C.E. Regional Council. RD.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	4	5	3	3	30
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element		Process for Integration		
Kidder County Local Emergency Operations Plan Kidder County Mitigation Plan Kidder County THIRA			Capability Assessment, Hazard History, Risk Assessment		City solicits three engineering proposals from qualified firms. Select appropriate firm based on proposals. Apply for grant funding. Execute project. Submit reimbursements and close-out grant.		

City of Robinson Project 4: Expand existing/create new planning and regulatory capabilities to address existing and new development to strengthen local planning processes.

Description/Benefit		The city of Robinson is inundated by flooding on an annual basis. The city lacks flood ordinances to regulate development in flood-prone areas. Flood ordinances should be developed and adopted by the city. Additional consideration should be given to prioritize sewer backup valves when upgrading existing or building new development. Redundancies in the power grid systems should be encouraged. Specific attention should be paid to tie-down procedures for temporary buildings. A list of plans, policies, codes and ordinances needing to be updated or created for Kidder County and incorporated jurisdictions are bolded in text narratives and are found in Chapter 7, Capability Assessment.					
Hazards Addressed		All					
Affected Jurisdiction(s)		City of Robinson					
Project Status		New					
Priority		High					
Responsible Agency		City Council(s), Planning & Zoning					
Partners		County Commission, Emergency Management, Emergency Services, NDACo, NDDES, NDLC, Public Works, RD					
Completion Timeframe		Ongoing		Cost	\$0 to \$5,000 / Staff-time		
Funding Source		Local budgets. Local, state and federal grants. Private sector.					
Values: 1 is low (negative impact and/or too costly) – Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	3	3	3	4	28
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element		Process for Integration		
All			Capability Assessment, Hazard History, Risk Assessment		Development of specifications. Review of legal counsel. Approval and adoption by county commission and city councils.		

City of Robinson Project 5: Purchase new fire suppression equipment for emergency services and provide training, and purchase equipment for the city.

Description/Benefit	The Robinson Fire Protection District lacks equipment to respond to incidents of urban fire. A focus should be to purchase GIS/GPS capable equipment. <u>Robinson Fire Protection District</u> <ul style="list-style-type: none">• Brush Truck• Self-Contained Breathing Apparatus (SCBAs)• Pumper Truck• Turn-out gear• HAZMAT Training <u>City of Robinson</u> <ul style="list-style-type: none">• Skidsteer• Payloader						
Hazards Addressed	Fire (Urban and Wildland). All hazards.						
Affected Jurisdiction(s)	City of Robinson						
Project Status	New						
Priority	High						
Responsible Agency	City Council(s), Emergency Services						
Partners	Emergency Management, County Commission						
Completion Timeframe	Ongoing				Cost	Project-specific	
Funding Source	Local, state, federal grants. CDBG, Emergency Services, FEMA, HUD, Public Utilities, RD, USFS.						
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	4	3	5	2	4	28
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element		Process for Integration		
Kidder County Local Emergency Operations Plan Kidder County Mitigation Plan Kidder County THIRA			Capability Assessment, Hazard History, Risk Assessment		Review by emergency services, cities, or county. Budget or apply for grant funding. Approval by board, county commission, or city council(s), and taxing districts.		

8.3.4 Mitigation Capability Assessment

Capability for mitigation is divided into four categories: administrative and technical, education and outreach, financial, and planning and regulatory. Each identified resource in the four categories can be used to implement mitigation strategies and access funding for projects. **Tables comparing the mitigation capabilities of the city of Robinson with all other jurisdictions in Kidder County can be found below and in Chapter 7, County Mitigation Capability Assessment.**

- Administrative and Technical: Identification of administrative and technical capabilities, which include staff, their skills and tools for mitigation planning to implement specific mitigation actions.
- Education and Outreach: Identification of education and outreach programs, and methods already in place to implement mitigation activities and communicate hazard-related information.
- Financial: Identification of access to or eligibility to use funding resources for hazard mitigation for jurisdictions.
- Planning and Regulatory: Jurisdictional plans, policies, codes, and ordinances adopted and in place that prevent and reduce the impacts of hazards.

City of Robinson Mitigation Capabilities Summary

The following mitigation capabilities were identified as commonplace among all hazard and threats upon completion of the risk assessment for the city of Robinson. More detailed information about the mitigation capabilities of the city of Robinson in relation to Kidder County and all other incorporated jurisdictions can be found in Chapter 7, Mitigation Capability Assessment.

2018 N.D. Enhanced Mitigation MAOP	Kidder Co. Sheriff's Office
Advanced communications: Internet & TV	MOUs
Farm Services Agency	NDDDES Fire Index Monitoring
Kidder County Ambulance	NDDOT Statewide Highway/Transportation Plan
Kidder Co. LEOP	NDSU/Kidder Co. Extension
Kidder Co. Emergency Mgmt.	Robinson Fire Department
Kidder County District Health Unit	Robinson City Council

8.3.5 Integration of Mitigation Plan into Planning Mechanisms

Integration of the plan into current planning mechanisms is critical in mitigation to communicate the needs of each jurisdiction to achieve an all-inclusive mitigation strategy. The process for integration of the mitigation plan is included after each mitigation project, which shows the planning mechanism utilized, the plan element used for integration and the process for integration.

8.3.6 Plan Maintenance

An important aspect of any useable plan is the maintenance and upkeep of the document. At any given time, planning, risk analysis, updating the situation assessment, research, coordinating, disaster response

or other activity is occurring. Plan maintenance ensures the plan will remain useful in the county for many years. A mitigation action progress report form to conduct plan maintenance is in Chapter 10 of this plan.

DRAFT

8.4 City of Steele, North Dakota

The following profile includes information specific to the city of Steele for mitigation planning purposes. The information included is as follows:

- Profile and Inventory;
- Risk Assessment;
- Hazard Scoring Notes;
- Mitigation Projects, and
- Capabilities for Mitigation.

Integration into Planning Mechanisms

The process for integration of the mitigation plan into existing planning mechanisms is discussed at the bottom of each mitigation project in section 8.4.3, in section 8.4.4, and in Chapter 6, Mitigation Strategy.

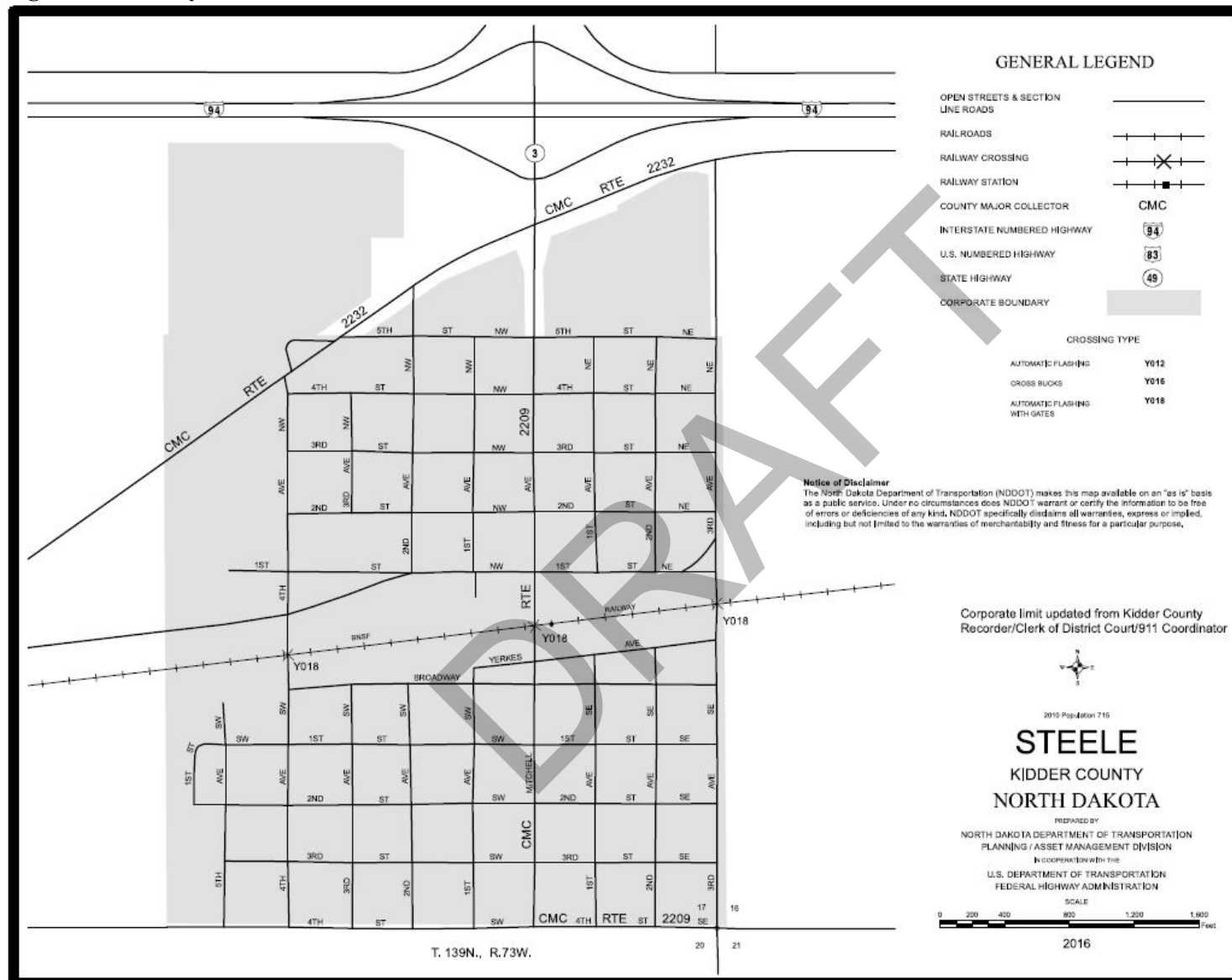
Plan Maintenance

Plan maintenance is shown in section 8.4.6.

Critical Facilities and Infrastructure

Figure 8.4.1 is a map of the city of Steele provided by the N.D. Dept. of Transportation.

Figure 8.4.1 – City of Steele, North Dakota



Source(s): N.D. Dept. of Transportation

8.4.1 Profile and Inventory

The location, total population, vulnerable populations, housing units and household size, businesses, buildings, critical facilities and infrastructure, services provided, and new and future development are shown for the city of Steele. Detailed narratives follow each section heading to profile the city.

Detailed information on public buildings, services provided, emergency response services and utilities can be found in Chapter 3, Profile and Inventory.

Location

The city of Steele is in central North Dakota located at the intersection of Interstate 94 and N.D. Highway 3 approximately 40 miles east of the city of Bismarck, the state capitol.

Population

Table 8.4.1 shows population trends for the city of Steele from 1920 to 2010, with an estimate for 2019.

Per the 2010 U.S. Decennial Census, the city of Steele has a population of 715 people, which is a decrease of 46 people (6.0 percent) from 762 people in 2000.

Table 8.4.1 – 1920 to 2010 City of Steele, North Dakota Population Statistics

1920	1930	1940	1950	1960	1970	1980	1990	2000	2010	2019 (est.)
550	519	721	762	847	696	796	762	761	715	711

Source(s): U.S. Decennial Census; American Community Survey, 5-Year Estimates

Vulnerable Populations

Age. Per the 2014 to 2018 American Community Survey 5-Year Estimate, the population of the city of Steele consists of 159 individuals under the age of 20 and 129 individuals age 65 and older.

Daycares. There are three daycares (Junior Pirates, Happy Hearts Childcare, and Lil Rascals Daycare) in the city of Steele.

Poverty. Per the 2014 to 2018 American Community Survey 5-Year Estimate, there are 52 households in the city of Steele that live below the poverty line.

Public Schools. According to the N.D. Dept of Public Instruction, the Kidder County Public School serves grades K through 12 with an enrollment of 352 as of 2019/2020. Between 2009/2010 (394 students) and 2019/2020 the district lost 42 students for a decrease of 10.7 percent.

Senior Housing Developments/Care Centers. Golden Manor is a basic care facility in the city of Steele. There are no age-restrict or senior housing developments in the city of Steele.

Housing Units and Household Size

The 2014 to 2018 American Community Survey 5-Year Estimate shows there is a total of 415 housing units in the city consisting of 308 single-family homes, 39 mobile/RV homes, and 68 multifamily homes.

The 2014 to 2018 American Community Survey 5-Year Estimate shows there are 364 households in the city of Steele resulting in an average household size of 2.10 people.

Businesses

BEK Communications, Kidder County Public School, The Coffee Cup Travel Plaza, and Golden Manor basic care facility are the major employers in the city of Steele. Additional information on businesses and economic development in the city of Steele or can be obtained by contacting Steele Betterment.

New and Future Development

The following development has occurred since the 2014 mitigation plan.

New

- Pifer's Auction constructed a new auction building in 2017.
- The Coffee Cup Travel Plaza constructed a new parking lot for semi-truck trailer's across N.D. Highway 3 to the east of the facility in fall of 2020.
- A Dollar General Store was constructed beginning in 2018 and opened in 2019.
- Approximately 10 single-family homes have been constructed since 2014.

Future

- Farmer's and Merchant's is expanding to offer hardware and serve as a convenience store. The project should be done in 2021.

Buildings, Critical Facilities and Infrastructure, and Services Provided

The following section profiles the housing units, services, emergency response services, jurisdictional buildings, and utilities of the city of Steele. Tables 3.10 to 3.13 in Chapter 3, Profile and Inventory show a complete inventory of this information for Kidder County and incorporated jurisdictions. An "X" indicates if the jurisdiction offers the utility or service (either through contract or employees) or possesses the building or resource. Narratives detailing information for the county and incorporated jurisdictions accompany each table.

Structures. Housing units show where populations are located. Table 3.9 in Chapter 3, Profile and Inventory shows the number of single-family, mobile home structures, and multifamily and in Kidder County and incorporated jurisdictions. The following are key points for the city of Steele:

- There are 308 single-family housing units comprising 74.2 percent of all housing units in the city of Steele.

- There are 39 Mobile/Boat/RV/Van homes comprising 9.4 percent of all housing units in the city of Steele.
- There are 68 Multifamily housing units in the city of Steele comprising 16.4 percent of all housing units in the city of Steele.

Services. The following services are provided in the city of Steele.

- Strom Sanitation provides garbage collection services to the city of Steele.
- The city of Steele has an inert landfill.
- The city of Steele has its own sanitary sewer system. There are approximately six residential units on the outskirts of town to the west that utilize septic systems.
- The Steele Ozone and Kidder County Press is the official newspaper of the city of Steele.
- The city of Steele provides drinking/potable water to its residents through a municipal system. There are a few city residents that utilize individual wells and private irrigation. It is illegal to drill any new wells.

Emergency Response Services. The following emergency response services were identified in the city of Steele.

- Kidder County Ambulance provides ambulance services to the city of Steele.
- Steele Fire Protection District provides fire protection services to the city of Steele.
- The Steele Police Department provides law enforcement services to the city. The Kidder County Sheriff's Office also provides law enforcement services to the city of Steele through mutual aid.
- The nearest hospitals to the city of Steele are in the city of Bismarck.
- Four Seasons Wellness is a medical clinic in the city of Steele.
- Kidder County District Health Unit is in the city of Steele and provides public health services to the city of Steele.

Critical Facilities. The following facilities were identified as critical in the city of Steele.

- Kidder County Ambulance Hall
- Kidder County Courthouse
- Kidder County Public School
- Steele City Hall
- Steele Fire Protection District Fire Hall
- U.S. Post Office

Infrastructure. The following infrastructure was identified as critical in the city of Steele.

- The city of Steele has a sanitary sewer system with five lagoon cells and two lift stations.
- The city of Steele has a municipal drinking/potable water system with a water treatment plant and water tower.
- The city of Steele is located at the intersection of N.D. Highway 3 and Interstate 94.
- BNSF Railroad traverse's city limits.

8.4.2 Risk Assessment and Hazard Scoring Notes

Table 8.4.2 summarizes the risk assessment scoring of the city of Steele. The risk assessment and hazard scoring notes for each hazard specific to the city are shown in Table 8.4.3. Risk assessment notes for impact, frequency, likelihood and vulnerability ubiquitous for jurisdictions in Kidder County are found in Chapter 4, Threat and Hazard Identification Assessment in each respective hazard profile.

Table 8.4.2 – City of Steele Jurisdiction Risk Assessment Scoring Summary

Risk Assessment Jurisdiction: City of Steele						
<u>Natural Hazard</u>	<u>Impact</u>	<u>Frequency</u>	<u>Likelihood</u>	<u>Vulnerability</u>	<u>Capabilities</u>	<u>Total</u>
Drought	4	3	4	4	2	13
Fire – Urban/Structure Collapse	4	2	2	2	2	8
Fire – Wildland (Rural)	3	4	4	2	2	11
Flood	3	2	4	3	2	10
Geologic Hazard	1	1	1	1	1	3
Infectious Disease	4	2	3	4	2	11
Severe Summer Weather	4	4	4	3	1	14
Severe Winter Weather	4	4	4	3	1	14
Space Weather	4	1	2	4	1	10
<u>Adversarial Threats</u>						
Civil Disturbance	2	1	2	2	1	6
Criminal, Terrorist or Nation-State Attack	3	2	2	3	1	9
Cyberattack	4	2	3	4	2	11
<u>Technological Threats</u>						
Dam Failure	NA	NA	NA	NA	NA	NA
Hazardous Material Release	4	2	4	4	2	12
Transportation Incident	4	4	4	4	3	13

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 8.4.3 – City of Steele Jurisdiction Risk Assessment

	Civil Disturbance	
Impact	<ul style="list-style-type: none"> Blocked Roads Business Interruptions Delayed Emergency Response Financial Hardship/Strain (public) 	<ul style="list-style-type: none"> HAZMAT Release Human Injury/Death Property Damage (Structure) Property Damage (Vehicle)
Frequency	<ul style="list-style-type: none"> Never an occurrence of a major incident 	<ul style="list-style-type: none"> DAPL protesters were sheltered in the city of Steele as they were caught in severe weather, but were not active in the city
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Presence of energy pipelines Interstate 94 Presence of railroad infrastructure 	<u>Less Likely</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Presence of energy pipelines Interstate 94 Lack of significant human resources to respond Presence of railroad infrastructure 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions

Table 8.4.3 – City of Steele Jurisdiction Risk Assessment – Continued

Criminal, Terrorist, Nation-State Attack	
Impact	<ul style="list-style-type: none"> Blocked Roads Business Interruptions Delayed Emergency Response Financial Hardship/Strain (public) HAZMAT Release Human Injury/Death Property Damage (Structure) Property Damage (Vehicle) Threats to city water supply and facilities Mass Casualties/Fatalities Loss of Communication Systems Disease Outbreak/Mass Infections
Frequency	<ul style="list-style-type: none"> No occurrences Miscellaneous property damage occurring in the city on an occasional basis DAPL protesters were sheltered in the city of Steele as they were caught in severe weather and made threats to the local population
Likelihood	<div> <div> <u>More Likely</u> <ul style="list-style-type: none"> Presence of energy pipelines Interstate 94 Presence of railroad infrastructure </div> <div> <u>Less Likely</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions </div> </div>
Vulnerability	<div> <div> <u>More Vulnerable</u> <ul style="list-style-type: none"> Presence of energy pipelines Interstate 94 Lack of significant human resources to respond Presence of railroad infrastructure </div> <div> <u>Less Vulnerable</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions </div> </div>

Table 8.4.3 – City of Steele Jurisdiction Risk Assessment – Continued

	Cyberattack	
Impact	<ul style="list-style-type: none"> Business Interruptions Delayed Emergency Response Financial Hardship/Strain (public) HAZMAT Release 	<ul style="list-style-type: none"> Human Injury/Death School Closure Loss of Communication Systems Identity Theft – loss of wages and/or assets
Frequency	<ul style="list-style-type: none"> Never an occurrence of a major attack 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Small town with lack of technological infrastructure to defend against cyber attacks Presence of energy pipelines Kidder County Courthouse Kidder County Public School BEK Communications 	<u>Less Likely</u> <ul style="list-style-type: none"> Lack of major financial institutions
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Small town with lack of technological infrastructure to defend against cyber attacks Presence of energy pipelines Elderly population relying largely on landlines for communication purposes, remote medical care and equipment monitoring Kidder County Courthouse Kidder County Public School BEK Communications 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Lack of major financial institutions

Table 8.4.3 – City of Steele Jurisdiction Risk Assessment - Continued

	Drought	
Impact	<ul style="list-style-type: none"> • Crop Loss • Loss of Economy • Loss of Livestock • Loss of Wildlife Habitat (decreased wildlife populations) • Increase in Wildland Fire Potential 	<ul style="list-style-type: none"> • Water quality compromised from stock dams • Diminished soil quality – salinity will increase • Negative impact on mental health of producers and fire responders – “community impact” • Local producers forced to sell off herds which can last for several years • Population loss as people moved away due to loss of economy
Frequency	<ul style="list-style-type: none"> • Severe Drought of 1961/1962, 1988/1989 to 1991/1992 • Summer of 2017, local producers forced to sell off portions of their herds 	<ul style="list-style-type: none"> • End of July through winter of 2016 – county reached severe drought status • Severe drought in summer/fall of 2020
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Dry/wet cycle every eight years • Climatic patterns will result in an eventual drought of significance • Lack of precipitation 	<u>Less Likely</u> <ul style="list-style-type: none"> • Heavy precipitation
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Wildlife & hunting economy • Agriculture economy • Elderly population • Flat terrain/open topography contributes to conditions • Pastureland adjacent to structures and city limits • Lack of fire index sign • Presence of railroad that can exacerbate conditions with increased risk of fire 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Financial assistance programs made available by the state and federal government • Burn Ban by county emergency management • Fire Index monitoring and mapping from NDDes • Advanced communications such as internet and TV • City has a water tower

Table 8.4.3 – City of Steele Jurisdiction Risk Assessment - Continued

	Fire – Urban Fire/Structure Collapse	
Impact	<ul style="list-style-type: none"> Building Collapse Delayed Emergency Response Evacuation (Localized) Explosion Human Injury/Death Increase Fire Potential Property damage on a significant scale if impacting downtown structures 	
Frequency	<ul style="list-style-type: none"> Occurrences of structures/vehicles being impacted every five to 10 years 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Close spacing of downtown structures Age of structures Increased use of electric heaters Outdated electric wiring in older homes and structures Outdated heating systems Railroad infrastructure traversing city limits 	<u>Less Likely</u> <ul style="list-style-type: none"> Building codes Better building standards and maintenance of structures Smoke detectors in public buildings and private homes/businesses Well-equipped fire department with trained volunteers
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Close spacing of downtown structures Age of structures Increased use of electric heaters Outdated electric wiring in older homes and structures Outdated heating systems Fire Hall does not have a permanent generator Prolonged response times due to limited fire staff during the daytime Railroad infrastructure traversing city limits 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Building codes Better building standards and maintenance of structures Smoke detectors in public buildings and private homes/businesses Well-equipped fire department with trained volunteers

Table 8.4.3 – City of Steele Jurisdiction Risk Assessment – Continued

	Fire – Rural & Wildland	
Impact	<ul style="list-style-type: none"> • Building Collapse • Crop Loss • Delayed Emergency Response • Evacuation (Localized) • Explosion • Increase Fire Potential • Loss of Power/Downed Power Lines • Mass Casualties • Losses could be on a significant scale if impacting a major producer or farmstead • Loss of farm equipment and assets • Loss of Livestock 	
Frequency	<ul style="list-style-type: none"> • Significant fire once every two to three years • Approximately between 15 to 20 wildland fires occurring annually • Controlled burns becoming out of control approximately 25 percent of the time 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Agricultural burn-off • High winds annually and dry conditions – when present • Pastureland adjacent to structures and city limits • Severe summer weather with significant lightning • Railroad infrastructure traversing through city limits 	<u>Less Likely</u> <ul style="list-style-type: none"> • Removal of CRP near city limits • Summer and winter weather with heavy precipitation
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Agricultural burn-off • High winds annually and dry conditions – when present • Pastureland adjacent to structures and city limits • Severe summer weather with significant lightning • Large fire district – strained coverage/resources • Railroad infrastructure traversing through city limits • Lack of fire breaks around city limits 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Removal of CRP • Summer and winter weather with heavy precipitation • MOUs with neighboring fire departments • Burn bans by county emergency management for areas outside city limits

Table 8.4.3 – City of Steele Jurisdiction Risk Assessment – Continued

	Flood	
Impact	<ul style="list-style-type: none"> • Blocked Roads: County roads and surrounding township roads, intersection of Mitchell Ave and Broadway St. • Delayed Emergency Response • Flooding (Highway & Structure) • Human Injury/Death • Property Damage / Sewer Backup • Runoff from buildings causes overland flooding • Failure of city's water treatment plant 	
Frequency	<ul style="list-style-type: none"> • Bi-annual occurrences of localized flooding of nearby township roads and highways • Major precipitation event resulted in water in basements in the 1990s • Ice storm of 1997 caused back up of ice in city's storm water system which resulted in overland flooding • Flash flooding occurs from heavy precipitation at the intersection of Mitchell Ave and Broadway St., and streets on the northwest and parts of the southwest and along 3rd Ave SE 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Rapid change of seasons resulting in excessive snow melt • Topography of the city is flat which contributes to slow drainage of water 	<u>Less Likely</u> <ul style="list-style-type: none"> • Dry seasons and low precipitation • City performs maintenance on its storm water system
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Rapid change of seasons resulting in excessive snow melt • Closed basin topography in areas of the county • City is not enrolled in the NFIP • City does not have flood ordinances • Topography of the city is flat which contributes to slow drainage of water • Freeze-up of culverts blocking spring drainage • Drainage routes missing from areas of town • Culverts can become blocked with debris 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Alternate routes were identified for townships roads • City performs maintenance on its storm water system

Table 8.4.3 – City of Steele Jurisdiction Risk Assessment – Continued

	Geologic Hazard	
Impact	<ul style="list-style-type: none"> Delayed Emergency Response Human Injury/Death Loss of Economy Loss of Power Property Damage 	
Frequency	<ul style="list-style-type: none"> No incidents involving geologic hazards in or near city limits 	
Likelihood	<u>More Likely</u>	<u>Less Likely</u> <ul style="list-style-type: none"> No Abandoned Mine Lands located near city limits PSC has an AML reclamation project aimed at recovering AMLs – work has been done in other parts of the state
Vulnerability	<u>More Vulnerable</u>	<u>Less Vulnerable</u> <ul style="list-style-type: none"> No Abandoned Mine Lands located near city limits PSC has an AML reclamation project aimed at recovering AMLs – work has been done in other parts of the state

Table 8.4.3 – City of Steele Jurisdiction Risk Assessment – Continued

	Hazardous Material Release	
Impact	<ul style="list-style-type: none"> Blocked Roads Delayed Emergency Response / Increased Fire Potential Environmental Degradation Evacuation (localized) Explosion 	<ul style="list-style-type: none"> Human Injury/Death Loss of Economy Loss of Potable Water Loss of Power Property Damage
Frequency	<ul style="list-style-type: none"> Small incidents of leaking anhydrous tanks bi-annually Never any major spills reported, but occasional diesel/fuel leaks from trucks at The Coffee Cup Travel Plaza 	<ul style="list-style-type: none"> Natural gas leak occurred in 2019 and resulted in localized evacuation of the city's main street
Likelihood	<p><u>More Likely</u></p> <ul style="list-style-type: none"> Transportation of chemicals by truck through city limits Storage of chemicals/fertilizers in city limits and on farmsteads in large tanks near city limits Presence of energy pipelines Railroad infrastructure traversing through city limits City located on Interstate 94 Anhydrous plant north of city limits Amerigas Propane Facility in city limits Farmer's and Merchant's has propane, diesel, and gas at its facility in city limits Coffee Cup Travel Plaza Storage of Chlorine at city's water treatment plant 	<p><u>Less Likely</u></p> <ul style="list-style-type: none"> Private companies have HAZMAT certifications Zoning and building codes

Table 8.4.3 – City of Steele Jurisdiction Risk Assessment – Continued

Hazardous Material Release	
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Transportation of chemicals by truck through city limits • Storage of chemicals/fertilizers in city limits and on farmsteads in large tanks near city limits • Presence of energy pipelines • No hospital in city limits • Railroad infrastructure traversing through city limits • City located on Interstate 94 • Anhydrous plant north of city limits • Amerigas Propane Facility in city limits • Farmer's and Merchant's has propane, diesel, and gas at its facility in city limits • Coffee Cup Travel Plaza • Storage of Chlorine at city's water treatment plant • Response times prolonged from fire department due to volunteer roster • Radio-activated siren is impacted by birds and surrounding vegetation, which renders the siren inoperable and needs manual cleaning
	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Designated truck route in the city of Steele • Fire departments have HAZMAT training • WBI has training every other year • Radio-activated emergency siren • Four Seasons Wellness Clinic • Kidder County Ambulance and Steele Fire Dept.

Table 8.4.3 – City of Steele Jurisdiction Risk Assessment – Continued

	Infectious Disease	
Impact	<ul style="list-style-type: none"> • Crop Loss • Human Injury/Death • Livestock Loss • Loss of Economy • Mass Casualties • Strain on local medical resources (ambulance) • Loss of medical staff due to sickness • Loss of Potable Water • Financial cost to public health resources 	
Frequency	<ul style="list-style-type: none"> • Annual occurrences of death, primarily among the elderly • Occurrence of disease - 1 in 3 for people annually • Annual occurrences of influenza cases in the local population • The COVID-19 pandemic of 2020 resulted in mass quarantine and sheltering of the local population and temporary closure of businesses • Annually occurrences of accidents on N.D. Highway 3 involving Canadian livestock 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Growing elderly population • Small population of children without immunization • Agriculture economy • Dependent on weather for animals and crops • Transporting of animals across state lines 	<u>Less Likely</u> <ul style="list-style-type: none"> • Advanced communications such as internet and tv • Public health and employment regulations for public facilities
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Growing elderly population • Small population of children without immunization • Agriculture economy • Transporting of animals across international and state lines – N.D. Highway 3 is a major transportation route from Canada, which does not have the same vaccination requirements as the United States • No hospital • Kidder County Public School 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Advanced communications such as internet and tv • Public health and employment regulations for public facilities • Immunizations & medications of local population • Four Seasons Wellness Clinic • Steele Veterinary Clinic

Table 8.4.3 – City of Steele Jurisdiction Risk Assessment – Continued

	Severe Summer Weather	
Impact	<ul style="list-style-type: none"> • <u>Blocked Roads:</u> Downed power lines and trees along Mitchell Ave which has bigger and older trees, southwest areas of the city with older trees • Evacuation (Localized) • Human Injury/Death – heat exhaustion • Sewer Backup • Shelter-in-place 	<ul style="list-style-type: none"> • Loss of Crops and Livestock • Loss of Power/Downed Power Lines • Vehicle and Property Damage • Damage to electrical equipment from lightning • Failure of city's water treatment plant from loss of power • Failure of communication building/tower/repeater adjacent to the city's water tower from lightning
Frequency	<ul style="list-style-type: none"> • Windstorm events occurring annually • Annual occurrences of hailstorms • Two or three significant storms producing damage to trees and property annually 	<ul style="list-style-type: none"> • Property damage from tornados/straight-line winds in summer 2017 and 2019 • Lightning damage to the city's water tower controls on top of the tower 2017/2018
Likelihood	<ul style="list-style-type: none"> • Climatic patterns will result in numerous annual occurrences of the hazard 	
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • High elderly population • Presence of mobile homes • Aging infrastructure (roads and electrical systems) • Lack of municipal building code enforcement • Lack of permanent generator at ambulance hall, city hall, fire hall, lift station, water tower, and Kidder County School • Railroad infrastructure traversing through city limits • City located on Interstate 94 • Trees near Golden Manor – falling branches from inclement weather • Radio-activated siren is impacted by birds and surrounding vegetation, which renders the siren inoperable and needs manual cleaning 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Advanced warning and notification such as internet and TV • Adopted building codes • Four Seasons Wellness Clinic • Radio-activated emergency siren • City adopted lift station maintenance plan • Trees surrounding city's water tower were removed • Permanent generator at city's water treatment plant and Golden Manor • Portable generators at ambulance hall, fire hall, and city hall • City water pumps/treatment plant, which has permanent backup power

Table 8.4.3 – City of Steele Jurisdiction Risk Assessment – Continued

	Severe Winter Weather	
Impact	<ul style="list-style-type: none"> • <u>Blocked Roads:</u> 518 3rd St. SW, Golden Manor block, Mitchell Avenue in its entirety, 3rd Avenue East • Failure of city's water treatment plant from loss of power • Failure of communication building/tower/repeater adjacent to the city's water tower from lightning and loss of power • Property Damage – repair of roofing, siding and drainage systems for homes 	
Frequency	<ul style="list-style-type: none"> • Annual occurrences of power loss from storms • Annual occurrences of blocked roads • Annual occurrences of wind events • Two or three significant blizzards producing damage to trees and property annually • Annual occurrences of sheltering stranded motorists when Interstate 94 is closed 	<ul style="list-style-type: none"> • Evacuation (Localized) • Human Injury/Death – wind chill • Loss of Power/Downed Power Lines • Sewer Backup • Shelter-in-place • Vehicle Damage • Loss of Livestock • Loss of Crops
Likelihood	<ul style="list-style-type: none"> • Climatic patterns will result in numerous annual occurrences of the hazard 	<ul style="list-style-type: none"> • Spring snowstorm of 2019 • <u>March 11, 2011 Blizzard:</u> 500 stranded motorists were sheltered in the cities of Dawson, Steele, and Tappen. National Guard was activated. The ambulance hall, golden Manor, and Kidder County Public School were used as shelters.

Table 8.4.3 – City of Steele Jurisdiction Risk Assessment – Continued

Severe Winter Weather	
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • High elderly population • Presence of mobile homes • Lack of municipal building code enforcement • Lack of permanent generator at ambulance hall, city hall, fire hall, lift station, water tower, and Kidder County School • Railroad infrastructure traversing through city limits • City located on Interstate 94 • Trees near Golden Manor – falling branches from inclement weather • Snow removal issue at Golden Manor block • Surge in sheltering needs due to city's location on Interstate 94 during blizzards • Radio-activated siren is impacted by birds and surrounding vegetation, which renders the siren inoperable and needs manual cleaning
	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Advanced warning and notification such as internet and TV • Adopted building codes • Four Seasons Wellness Clinic • Radio-activated emergency siren • City adopted lift station maintenance plan • City water pumps/treatment plant, which has permanent backup power

Table 8.4.3 – City of Steele Jurisdiction Risk Assessment – Continued

	Space Weather
Impact	<ul style="list-style-type: none"> • Loss of operation of the lift station, fire hall, etc. • Loss/outage of medical devices at private residences • Property damage from sewer backups due to loss of lift station • Business Interruptions
Frequency	<ul style="list-style-type: none"> • Never a recorded occurrence in Kidder County or North Dakota
Likelihood	<ul style="list-style-type: none"> • Dependent on solar activity and the 11-year solar cycle • Likely to occur once every 500 years per the 2018 N.D. Enhanced Mitigation MAOP
Vulnerability	<div> <div> <u>More Vulnerable</u> <ul style="list-style-type: none"> • Agriculture economy • All critical facilities and infrastructure that require electricity for operation • Advanced communication systems (internet, TV, etc.) • Lack of permanent generator at ambulance hall, city hall, fire hall, lift station, water tower, and Kidder County School • Kidder County Courthouse • Kidder County Public School • BEK Communications </div> <div> <u>Less Vulnerable</u> <ul style="list-style-type: none"> • Local food production/households with gardens • City adopted lift station maintenance plan </div> </div>

Table 8.4.3 – City of Steele Jurisdiction Risk Assessment – Continued

	Transportation Incident	
Impact	<ul style="list-style-type: none"> Blocked Roads from inadequate road clearing Human Injury/Death Increased Fire Potential Loss of Transportation/Accessibility Mass Casualties/Fatalities Delayed Emergency Response HAZMAT Release Livestock Loss Business Interruptions Property Damage Could be catastrophic if involving a school bus filled with children and a truck carrying hazardous materials 	
Frequency	<ul style="list-style-type: none"> Annual occurrences of accidents involving cars and/or farm equipment in city limits Bi-weekly/monthly occurrences of incidents on Interstate 94 – largely dependent on weather conditions Annual occurrences of spray planes crashing in rural areas near city limits Fatality occurring on Halloween 2020 due to a traffic incident Annually occurrences of accidents on N.D. Highway 3 involving Canadian livestock 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Intoxicated drivers High truck traffic from agriculture-related traffic Railroad infrastructure traversing through city limits City located on Interstate 94 Coffee Cup Travel Plaza Open range livestock 	<u>Less Likely</u> <ul style="list-style-type: none"> No commercial passenger airport
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Intoxicated drivers High truck traffic from agriculture-related traffic No hospital Railroad infrastructure traversing through city limits City located on Interstate 94 Coffee Cup Travel Plaza Open range livestock 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> No commercial passenger airport Four Seasons Wellness Clinic Presence of designated truck routes through city limits Kidder County Ambulance and Steele Fire Dept. Rapid response from Aeromedical Support in Bismarck

8.4.3 Mitigation Strategy

The Kidder County Multi-Jurisdictional Multi-Hazard Plan Update includes a mitigation strategy consisting of seven goals in Chapter 6. The following problem statement and mitigation projects address the mitigation needs of the city of Steele. It should be noted that some mitigation projects that pertain to all jurisdictions are included to encourage county-wide collaboration.

Problem Statement

The city of Steele can be impacted by civil disturbance; criminal, terrorist or nation-state attack; cyberattack; drought; fire (urban and wildland); flood (overland and riverine); geologic hazard; hazardous material release, infectious disease, severe summer weather, severe winter weather, space weather and transportation incidents. Economic loss to the agriculture and livestock industry, and hunting/recreational industry from natural hazards in the county impacts the city's economy. Blocked roads and breaks to mains in the city's drinking/potable water system occur annually from severe summer weather and severe winter weather. The risk to hazardous material release and mass sheltering needs from stranded motorists from severe winter weather is high due to the city's location on Interstate 94. Areas of the city lack proper drainage resulting in overland flooding and blocked roads. The city lacks a fire index sign. The county's ambulance hall and courthouse (located in the city), and the city hall, fire hall, lift station, and public school lack generators for backup power. With little to no capabilities to accomplish major projects independently, the city is dependent on outside sources for mitigation.

Installation of permanent backup power sources; a fire index sign; creation of a sheltering response plan and upgrading/expanding existing or construction of new shelters; an engineering study to identify options to retrofit/upgrade the city's drinking/potable water system; and expansion of education and outreach, financial, and planning and regulatory capabilities are a priority for the city of Steele.

City of Steele Project 1: Install permanent generators at critical facilities and infrastructure.

Description/Benefit	Test existing generators and create regularly scheduled maintenance system. Install new generators to establish permanent source of backup power to maintain continued operation of the following critical facilities and infrastructure, with facilities having the option to serve as a shelter. The city’s shop and drinking/potable water system already has a permanent backup generator. <u>Install New</u> <ul style="list-style-type: none">• Kidder County Ambulance Hall• Kidder County Courthouse• Kidder County Public School• Steele City Hall• Steele Fire Hall• Steele lift stations (pre-wiring only)• Steele water tower• Steele Senior Center						
Hazards Addressed	All hazards						
Affected Jurisdiction(s)	City of Steele and greater Kidder County						
Project Status	Ongoing and Continue/New						
Priority	Very High						
Responsible Agency	County Commission, City Council(s), Public Works, Emergency Services						
Partners	Emergency Management, Public Utilities						
Completion Timeframe	Ongoing			Cost	Project-specific		
Funding Source	Public Utilities, Regional Council, RD. FEMA’s Building Resilient Infrastructure and Communities (BRIC). State Homeland Security grants.						
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized		Plan Element Utilized			Process for Integration		
Kidder County Hazard Mitigation Plan Kidder County Local Emergency Operations Plan Steele Comprehensive Plan		Capability Assessment, Hazard History, Risk Assessment			Include in city’s or agency’s budget. Apply for grant funding or purchase directly using existing budget. Approval city council or board.		

City of Steele Project 2: Work with Kidder County Emergency Management to establish a sheltering response plan.

Description/Benefit		Kidder County Ambulance provides sheltering services to hundreds of people during blizzards and times of inclement weather, primarily severe winter weather. The resources of the ambulance and its volunteers become overwhelmed. A coordinated response plan is needed so other agencies (City of Steele, Steele Fire Department, Kidder County Emergency Management, Kidder County District Health Unit, Kidder County Public School, care centers, etc.) can assist in the effort thereby spreading out the response needs.					
Hazards Addressed		All					
Affected Jurisdiction(s)		City of Steele and greater Kidder County					
Project Status		New					
Priority		High					
Responsible Agency		County Commission, City Council/Planning and Zoning, Emergency Management, Emergency Services, Public Health, Kidder County Public School					
Partners		FEMA, NDAC, NDDDES, NDLC, Red Cross, Regional Council, Social Services, The Salvation Army (local chapter)					
Completion Timeframe		1 year		Cost		Staff-time	
Funding Source		Local budgets. State and federal grants.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	1	5	5	5	31
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element			Process for Integration	
Kidder County Hazard Mitigation Plan Kidder County Local Emergency Operations Plan Steele Comprehensive Plan			Capability Assessment, Hazard History, Risk Assessment			Develop draft plan and adopt final version. Make the plan an annex in the Kidder County Local Emergency Operations Plan.	

City of Steele Project 3: Construct new storm shelters/community safe rooms or retrofit existing structures to reduce the risk to vulnerable populations from severe weather.

Description/Benefit		Provide safe area of refuge for permanent residents, temporary populations, and seasonal/recreational populations from severe weather. Reduce/eliminate loss of life from hazards and man-made threats. Upgrade existing shelters to be fully ADA compliant and pet friendly. Construct new storm shelters/community safe room in jurisdictions currently lacking a storm shelter/safe room. More information on community shelters can be found through the following link: https://www.fema.gov/media-library/assets/documents/5090 <u>March 11, 2011.</u> A severe winter storm caused the closure of I-94 from Dickinson to Fargo resulting in several hundred motorists stranded along the highway. The N.D. National Guard was activated to assist in the rescue of stranded motorists. Kidder County and the cities of Steele, Dawson, and Tappen sheltered over 500 people and neighboring Stutsman County sheltered an additional 500 people. Prior to the onset of the storm, normal travel was occurring and people were not prepared for the unpredicted severity of the storm.					
Hazards Addressed		All					
Affected Jurisdiction(s)		City of Steele and greater Kidder County					
Project Status		New					
Priority		Medium/High					
Responsible Agency		City Council/Planning and Zoning, Emergency Management, Emergency Services					
Partners		County Commission, FEMA, NDAC, NDDDES, NDLC, Red Cross, Regional Council, Social Services					
Completion Timeframe		3 to 5 years			Cost	Staff time	
Funding Source		Local, state, and federal grants. FEMA’s Building Resilient Infrastructure and Communities (BRIC) Grant Program. State Homeland Security Grants.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	4	4	2	4	29
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
<u>Planning Mechanisms Utilized</u>			<u>Plan Element</u>		<u>Process for Integration</u>		
Kidder County Hazard Mitigation Plan Kidder County Local Emergency Operations Plan Steele Comprehensive Plan			Capability Assessment, Hazard History, Risk Assessment		Include in city’s/county’s capital improvement budget/plan. Apply for grant funding or fund directly using existing sales tax revenue. Approval by city council.		

City of Steele Project 4: Study options for implementation of a fire break and/or installation of a fire index sign.

Description/Benefit		Plan and install fire breaks around city limits, or critical facilities and infrastructure, to reduce/eliminate the risk to wildland fires, and losses to people and property. The city should focus on areas where wildland vegetation and city structures around city limits. Particular attention should be paid to the northwest side of the city near the golf course. Partnerships should be established with local landowners. The project should also include research into purchasing and installation of a fire index sign.					
		See Chapter 4, Fire for wildland-urban interface maps and other information to assist in identifying potential location(s) and developing scope.					
Hazards Addressed		Drought, Fire (Urban/Structure and Wildland), Severe Summer Weather					
Affected Jurisdiction(s)		City of Steele and greater Kidder County					
Project Status		New					
Priority		Low for fire break. Medium for fire index sign.					
Responsible Agency		City Council(s), Steele Fire Department, Emergency Management, NDFS					
Partners		Private Landowners. County Commission, County Highway Dept., Emergency Services, NDAC, NDLC, N.D. Firefighter’s Association, NRCS					
Completion Timeframe		1 to 3 years			Cost	Project-specific	
Funding Source		Local and state grants. FEMA Pre-Disaster Mitigation Grant Program (PDM). Private landowners.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
4	5	4	1	3	3	3	23
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element		Process for Integration		
Kidder County Hazard Mitigation Plan Kidder County Local Emergency Operations Plan Steele Comprehensive Plan			Capability Assessment, Hazard History, Risk Assessment		Determine scope of work through collaboration with landowners, local fire departments and county engineering. Approval by city council. Apply for grant funding and/or implement independently.		

City of Steele Project 5: Conduct engineering study to develop a scope of work to upgrade/retrofit the city's drinking/potable water system to reduce and/or eliminate losses of service to impacts from severe weather.

Description/Benefit		The city’s drinking/potable water system consists of cast iron mains that are prone to breaking from freezing and thawing and is past its useful-life. Overland flooding and property damage can result from a break. The system needs to be upgraded to PVC to prolong its useful life and reduce impacts from severe weather.					
		Mitchell Avenue has been completed.					
		Construction/execution of the scope of work should be pursued upon conclusion of the engineering study using grant funding.					
Hazards Addressed		Flood, Infectious Disease, Severe Summer Weather, Severe Winter Weather					
Affected Jurisdiction(s)		City of Steele and greater Kidder County					
Project Status		New					
Priority		High					
Responsible Agency		City Council, Public Works					
Partners		County Commission, NDAC, NDLC, Regional Council, private contractors					
Completion Timeframe		2 to 3 years			Cost	Project-specific	
Funding Source		Local budgets. N.D. League of Cities. FEMA’s Building Resilient Infrastructure and Communities (BRIC) Grant Program.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	4	5	3	5	32
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element		Process for Integration		
Kidder County Local Emergency Operations Plan Kidder County Mitigation Plan Kidder County THIRA			Capability Assessment, Hazard History, Risk Assessment		City solicits three engineering proposals from qualified firms. Select appropriate firm based on proposals. Apply for grant funding. Execute project. Submit reimbursements and close-out grant.		

City of Steele Project 6: Update/expand existing and/or create new planning and regulatory capabilities to address existing and new development.

Description/Benefit		Build the planning and regulatory capability of the city of Steele by updating existing and/or expand and create new plans, policies, and ordinances. To ensure new and existing structures adhere to building standards to withstand impacts from hazards. Work with the county department of health on sheltering and mass care plans since the city is the location of the Kidder County Courthouse. Specific research should be conducted to update/create and develop a capital improvement fund, comprehensive, continuity of operations, flood ordinances, impact fees, land use plan, sheltering and mass care (with the county), storm water management plan, water conservation plan, and zoning. The existing emergency operations/continuity plan for the city needs to be compiled into a written document. Additional consideration should be given to prioritize sewer backup valves when upgrading existing or building new development. Redundancies in the power grid systems should be encouraged. A list of plans, policies, codes and ordinances needing to be updated or created for the city of Steele are bolded in text narratives in the capabilities section of this profile or in Chapter 7, Capability Assessment.					
Hazards Addressed		All					
Affected Jurisdiction(s)		City of Steele					
Project Status		New					
Priority		High					
Responsible Agency		City Council, Kidder County Public Health, Planning & Zoning					
Partners		Emergency Management, Emergency Services, NDAC, NDDES, NDLC, Public Works, RD					
Completion Timeframe		Ongoing		Cost	\$0 to \$10,000 / Staff-time		
Funding Source		Local budgets. Local, state and federal grants. Private sector.					
Values: 1 is low (negative impact and/or too costly) – Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	4	3	4	4	5	30
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element		Process for Integration		
All			Capability Assessment, Hazard History, Risk Assessment		Development and approval by city council.		

City of Steele 7: Relocate and upgrade outdoor emergency siren.

Description/Benefit	The city’s outdoor emergency siren is in a location that causes it to become inoperable due to the surrounding environment. Birds make their nests in the cones. Twigs and branches fall through the screens and bind up the siren when it engages. The city public works department must rent a lift to clean it out periodically. The siren needs to be relocated to mitigate the impact from birds and vegetation and upgraded to a model that does not allow for nesting by birds.						
Hazards Addressed	All						
Affected Jurisdiction(s)	City of Steele						
Project Status	New						
Priority	High						
Responsible Agency	City Council/Planning and Zoning, Emergency Services						
Partners	County Commission, NDAC, NDLC, Regional Council						
Completion Timeframe	1 to 2 years			Cost	Staff time and equipment costs		
Funding Source	Local budgets. N.D. League of Cities. State Homeland Security Grants.						
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element		Process for Integration		
Kidder County LEOP Kidder County Hazard Mitigation Plan Kidder County THIRA			Capability Assessment, Hazard History, Risk Assessment		Include in city and/or fire department’s capital improvement plan. Apply for grant funding or purchase directly using existing sales tax revenue or budgets. Approval city council or board.		

8.4.4 Mitigation Capability Assessment

Capability for mitigation is divided into four categories: administrative and technical, education and outreach, financial, and planning and regulatory. Each identified resource in the four categories can be used to implement mitigation strategies and access funding for projects. **Tables comparing the mitigation capabilities of the city of Steele with all other jurisdictions in Kidder County can be found below and in Chapter 7, County Mitigation Capability Assessment.**

- Administrative and Technical: Identification of administrative and technical capabilities, which include staff, their skills and tools for mitigation planning to implement specific mitigation actions.
- Education and Outreach: Identification of education and outreach programs, and methods already in place to implement mitigation activities and communicate hazard-related information.
- Financial: Identification of access to or eligibility to use funding resources for hazard mitigation for jurisdictions.
- Planning and Regulatory: Jurisdictional plans, policies, codes, and ordinances adopted and in place that prevent and reduce the impacts of hazards.

City of Steele Mitigation Capabilities Summary

The following mitigation capabilities were identified as commonplace among all hazard and threats upon completion of the risk assessment for the city of Steele. More detailed information about the mitigation capabilities of the city of Steele in relation to Kidder County and all other incorporated jurisdictions can be found in Chapter 7, Mitigation Capability Assessment.

2018 N.D. Enhanced Mitigation MAOP	Kidder Co. Sheriff's Office
Advanced communications: Internet & TV	MOUs
Farm Services Agency	NDDDES Fire Index Monitoring
Kidder County Ambulance	NDDOT Statewide Highway/Transportation Plan
Kidder Co. LEOP	NDSU/Kidder Co. Extension
Kidder Co. Emergency Mgmt.	Steele Fire Department
Kidder County District Health Unit	

8.4.5 Integration of Mitigation Plan into Planning Mechanisms

Integration of the plan into current planning mechanisms is critical in mitigation to communicate the needs of each jurisdiction to achieve an all-inclusive mitigation strategy. The process for integration of the mitigation plan is included after each mitigation project, which shows the planning mechanism utilized, the plan element used for integration and the process for integration.

8.4.6 Plan Maintenance

An important aspect of any useable plan is the maintenance and upkeep of the document. At any given time, planning, risk analysis, updating the situation assessment, research, coordinating, disaster response

or other activity is occurring. Plan maintenance ensures the plan will remain useful in the county for many years. A mitigation action progress report form to conduct plan maintenance is in Chapter 10 of this plan.

DRAFT

8.5 City of Tappen, North Dakota

The following profile includes information specific to the city of Tappen for mitigation planning purposes. The information included is as follows:

- Profile and Inventory;
- Risk Assessment;
- Hazard Scoring Notes;
- Mitigation Projects, and
- Capabilities for Mitigation.

Integration into Planning Mechanisms

The process for integration of the mitigation plan into existing planning mechanisms is discussed at the bottom of each mitigation project in section 8.5.3, in section 8.5.4, and in Chapter 6, Mitigation Strategy.

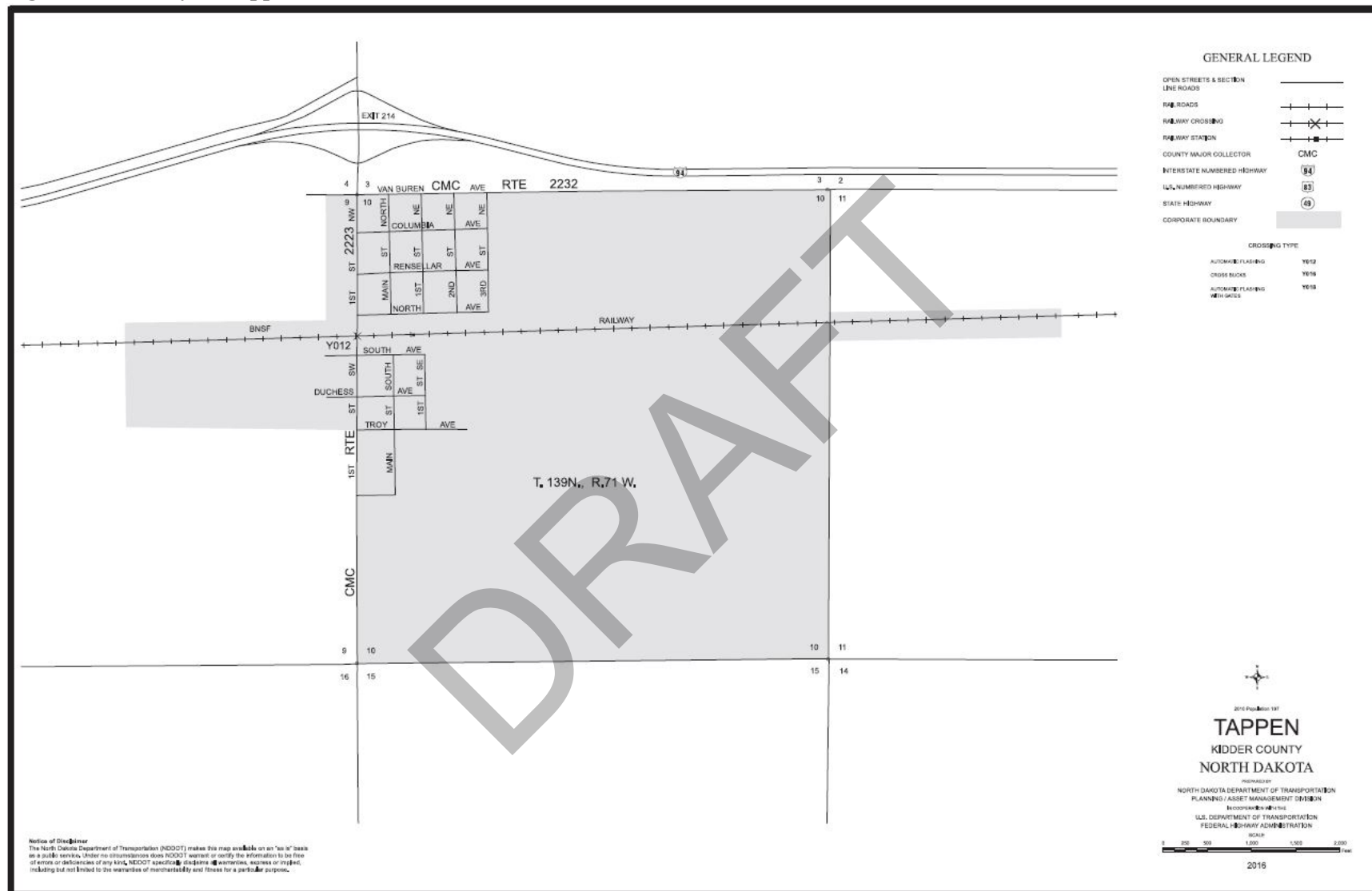
Plan Maintenance

Plan maintenance is shown in section 8.5.6.

Critical Facilities and Infrastructure

Figure 8.5.1 is a map of the city of Tappen provided by the N.D. Dept. of Transportation.

Figure 8.5.1 – City of Tappen, North Dakota



Source(s): N.D. Dept. of Transportation

8.5.1 Profile and Inventory

The location, total population, vulnerable populations, housing units and household size, businesses, buildings, critical facilities and infrastructure, services provided, and new and future development are shown for the city of Tappen. Detailed narratives follow each section heading to profile the city.

Detailed information on public buildings, services provided, emergency response services and utilities can be found in Chapter 3, Profile and Inventory.

Location

The city of Tappen is in central North Dakota located on Interstate 94 in east-central Kidder County approximately 55 miles east of the city of Bismarck, the state capitol.

Population

Table 8.5.1 shows population trends for the city of Tappen from 1920 to 2010, with an estimate for 2019.

Per the 2010 U.S. Decennial Census, the city of Tappen has a population of 197 people, which is a decrease of 13 people (6.2 percent) from 210 people in 2000.

Table 8.5.1 – 1920 to 2010 City of Tappen, North Dakota Population Statistics

1920	1930	1940	1950	1960	1970	1980	1990	2000	2010	2019 (est.)
182	208	323	379	326	294	271	239	210	197	202

Source(s): U.S. Decennial Census; American Community Survey, 5-Year Estimates

Vulnerable Populations

Age. Per the 2014 to 2018 American Community Survey 5-Year Estimate, the population of the city of Tappen consists of 91 individuals under the age of 20 and 36 individuals age 65 and older, comprising 32.4 percent and 12.8 percent of the population, respectively. **Meeting participants indicated that the overall population of the city is older and the figures reported by the American Community Survey seem to be “switched” around.**

Daycares. There are no daycares in the city of Tappen.

Poverty. Per the 2014 to 2018 American Community Survey 5-Year Estimate, there are 12 households in city of Tappen that live below the poverty line.

Public Schools. There are no public schools in the city of Tappen. The public school, which was K-6 at the time, closed in 2019.

Senior Housing Developments/Care Centers. There are no age-restricted, senior housing developments or care centers in the city of Tappen.

Housing Units and Household Size

The 2014 to 2018 American Community Survey 5-Year Estimate shows there is a total of 124 housing units in the city consisting of 98 single-family homes, 26 mobile/RV homes, and no multifamily homes.

The 2014 to 2018 American Community Survey 5-Year Estimate shows there are 110 households in the city of Tappen resulting in an average household size of 2.55 people. **The Tappen City Auditor indicated the city sends approximately 110 utility to households in the city.**

Businesses

I-94 Milling, RM Construction, Tappen Oil Company, Tappen Roadhouse Bar, and U.S.A. Organics are the only employers in the city of Tappen.

New and Future Development

The following development has occurred since the 2014 mitigation plan.

New

- Construction of a building for U.S.A. Organics in 2017, with an expansion in 2020.
- I-94 Milling constructed a building in 2018.
- A new Kidder County Shop was constructed in 2018.
- The Tappen Elementary School closed in 2019.
- The city began receiving its drinking/potable water from South Central Rural Water District in 2018.

Future

- No future development was identified at this time.

Buildings, Critical Facilities and Infrastructure, and Services Provided

The following section profiles the housing units, services, emergency response services, jurisdictional buildings, and utilities of the city of Tappen. Tables 3.10 to 3.13 in Chapter 3, Profile and Inventory show a complete inventory of this information for Kidder County and incorporated jurisdictions. An “X” indicates if the jurisdiction offers the utility or service (either through contract or employees) or possesses the building or resource. Narratives detailing information for the county and incorporated jurisdictions accompany each table.

Structures. Housing units show where populations are located. Table 3.9 in Chapter 3, Profile and Inventory shows the number of single-family, mobile home structures, and multifamily and in Kidder County and incorporated jurisdictions. The following are key points for the city of Tappen:

- There are 98 single-family housing units comprising 79.0 percent of all housing units in the city of Tappen.
- There are 26 Mobile/Boat/RV/Van homes comprising 21.0 percent of all housing units in the city of Tappen.
- There are no Multifamily housing units in the city of Tappen.

Services. The following services are provided in the city of Tappen.

- Waste Management provides garbage collection services to the city of Tappen.
- The city of Tappen does not have an inert landfill.
- The city of Tappen has a sanitary sewer system with two lagoon cells.
- The Steele Ozone and Kidder County Press is the official newspaper of the city of Tappen.
- South Central Regional Water District provides drinking/potable water to the city of Tappen.

Emergency Response Services. The following emergency response services were identified in the city of Tappen.

- Kidder County Ambulance provides ambulance services to the city of Tappen. The city also has five first responders.
- Tappen Fire Protection District provides fire protection services to the city of Tappen.
- The Kidder County Sheriff's Office provides law enforcement services to the city of Tappen through mutual aid.
- The nearest hospital to the city of Tappen would be in the city of Jamestown.
- There is no medical clinic in the city of Tappen.
- Kidder County District Health Unit is in the city of Steele and provides public health services to the city of Tappen.

Critical Facilities. The following facilities were identified as critical in the city of Tappen.

- Kidder County Shop
- Tappen City Hall/City Shop/Community Center/Shelter
- Tappen Fire Protection District Fire Hall
- U.S. Post Office

Infrastructure. The following infrastructure was identified as critical in the city of Tappen.

- The city of Tappen has a sanitary sewer system with two lagoon cells and one lift station.
- The city of Tappen receives its drinking/potable water from South Central Regional Water District. The water district delivers the water directly to households in the city. There are approximately 15 households that utilize individual wells for drinking/potable water.
- The city of Tappen is located on Interstate 94.
- BNSF Railroad traverses the city.

8.5.2 Risk Assessment and Hazard Scoring Notes

Table 8.5.2 summarizes the risk assessment scoring of the city of Tappen. The risk assessment and hazard scoring notes for each hazard specific to the city are shown in Table 8.5.3. Risk assessment notes for impact, frequency, likelihood and vulnerability ubiquitous for jurisdictions in Kidder County are found in Chapter 4, Threat and Hazard Identification Assessment in each respective hazard profile.

Table 8.5.2 – City of Tappen Jurisdiction Risk Assessment Scoring Summary

Risk Assessment Jurisdiction: City of Tappen						
<u>Natural Hazard</u>	<u>Impact</u>	<u>Frequency</u>	<u>Likelihood</u>	<u>Vulnerability</u>	<u>Capabilities</u>	<u>Total</u>
Drought	4	3	4	4	1	14
Fire – Urban/Structure Collapse	4	2	2	3	2	9
Fire – Wildland (Rural)	4	2	4	2	2	10
Flood	4	4	4	4	1	15
Geologic Hazard	1	1	1	1	1	3
Infectious Disease	3	2	2	3	1	9
Severe Summer Weather	4	4	4	3	2	13
Severe Winter Weather	4	4	4	3	2	13
Space Weather	4	1	2	3	1	9
<u>Adversarial Threats</u>						
Civil Disturbance	1	1	2	2	1	5
Criminal, Terrorist or Nation-State Attack	3	1	2	4	1	9
Cyberattack	3	1	2	4	1	9
<u>Technological Threats</u>						
Dam Failure	NA	NA	NA	NA	NA	NA
Hazardous Material Release	4	2	2	4	1	11
Transportation Incident	4	4	4	3	2	13

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 8.5.3 – City of Tappen Jurisdiction Risk Assessment

	Civil Disturbance	
Impact	<ul style="list-style-type: none"> Blocked Roads Business Interruptions Delayed Emergency Response Financial Hardship/Strain (public) 	<ul style="list-style-type: none"> HAZMAT Release Human Injury/Death Property Damage (Structure) Property Damage (Vehicle)
Frequency	<ul style="list-style-type: none"> Never an occurrence of a major incident 	<ul style="list-style-type: none"> DAPL protesters were not active in the city
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Lack of local active/continuous law enforcement coverage Interstate 94 Railroad infrastructure Presence of pipelines 	<u>Less Likely</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions Sparse population
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Lack of local active/continuous law enforcement coverage Interstate 94 Railroad infrastructure Presence of pipelines 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions Sparse population

Table 8.5.3 – City of Tappen Jurisdiction Risk Assessment – Continued

Criminal, Terrorist, Nation-State Attack	
Impact	<ul style="list-style-type: none"> Blocked Roads Business Interruptions Delayed Emergency Response Disease Outbreak/Mass Infections Financial Hardship/Strain (public) HAZMAT Release Human Injury/Death Loss of Communication Systems Mass Casualties/Fatalities Property Damage (Structure) Property Damage (Vehicle) City's drinking/potable water system could be contaminated
Frequency	<ul style="list-style-type: none"> No occurrences Miscellaneous property damage/break-ins to abandoned property occurring in the city on an occasional basis
Likelihood	<div> <div> <u>More Likely</u> <ul style="list-style-type: none"> Lack of local active/continuous law enforcement coverage Interstate 94 Railroad infrastructure Presence of pipelines </div> <div> <u>Less Likely</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions </div> </div>
Vulnerability	<div> <div> <u>More Vulnerable</u> <ul style="list-style-type: none"> Lack of local active/continuous law enforcement coverage Interstate 94 Railroad infrastructure Presence of pipelines City's drinking/potable water system Underground aquifer </div> <div> <u>Less Vulnerable</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions </div> </div>

Table 8.5.3 – City of Tappen Jurisdiction Risk Assessment – Continued

	Cyberattack	
Impact	<ul style="list-style-type: none"> • Business Interruptions • Delayed Emergency Response • Financial Hardship/Strain (public) • Government Interruptions • HAZMAT Release 	<ul style="list-style-type: none"> • Human Injury/Death • Identity Theft – loss of wages and/or assets • Loss of Communication Systems • School Closure
Frequency	<ul style="list-style-type: none"> • Never an occurrence of a major attack 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Small town with lack of technological infrastructure to defend against cyber attacks 	<u>Less Likely</u> <ul style="list-style-type: none"> • Lack of major financial institutions or communication infrastructure • Lack of a public school
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Small town with lack of technological infrastructure to defend against cyber attacks • Elderly population relying largely on landlines for communication purposes, remote medical care, and equipment monitoring • Radio tower located at city hall/community center/fire hall that provides communication to fire department 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Lack of major financial institutions or communication infrastructure • Lack of a public school

Table 8.5.3 – City of Tappen Jurisdiction Risk Assessment - Continued

	Drought	
Impact	<ul style="list-style-type: none"> • Crop Loss • Loss of Economy • Loss of Livestock • Loss of Wildlife Habitat (decreased wildlife populations) • Increase in Wildland Fire Potential • Water quality compromised from stock dams 	<ul style="list-style-type: none"> • Diminished soil quality – salinity will increase • Negative impact on mental health of producers and fire responders – “community impact” • Local producers forced to sell off herds which can last for several years • Population loss as people moved away due to loss of economy
Frequency	<ul style="list-style-type: none"> • Severe Drought of 1961/1962, 1988/1989 to 1991/1992 • Summer of 2017, local producers forced to sell off portions of their herds 	<ul style="list-style-type: none"> • End of July through winter of 2016 – county reached severe drought status • Severe drought in summer/fall of 2020
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Dry/wet cycle every 10 years • Climatic patterns will result in an eventual drought of significance • Lack of precipitation 	<u>Less Likely</u> <ul style="list-style-type: none"> • Heavy precipitation
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Loss of economy from decreased wildlife & hunting • Agriculture economy • Elderly population • Flat terrain/open topography contributes to conditions • Pastureland adjacent to structures and city limits 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Financial assistance programs made available by the state and federal government • Burn Ban by county emergency management • Fire Index monitoring and mapping from NDDes • Advanced communications such as internet and TV

Table 8.5.3 – City of Tappen Jurisdiction Risk Assessment - Continued

Fire – Urban Fire/Structure Collapse	
Impact	<ul style="list-style-type: none"> • Building Collapse • Delayed Emergency Response • Evacuation (Localized) • Explosion • Human Injury/Death • Increase Fire Potential • Property damage on a significant scale if impacting downtown structures and other structures in the city
Frequency	<ul style="list-style-type: none"> • Occurrences of structures/vehicles being impacted every 15 to 20 years • Annual occurrences of fires involving farm equipment
Likelihood	<div> <div> <u>More Likely</u> <ul style="list-style-type: none"> • Age of structures • Increased use of electric heaters • Outdated electric wiring in older homes and structures • Outdated heating systems • Presence of natural gas service to city residents • Railroad infrastructure traversing city limits </div> <div> <u>Less Likely</u> <ul style="list-style-type: none"> • Building codes • Better building standards and maintenance of structures • Smoke detectors in public buildings and private homes/businesses • Well-equipped fire department with trained volunteers </div> </div>
Vulnerability	<div> <div> <u>More Vulnerable</u> <ul style="list-style-type: none"> • Age of structures • Increased use of electric heaters • Outdated electric wiring in older homes and structures • Outdated heating systems • Presence of natural gas service to city residents • Railroad infrastructure traversing city limits • City hall/city shop/community center and fire hall do not have permanent generators • Prolonged response times due to limited fire staff during the daytime </div> <div> <u>Less Vulnerable</u> <ul style="list-style-type: none"> • Building codes • Better building standards and maintenance of structures • Smoke detectors in public buildings and private homes/businesses • Well-equipped fire department with trained volunteers • The city of Tappen has a portable generator </div> </div>

Table 8.5.3 – City of Tappen Jurisdiction Risk Assessment – Continued

	Fire – Rural & Wildland	
Impact	<ul style="list-style-type: none"> • Building Collapse • Crop Loss • Delayed Emergency Response • Evacuation (Localized) • Explosion • Increase Fire Potential • Loss of Power/Downed Power Lines • Loss of Livestock • Loss of Wildlife Habitat • Mass Casualties • Property Damage (Structure & Vehicle) • Losses could be on a significant scale if impacting a major producer or farmstead • Loss of farm equipment and assets 	
Frequency	<ul style="list-style-type: none"> • Approximately three significant fire occurring annually • Controlled burns can become out of control annually • During the drought of 1988/1989, a large wildland fire was ignited by a train on the railroad track. The train produce sparks which ignited small fires on nearby CRP between the cities of Tappen and Dawson. 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Agricultural burn-off • High winds annually and dry conditions – when present • Pastureland adjacent to structures and city limits • Severe summer weather with significant lightning • Railroad infrastructure traversing city limits 	<u>Less Likely</u> <ul style="list-style-type: none"> • Removal of CRP near city limits • Summer and winter weather with heavy precipitation
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Agricultural burn-off • High winds annually and dry conditions – when present • Pastureland adjacent to structures and city limits • Severe summer weather with significant lightning • Large fire district – strained coverage/resources • Lack of fire breaks around city limits • Railroad infrastructure traversing city limits • City Hall and Fire Hall does not have a permanent generator 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Removal of CRP near city limits • Summer and winter weather with heavy precipitation • MOUs with neighboring fire departments • Burn bans by county emergency management for areas outside city limits • Radio-activated emergency siren • City of Tappen has a portable generator

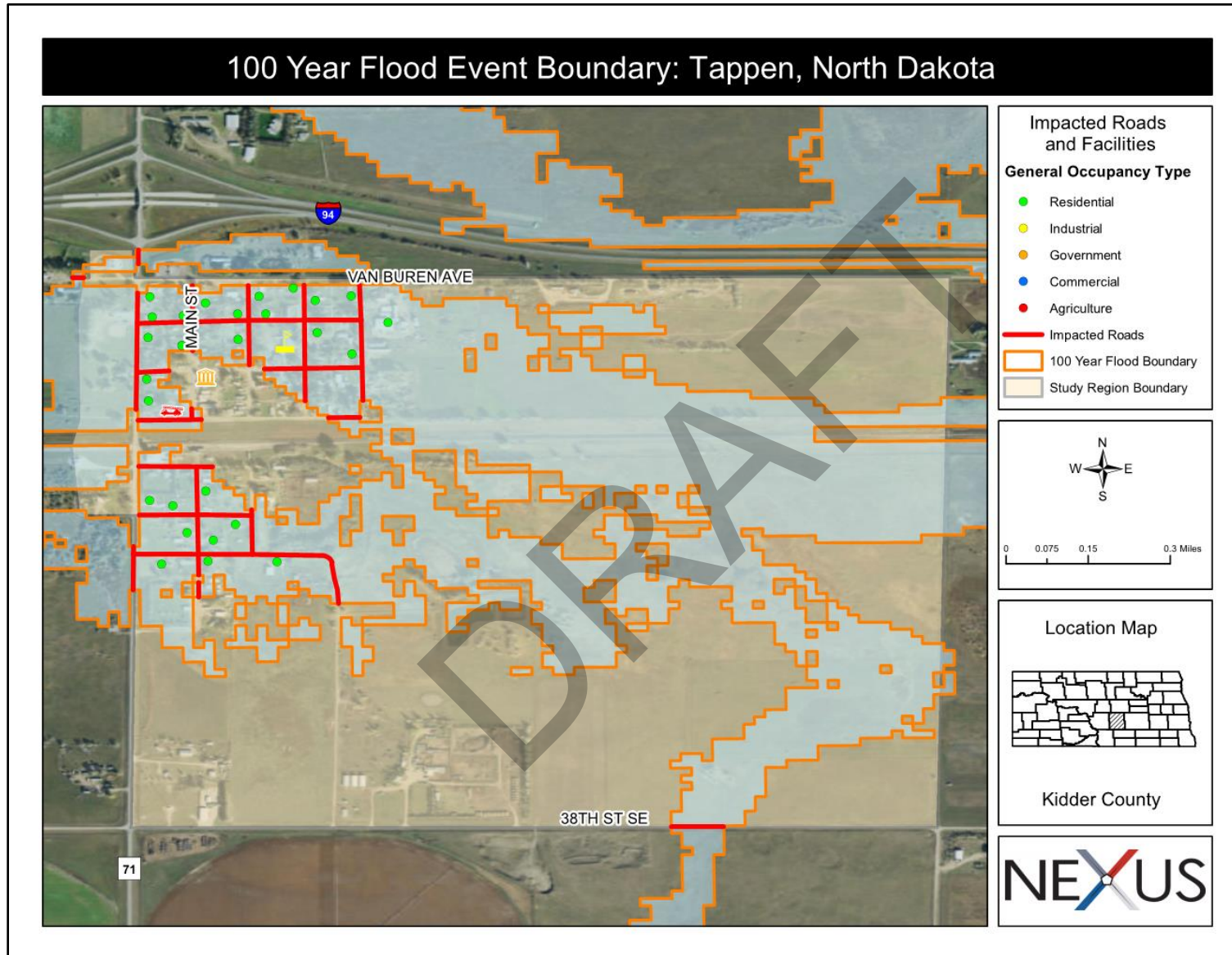
Table 8.5.3 – City of Tappen Jurisdiction Risk Assessment – Continued

	Flood	
Impact	<ul style="list-style-type: none"> • <u>Blocked Roads:</u> Surrounding rural and township roads, area of the city south of the railroad, 3rd St. and Columbia Avenue • Delayed Emergency Response • Flooding (Highway & Structure) • Human Injury/Death • Property Damage to basements from ground seepage • Flood waters inundate the city's sanitary sewer system from ground seepage draining into floor drains in people's basements 	<u>2020 100-Year Flood Event HAZUS Analysis</u> <ul style="list-style-type: none"> • 134 displaced people, none needing short term sheltering • 27 residential structures impacted by damage • \$185,000 in building losses • \$107,000 in contents losses • No inventory losses • \$971,000 in relocation losses • \$430,000 in capital related losses • \$1,022,000 in wage losses • \$217,000 in rental income losses
Frequency	<ul style="list-style-type: none"> • Annual occurrences of localized flooding of nearby township roads and highways • Major flooding in 2009/2010 that required sandbagging in areas south of the railroad 	<ul style="list-style-type: none"> • Overland flooding from high water tables impacting city streets every five years
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Rapid change of seasons resulting in excessive snow melt 	<u>Less Likely</u> <ul style="list-style-type: none"> • Dry seasons and low precipitation • General topography of the city does not contribute to overland flooding as there is adequate drainage

Table 8.5.3 – City of Tappen Jurisdiction Risk Assessment – Continued

	Flood	
Vulnerability	<u>More Vulnerable</u>	<u>Less Vulnerable</u>
	<ul style="list-style-type: none"> • Rapid change of seasons resulting in excessive snow melt • Closed basin topography in areas of the county and adjacent to the city of Tappen • City is not enrolled in the NFIP • City does not have flood ordinances • City Hall and Fire Hall does not have a permanent generator • An open ditch is also located along Dutchess Avenue and North Avenue and needs to be upgraded with new culverts and grading 	<ul style="list-style-type: none"> • Alternate routes were identified for townships roads • General topography of the city does not contribute to overland flooding as there is adequate drainage • City of Tappen has a portable generator • The city completed an underground drainage control project to lower the water table. The project consists of an 8-inch drainage perforated pipe along North Avenue, and open drainage ditches south of the railroad on Troy Avenue and Columbia Avenue. • The city has a 4-inch diesel motor pump that can move excessive water. It was purchased in 2019. • After the 2009 flood, FEMA worked to fill basements of local housing units • New lift station installed in 2008

Figure 8.5.2 – City of Tappen 100-Year Flood Event Boundary



Source(s): Kidder County HAZUS Analysis, 100-Year Flood Event Boundary, Mountain Plains, LLC and Nexus Planning & Consulting, LLC

Table 8.5.3 – City of Tappen Jurisdiction Risk Assessment – Continued

	Geologic Hazard	
Impact	<ul style="list-style-type: none"> Blocked Roads Delayed Emergency Response Human Injury/Death 	<ul style="list-style-type: none"> Loss of Economy Loss of Power Property Damage
Frequency	<ul style="list-style-type: none"> No incidents involving geologic hazards in or near city limits 	
Likelihood	<u>More Likely</u>	<u>Less Likely</u> <ul style="list-style-type: none"> No Abandoned Mine Lands located near city limits PSC has an AML reclamation project aimed at recovering AMLs – work has been done in other parts of the state
Vulnerability	<u>More Vulnerable</u>	<u>Less Vulnerable</u> <ul style="list-style-type: none"> No Abandoned Mine Lands located near city limits PSC has an AML reclamation project aimed at recovering AMLs – work has been done in other parts of the state

Table 8.5.3 – City of Tappen Jurisdiction Risk Assessment – Continued

	Hazardous Material Release	
Impact	<ul style="list-style-type: none"> Blocked Roads Delayed Emergency Response Environmental Degradation Evacuation (localized) Explosion 	<ul style="list-style-type: none"> Human Injury/Death Increased Fire Potential Loss of Economy Loss of Power and/or Potable Water Property Damage
Frequency	<ul style="list-style-type: none"> Small incident of leaking anhydrous reported at the anhydrous tank north of the city of Tappen Never any major spills reported 	<ul style="list-style-type: none"> The natural gas pipeline that traverses city limits has a relief valve just north of city limits. The valve failed in 2002 and 2006.
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Transportation of chemicals by truck through city limits Storage of chemicals/fertilizers in city limits and on farmsteads in large tanks near city limits Railroad infrastructure traversing city limits City located on Interstate 94 Presence of pipelines Natural gas relief vale north of the city Anhydrous plant north of city limits 	<u>Less Likely</u> <ul style="list-style-type: none"> Private companies have HAZMAT certifications No public school

Vulnerability	<p><u>More Vulnerable</u></p> <ul style="list-style-type: none"> • Transportation of chemicals by truck through city limits • Storage of chemicals/fertilizers in city limits and on farmsteads in large tanks near city limits • Railroad infrastructure traversing city limits • City located on Interstate 94 • Presence of pipelines • Natural gas relief vale north of the city • Anhydrous plant north of city limits • Local oil company stores approximately 50,000 gallons of diesel and gas in city limits • No hospital or medical clinic in city limits • City Hall and Fire Hall lack permanent generators 	<p><u>Less Vulnerable</u></p> <ul style="list-style-type: none"> • Fire departments have frequent HAZMAT training • Radio-activated emergency siren • Kidder County Ambulance and Tappen Fire Dept. • No public school • City of Tappen has a portable generator
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Table 8.5.3 – City of Tappen Jurisdiction Risk Assessment – Continued

	Infectious Disease	
Impact	<ul style="list-style-type: none"> • Crop Loss • Human Injury/Death • Livestock Injury/Death • Loss of Economy • Mass Casualties 	<ul style="list-style-type: none"> • Strain on local medical resources (ambulance) • Loss of Potable Water • Financial cost to public health resources • Loss of medical staff due to sickness
Frequency	<ul style="list-style-type: none"> • Annual occurrences of death, primarily among the elderly • Occurrence of disease - 1 in 3 for people annually • Annual occurrences of influenza cases in the local population 	<ul style="list-style-type: none"> • The COVID-19 pandemic of 2020 resulted in mass quarantine and sheltering of the local population and temporary closure of businesses. Two city residents died from the disease.
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Growing elderly population • Small population of children without immunization • Agriculture economy • Dependent on weather for animals and crops • Transporting of animals across state lines 	<u>Less Likely</u> <ul style="list-style-type: none"> • Advanced communications such as internet and tv • Public health and employment regulations for public facilities
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Growing elderly population • Small population of children without immunization • Agriculture economy • Transporting of animals across state lines • City located on Interstate 94 • No hospital or medical clinic in city limits • City has a sanitary sewer system • People pumping water from basements into city streets from ground seepage 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Advanced communications such as internet and tv • Public health and employment regulations for public facilities • Immunizations & medications of local population • No public school • The city completed an underground drainage control project to lower the water table. The project consists of an 8-inch drainage perforated pipe along North Avenue, and open drainage ditches south of the railroad on Troy Avenue and Columbia Avenue. • New lift station installed in 2008

Table 8.5.3 – City of Tappen Jurisdiction Risk Assessment – Continued

	Severe Summer Weather	
Impact	<ul style="list-style-type: none"> • <u>Blocked Roads:</u> Surrounding rural and township roads, area of the city south of the railroad, 3rd St. Columbia Avenue • A majority of city streets would be blocked if a 100-year flood event occurred. • Downed Trees • Evacuation (Localized) • Human Injury/Death – heat exhaustion • Livestock Injury/Death • Loss of Crops • Loss of Power/Downed Power Lines • Property Damage – repair of roofing, siding and drainage systems for homes • Damage to electrical equipment from lightning • Shelter-in-place • Vehicle Damage 	
Frequency	<ul style="list-style-type: none"> • Windstorm events occurring annually • Annual occurrences of hailstorms • Two or three significant storms producing damage to trees and property annually • Property damage from tornados/straight-line winds in summer 2017 and 2019 • Flood waters from high water tables inundates the sanitary sewer system bi-annually and impacts the basements of people's homes annually 	
Likelihood	<ul style="list-style-type: none"> • Climatic patterns will result in numerous annual occurrences of the hazard 	
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • High elderly population • Presence of mobile homes • Aging infrastructure (roads and electrical systems) • Lack of municipal building code enforcement • Railroad infrastructure traversing city limits • City located on Interstate 94 • Presence of pipelines • No hospital or medical clinic in city limits • Lack of permanent generator at city hall and fire hall • City has a sanitary sewer system that is inundated by flood waters resulting from heavy precipitation • High water table 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Advanced warning and notification such as internet and TV • Adopted building codes but lack enforcement • Radio-activated emergency siren • City of Tappen has a portable generator • City has own skidsteer and blader for removal of debris • New lift station installed in 2008

Table 8.5.3 – City of Tappen Jurisdiction Risk Assessment – Continued

	Severe Winter Weather	
Impact	<ul style="list-style-type: none"> <u>Blocked Roads:</u> Surrounding rural and township roads, area of the city south of the railroad, 3rd St. Columbia Avenue. A majority of city streets would be blocked by snow drifts when a major blizzard occurs. Evacuation (Localized) Human Injury/Death – wind chill Loss of Crops Loss of Livestock Loss of Power/Downed Power Lines Property Damage – repair of roofing, siding and drainage systems for homes Shelter-in-place Vehicle Damage 	
Frequency	<ul style="list-style-type: none"> Annual occurrences of power loss from storms Annual occurrences of blocked roads Annual occurrences of wind events Two or three significant blizzards producing damage to trees and property annually Major blizzard in fall of 2015 March 2017 snowstorm resulted in blocked roads throughout the city and county Major blizzard in fall of 2018 Spring and fall snowstorms of 2019 	
Likelihood	<ul style="list-style-type: none"> Climatic patterns will result in numerous annual occurrences of the hazard Impacts can be expected county-wide 	
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> High elderly population Presence of mobile homes Lack of municipal building code enforcement Railroad infrastructure traversing city limits City located on Interstate 94 Presence of pipelines No hospital or medical clinic in city limits Lack of permanent generator at city hall and fire hall City has a sanitary sewer system that is inundated by flood waters resulting from rapid snow melt High water table 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Advanced warning and notification such as internet and TV Adopted building codes Radio-activated emergency siren City of Tappen has a portable generator City has own skidsteer and blader for removal of debris New lift station installed in 2008

Table 8.5.3 – City of Tappen Jurisdiction Risk Assessment – Continued

	Space Weather
Impact	<ul style="list-style-type: none"> • Loss of operation of the city hall and fire hall, etc. • Loss/outage of medical devices at private residences
Frequency	<ul style="list-style-type: none"> • Never a recorded occurrence in Kidder County or North Dakota
Likelihood	<ul style="list-style-type: none"> • Dependent on solar activity and the 11-year solar cycle • Likely to occur once every 500 years per the 2018 N.D. Enhanced Mitigation MAOP
Vulnerability	<div> <div> <u>More Vulnerable</u> <ul style="list-style-type: none"> • Agriculture economy • All critical facilities and infrastructure that require electricity for operation • Advanced communication systems (internet, TV, etc.) • Lack of permanent generator at city hall and fire hall </div> <div> <u>Less Vulnerable</u> <ul style="list-style-type: none"> • Local food production/households with gardens • No public school • City of Tappen has a portable generator </div> </div>

Table 8.5.3 – City of Tappen Jurisdiction Risk Assessment – Continued

	Transportation Incident	
Impact	<ul style="list-style-type: none"> Blocked roads from inadequate road clearing or incidents Human Injury/Death Increased Fire Potential Loss of Transportation/Accessibility Mass Casualties/Fatalities 	
Frequency	<ul style="list-style-type: none"> Annual occurrences of multiple accidents involving cars and/or farm equipment A major incident occurs annually on Interstate 94 resulting in one or more fatalities 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Intoxicated drivers High truck traffic from agriculture-related traffic Railroad infrastructure traversing city limits City located on Interstate 94 Presence of pipelines 	<u>Less Likely</u> <ul style="list-style-type: none"> No commercial passenger airport
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Intoxicated drivers High truck traffic from agriculture-related traffic No hospital or medical clinic in city limits Railroad infrastructure traversing city limits City located on Interstate 94 Presence of pipelines 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> No commercial passenger airport

8.5.3 Mitigation Strategy

The Kidder County Multi-Jurisdictional Multi-Hazard Plan Update includes a mitigation strategy consisting of seven goals in Chapter 6. The following problem statement and mitigation projects address the mitigation needs of the city of Tappen. It should be noted that some mitigation projects that pertain to all jurisdictions are included to encourage county-wide collaboration.

Problem Statement

The city of Tappen can be impacted by civil disturbance; criminal, terrorist or nation-state attack; cyberattack; drought; fire (urban and wildland); flood (overland and riverine); geologic hazard; hazardous material release, infectious disease, severe summer weather, severe winter weather, space weather and transportation incidents. Economic loss to the agriculture and livestock industry, and hunting/recreational industry from natural hazards in the county impacts the city's economy. Blocked roads occur annually from overland flooding, severe summer weather, and severe winter weather; the city's sanitary sewer system is also impacted by these hazards. The risk to hazardous material release and transportation incidents is high due to the city located on Interstate 94. The city hall/city shop/community center/shelter, fire hall, and sanitary sewer system lack generators for backup power. With little to no capabilities to accomplish major projects independently, the city is dependent on outside sources for mitigation.

Installation of permanent backup power sources; engineering studies to improve stormwater drainage and to identify options to retrofit/upgrade the city's drinking/potable water system; and expansion of education and outreach, financial, and planning and regulatory capabilities are a priority for the city of Tappen.

City of Tappen Project 1: Install permanent generators at critical facilities and infrastructure.

Description/Benefit		Test existing generators and create regularly scheduled maintenance system. Install new generators to establish permanent source of backup power to maintain continued operation of the following critical facilities and infrastructure, with facilities having the option to serve as a shelter. The Tappen City Hall/City Shop/Community Center/Shelter has been pre-wired for a portable generator through homeland security grant funding. The city’s lift station needs to be pre-wired for portable generator capabilities.					
		<u>Install New</u> <ul style="list-style-type: none">• Tappen City Hall/City Shop/Community Center/Shelter• Tappen Fire Protection District Fire Hall• Tappen sanitary sewer lift station (includes hook up)					
Hazards Addressed		All hazards					
Affected Jurisdiction(s)		City of Tappen					
Project Status		Ongoing and Continue/New					
Priority		Very High					
Responsible Agency		City Council, Public Works, Emergency Services					
Partners		Emergency Management, Public Utilities					
Completion Timeframe		2 to 3 years			Cost	Project-specific	
Funding Source		Public Utilities, Regional Council, RD. FEMA Building Resilient Infrastructure and Communities (BRIC). State Homeland Security grants.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
<u>Planning Mechanisms Utilized</u>			<u>Plan Element Utilized</u>			<u>Process for Integration</u>	
Kidder County Hazard Mitigation Plan Kidder County Local Emergency Operations Plan			Capability Assessment, Hazard History, Risk Assessment			Include in city’s or fire department’s budget. Apply for grant funding or purchase directly using existing budgets. Approval by city council or board.	

City of Tappen Project 2: Conduct engineering study to develop a scope of work to upgrade/retrofit the city's sanitary sewer system.

Description/Benefit		The city’s sanitary sewer system is constructed with PVC piping, but the manholes are made of cement and need to be sealed as water enters the system at these points. The system’s lift station also needs to be replaced with an upgraded model (within the next 8 years).					
Hazards Addressed		All					
Affected Jurisdiction(s)		City of Tappen					
Project Status		New					
Priority		High					
Responsible Agency		City Council					
Partners		County Commission, NDAC, NDGF, NDLC, Regional Council, private contractors					
Completion Timeframe		2 to 3 years			Cost	Project-specific	
Funding Source		Local budgets. N.D. League of Cities. FEMA’s Building Resilient Infrastructure and Communities (BRIC) Grant Program.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	4	5	3	3	30
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element		Process for Integration		
Kidder County Local Emergency Operations Plan Kidder County Mitigation Plan			Capability Assessment, Hazard History, Risk Assessment		City solicits three engineering proposal from qualified firms. Select appropriate firm based on proposals. Apply for grant funding. Execute project. Submit reimbursements and close-out grant.		

City of Tappen Project 3: Conduct engineering study to develop a scope of work to improve drainage along Dutchess Avenue and North Avenue drainage ditch to mitigate impacts of overland flooding.

Description/Benefit		The city recently completed an underground drainage control project to lower the water table. The project consists of an 8-inch drainage perforated pipe along North Avenue, and open drainage ditches south of the railroad on Troy Avenue and Columbia Avenue. An open ditch is also located along Dutchess Avenue and North Avenue and needs to be upgraded with new culverts and grading to improve drainage and reduce/eliminate overland flooding, blocked roads, etc.					
Hazards Addressed		All					
Affected Jurisdiction(s)		City of Tappen					
Project Status		New					
Priority		High					
Responsible Agency		City Council, Public Works					
Partners		County Commission, NDAC, NDGF, NDLC, Regional Council, private contractors					
Completion Timeframe		2 to 3 years			Cost	Project-specific	
Funding Source		Local budgets. N.D. League of Cities. FEMA’s Building Resilient Infrastructure and Communities (BRIC) Grant Program.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	4	5	3	3	30
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element		Process for Integration		
Kidder County Local Emergency Operations Plan Kidder County Mitigation Plan			Capability Assessment, Hazard History, Risk Assessment		City solicits three engineering proposal from qualified firms. Select appropriate firm based on proposals. Apply for grant funding. Execute project. Submit reimbursements and close-out grant.		

City of Tappen Project 4: Expand existing new planning and regulatory capabilities to address existing and new development to strengthen local planning processes.

Description/Benefit		The city of Tappen is inundated by flooding on an annual basis. The city lacks flood ordinances to regulate development in flood-prone areas. Flood ordinances should be developed and adopted by the city. Additional consideration should be given to prioritize sewer backup valves when upgrading existing or building new development. Redundancies in the power grid systems should be encouraged. Specific attention should be paid to tie-down procedures for temporary buildings. A list of plans, policies, codes and ordinances needing to be updated or created for Kidder County and incorporated jurisdictions are bolded in text narratives and are found in Chapter 7, Capability Assessment.					
Hazards Addressed		All					
Affected Jurisdiction(s)		City of Tappen					
Project Status		New					
Priority		High					
Responsible Agency		City Council(s), County Commission, Planning & Zoning					
Partners		Emergency Management, Emergency Services, NDACo, NDDes, NDLC, Public Works, RD					
Completion Timeframe		Ongoing		Cost	\$0 to \$5,000 / Staff-time		
Funding Source		Local budgets. Local, state and federal grants. Private sector.					
Values: 1 is low (negative impact and/or too costly) – Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	3	3	3	4	28
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element		Process for Integration		
All			Capability Assessment, Hazard History, Risk Assessment		Development of specifications. Review of legal counsel. Approval and adoption by county commission and city councils.		

City of Tappen Project 5: Fill in basements of homes and structures to reduce or eliminate the impacts of flooding.

Description/Benefit		Severe flooding due to high water tables in 1999 and 2000 resulted in mitigation funding to fill basements of structures in the city. Staff at the N.D. Dept. of Emergency Services (NDDDES) recall seeing water hoses leading from a majority of residential homes and structures in the city of Tappen.					
Hazards Addressed		Flood, Infectious Disease, Severe Summer Weather, Severe Winter Weather					
Affected Jurisdiction(s)		City of Tappen					
Project Status		New					
Priority		High					
Responsible Agency		City Council(s), Emergency Management, Emergency Services					
Partners		County Commission, FEMA, NDDDES					
Completion Timeframe		Ongoing			Cost	Project-specific	
Funding Source		Local, state, federal grants. NDDDES. FEMA’s BRIC, FMA or HMGP Programs.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	3	3	5	31
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element			Process for Integration	
Kidder County LEOP Kidder County Mitigation Plan Kidder County THIRA			Capability Assessment, Hazard History, Risk Assessment			Identify remaining structures with basements. Work with property owners and compile grant funding application.	

8.5.4 Mitigation Capability Assessment

Capability for mitigation is divided into four categories: administrative and technical, education and outreach, financial, and planning and regulatory. Each identified resource in the four categories can be used to implement mitigation strategies and access funding for projects. **Tables comparing the mitigation capabilities of the city of Tappen with all other jurisdictions in Kidder County can be found below and in Chapter 7, County Mitigation Capability Assessment.**

- Administrative and Technical: Identification of administrative and technical capabilities, which include staff, their skills and tools for mitigation planning to implement specific mitigation actions.
- Education and Outreach: Identification of education and outreach programs, and methods already in place to implement mitigation activities and communicate hazard-related information.
- Financial: Identification of access to or eligibility to use funding resources for hazard mitigation for jurisdictions.
- Planning and Regulatory: Jurisdictional plans, policies, codes, and ordinances adopted and in place that prevent and reduce the impacts of hazards.

City of Tappen Mitigation Capabilities Summary

The following mitigation capabilities were identified as commonplace among all hazard and threats upon completion of the risk assessment for the city of Tappen. More detailed information about the mitigation capabilities of the city of Tappen in relation to Kidder County and all other incorporated jurisdictions can be found in Chapter 7, Mitigation Capability Assessment.

2018 N.D. Enhanced Mitigation MAOP	Kidder Co. Sheriff's Office
Advanced communications: Internet & TV	MOUs
Farm Services Agency	NDDDES Fire Index Monitoring
Kidder County Ambulance	NDDOT Statewide Highway/Transportation Plan
Kidder Co. LEOP	NDSU/Kidder Co. Extension
Kidder Co. Emergency Mgmt.	Tappen Fire Department
Kidder County District Health Unit	Tappen City Council

8.5.5 Integration of Mitigation Plan into Planning Mechanisms

Integration of the plan into current planning mechanisms is critical in mitigation to communicate the needs of each jurisdiction to achieve an all-inclusive mitigation strategy. The process for integration of the mitigation plan is included after each mitigation project, which shows the planning mechanism utilized, the plan element used for integration and the process for integration.

8.5.6 Plan Maintenance

An important aspect of any useable plan is the maintenance and upkeep of the document. At any given time, planning, risk analysis, updating the situation assessment, research, coordinating, disaster response

or other activity is occurring. Plan maintenance ensures the plan will remain useful in the county for many years. A mitigation action progress report form to conduct plan maintenance is in Chapter 10 of this plan.

DRAFT

8.6 City of Tuttle, North Dakota

The following profile includes information specific to the city of Tuttle for mitigation planning purposes. The information included is as follows:

- Profile and Inventory;
- Risk Assessment;
- Hazard Scoring Notes;
- Mitigation Projects, and
- Capabilities for Mitigation.

Integration into Planning Mechanisms

The process for integration of the mitigation plan into existing planning mechanisms is discussed at the bottom of each mitigation project in section 8.6.3, in section 8.6.4, and in Chapter 6, Mitigation Strategy.

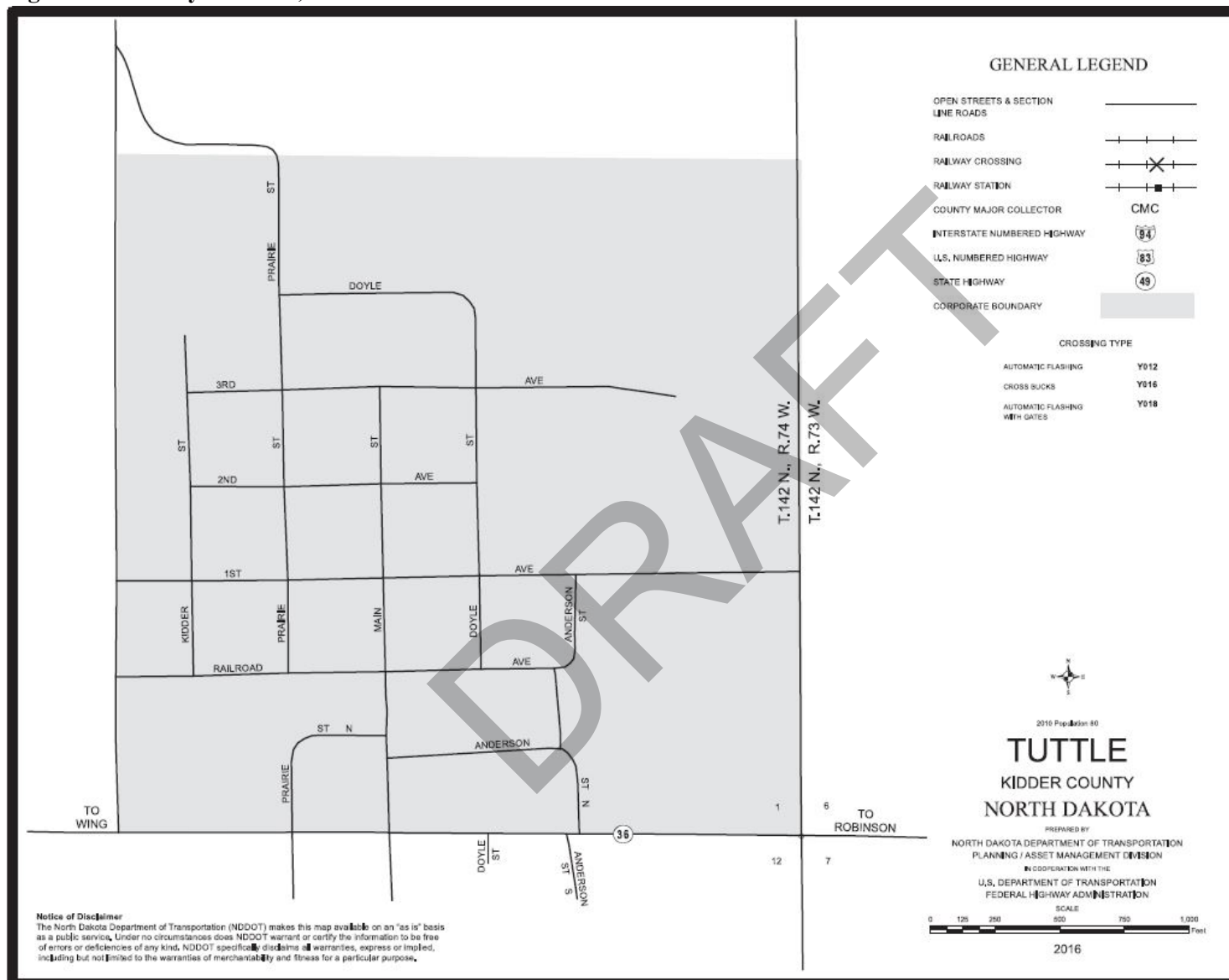
Plan Maintenance

Plan maintenance is shown in section 8.6.6.

Critical Facilities and Infrastructure

Figure 8.6.1 is a map of the city of Tuttle provided by the N.D. Dept. of Transportation.

Figure 8.6.1 – City of Tuttle, North Dakota



Source(s): N.D. Dept. of Transportation

8.6.1 Profile and Inventory

The location, total population, vulnerable populations, housing units and household size, businesses, buildings, critical facilities and infrastructure, services provided, and new and future development are shown for the city of Tuttle. Detailed narratives follow each section heading to profile the city.

Detailed information on public buildings, services provided, emergency response services and utilities can be found in Chapter 3, Profile and Inventory.

Location

The city of Tuttle is in central North Dakota located just west of the intersection of N.D. Highways 3 and 36 in northwest Kidder County approximately 63 miles northeast of the city of Bismarck, the state capitol.

Population

Table 8.6.1 shows population trends for the city of Tuttle from 1920 to 2010, with an estimate for 2019.

Per the 2010 U.S. Decennial Census, the city of Tuttle has a population of 80 people, which is a decrease of 26 people (24.5 percent) from 106 people in 2000.

Table 8.6.1 – 1920 to 2010 City of Tuttle, North Dakota Population Statistics

1920	1930	1940	1950	1960	1970	1980	1990	2000	2010	2019 (est.)
321	383	357	368	255	216	202	160	106	80	81

Source(s): U.S. Decennial Census; American Community Survey, 5-Year Estimates

Vulnerable Populations

Age. Per the 2014 to 2018 American Community Survey 5-Year Estimate, the population of the city of Tuttle consists of nine individuals under the age of 20 and 27 individuals age 65 and older.

Daycares. There are no daycares in the city of Tuttle.

Poverty. Per the 2014 to 2018 American Community Survey 5-Year Estimate, there are four households in city of Tuttle that live below the poverty line. **Meeting participants indicated that the level of poverty is anticipated to be higher than what is reported by the U.S. Census as a lot of residents are living on fixed-incomes.**

Public Schools. There are no public schools in the city of Tuttle. The public school closed in 2007.

Senior Housing Developments/Care Centers. There are no senior housing developments or care centers in the city of Tuttle. The city has six-unit age-restricted low-income housing development.

Housing Units and Household Size

The 2014 to 2018 American Community Survey 5-Year Estimate shows there is a total of 85 housing units in the city consisting of 71 single-family homes, 10 mobile/RV homes, and four multifamily homes. **Meeting participants indicated the only multifamily home in the city is a triplex.**

The 2014 to 2018 American Community Survey 5-Year Estimate shows there are 52 households in the city of Tuttle resulting in an average household size of 1.65 people.

Businesses

The Tuttle Elevator is the only major employer in the city of Tuttle employing approximately six people.

New and Future Development

The following development has occurred since the 2014 mitigation plan.

New

- The 5309 Tavern opened in 2017.
- The former public school was sold and developed into the Tuttle Rural Innovation Corporation in 2018. Farms Foundation for Agriculture and Rural Resource Management and Sustainability opened its headquarters in the building in 2018/2019.

Future

- No future development was identified. The city needs to upgrade sanitary sewer equipment and is planning to make investments in the future. The city's water well also needs inspection and sealing work.

Buildings, Critical Facilities and Infrastructure, and Services Provided

The following section profiles the housing units, services, emergency response services, jurisdictional buildings, and utilities of the city of Tuttle. Tables 3.10 to 3.13 in Chapter 3, Profile and Inventory show a complete inventory of this information for Kidder County and incorporated jurisdictions. An "X" indicates if the jurisdiction offers the utility or service (either through contract or employees) or possesses the building or resource. Narratives detailing information for the county and incorporated jurisdictions accompany each table.

Structures. Housing units show where populations are located. Table 3.9 in Chapter 3, Profile and Inventory shows the number of single-family, mobile home structures, and multifamily and in Kidder County and incorporated jurisdictions. The following are key points for the city of Tuttle:

- There are 71 single-family housing units comprising 83.5 percent of all housing units in the city of Tuttle.
- There are 10 Mobile/Boat/RV/Van homes comprising 11.8 percent of all housing units in the city of Tuttle.
- There are four Multifamily housing units comprising 4.7 percent of all housing units in the city of Tuttle.

Services. The following services are provided in the city of Tuttle.

- Strom Sanitation provides garbage collection services to the city of Tuttle.

- The city of Tuttle has an inert landfill.
- The city of Tuttle has a sanitary sewer system with two lagoon cells and one lift station. Two housing units utilize septic systems.
- The Steele Ozone and Kidder County Press is the official newspaper of the city of Tuttle.
- The city of Tuttle maintains a municipal water system consisting of two municipal wells that pump into one holding tank that provides drinking/potable water to city residents.

Emergency Response Services. The following emergency response services were identified in the city of Tuttle.

- Wing Ambulance provides ambulance services to the city of Tuttle.
- Tuttle Fire Protection District provides fire protection services to the city of Tuttle.
- The Kidder County Sheriff's Office provides law enforcement services to the city of Tuttle.
- The nearest hospital to the city of Tuttle would be in the city of Bismarck.
- There is no medical clinic in the city of Tuttle.
- Kidder County District Health Unit is in the city of Steele and provides public health services to the city of Tuttle.

Critical Facilities. The following facilities were identified as critical in the city of Tuttle.

- Tuttle City Hall/City Shop/Community Center/Shelter (Blue Hall)
- Tuttle Community Store
- Tuttle Elevator (provides gas and propane to city residents for heating purposes)
- Tuttle Fire Protection District Fire Hall
- U.S. Post Office

Infrastructure. The following infrastructure was identified as critical in the city of Tuttle.

- The city of Tuttle has a sanitary sewer system with two lagoon cells and one lift station.
- The city of Tuttle has a municipal drinking/potable water system consisting of two wells that feed into one holding tank.
- The city of Tuttle is located just west of the intersection of N.D. Highways 3 and 36.
- There is no railroad infrastructure traversing the city of Tuttle. The railroad was decommissioned in the early 1990s.

8.6.2 Risk Assessment and Hazard Scoring Notes

Table 8.6.2 summarizes the risk assessment scoring of the city of Tuttle. The risk assessment and hazard scoring notes for each hazard specific to the city are shown in Table 8.6.3. Risk assessment notes for impact, frequency, likelihood and vulnerability ubiquitous for jurisdictions in Kidder County are found in Chapter 4, Threat and Hazard Identification Assessment in each respective hazard profile.

Table 8.6.2 – City of Tuttle Jurisdiction Risk Assessment Scoring Summary

Risk Assessment Jurisdiction: City of Tuttle						
<u>Natural Hazard</u>	<u>Impact</u>	<u>Frequency</u>	<u>Likelihood</u>	<u>Vulnerability</u>	<u>Capabilities</u>	<u>Total</u>
Drought	4	2	4	4	1	13
Fire – Urban/Structure Collapse	4	3	2	2	2	9
Fire – Wildland (Rural)	4	3	4	3	2	12
Flood	3	2	3	3	1	10
Geologic Hazard	1	1	1	1	1	3
Infectious Disease	3	4	3	3	1	12
Severe Summer Weather	4	4	4	3	2	13
Severe Winter Weather	4	4	4	3	2	13
Space Weather	4	1	2	4	1	10
<u>Adversarial Threats</u>						
Civil Disturbance	3	1	2	2	1	7
Criminal, Terrorist or Nation-State Attack	4	1	2	1	1	6
Cyberattack	2	1	2	1	1	5
<u>Technological Threats</u>						
Dam Failure	NA	NA	NA	NA	NA	NA
Hazardous Material Release	4	2	2	2	1	9
Transportation Incident	4	2	3	2	1	10

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 8.6.3 – City of Tuttle Jurisdiction Risk Assessment

	Civil Disturbance	
Impact	<ul style="list-style-type: none"> Blocked Roads Business Interruptions Delayed Emergency Response Financial Hardship/Strain (public) 	<ul style="list-style-type: none"> HAZMAT Release Human Injury/Death Property Damage (Structure) Property Damage (Vehicle)
Frequency	<ul style="list-style-type: none"> Never an occurrence of a major incident 	<ul style="list-style-type: none"> DAPL protesters were not active in the city
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Lack of local active/continuous law enforcement coverage 	<u>Less Likely</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions Sparse population
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Lack of local active/continuous law enforcement coverage 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions Sparse population

Table 8.6.3 – City of Tuttle Jurisdiction Risk Assessment – Continued

Criminal, Terrorist, Nation-State Attack	
Impact	<ul style="list-style-type: none"> Blocked Roads Business Interruptions Delayed Emergency Response Disease Outbreak/Mass Infections Financial Hardship/Strain (public) HAZMAT Release Human Injury/Death Loss of Communication Systems Mass Casualties/Fatalities Property Damage (Structure) Property Damage (Vehicle)
Frequency	<ul style="list-style-type: none"> No occurrences Miscellaneous property damage/break-ins to abandoned property occurring in the city on an occasional basis In 2016, a group of outside individuals broke into churches, bars, the former public school, and abandoned buildings in Tuttle and committed extensive vandalism. Numerous other incorporated cities in the area were also targeted.
Likelihood	<div> <div> <u>More Likely</u> <ul style="list-style-type: none"> Lack of local active/continuous law enforcement coverage </div> <div> <u>Less Likely</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions Lack of major travel artery (Interstate 94) No railroad infrastructure traverses city limits No pipelines </div> </div>
Vulnerability	<div> <div> <u>More Vulnerable</u> <ul style="list-style-type: none"> Lack of local active/continuous law enforcement coverage </div> <div> <u>Less Vulnerable</u> <ul style="list-style-type: none"> Small town with no major regional/state attractions Lack of major travel artery (Interstate 94) No railroad infrastructure traverses city limits No pipelines </div> </div>

Table 8.6.3 – City of Tuttle Jurisdiction Risk Assessment – Continued

	Cyberattack	
Impact	<ul style="list-style-type: none"> • Business Interruptions • Delayed Emergency Response • Financial Hardship/Strain (public) • Government Interruptions • HAZMAT Release 	<ul style="list-style-type: none"> • Human Injury/Death • Identity Theft – loss of wages and/or assets Loss of Communication Systems • School Closure
Frequency	<ul style="list-style-type: none"> • Never an occurrence of a major attack 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Small town with lack of technological infrastructure to defend against cyber attacks 	<u>Less Likely</u> <ul style="list-style-type: none"> • Lack of major financial institutions or communication infrastructure • Lack of a public school
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Small town with lack of technological infrastructure to defend against cyber attacks • Elderly population relying largely on landlines for communication purposes, remote medical care, and equipment monitoring 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Lack of major financial institutions or communication infrastructure • Lack of a public school

Table 8.6.3 – City of Tuttle Jurisdiction Risk Assessment - Continued

	Drought	
Impact	<ul style="list-style-type: none"> • Crop Loss • Loss of Economy • Loss of Livestock • Loss of Wildlife Habitat (decreased wildlife populations) • Increase in Wildland Fire Potential • Water quality compromised from stock dams 	<ul style="list-style-type: none"> • Diminished soil quality – salinity will increase • Negative impact on mental health of producers and fire responders – “community impact” • Local producers forced to sell off herds which can last for several years • Population loss as people moved away due to loss of economy
Frequency	<ul style="list-style-type: none"> • Severe Drought of 1961/1962, 1988/1989 to 1991/1992 • Summer of 2017, local producers forced to sell off portions of their herds 	<ul style="list-style-type: none"> • End of July through winter of 2016 – county reached severe drought status • Severe drought in summer/fall of 2020
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Dry/wet cycle every 10 years • Climatic patterns will result in an eventual drought of significance • Lack of precipitation 	<u>Less Likely</u> <ul style="list-style-type: none"> • Heavy precipitation
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Loss of economy from decreased wildlife & hunting • Agriculture economy • Elderly population • Flat terrain/open topography contributes to conditions • Pastureland adjacent to structures and city limits 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Financial assistance programs made available by the state and federal government • Burn Ban by county emergency management • Fire Index monitoring and mapping from NDDes • Advanced communications such as internet and TV

Table 8.6.3 – City of Tuttle Jurisdiction Risk Assessment - Continued

	Fire – Urban Fire/Structure Collapse	
Impact	<ul style="list-style-type: none"> Building Collapse Delayed Emergency Response Evacuation (Localized) Explosion Human Injury/Death Increase Fire Potential Property damage on a significant scale if impacting downtown structures and other structures in the city 	
Frequency	<ul style="list-style-type: none"> Occurrences of structures/vehicles being impacted every 15 to 20 years Annual occurrences of fires involving farm equipment The former Post Office, which is now converted to residential uses, experienced a structure fire in 2007 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Age of structures Increased use of electric heaters Outdated electric wiring in older homes and structures Outdated heating systems Use of propane tanks for heating of homes in the city 	<u>Less Likely</u> <ul style="list-style-type: none"> Building codes Better building standards and maintenance of structures Smoke detectors in public buildings and private homes/businesses Well-equipped fire department with trained volunteers No railroad infrastructure traversing city limits
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Age of structures Increased use of electric heaters Outdated electric wiring in older homes and structures Outdated heating systems Use of propane tanks for heating of homes in the city Fire Hall does not have a permanent generator Prolonged response times due to limited fire staff during the daytime 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Building codes Better building standards and maintenance of structures Smoke detectors in public buildings and private homes/businesses Well-equipped fire department with trained volunteers No railroad infrastructure traversing city limits The city of Tuttle has a portable generator Intentional burning of dilapidated structures to remove them permanently

Table 8.6.3 – City of Tuttle Jurisdiction Risk Assessment – Continued

Fire – Rural & Wildland	
Impact	<ul style="list-style-type: none"> • Building Collapse • Crop Loss • Delayed Emergency Response • Evacuation (Localized) • Explosion • Increase Fire Potential • Loss of Power/Downed Power Lines • Mass Casualties • Losses could be on a significant scale if impacting a major producer or farmstead • Loss of farm equipment and assets • Loss of Livestock • Loss of Wildlife Habitat
Frequency	<ul style="list-style-type: none"> • Significant fire occurs annually • Controlled burns can become out of control annually
Likelihood	<div> <div> <u>More Likely</u> <ul style="list-style-type: none"> • Agricultural burn-off • High winds annually and dry conditions – when present • Pastureland adjacent to structures and city limits • Severe summer weather with significant lightning </div> <div> <u>Less Likely</u> <ul style="list-style-type: none"> • Removal of CRP near city limits • Summer and winter weather with heavy precipitation • No railroad infrastructure traversing through city limits </div> </div>
Vulnerability	<div> <div> <u>More Vulnerable</u> <ul style="list-style-type: none"> • Agricultural burn-off • High winds annually and dry conditions – when present • Pastureland adjacent to structures and city limits • Severe summer weather with significant lightning • Large fire district – strained coverage/resources • Lack of fire breaks around city limits • Fire Hall does not have a permanent generator </div> <div> <u>Less Vulnerable</u> <ul style="list-style-type: none"> • Removal of CRP near city limits • Summer and winter weather with heavy precipitation • MOUs with neighboring fire departments • Burn bans by county emergency management for areas outside city limits • No railroad infrastructure traversing through city limits • Radio-activated emergency siren • City of Tuttle has a portable generator </div> </div>

Table 8.6.3 – City of Tuttle Jurisdiction Risk Assessment – Continued

	Flood	
Impact	<ul style="list-style-type: none"> • <u>Blocked Roads:</u> Surrounding rural and township roads, and a low-spot prone to flooding east of the city park on Doyle Street • Delayed Emergency Response • Flooding (Highway & Structure) 	<ul style="list-style-type: none"> • Human Injury/Death • Property Damage • Runoff from buildings causes overland flooding on Main Street
Frequency	<ul style="list-style-type: none"> • Annual occurrences of localized flooding of nearby township roads and highways 	<ul style="list-style-type: none"> • Bi-annual occurrences of flooding at low-spot prone east of the city park on Doyle Street • Flood waters from high water tables inundates the sanitary sewer system every 6 years
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Rapid change of seasons resulting in rapid snow melt 	<u>Less Likely</u> <ul style="list-style-type: none"> • Dry seasons and low precipitation • General topography of the city does not contribute to overland flooding
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Rapid change of seasons resulting in rapid snow melt • Closed basin topography in areas of the county • City of Tuttle located in a closed basin • City is not enrolled in the NFIP • City does not have flood ordinances • City has a sanitary sewer system consisting of tile that can be inundated by high water tables 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Alternate routes were identified for townships roads • General topography of the city does not cause overland flooding • City of Tuttle has a portable generator

Table 8.6.3 – City of Tuttle Jurisdiction Risk Assessment – Continued

	Geologic Hazard	
Impact	<ul style="list-style-type: none"> Blocked Roads Delayed Emergency Response Human Injury/Death 	<ul style="list-style-type: none"> Loss of Economy Loss of Power Property Damage
Frequency	<ul style="list-style-type: none"> No incidents involving geologic hazards in or near city limits 	
Likelihood	<u>More Likely</u>	<u>Less Likely</u> <ul style="list-style-type: none"> No Abandoned Mine Lands located near city limits PSC has an AML reclamation project aimed at recovering AMLs – work has been done in other parts of the state
Vulnerability	<u>More Vulnerable</u>	<u>Less Vulnerable</u> <ul style="list-style-type: none"> No Abandoned Mine Lands located near city limits PSC has an AML reclamation project aimed at recovering AMLs – work has been done in other parts of the state

Table 8.6.3 – City of Tuttle Jurisdiction Risk Assessment – Continued

	Hazardous Material Release	
Impact	<ul style="list-style-type: none"> Blocked Roads Delayed Emergency Response Environmental Degradation Evacuation (localized) Explosion Human Injury/Death Increased Fire Potential Loss of Economy Loss of Potable Water Loss of Power Property Damage 	
Frequency	<ul style="list-style-type: none"> Small incidents of leaking anhydrous have been reported in the past In 2018, an anhydrous bulk plant west of the city about 1.5 miles suffered damage from high winds association with severe summer weather. The incident required containment and clean up by a private service. 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Transportation of chemicals by truck through city limits Storage of chemicals/fertilizers in city limits and on farmsteads in large tanks near city limits 	<u>Less Likely</u> <ul style="list-style-type: none"> Private companies have HAZMAT certifications No railroad infrastructure traversing through city limits City not located on Interstate 94 No public school No anhydrous plant near city limits No energy pipelines
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Transportation of chemicals by truck through city limits Storage of chemicals/fertilizers in city limits and on farmsteads in large tanks near city limits No hospital or medical clinic in city limits Fire Hall lacks a permanent generator 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Fire departments have frequent HAZMAT training Radio-activated emergency siren Kidder County Ambulance and Tuttle Fire Dept. No railroad infrastructure traversing through city limits City not located on Interstate 94 No public school No anhydrous plant near city limits No energy pipelines City of Tuttle has a portable generator

Table 8.6.3 – City of Tuttle Jurisdiction Risk Assessment – Continued

	Infectious Disease	
Impact	<ul style="list-style-type: none"> • Crop Loss • Human Injury/Death • Livestock Injury/Death • Loss of Economy • Mass Casualties • Strain on local medical resources (ambulance) • Loss of Potable Water • Financial cost to public health resources • Loss of medical staff due to sickness 	
Frequency	<ul style="list-style-type: none"> • Annual occurrences of death, primarily among the elderly • Occurrence of disease - 1 in 3 for people annually • Annual occurrences of influenza cases in the local population • The COVID-19 pandemic of 2020 resulted in mass quarantine and sheltering of the local population and temporary closure of businesses 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> • Growing elderly population • Small population of children without immunization • Agriculture economy • Dependent on weather for animals and crops • Transporting of animals across state lines 	<u>Less Likely</u> <ul style="list-style-type: none"> • Advanced communications such as internet and tv • Public health and employment regulations for public facilities
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> • Growing elderly population • Small population of children without immunization • Agriculture economy • Transporting of animals across state lines • No hospital or medical clinic in city limits • City has a sanitary sewer system consisting of tile that can be inundated by high water tables 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> • Advanced communications such as internet and tv • Public health and employment regulations for public facilities • Immunizations & medications of local population • No public school

Table 8.6.3 – City of Tuttle Jurisdiction Risk Assessment – Continued

	Severe Summer Weather	
Impact	<ul style="list-style-type: none"> <u>Blocked Roads:</u> Surrounding rural and township roads, and a low-spot prone to flooding east of the city park on Doyle Street Downed Trees Evacuation (Localized) Human Injury/Death – heat exhaustion Shelter-in-place Vehicle Damage Livestock Injury/Death Loss of Crops Loss of Power/Downed Power Lines Property Damage – repair of roofing, siding and drainage systems for homes Damage to electrical equipment from lightning 	
Frequency	<ul style="list-style-type: none"> Windstorm events occurring annually Annual occurrences of hailstorms Two or three significant storms producing damage to trees and property annually Property damage from tornados/straight-line winds in summer 2017 and 2019 City experienced seven straight-line wind events in 2020 resulting in numerous downed trees Bi-annual occurrences of flooding at low-spot prone east of the city park on Doyle Street Flood waters from high water tables inundates the sanitary sewer system every 6 years 	
Likelihood	<ul style="list-style-type: none"> Climatic patterns will result in numerous annual occurrences of the hazard 	
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> High elderly population Presence of mobile homes Aging infrastructure (roads and electrical systems) Lack of municipal building code enforcement Lack of permanent generator at city hall and fire hall City has a sanitary sewer system consisting of tile that can be inundated by high water tables 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> Advanced warning and notification such as internet and TV Adopted building codes but lack enforcement Radio-activated emergency siren No railroad infrastructure traversing through city limits City not located on Interstate 94 No energy pipelines City of Tuttle has a portable generator City of Tuttle has a payloader for removal of tree branches and debris

Table 8.6.3 – City of Tuttle Jurisdiction Risk Assessment – Continued

	Severe Winter Weather	
Impact	<ul style="list-style-type: none"> • <u>Blocked Roads:</u> Surrounding rural and township roads, and the intersection of 3rd St. and Kidder St. North and can traverse in length down to 1st St. • Evacuation (Localized) • Human Injury/Death – wind chill • Loss of Crops 	<ul style="list-style-type: none"> • Loss of Livestock • Loss of Power/Downed Power Lines • Property Damage – repair of roofing, siding and drainage systems for homes • Shelter-in-place • Vehicle Damage
Frequency	<ul style="list-style-type: none"> • Annual occurrences of power loss from storms • Annual occurrences of blocked roads • Annual occurrences of wind events • Two or three significant blizzards producing damage to trees and property annually 	<ul style="list-style-type: none"> • Major blizzard in fall of 2015 • March 2017 snowstorm resulted in blocked roads throughout the city • Major blizzard in fall of 2018 • Spring snowstorm of 2019
Likelihood	<ul style="list-style-type: none"> • Climatic patterns will result in numerous annual occurrences of the hazard 	<ul style="list-style-type: none"> • Impacts can be expected county-wide
Vulnerability	<p><u>More Vulnerable</u></p> <ul style="list-style-type: none"> • High elderly population • Presence of mobile homes • Lack of municipal building code enforcement • Lack of permanent generator at city hall and fire hall • City has a sanitary sewer system consisting of tile that can be inundated by high water tables 	<p><u>Less Vulnerable</u></p> <ul style="list-style-type: none"> • Advanced warning and notification such as internet and TV • Adopted building codes • Radio-activated emergency siren • No railroad infrastructure traversing through city limits • City not located on Interstate 94 • No energy pipelines • City of Tuttle has a portable generator • City of Tuttle has a payloador for removal of snow drifts, tree branches, and debris

Table 8.6.3 – City of Tuttle Jurisdiction Risk Assessment – Continued

	Space Weather
Impact	<ul style="list-style-type: none"> • Loss of operation of the city hall/fire hall, etc. • Loss/outage of medical devices at private residences
Frequency	<ul style="list-style-type: none"> • Never a recorded occurrence in Kidder County or North Dakota
Likelihood	<ul style="list-style-type: none"> • Dependent on solar activity and the 11-year solar cycle • Likely to occur once every 500 years per the 2018 N.D. Enhanced Mitigation MAOP
Vulnerability	<div> <div> <u>More Vulnerable</u> <ul style="list-style-type: none"> • Agriculture economy • All critical facilities and infrastructure that require electricity for operation • Advanced communication systems (internet, TV, etc.) • Lack of permanent generator at city hall and fire hall </div> <div> <u>Less Vulnerable</u> <ul style="list-style-type: none"> • Local food production/households with gardens • No public school • City of Tuttle has a portable generator </div> </div>

Table 8.6.3 – City of Tuttle Jurisdiction Risk Assessment – Continued

	Transportation Incident	
Impact	<ul style="list-style-type: none"> Blocked roads from inadequate road clearing Human Injury/Death Increased Fire Potential Loss of Transportation/Accessibility Mass Casualties/Fatalities Delayed Emergency Response HAZMAT Release Livestock Loss Business Interruptions Property Damage Could be catastrophic if involving a school bus filled with children and a truck carrying hazardous materials 	
Frequency	<ul style="list-style-type: none"> Annual occurrences of accidents involving cars and/or farm equipment A major incident occurs resulting in one or more fatalities at the intersection of N.D. Highways 3 and 36 every 10 years 	
Likelihood	<u>More Likely</u> <ul style="list-style-type: none"> Intoxicated drivers High truck traffic from agriculture-related traffic 	<u>Less Likely</u> <ul style="list-style-type: none"> No commercial passenger airport No railroad infrastructure traversing through city limits City not located on Interstate 94
Vulnerability	<u>More Vulnerable</u> <ul style="list-style-type: none"> Intoxicated drivers High truck traffic from agriculture-related traffic No hospital or medical clinic in city limits Intersection of N.D. Highways 3 and 36 has a blind-turned that reduces visibility and contributes to incidents N.D. Highway 36 is used by truck traffic to bypass weight limits or permit requirements on Interstate 94 	<u>Less Vulnerable</u> <ul style="list-style-type: none"> No commercial passenger airport No railroad infrastructure traversing through city limits City not located on Interstate 94

8.6.3 Mitigation Strategy

The Kidder County Multi-Jurisdictional Multi-Hazard Plan Update includes a mitigation strategy consisting of seven goals in Chapter 6. The following problem statement and mitigation projects address the mitigation needs of the city of Tuttle. It should be noted that some mitigation projects that pertain to all jurisdictions are included to encourage county-wide collaboration.

Problem Statement

The city of Tuttle can be impacted by civil disturbance; criminal, terrorist or nation-state attack; cyberattack; drought; fire (urban and wildland); flood (overland and riverine); geologic hazard; hazardous material release, infectious disease, severe summer weather, severe winter weather, space weather and transportation incidents. Economic loss to the agriculture and livestock industry, and hunting/recreational industry from natural hazards in the county impacts the city's economy. Blocked roads occur annually and the city's sanitary sewer system is constructed with tile and is inundated by flooding resulting from severe summer weather and severe winter weather. This impact can also contribute to the risk of infectious disease as uncontrolled raw sewage is a type of hazardous material release. The risk to hazardous material release and transportation incidents is low due to the city not being located on Interstate 94 or railroad infrastructure. The city hall and fire hall lack generators for backup power. With little to no capabilities to accomplish major projects independently, the city is dependent on outside sources for mitigation.

Installation of permanent backup power sources; conducting of engineer study for retrofitting of city's sanitary sewer system (and subsequent grant opportunities for construction); and expansion of education and outreach, financial, and planning and regulatory capabilities are a priority for the city of Tuttle.

City of Tuttle Project 1: Install permanent generators at critical facilities and infrastructure.

Description/Benefit		Test existing generators and create regularly scheduled maintenance system. Install new generators to establish permanent source of backup power to maintain continued operation of the following critical facilities and infrastructure, with facilities having the option to serve as a shelter. The Blue Hall has been pre-wired for a portable generator through homeland security grant funding.					
		<u>Install New</u> <ul style="list-style-type: none">• Tuttle City Hall/City Shop/Community Center/Shelter (Blue Hall) – currently has transfer switch and portable generator• Tuttle Community Store (private)• Tuttle Fire Protection District Fire Hall• Tuttle municipal wells/water plant• Tuttle sanitary sewer lift station					
Hazards Addressed		All hazards					
Affected Jurisdiction(s)		City of Tuttle					
Project Status		Ongoing and Continue/New					
Priority		Very High					
Responsible Agency		City Council, Public Works, Emergency Services					
Partners		Emergency Management, Public Utilities					
Completion Timeframe		2 to 3 years			Cost	Project-specific	
Funding Source		Public Utilities, Regional Council, RD. FEMA Building Resilient Infrastructure and Communities (BRIC). State Homeland Security grants.					
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35
Integration of Mitigation Plan Requirements into Local Planning Mechanisms							
Planning Mechanisms Utilized			Plan Element Utilized			Process for Integration	
Kidder County Hazard Mitigation Plan Kidder County Local Emergency Operations Plan			Capability Assessment, Hazard History, Risk Assessment			Include in city’s or fire department’s budget. Apply for grant funding or purchase directly using existing budgets. Approval by city council or board.	

City of Tuttle Project 2: Conduct engineering study to develop a scope of work to retrofit the city's sanitary sewer system.

Description/Benefit		The city’s sanitary sewer system is constructed with tile, which is disintegrating in certain areas and is past its useful life. The system is susceptible to impacts from flooding, severe summer weather, and severe winter weather, which can contribute to infectious disease. The system needs to be upgraded to PVC piping. The system’s lift station also needs to be replaced with an upgraded model. The scope of work cost estimate identified in the study will be used to pursue additional grant opportunities to fund construction.						
Hazards Addressed		All						
Affected Jurisdiction(s)		City of Tuttle						
Project Status		New						
Priority		Very High						
Responsible Agency		City Council						
Partners		County Commission, Emergency Management, NDAC, NDLC, Regional Council, private contractors						
Completion Timeframe		1 to 2 years			Cost	Cost of the study is project-specific. \$13,000 per city block in lieu of grant funding.		
Funding Source		Local budgets. N.D. League of Cities. State Homeland Security Grants. FEMA’s Building Resilient Infrastructure and Communities (BRIC) Grant Program.						
Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)								
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL	
5	5	5	3	5	3	3	29	
Integration of Mitigation Plan Requirements into Local Planning Mechanisms								
Planning Mechanisms Utilized			Plan Element			Process for Integration		
Kidder County Local Emergency Operations Plan Kidder County Mitigation Plan			Capability Assessment, Hazard History, Risk Assessment			City solicits three engineering proposal from qualified firms. Select appropriate firm based on proposals. Explore grant options and apply for grant funding. Execute project. Submit reimbursements and close-out grant.		

8.6.4 Mitigation Capability Assessment

Capability for mitigation is divided into four categories: administrative and technical, education and outreach, financial, and planning and regulatory. Each identified resource in the four categories can be used to implement mitigation strategies and access funding for projects. **Tables comparing the mitigation capabilities of the city of Tuttle with all other jurisdictions in Kidder County can be found below and in Chapter 7, County Mitigation Capability Assessment.**

- Administrative and Technical: Identification of administrative and technical capabilities, which include staff, their skills and tools for mitigation planning to implement specific mitigation actions.
- Education and Outreach: Identification of education and outreach programs, and methods already in place to implement mitigation activities and communicate hazard-related information.
- Financial: Identification of access to or eligibility to use funding resources for hazard mitigation for jurisdictions.
- Planning and Regulatory: Jurisdictional plans, policies, codes, and ordinances adopted and in place that prevent and reduce the impacts of hazards.

City of Tuttle Mitigation Capabilities Summary

The following mitigation capabilities were identified as commonplace among all hazard and threats upon completion of the risk assessment for the city of Tuttle. More detailed information about the mitigation capabilities of the city of Tuttle in relation to Kidder County and all other incorporated jurisdictions can be found in Chapter 7, Mitigation Capability Assessment.

2018 N.D. Enhanced Mitigation MAOP	Kidder Co. Sheriff's Office
Advanced communications: Internet & TV	MOUs
Farm Services Agency	NDDDES Fire Index Monitoring
Kidder County Ambulance	NDDOT Statewide Highway/Transportation Plan
Kidder Co. LEOP	NDSU/Kidder Co. Extension
Kidder Co. Emergency Mgmt.	Tuttle Fire Department
Kidder County District Health Unit	Tuttle City Council

8.6.5 Integration of Mitigation Plan into Planning Mechanisms

Integration of the plan into current planning mechanisms is critical in mitigation to communicate the needs of each jurisdiction to achieve an all-inclusive mitigation strategy. The process for integration of the mitigation plan is included after each mitigation project, which shows the planning mechanism utilized, the plan element used for integration and the process for integration.

8.6.6 Plan Maintenance

An important aspect of any useable plan is the maintenance and upkeep of the document. At any given time, planning, risk analysis, updating the situation assessment, research, coordinating, disaster response

or other activity is occurring. Plan maintenance ensures the plan will remain useful in the county for many years. A mitigation action progress report form to conduct plan maintenance is in Chapter 10 of this plan.

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10. Plan Maintenance

Mitigation planning for Kidder County, North Dakota is continuous. An important aspect of any useable plan is the maintenance and upkeep of the document. At any given time, planning, risk analysis, updating the risk assessment, research, coordinating, disaster response or other activity is occurring. Thus, ensuring the plan will remain useful is critical.

Plan Monitoring

Kidder County's emergency manager and the LEPC are responsible for monitoring, evaluating and updating the plan. All disaster and emergency incidents will be evaluated for general and specific hazard history and mitigation strategy recommendations to be added to the plan.

The plan will be updated and submitted to the N.D. Dept. of Emergency Services and FEMA within five years to assure the county maintains a FEMA-approved multi-jurisdictional multi-hazard mitigation plan.

Plan Evaluation

At its February meeting each year, each county commission, city council/commission and emergency response entity will review actions taken on mitigation projects and losses due to hazards in the past year.

- **A Mitigation Action Progress Report Form for reporting of annual mitigation actions taken and losses due to hazards is included in this chapter for Kidder County.**
- **The annual reports are due back to each respective emergency manager by March 15.**

The comments about the plan, project implementation, and information will be shared through each jurisdiction's minutes, and these minutes will be sent to county emergency management. The emergency manager will share this information with the Kidder County Commission. Emergency services and the public health department will be encouraged to constantly and consistently inform emergency management of incidents as they occur so that the data can be immediately considered to better understand the risks in the county and enable accurate updating of hazard information to include in hazard mitigation efforts.

Public Involvement

The public will be informed of the opportunity to comment on plan updates through the advertising of the jurisdiction meetings. The plan will be available to the public at the Kidder County Courthouse and at the city halls in each of the jurisdictions. During plan updates, the plan will also be on the emergency City of Steele website. The public is encouraged to share input on the plan.

10.1 Kidder County, N.D. Mitigation Action Progress Report Form

The Mitigation Action Progress Report Form is part of the annual review of hazard impacts, mitigation projects and reporting of data to the emergency manager. Please complete to maintain/update the mitigation plan for Kidder County. Include date and location of incident(s), and photographs or other documentation. **Additional information can be included and attached to this form on a separate page.**

Return to: Kidder County Emergency Manager
PO Box 372
Steele, ND 58482

Due: March 15

List injuries or property losses due to hazards in past year:

List new vulnerable areas that need to be addressed:

Identify what actions on jurisdiction's mitigation projects were taken in past year:

If no action, why:

First & Last Name	
Title & Jurisdiction Represented	
Date (MM/DD/YYYY)	
Contact Info (Email & Phone)	