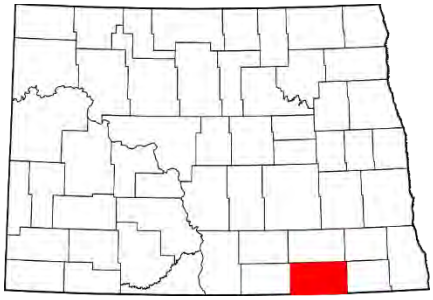
Dickey County Multi-Hazard Mitigation Plan

Prepared By:
South Central Dakota Regional Council

2026

2026 Dickey County Multi-Jurisdictional Multi-Hazard Mitigation Plan

Dickey County, North Dakota



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1. Introduction

Executive Summary

The updating of the Dickey County Multi-Jurisdictional Multi-Hazard Mitigation Plan (MHMP) was conducted per the FEMA grant timeline. It included the review of hazards, risks, vulnerabilities, and capabilities of the county, and resulting mitigation actions in Dickey County, North Dakota. The review of hazard impacts to the county is ongoing by county officials, as are the efforts to mitigate injuries and damages from hazards. 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 hazards profiled in this plan include communicable disease, dam failure, drought, flood, hazardous material release, homeland security incident, severe summer weather, severe winter weather, shortage or outage of critical materials or infrastructure, transportation accident, urban fire/structure collapse, wildland fire, and windstorm.

This update of the Dickey County Multi-Jurisdictional Multi-Hazard Plan includes a mitigation strategy consisting of five goals and specific mitigation projects for each incorporated jurisdiction based on the risk assessment developed at Planning Committee and jurisdictional meetings. All hazards and 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 against.

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

Goal 1: Improve public awareness, education and planning of hazard and action to protect themselves.

Goal 2: Reduce impacts of floods on people and property.

Goal 3. Reduce impacts of fires and drought.

Goal 4. Implement cost effective measures to reduce impacts of manmade and natural disasters.

Goal 5. Provide safe drinking water, places and early warnings for public 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 are included in this document. 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 hazard and manmade threats varies between jurisdictions. Based on information gathered at each jurisdictional meeting, a problem statement was formed to summarize the needs of the jurisdictions.

Dickey County

Dickey County is impacted by communicable disease, dam failure, drought, flood, hazardous materials storage & release, homeland security incident, severe summer weather, severe winter storm, climate

change, shortage or outage of critical materials or infrastructure, transportation accidents, urban fire/structure collapse, wildland fire, and windstorm. Education, public outreach and communicating emergency and disaster messages to the people throughout the county is challenging with the limited local media sources and the limited number of people with the expertise, experience and time to do website and social media development and maintenance. All jurisdictions have limited paid staff to take on additional duties. The energy production in the western portion of the State and the increased agricultural industry has resulted in an increase in hazardous materials being transported through the county by trucks and railroad. The county has planning and regulatory, administrative and technical, financial, education and outreach capabilities to accomplish mitigation. However, the county relies on outside sources for large-scale mitigation projects. Education and outreach, upgrading of critical facilities and infrastructure, upgrading of emergency sirens, generators to maintain services, improved access for emergency services, and additional storms shelters are a priority in the county.

Ellendale

Ellendale is located on U.S. Highway 281 on the border of North and South Dakota. It is called the gateway to North Dakota as the city is the first stop traveling northward into the state on U.S. Highway 281 from South Dakota.

The city of Ellendale has an elementary school and a high school; medical clinics; county courthouse; city shop (Ellendale Street Department); county shop; library; airport; city hall-ambulance building; police department; fire hall; park district; post office; N.D. Department of Transportation shop; USDA Farm Service Agency offices; and Ellendale Job Development Authority office.

The nearest hospitals to the city are Oakes Community Hospital in Oakes, N.D., Avera St. Luke's Hospital and Sanford Hospital in Aberdeen, S.D. Vulnerable populations are located at the two nursing homes in Ellendale (Prince of Peace Care Center and Evergreen Place) and in the college dorms at Trinity Bible College.

Forbes

Forbes is a small, farming community located near the South Dakota border and 19 miles west-southwest of Ellendale. The city does not have building codes, an inspector or building permits.

The city of Forbes has a post office, city hall and city park, which is managed by the Forbes City Council. The city also has an inert landfill. The city does not have a school.

The nearest medical services are provided by the city of Ellendale, approximately 19 miles to the east-northeast. The nearest hospital is located in Aberdeen, S.D., roughly 47 miles south-southeast. The nearest North Dakota hospital is located in the city of Oakes, approximately 50 miles to the east-northeast.

Fullerton

Fullerton is a farming community located between the cities of Monango and Oakes in north-central Dickey County. The city does not have building codes, an inspector or building permits.

The city of Fullerton has a city hall, community center, park and the community owned Carroll House. The community is served by a U.S. Post Office and does not have a school.

The city of Oakes, approximately 16 miles to the east, serves Fullerton with a hospital, health clinic, and ambulance services. Clinics are also located in Ellendale, approximately 17 miles to the south-southwest.

The city hall and fire hall do not have generators

Ludden

Ludden is located on N.D. Highway 1 and N.D. Highway 11, and is 11 miles south of Oakes and 19 miles east of Ellendale. The city does not have building codes, an inspector or building permits.

There are no government buildings in the city. The city of Ludden has a community center.

Ambulance and fire protection for the community are delivered by the Ellendale providers. The nearest hospital is located in Oakes 11 miles north of the city.

Monango

The city of Monango is a small rural farming community in central Dickey County located along U.S. Highway 281, the most prominent north-south highway between U.S. Highway 83 and Interstate 29. The city does not have building codes, an inspector or building permits.

Emergency services are delivered by: Ellendale Ambulance Service, Ellendale Fire Department, and Dickey County Sheriff's Office. The nearest hospital is located in Oakes 25 miles to the east.

Oakes

The city of Oakes, located along N.D. Highway 1, is the largest city in Dickey County. The community is in a productive agricultural region that supports numerous agricultural businesses. The city has adopted the state building code and issues building permits.

The city of Oakes has a preschool, elementary school and high school; Oakes Community Hospital and clinic; Sanford Clinic; Oakes Police Department; Oakes Ambulance Service; Oakes Fire Department; pharmacy; chiropractic care; optometrist; counseling services; drug store; regional career and technology center; city hall/ambulance hall; city shop; city fire station; county shop; community center, post office; park district; airport; armory National Guard Company; N.D. Department of Transportation shop; N.D. Job Service office; social services; and Veteran's Service Office.

The new ambulance hall is a designated shelter for people living in mobile structures. The armory is also a designated shelter.

Background

The Dickey County Multi-Jurisdictional Multi-Hazard Mitigation Plan (MHMP) was developed and approved by Federal Management Agency (FEMA) in 2014. The plan was updated and submitted for FEMA approval in 2014 to address the needs of people living and working in Dickey County and its incorporated cities: Ellendale, Forbes, Fullerton, Ludden, Monango, and Oakes.

This document includes a profile of Dickey County and its incorporated cities. The planning process is explained along with those involved in the updating of the county's multi-jurisdictional plan. A comprehensive assessment is included in the plan providing a summary of the risks that affect the county and its jurisdictions, maps, hazards, threats and risk assessment, mitigation strategies including goals, objectives, projects, and plan maintenance.

This document articulates the discussions and considerations stated during the planning process in 2026 to update the 2019 Plan. The MHMP Planning 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 Dickey 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 the 2014 State of North Dakota MHMP, for every dollar spent on mitigation, society saves on average four dollars in avoided future losses. 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 Dickey County 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 Dickey County Multi-Hazard Mitigation Plan.

2. Adoption Documentation

Authority

Federal: Public Law 93-288 as amended, established the basis for federal mitigation activity in 1974. A section of this Act requires the identification, evaluation, and mitigation of hazards as a prerequisite for state receipt of future disaster assistance outlays. Since 1974, many additional programs, regulations, and laws have expanded on the original Stafford Act, several additional provisions were also added that provided for the availability of significant mitigation measures in the aftermath or presidentially declared disasters. Civil preparedness Guide 1-3 and Chapter 6-Hazard Mitigation Assistance Programs places emphasis on hazard mitigation planning directed towards hazards with a high impact and threat potential.

Legislative: The North Dakota Century Code, Chapter 37-17.1 requires the North Dakota Division of Emergency Management to coordinate the development of a Hazard Mitigation Plan. Other state laws require various state agencies to mitigate the effects or impacts of hazards in regard to public safety, environment, etc. The North Dakota State Water Commission is responsible for assisting in the flood insurance program and is the lead agency in flood hazard mitigation actions.

Executive: The Governor has the leadership role in the issuance of guidance to all state agencies to minimize the effects of hazards on the citizens of North Dakota. In state and federal recovery agreements following a presidentially declared disaster, the Governor initiates the updating of the state and local mitigation plans based on federal requirements or state and presidentially declared disaster (see State Administrative Recovery Handbook for Mitigation Assistance) requirements.

Local: Local governments play an essential role in implementing effective mitigation, both before and after disaster events. Each local government will review all damages, losses, and related impacts to determine the need or requirement for mitigation action and planning whenever seriously affected by a disaster, or when applying for state or federal recovery assistance. In Dickey County, the local governing body responsibility for carrying out plans and policies is the County Commission. The Dickey County Commission and each incorporated city in the county – Ellendale, Forbes, Fullerton, Ludden, Monango, and Oakes – are responsible for reviewing and updating ordinances. The County Commission represents all townships and unincorporated communities in the county for planning purposes. Budgets are limited and do not allow the county and jurisdictions the ability to complete as many projects as desired.

Promulgation Statement

Government at all levels has the responsibility for the protection of life, property, and the environment from hazards and threats which are known to impact jurisdictions. The jurisdictions of Dickey County, by resolution, hereby adopt the concepts and conditions set forth by the Dickey County Multi-Hazard Mitigation Plan (MHMP).

3. Planning Process

Background

The Dickey County Commission began the process to update its multi-hazard mitigation plan by applying for and receiving a grant to assist in the cost of the planning process. The Dickey County Multi-Jurisdictional Multi-Hazard Mitigation Plan was approved by the N.D. Department of Emergency Services (NDDES) and the Federal Emergency Management Agency (FEMA) in 2014 updated in 2019 and 2026. The jurisdictions represented in Dickey County are under the auspices of the county and will apply for Hazard Mitigation Assistance through the county as a whole. The six jurisdictions in the 2014-approved plan participated in the planning process for the 2026 countywide plan update. (Table 3.1)

Table 3.1 – Jurisdictional Participation in Mitigation Planning

Jurisdictions Represented in Plan	Participation
Dickey County	Continued Participation (2004-2026)
City of Ellendale	Continued Participation (2004-2026)
City of Forbes	Continued Participation (2004-2026)
City of Fullerton	Continued Participation (2004-2026)
City of Ludden	Continued Participation (2004-2026)
City of Monango	Continued Participation (2014-2026)
City of Oakes	Continued Participation (2004-2026)

Whereas, the jurisdictions have limited capability to undertake the preparation of a hazard mitigation plan, the Dickey County Commission contracted with the South Central Dakota Regional Council located in Jamestown, N.D., to act on behalf of the county to facilitate the planning process and write of the update to Dickey County's plan.

Table 3.2 – Planning Committee Members

Representing	Name
Dickey County Emergency Manager /911 Communications/ Flood Plain Administrator/Homeland Security Director	Charlie Russell
Dickey County Commissioners	John Hokana, Brandon Carlson, Kacey Holm, Jerry Walsh, Marke Roberts
Dickey County Zoning Board	Matt Herman
Dickey County Water Resource Board	Keith Hauck
Ellendale Township	Joel Hamar
Dickey County Auditor	Wanda Shephard
Dickey County Highway Superintendent	Jeff Hagen
City of Ellendale City Council	Tammy Belgarde, Justin Meidinger
City of Ellendale Mayor	Don Flaherty
City of Ellendale Auditor	Nicole Kempf
Ellendale Library Board	Betty Martin
Utilities	
MDU	Daniel Albrecht, Scott Wertz
Southeast Water Users	Troy Bomme
Law Enforcement	
Dickey County Sheriff's Department	Chris Estes
Dickey County Sheriff's Department	Zach Sahli

Dickey County Sheriff's Department	Kyle Johnson
North Dakota Highway Patrol	Wes Maley
North Dakota Highway Patrol	Bryan Niewind
Oakes Police Department	Matt O'Brien
Ellendale Police Department	Brad Knutson
Fire Departments	
Ellendale Fire Department	Matt Thorpe, Nolan Hamar
Oakes Fire Department	Jeremy Sitzer
Emergency Medical Services	
Ellendale Volunteer Ambulance	Don Flaherty, Charlie Russell
Medical	
Central Valley Health District	Frank Bolak, EPR Coordinator
Dickey County Health District	Kerry Waldo
Benedictine Living Comm. – Ellendale	Naomi Gmeneich
Education	
Ellendale Public School	Allison Radermacher

Summary

After reviewing the county's history of hazards, identifying vulnerabilities and losses, the Planning Committee reviewed hazards and identified the Dickey County Hazards (See Table 3.11) to include:

- Communicable Disease
- Drought
- Flood
- Hazardous Materials Storage & Release
- Homeland Security Incident
- Severe Summer Weather
- Severe Winter Storm
- Climate Change
- Shortage or Outage of Critical Materials or Infrastructure
- Transportation Accident
- Urban Fire or Structure Collapse
- Wildland Fire
- Windstorm

This update of the Dickey County Multi-Jurisdictional Multi-Hazard Plan includes a mitigation strategy consisting of five goals and specific mitigation projects for each incorporation jurisdiction based on the risk assessment developed at Planning Committee and jurisdictional meetings.

- **Goal 1:** Improve public awareness, education and planning of hazard and action to protect themselves.
- **Goal 2:** Reduce impacts of floods on people and property.
  (Combination of goals 2 and 3 from previous plan)
- **Goal 3:** Reduce impact of fires and drought.
  (Combination of goals 4 and 6 from previous plan)
- **Goal 4:** Implement cost effective measures to reduce impacts of manmade and natural disasters.
  (Old goal 5, combination of goals 7 and 8 from previous plan)
- **Goal 5:** Provide safe places and warnings for public to take protective action during hazard events.

The 18 projects are identified and ranked in Chapter 6 of this plan. The status of each mitigation project from the 2019 Dickey County MHMP is shown in Table 3.3.

This mitigation plan will also be incorporated into city, county, regional and state plans. The information is being incorporated into the county's Emergency Operations Plan and other emergency preparedness and response plans. The Dickey County Multi-Jurisdictional Multi-Hazard Mitigation Plan will be leveraged to inform planning mechanisms for the county and for the cities of Ellendale, Forbes, Fullerton, Ludden, Monango, and Oakes. The cities of Forbes, Fullerton, Monango and Ludden do not have their own planning mechanisms but participate and support development of county-level plans. The planning committee conducted a county-wide risk assessment for all of the jurisdictions and the county plan's data will be used as they review county and city ordinances. All of the jurisdictions were invited to review the plan and given an opportunity to comment.

The data in this plan is being used in Oakes and Ellendale capital improvement and development plans, South Central Dakota Regional Council's Comprehensive Economic Development Strategies and Disaster Resiliency Plan for the U.S. Department of Commerce Economic Development Administration and the state of North Dakota mitigation plan.

Table 3.3 – Changes to Mitigation Projects from 2019 Dickey County Mitigation Plan

Project	Affected Jurisdictions	Responsible Agency	Hazard Mitigated	Status
1: Use the county disaster preparedness website to improve household disaster preparedness including safe methods for new construction, disaster resilience.	All	Emergency Manager	All	Ongoing
2: Increase awareness of drought tolerant practices in farming.	All	ND Extension Service	Drought, Fire	Ongoing
3: Increase awareness of drought tolerant practices in municipalities.	All	ND Extension Service; Emergency Manager; FSA	Drought, Fire, Shortage of Critical Materials and/or Infrastructure	Ongoing
4: Increase Fire Awareness Programs.	All	Emergency Manager; Fire Department	Fire	Ongoing
5: Increase awareness of shortage of critical materials and/or infrastructure	All	Cities, County, State	Shortage or outage of critical materials or infrastructure	Ongoing
6: Education on public/personal safety - vehicle, railroad and aircraft accidents.	All	Law Enforcement; Public Safety; Emergency; Fire; Ambulance; ND State and Federal DOT	Transportation Accident	Ongoing
7: Encourage people to have insurance to protect from property losses.	All	Dickey County; Ellendale; Forbes; Fullerton; Ludden	Drought, Flood Severe Summer Weather	Ongoing
8: Assure County has FEMA-Approved Mitigation Plan.	All	Emergency Manager	All	Ongoing
9: Remove existing structures from James River Floodplain.	Oakes, Ludden, Dickey County	Individual Jurisdictions	Flood	2 to 5 years
10: Work with state and federal	Dickey County,	Emergency	Flood	Complete

officials to have Dickey County flood mapped.	Oakes	Manager		
11: Review of ordinances to assure jurisdictions meet minimum federal and state requirements to comply with NFIP.	Dickey County, Oakes, Ludden	Emergency Manager, City and County Auditor(s)	Flood	Ongoing
12: Maintain infrastructure improvement plan. Maintain and create Drainage	All	City Councils, County Commission, Township Boards	Overland Flooding	Ongoing
13: Improve County Highway 3, N.D. Highway 11 and N.D. Highway 1 over the James River to provide emergency services access during floods.	Oakes City, Ludden, Townships of Bear Creek, Hudson, Riverdale, Wright, Port Emma, James River Valley, Clement, Lovell	Cities of Oakes and Ludden and Townships	River Flooding	Ongoing
14: Obtain firefighting equipment to assure emergency response entities are equipped to fight fires and rescue people.	Dickey County, Ellendale, Forbes, Fullerton, Ludden, Oakes	Emergency Manager; Fire Department	Fire, Transportation Accident; Hazardous Material Incident; Severe Winter Weather; Severe Summer Weather; Homeland Security Incident	Ongoing
15: Bury power lines.	All	Power Companies: Ottertail, Dakota Valley Electric, MDU	Severe Winter Weather, Severe Summer Weather, Windstorm	Ongoing
16: Assure sanitation system and storm sewer infrastructure is adequate in all jurisdictions.	Ellendale	City, Water/Sewer Treatment Facilities	Flood (Overland), Severe Summer Weather, Severe Winter Weather	Ongoing
17: Provide adequate storm shelters per capita in each jurisdiction.	All	Emergency Manager, County, City, Fire Department	Hazardous Material Incident, Severe Winter Weather, Severe Summer Weather, Homeland Security Incident, Dam Failure, Flood, Firestorm, and Windstorm	Ongoing
18: Provide Public Generated Facilities.	All	Emergency Manager, County, City, Fire Department	All	Ongoing

Planning Process Details

Included on the following pages is a summary of the planning process. More details of the meetings held are located in Appendix 5. Roughly two weeks prior to Planning Committee meetings, invitation emails to local jurisdictions, stakeholders, agencies, and neighboring emergency managers. The week prior to the Planning Committee meetings, reminder Facebook messages and emails were sent to the aforementioned parties. (See Appendix 3 for invite materials and documentation, and Appendix 4 for media coverage documentation.)

The first Dickey County Planning Committee Meeting was held on February 6th, 2025, at the Oakes Armory in Oakes, ND. The planning committee also met on February 20th, 2025at the Ellendale Opera House, Ellendale and March 27th, 2025 at the Archery building in Ellendale, ND.

Discussion at the meetings included the purpose of mitigation and the update of the Dickey County Multi-Jurisdictional Multi-Hazard Mitigation Plan (MHMP), how the current mitigation plan is used, who needed to be involved in the planning process, how to get public involvement, when to hold meetings, and review of the 2019 Dickey County MHMP, an initial review of the county's and state's hazards and vulnerabilities, and identification of the processes and steps to be taken in the planning process.

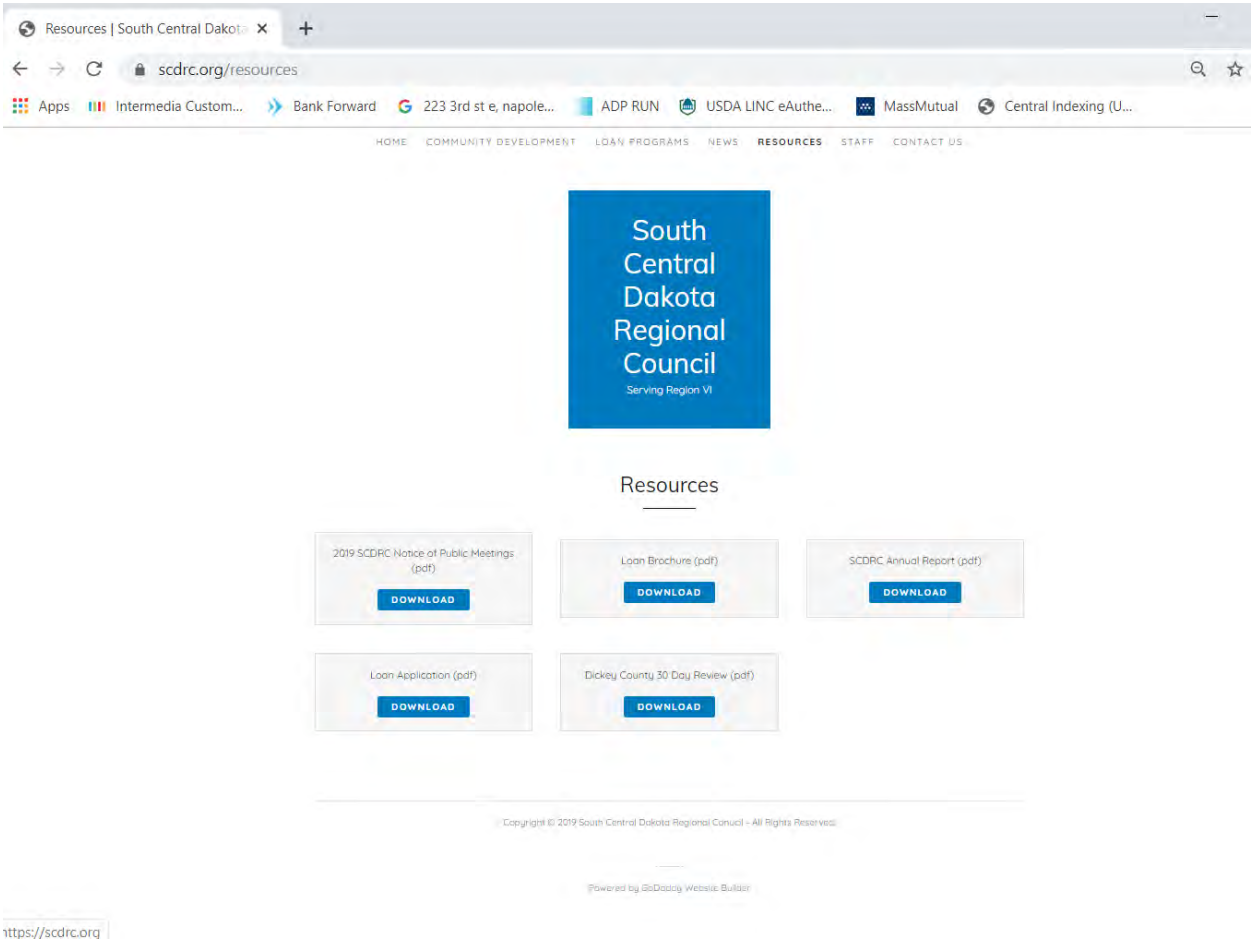
The Planning Committee identified that the plan represents the seven jurisdictions in the county: Dickey County Commission, the cities of Ellendale, Forbes, Fullerton, Ludden, Monango, and Oakes. Representatives from each jurisdiction were encouraged to be part of the planning process. The jurisdictions of Forbes, Fullerton, Ludden and Monango participated in plan development but will pursue Hazard Mitigation Assistance (HMA) projects under the auspices of the county. Jurisdictional meetings were held in each jurisdiction to conduct a specific risk assessment, identify vulnerable areas, assess level of readiness and preparedness, estimate potential losses from specific hazard events, decide on capacity and on how to allocate resources, and prioritize mitigation measures, actions, and projects for each jurisdiction. The Planning Committee voted that incorporated jurisdictions would be eligible for inclusion in the update upon completion of a jurisdictional meeting and not by representation at committee meetings.

The Planning Committee voted to make decisions in the planning process by a simple majority vote of committee members present. Committee members discussed how to gather the information needed to update the plan and how to garner public involvement. Letters, phone calls, and surveys were discussed. Other community and jurisdictional plans were discussed. The committee discussed that entities, such as school districts, park districts, water boards, rural electric cooperatives that can apply directly for FEMA grant funds, which participated in the process could also sign a resolution to adopt the plan.

The Planning Committee had its first review of Dickey County and jurisdictions' hazards. The committee compared the hazards and their rankings in the 2019 State of North Dakota MHMP to the county's 2026 identified hazards and rankings. The committee compared the ranking of the frequency and likelihood of hazards in the state plan and in the 2026 county plan to the updated history and data. The Planning Committee voted on which hazards to exclude from the planning process and voted to include windstorm as a separate hazard in the update.

Per recommendations from the state and FEMA, public involvement was through a community survey, news releases, and information shared at community events. The Planning Committee created a survey for public outreach. Participants agreed to distribute the survey through businesses, organizations, churches, and individuals.

The 2026 Dickey County MHMP was posted on the South Central Dakota Regional Council website at www.scdrc.org.



Public Participation and Comment Integration

All planning meetings were open to the public. See Appendix 5 for meeting notes.

The plan was presented to the Dickey County Commission on June 16, 2026, and was approved. The plan was submitted to the N.D. Dept. of Emergency Services on February 26, 2020.

Roles and Responsibilities

Table 3.4 indicates who participated and how each participated in the mitigation planning process from each Dickey County jurisdiction in 2004, 2014, 2019 and 2024.

Table 3.4 – Jurisdictional Participation in Planning Process

Jurisdictions Represented	Name and Title	Form of Participation	Status of Plan Participation
Dickey County	Charlie Russell Emergency Manager	Survey, Comments, Information, Review	2004, 2014, 2019, 2026
Dickey County	Wanda Shephard Dickey County Auditor	Comments, Information, Review	2014, 2019, 2026
City of Oakes	Lori Novak CHI Oakes Hospital	Comments, Information, Review	2019
City of Oakes	Tina Ochsner CHI Oakes Hospital	Comments, Information, Review	2019
Dickey County City of Fullerton	Dean Simek County Commissioner Mayor of Fullerton	Comments, Information, Review	2014
Dickey County	Thor Sand Dickey County Commissioner	Comments, Information, Review	2014
Dickey County	Joel Hamar Dickey County Commissioner	Comments, Information, Review	2004, 2014, 2019
Dickey County	Kacey Holm Dickey County Commissioner	Comments, Information, Review	2026
Dickey County	John Hokana Dickey County Commissioner	Comments, Information, Review	2026
Dickey County	Brandon Carlson Dickey County Commissioner	Comments	2026
Dickey County	Jeff Hagen Dickey County Highway Superintendent	Comments, Information, Review	2026
Dickey County	Kerry Waldo Dickey County Health District	Comments, Information	2026
Dickey County	Keith Hauck Dickey County Water Board	Comments	2026
Dickey County	Matt Herman Dickey County Zoning Board	Comments	2026
Township of Ellendale	Joel Hamar	Comments	2026
City of Ellendale	Candace Middlestead Previous Ellendale City Auditor	Comments Information, Projects	2014
City of Ellendale	Nicole Kempf Ellendale City Auditor	Comments	2026
City of Ellendale	Tammy Belgarde	Comments	2026
City of Ellendale	Ellendale City Council	Comments	2026
City of Oakes	Jerry Hollingsworth Oakes Fire Department	Comments Information, Projects	2014, 2026
City of Oakes	Monty Zimmer Oakes Mayor	Comments, Review Information, Projects	2004, 2014, 2019
City of Oakes	Justin Prochnow Oakes Police Department	Comments, Information, Review	2014
City of Oakes	Jeff Forward Oakes City Council Oakes Enhancement	Comments Information	2014

City of Oakes	Mike Kelly Oakes City Council	Comments	2026
City of Ellendale	Matt Thorpe Ellendale Fire Department	Comments Information	2014, 2019
City of Ellendale	Michele Thorpe Ellendale Ambulance	Comments Information Review	2019
City of Oakes	Mike Sandy Oakes Ambulance	Comments Information	2014, 2019
City of Ellendale Ellendale Ambulance and Fire Department	Corey Gulke Ellendale Ambulance and Fire Department	Comments Information	2014, 2019
City of Oakes	Greg Strutz Oakes City Council	Comments	2014
City of Oakes	Nick Harris Oakes City Council	Comments	2014
City of Monango	Tyler Kinzler Monango Mayor	Comments Information	2014
City of Oakes	April Haring Oakes City Auditor	Comments Information	2014
City of Ellendale Dickey County	Don Flaherty Ellendale Mayor and Dickey County Tax Director	Comments Information Review	2004, 2014, 2019, 2026
City of Ellendale	Richard Wadholm	Comments Information Review	2019
Dickey County	Steven Horner Dickey County Sheriff's Department	Comments Information Review	2019
City of Ellendale	Lucas VanZee City Police Department	Comments Information Review	2019
City of Oakes	Matt O'Brien City Police Department	Comments Information Review	2019, 2026
City of Ellendale	Paul Wedell City Fire Department Chief	Comments Information Review	2019
Dickey County Health Department	Amber Miller, RN	Comments Information Review	2019
Dickey County Health Department	Laurie Wang, RN-DON	Comments Information Review	2019
City of Oakes	Marke Roberts Chief of Police Dept.	Comments Information Review	2014, 2026
City of Oakes	Doug Sitzler Oakes City Council	Comments	2014

City of Ellendale	Mike Frannea Chief of Police	Comments Information	2014
Dickey County	Chris Estes Deputy	Comments Information	2014, 2019, 2026
Dickey County	Zach Sahli Deputy	Comments Information	2026
City of Oakes	Ryan Marthaller Oakes Fire Department	Comments Information	2014
City of Ludden	Chuck German Mayor	Comments Information Review	2014
Dickey County, City of Ellendale	Resa Russell	Comments Information	2014
City of Oakes	Andrea Masse Secretary-Sheriff's Office	Comments Information	2014
Dickey County	Jim Bohannon Sheriff's Department	Comments Information Review	2014
City of Ellendale	Theresa Kassa Inspector, Chamber UP	Comments Information	2014
City of Ellendale	Todd Flynn-Public Works Superintendent	Comments Information	2014
City of Ellendale	Sandy Ulmer Ellendale City Council	Comments Information	2014
City of Ellendale	Tim Belmore City Council	Comments Information	2014
City of Ellendale	Darren Pahl City Council	Comments Information	2014
City of Ellendale	Jolene Maunu City Council	Comments Information	2014
City of Ellendale	Troy Schilling City Council, CFO-Dickey Rural	Comments Information	2014
City of Ellendale	Judy Wedell Ellendale JDA	Comments	2026
City of Fullerton	Dean Arit Fire Dept., City Council	Comments Information	2014
City of Fullerton	Darren Adams City Council	Comments Information	2014
City of Fullerton	Steve Peterson Fire Dept., City Council	Comments Information	2014
City of Fullerton	Virginia Hagen City Auditor	Comments Information	2014
City of Monango	Sue Kinzler City Auditor	Comments Information	2014
City of Monango	Austin Smith City Council	Comments Information	2014
City of Monango	Jasmine Smith City Council	Comments Information	2014
City of Ludden	Ericca German City Auditor	Comments Information	2014, 2026

City of Ludden	Matt German Mayor	Comments	2026
City of Forbes	Judy McFarlane City Board Member	Comments Information	2014
City of Forbes	Dan Bradenburger City Board Member	Comments Information	2014
City of Forbes	Dennis Schrum Mayor	Comments Information	2014
Dickey County	Lance Kohlmeyer Dickey County Sheriff	Comments Information	2014

Additional participants in the plan development are listed in Table 3.6. Each was allowed the opportunity to comment on the plan.

Table 3.5 – Federal, State, Regional, Business and Other Participation in Planning Process

Other Participation	Representing	Name and Title	Form of Participation	Status of Plan Participation
Business/ Industry	Applied Digital	Keith Breckheimer	Comments Information	2026
Business/ Industry	Applied Digital	Brandon Luun	Comments Information	2026
Business/ Industry	Applied Digital	Nick Phillips	Comments	2026
Business/ Industry	Applied Digital	Andrea Monelus	Comments	2026
Business/ Industry	Applied Digital	Martin Vega	Comments	2026
Business/ Industry	Summit Carbon Solutions (SCS)	Charlie Adams	Comments, Information	2026
Business/ Industry	Invenergy	Michael Iacapetti	Comments	2026
Business/ Industry	Invenergy	Greg Stanek	Comments	2026
Business/ Industry	Invenergy	Tyler Svazo	Comments	2026
Business/ Industry	OLS Tubs	Katie Rongen	Comments	2026
Business/ Industry	James Valley Grain	Eric Larson	Comments	2026
Business/ Industry	Starion Bank	Lee Weisbeck	Comments	2026
Business/ Industry	Ellendale Farmers Union	David Maunu	Comments	2014
Business/ Industry	Ellendale Farmers Union	Jerry Rekow	Comments	2004, 2014
Business/ Industry	Cenex	Roger Warbis	Comments	2014
Business/	Farmer	Tim Belmore	Comments	2014

Industry		Farmer	Information	
Business/ Industry	Oakes Community Hospital	Ashley Reed Quality Risk Manager	Comments Information	2014
Business/ Industry	Sanford Health Clinics	Theresa Kelly Director	Comments Information	2014
Business/ Industry	Avera Health Clinic	Lorlei Maier Business Manager	Comments Information	2014
Business/ Industry	Oakes Community Hospital	Lee Boyles President	Comments Information	2014
Business/ Industry	Oakes Community Hospital	Elnora Hokana	Comments Information	2014
Business/ Industry	Oakes Community Hospital	Mary Quandt Emergency Preparedness Coordinator	Comments Information	2014, 2019
Business/ Industry	Oakes Community Hospital	Cheryl Anderson	Comments	2026
Business/ Industry	CHI Oakes Hospital	Lori Novak	Comments Information Review	2019
Business/ Industry	CHI Oakes Hospital	Tina Ochsner	Comments Information Review	2019
Business/ Industry	Oakes Community Hospital	Kathy Baumann	Comments Information	2014
Business/ Industry	Prince of Peace Center/Evergreen Place	Michele Thorpe, RN, DON	Comments Information Review	2019
Business/ Industry	TPA Hydro	Tim Adair	Comments	2026
Business/ Industry	Ellendale Library Board	Betty Martin	Comments	2026
Business/ Industry	Benedictine Living Community – Ellendale	Naomi Gmeneich	Comments	2026
Business/ Industry	EDF Renewables	Sara Throndson	Comments	2026
Business/ Industry	MDU	Scott Wertz	Comments	2026
Business/ Industry	Abstract Office Dickey County Fair Board	Val Wagner	Comments	2026
Business/ Industry	Crossroads Advisors	Neil Doty	Comments	2026
Business/ Industry	Kedish House	Kristi Gilbert	Comments	2026
FederalB	Farm Services Agency	Judy Nohrenberg County Executive Director	Comments Information	2014
Federal	National Weather Service	John Paul “JP” Martin Warning Coordination Meteorologist	Comments Information	2014
Federal	U.S. Army Corps of	Bob Martin, Pipestem Dam	Comments	2014

	Engineers	manager for U.S. Army Corps of Engineers, Jamestown, ND	Information	
Public	Albion Township	Mark Bobbe	Comments Information	2026
Public	Albion Township	Allan Miller	Comments	2026
Public	Young Township	Marlon Steinwand Township Board	Comments Information	2014
Public	Clement Township	Gaylon Brandy	Comments	2014
Public	Clement Township	Jeff Anderson	Comments	2014
Public	Clement Township	Doug Ptacek	Comments	2014
Public	Riverdale Township	Linda Visto	Comments	2026
Public	Riverdale Township	Charnell Haak	Comments	2026
Public	Maple Township	Alan Gramlow	Comments	2026
Public	Maple Township	Ruby Gramlow	Comments	2026
Public	Divide Township	Travis Thompson	Comments	2026
Public	Divide Township	Shay Nelson	Comments	2026
Public	Spring Valley Township	Matt Herman	Comments	2026
Public	Valley Township	Jason Hildenbrand	Comments	2026
Public	Housing	Teresa Blondo	Comments, Information	2026
Public	Dickey County Resident	Evelyn Fuller	Comments, Information	2026
Public	Ellendale	Cari Haase	Comments, Information	2026
Public	Ellendale	Shannon Brody	Comments, Information	2026
Public	Ellendale	Julie Haase	Comments	2026
Public	Ellendale	Joel Dasbeam	Comments	2026
Public	Ellendale	Ken Smith	Comments	2026
Public	Monango	Bev Radermacher	Comments	2026
Public	City of Oakes	Dave Sitzler	Comments	2026
Public	Ellendale	Brad Sand	Comments	2026
Public	Dickey County Resident	George Schaefer	Comments	2026
Public	Dickey County Resident	Peggy Brandenburger	Comments	2026
Public	Dickey County Resident	Tony Brandenburger	Comments	2026
Public	Dickey County Resident	Mark Thoelgag	Comments	2026
Public	Dickey County Resident	Tim Leppert	Comments	2026
Public	Dickey County Resident	Don Meidinger	Comments	2026
Public	Dickey County Resident	Sabrina Hildenbrand	Comments	2026
Public	Dickey County	Chase Durheim	Comments	2026

	Resident			
Public	Dickey County Resident	Michelle Mueller	Comments	2026
Public	Dickey County Resident	Doug Linder	Comments	2026
Education	Trinity Bible College	Admissions Officer	Information	2014
Education	Trinity Bible College	Todd Staley Facilities Coordinator	Comments Information Review	2019
Education	Ellendale Public School	Michael Kaiser Superintendent	Comments Information Review	2019
Education	Oakes Public School	Kraig Steinhoff Superintendent	Comments Information Review	2019
Education	Ellendale Public School	Michele Thorpe School Board VP	Comments Information Review	2019
Education	Ellendale Public School	Allison Radermacher Elementary/MRC Principal	Comments	2026
State	North Dakota Department of Emergency Services	Jeff Thompson	Comments	2026
State	North Dakota Highway Patrol	Wes Maley	Comments, Information	2026
State	North Dakota Highway Patrol	Bryan Niewind	Comments, Information	2026
State	N.D. Aeronautics Commission	Website	Information	2014
State	N.D. Department of Transportation	John Thompson District 2 Engineer	Comments Information	2014
State	N.D. League of Cities	Jerry Hjelmstad	Comments Information	2014
State	Central Valley Health	Frank Bolak	Comments Information	2019, 2026
State	North Dakota Department of Commerce	Maria Effertz	Comments, Information	2026
State	North Dakota Department of Emergency Services	Debbie LaCombe	Comments, Information	2026
State	South Country Human Service Zone	Michelle Masset, Director	Comments, Information	2026
Utilities	Dickey Rural Networks	Troy Schilling, CFO	Comments Information	2014
Utilities	Dickey Rural Networks	James Byerley	Comments Information	2014
LaMoure County	LaMoure County Public Health	Tony Hanson, ADM	Comments Information Review	2019

State	ND Water Commission	Garland Erbele, State Engineer	Comments Information	2019

Public Participation and Comment Integration

All planning meetings were open to the public. A community survey was distributed throughout the county to encourage people's opinions and discussions about mitigation

Community Hazard Survey

A two-page Dickey County Community Hazard Survey was created by the plan consultant, Emergency Manager and the LEPC for distribution to encourage more public input. This survey was distributed through GoDaddy.com, hard copy by the Emergency Manager and through jurisdictional and county meetings. These survey results were used to complete the Hazard Profile in Appendix 7.

Review and Incorporation of Existing Plans and Information

The Dickey County MHMP was developed with the consultation of local, state and federal agencies, local businesses, educational institutions and nonprofits. The Planning Committee reviewed information from their plans and programs and used this information in this plan document. The plans and organizations consulted, and the information used in this plan document is identified in Table 3.6. The information gathered from these sources was used in the profile of the county and each community to identify capacity, vulnerabilities, hazards and threats to complete the risk assessment and identify mitigation strategies and who would be responsible to implement the action, partners and sources of funding for projects.

Table 3.6 – Review and Incorporation of Existing Plans and Information

Organization	Existing Plans and Information
Job Service of North Dakota	• Job Force Statistics in Dickey County
Oakes Community Hospital	• Health care services and statistics
Avera Clinic	• Health care services and statistics
Sanford Health	• Health care services and statistics
National Climatic Data Center (NCDC)	• Weather Event History Data
National Oceanic and Atmospheric Administration (NOAA) Satellite and Information Service	• Weather Event History Data • Snowfall History • Climatological Data • Tornado Statistics and Information
National Register of Historic Places	• Historic Preservation
National Weather Service	• Weather Event History Data • North Dakota Fire Danger Index
North Dakota Agricultural Statistic Service, USDA	• Livestock and Crop Production data/Ranking • Agricultural Statistics • County Land Types
North Dakota Department of Emergency Services	• Technical Assistance Provided
North Dakota Department of Health	• Disease Prevention/Statistics • Public Health • Influenza History • Terrorism Information
North Dakota Department of Transportation	• North Dakota Department of Transportation, TransAction III, North Dakota's Statewide Strategic Transportation Plan 2012

North Dakota Game and Fish	• Wildlife Data
North Dakota Multi-Hazard Mitigation Plan, March 2011 and 2014	• State Mitigation Plan
North Dakota State Fire Marshal's Office	• National Fire Incident Reporting Program
North Dakota State University Extension Service	• County Land Use
North Dakota State Water Commission	• Dam Safety • National Flood Insurance Program • Drought Disaster • Flood Control
Dickey County Emergency Manager	• Dickey County Emergency Operations Plan • Accident Reports • Emergency Action Plan-Jamestown Dam • Emergency Action Plan-Pheasant Lake Dam
Dickey County Leader	• Photos and County Hazard History Events
Dickey County Office of Emergency Services	• Hazardous Preparedness Information
Dickey County Sheriff's Office	• Traffic Safety
Dickey County Multi-Hazard Mitigation Plan, July 2004, 2014	• Reviewed and Updated
Housing Needs Assessment for the North Dakota Planning Region VI	• Housing Data for Dickey County • Household Projections • Population Statistics and Projections • Special Needs facilities • Housing demand and analysis
Spatial Hazard Events and Losses Database for the United States (SHELDUS)	• Weather Event History Data • Weather Descriptions
U.S. Census 2010	• Demographic Data
U.S. Centers for Disease Control and Prevention (CDC)	• Disease Control • Disease Transmission
U.S. Department of Commerce	• Economic Development
U.S. Drought Monitor	• Drought Statistics
U.S. Fish and Wildlife Service, North Dakota Field Office	• Endangered Species Data
U.S. Geological Survey	• Geologic Research

Hazard Identification

Table 3.7 shows the hazards included in the plan, how identified and why they are included in the plan.

Table 3.7 – Dickey County Major Hazards

Hazard Profile	How Identified	Why Identified
Communicable Disease	• ND Department of Agricultural • ND Department of Health	• Agricultural Community • Disease Statistics for Dickey County
Drought	• National Climatic Data Center • U.S. Drought Monitor • U.S. Department of Agricultural	• Drought History • Current Drought conditions • Presidential Disaster Declarations • Agricultural Community
Urban Fire or Structure Fire	• ND State Fire Marshal's Office • County Fire Districts	• National Fire Reporting Incident Report • County Fire history

Wildland Fire	• ND State Fire Marshal's Office • County Fire Districts	• National Fire Reporting Incident Report • County Fire history
Flood	• National Climatic Data Center • Dickey County Emergency Manager • National Weather Service	• History Events • Presidential Disaster Declarations • County Flooding Events
Hazardous Materials Storage & Release	• Dickey County Emergency Manger • ND Department of Transportation • Farm Service Agency	• Hazardous materials routes through county • History of hazardous Material incidents • High truck traffic through county on Highway 281 • Pipeline located in county • Agricultural community - fertilizer use
Homeland Security Incidents	• Dickey County Emergency Manager	
Shortage or Outage of Critical Materials or Infrastructure	• Dickey County Emergency Manager • ND Public Service Commission • Stakeholder input MDU, Dakota Valley, Dickey Rural Networks	• History of power outages • Shortage of critical materials history • Communication outages
Severe Summer Weather	• National Climatic Data Center • National Weather Service • Dickey County Emergency Manager • SHELDUS	• Presidential Disaster Declarations history • History of extensive damage from Summer Storms • Dickey County Summer Storm History
Transportation Accidents	• ND Department of Transportation • Dickey County Sheriff's Office • Oakes Police Department • Ellendale Police Department • North Dakota Highway Patrol	• Accident history in county
Severe Winter Storm	• National Climatic Data Center • National weather Service • Dickey County Emergency Manager • SHELDUS	• Winter Storm history in county • Presidential Disaster Declaration for severe Winter Storms
Windstorm	• National Climatic Data Center • National Weather Service • Dickey County Emergency Manager • SHELDUS	• Presidential Disaster Declarations history • History of extensive damage from Summer Storms • Dickey County Summer Storm History

Table 3.8 shows the hazards the Planning Committee determined should be excluded from the plan and reasons why this decision was made. (See Appendix 5)

Table 3.8 – Hazards Excluded from Plan

Hazard	Why Excluded
Coastal Erosion	• Dickey County does not have an ocean coastline
Geological Earthquake	• No historical data or incident reports • No past emergency declarations
Hurricane	• Dickey County does not have an ocean coastline
Tsunami	• Dickey County does not have an ocean coastline

IMPLEMENTATION OF MITIGATION ACTIONS

Upon adoption of the updated Dickey County Multi-Hazard Mitigation Plan, all of the participating local jurisdictions thereof will incorporate the findings and projects of the Plan in all planning areas as appropriate to include but not limited to the following:

- Dickey County Emergency Operations Plan
- Oakes Capital Improvement Plan
- Dickey County and City zones and ordinances
- School System Emergency Operations Plan
- Healthcare Facility Emergency Operations Plan
- All appropriate new or current planning mechanisms

Jurisdictions that participated in and adopted the plan will be required to coordinate all mitigation actions with the County. The planning required for implementation will be the responsibility of the local jurisdictions in coordination with the county. Jurisdictions that participated and adopted the plan can implement mitigation actions as they deem appropriate. Some of the municipalities have indicated that they do not have the financial capability to move forward with projects identified in the plan at this time, however, all will consider applying for funds through State and Federal Agencies once such funds become available. If and when the municipalities are able to secure funding for the mitigation projects, they will move forward with the projects identified. A benefit cost analysis will be conducted on an individual basis after the decision is made to move forward with a project.

MONITORING, EVALUATING, AND UPDATING THE PLAN

Dickey County and all of the participating local jurisdictions thereof will incorporate the findings and projects of the Plan in all planning areas as appropriate to include the Emergency Operations Plan, the Oakes Capital Improvement Plan, and all appropriate new or current planning mechanisms. Periodic monitoring and reporting of the plan are required to ensure that the goals and objectives for the Dickey County mitigation plan are kept current and that local mitigation efforts are being carried out.

During the process of implementing mitigation strategies, the county or communities within the county may experience lack of funding, budget cuts, staff turnover, and/or a general failure of projects. These scenarios are not in themselves a reason to discontinue and fail to update the Plan. A good plan needs to provide for periodic monitoring and evaluation of its successes and failures and allow for appropriate changes to be made.

The plan shall be reviewed annually, as required by the County Emergency Manager, or as the situation dictates such as following a disaster declaration. The Dickey County Emergency Manager will review the plan annually in conjunction with the budgeting process and ensure the following:

1. The County Elected body will receive an annual report and/or presentation on the implementation status of the plan;
2. The report will include an evaluation of the effectiveness and appropriateness of the mitigation actions proposed in the plan; and
3. The report will recommend, as appropriate, any required changes or amendments to the plan.

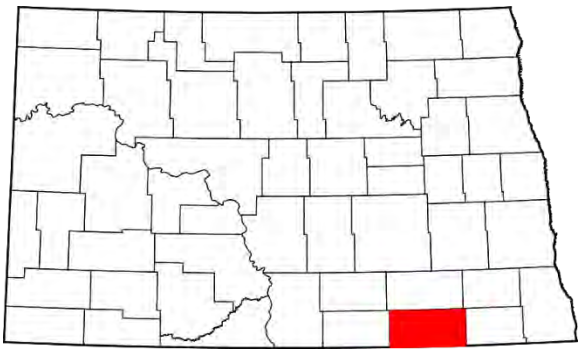
The goals, objectives, and mitigation strategies will be readdressed and amended as necessary based on new information, additional experience and the implementation progress of the plan. The approach to this plan update effort will be essentially the same as the one used for the original plan development.

4. County and Jurisdictions Profile and Inventory

Dickey County and Jurisdictions Overview

Dickey County is located in south-central North Dakota, bordering South Dakota. The county encompasses 1,142 square miles. Of those 1,142 square miles, 1,131 square miles of it is land (99.04 percent) and 11 square miles (0.96 percent) includes water. The 2020 census population of the county was 4,999 people, with a population density of 4.4.

The county is approximately twenty-four (24) miles from north to south and approximately forty-seven-and a half (47.5) miles from east to west. The county is bordered on the north by LaMoure County, on the northeast by Ransom County, on the east by Sargent County, on the south by Brown County, S.D., on the southwest by McPherson County, S.D., and McIntosh County on the west. Agriculture is the main economic enterprise in the county. Other sectors of the economy are comprised mostly of agricultural-related and agriculture value-added industries. U.S. Highway 281, a major trade route extending from the Canadian border to the Mexican border, traverses north and south through the county and lies parallel to the hills to the west which mark the beginning of the rolling Great Plains. Other major highways in the county include N.D. Highway 1, N.D. Highway 11, and N.D. Highway 56. There are thirty-two (32) townships in the county. All are organized townships. The townships are: Ada, Albertha, Albion, Bear Creek, Clement, Divide, Elden, Ellendale, Elm, German, Grand Valley, Hamburg, Hudson, James River Valley, Kent, Kentner, Keystone, Lorraine, Lovell, Maple, Northwest, Port Emma, Porter, Potsdam, Riverdale, Spring Valley, Valley, Van Meter, Whitestone, Wright, Yorktown, and Young. A detailed map of Dickey County is shown in Chapter 9.



Dickey County is the highlighted county located on the southern border of North Dakota.

Dickey County features two national protected areas. Both are managed under the Kulm Wetland Management District. The first, Dakota Lake National Wildlife Refuge is located in southern Dickey County. The refuge is a migration stopover for thousands of waterfowl and shore birds. The second, Maple River National Refuge, encompasses 1,120 acres of land, and is located in the central portion of the county.

Climate

The county's geographic location results in a sub-humid continental climate characterized by marked fluctuations in daily and seasonal maximum and minimum temperatures, and light to moderate precipitation. The precipitation tends to be irregular in occurrence, amounts, and area coverage. The inconsistency of the county's weather arises from the interaction of three major air masses which originate in distinct global regions; cold, dry air from the polar region; warm, moist air from the Gulf of Mexico; and cool, moist air from the Northern Pacific. Both the temperature and the moisture characteristics of a northern Pacific air mass change as the air moves across the Rocky Mountains. The resulting air, which is usually mild and dry, reinforces the continental nature of the county's climate. The

polar air mass tends to dominate the other two, but its influence is considerably lessened during the summer.

Normally, the temperature is moderate until the beginning of July, after which short hot periods are experienced through the end of August. The freeze-free period is the number of days between the average last occurrences of 32 degrees Fahrenheit (F) or lower in the spring and the first occurrence in the fall. The length of the freeze-free period approximates the length of the growing season which ranges from 110 days to 129 days between May 23 and September 11. Topography and local weather conditions can produce subfreezing temperatures at the ground surface while the air temperature a few feet above the ground remains above 32 degrees F. The lowest temperature ever recorded in Dickey County was -45 degrees on January 2, 1906, and the highest temperature ever recorded was 112 degrees on July 6, 1936.

Seasonally Average Expectations
Though no single year is likely to have "average" weather through its entire course of seasons there are certain weather expectations anticipated in an average or normal year. Several years in the 60's, the early 70's, mid-80's and early 90's may fit this description best.

- Winter - Typically 35-40 inches of snow, with 2.5 to 3.0 inches of water equivalent. Perhaps 6-8 winter storms, with 3-4 reaching blizzard intensity, the remainder is usually a combination of heavy snow, freezing rain, or windblown snow. These storms may generally last from 24 hours to 4 days. Extremely cold wind chills of less than - 40F° (old scale - 60F°) usually occur a few times a winter.

- Spring - Typically the spring will bring one or two late season heavy snow or blizzard events, and perhaps another high wind event affecting most of the County. An average season's snowmelt will generally cause minor overland or river flooding, though it may be aggravated by heavier rains or heavier snowfall in upstream portions of the river and reach moderate levels. Prior to spring green-up there is typically a slight wildfire risk, especially for grassland acreages and roadsides.

- Summer - Typical summer season precipitation will come from the nearly 100 thunderstorms which occur during approximately 30 days (during late spring through fall). Of these, approximately 20 storms will reach severe intensity and produce 10-15 distinct large hail events (events separated by 10 miles or 15 minutes), a half-dozen damaging wind events, and approximately one weak tornado or flash flood each year.

- Autumn - Typically the fall will transition from thunderstorms to widespread rainstorms, and/or to winter storms, with a month or so of dry and pleasant weather. A typical fall will have one or two high wind periods, each lasting from 4 to 20 hours.

Extreme Wet Cycle Expectations
Though the overall record of weather observations across Dickey County is relatively short (around 60 years), the protracted wet cycle of 1993-2002 has resulted in several different seasons where the number of weather events reached extreme levels.

- Winter - An extreme winter may reach 80-100 inches of snow, with 5-7 inches of water equivalent. Winter storms may last for 1-3 days, with nearly continuous wind driven snows and drifting making travel nearly impossible for many days on end. Temperatures can easily remain well below zero Fahrenheit for many days and even weeks. Extremely cold Wind Chills of less than - 40F° (old scale - 60F°) can occur several times through this period.

- Spring - Typically a wet cycle spring will bring two or more late season heavy snow or Blizzard events, followed quickly by ice storms followed by heavy rains on top of melting ice and snow. The spring flood of 1997 established new records along most rivers in the North Dakota Basin Watersheds. Cool and wet conditions will generally result in a low wildfire threat.

- Summer - An extreme winter does not always result in an extreme summer, or vice versa. However, under wet cycle conditions the summer could typically be cool and wet or hot and wet. If it is hot and wet, like the summers of 2001 and 2002, there could be a fifty percent increase in the number of thunderstorms. The storm may cover a larger area, and the occurrence of large hail and damaging winds could easily double to around 30 distinct events. The highest number of reported tornadoes in the county was three in 1960. Approximately 2 or 3 events will produce flash flooding or protracted overland flooding.

- Autumn - An extreme fall will include the typical transition from thunderstorms to widespread rainstorms, to winter storms, but with little or no dry period. The fall may produce 2-3 high wind events and early season winter storms. The heaviest and wettest snowfalls will likely be in late fall or early spring.

Annual EAS Activations

The National Weather Service issues forecasts and warnings for specific weather hazards for the protection of life and property and for the enhancement of the national economy. Certain hazards require activation of the Emergency Alert System (EAS) to alert the public. In a typical year, the NWS will issue 52 routine weekly EAS tests, 6-8 winter storm watches and 6-8 winter storm warnings, 1-2 flood or flash flood watches or warnings, 5 severe thunderstorm or tornado watches for 20-25 severe thunderstorms, and another 1-2 high wind watches or warnings. This will result in nearly 100 county-wide EAS activations during the course of the year, half as part of the system test and half for real life-threatening weather situations.

Table 4.1 – 1991 to 2025 Dickey County Temperature, and Precipitation

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	20	25	38	54	68	77	82	81	72	56	39	26	53
Average Min. Temperature (F)	1	5	17	30	43	54	59	56	47	33	20	8	31
Average Total Precipitation (in.)	.51	.54	.96	1.72	3.28	3.83	3.53	2.55	2.35	1.95	.68	.56	22.44

Source: High Plains Regional Climate Center

Population

Population statistics for Dickey County for the years 1980, 1990, 2000, 2010 and 2020 were obtained through the U.S. Census Bureau-Decennial Census. Population estimates for 2022, and projections for 2030 and 2040 were provided by the Housing Needs Assessment for The North Dakota Planning Region VI. Table 4.2 summarizes the population statistics for Dickey County. Figures 4.1 and 4.2 illustrate population trends and projections for Dickey County and city jurisdictions following the table. Statistics on population trends and projections are needed to understand the distribution of people across the county to ensure appropriate allocation of resources for mitigation purposes. These statistics also highlight where future needs may be.

The population of Dickey County has been declining for the past several decades despite job creation and economic stability. The decline in population is primarily due to agricultural mechanization and the decrease in family size. Between 1990 and 2000, the county lost 5.7 percent of its population, 8.1 percent between 2000 and 2010 and an additional 5 percent between 2010-2020.

As of the 2020 Census, all jurisdictions in Dickey County experienced population loss with the exception of Monango, which added eight people, an increase of 29.6 percent. Projecting forward to 2030, the city of Ellendale is expected to decrease in population to 911. The city of Oakes is expected to remain relatively stable over the next decade with a 2030 projected population of 1,745. With new energy and facilities coming into the area, the population of Dickey County and specifically Ellendale will increase in the next 5 years. No data on the amount of that increase is available.

Table 4.2 – 1990 to 2040 Dickey County Population Statistics

	2000	2010	2020	Percent Change 2000 to 2010	Percent Change 2010 to 2020	Estimate	Projections	
						2022	2030	2040
Dickey County	5757	5289	4999	-8.1%	-5%	5003	4749	4512
Ellendale	1559	1394	1125	-10.6%	-19%	997	911	738
Forbes	64	53	36	-17.2%	-32%	20	25	17
Fullerton	85	54	62	-36.5%	15%	63	77	88
Ludden	29	23	15	-20.1%	-35%	27	10	5
Monango	28	36	30	29.6%	-17%	19	25	20
Oakes	1775	1856	1798	-6.2%	-3%	2125	1745	1692

Sources: U.S. Census: American Fact Finder, Housing Needs Assessment for The North Dakota Planning Region VI

Poverty Statistics

Statistics on poverty in Dickey County are provided by the 2023 American Community Survey, Estimate from the U.S. Census Bureau. Information shown includes Number and percent of individuals 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 and man-made hazards. Table 4.3 summarizes poverty statistics in Dickey County.

Per the 2023 American Community Survey, there are 570 individuals in Dickey County with incomes below the poverty level, representing 11.5 percent of individuals in Dickey County. Conversely, there are 4,389 individuals with incomes above the poverty level, representing 88.5 percent of people in Dickey County.

Table 4.3 – 2023 American Community Survey 5-year estimates

TOTAL	Income below Poverty Level	Income Above Poverty Level	Percent Below Poverty Level	Percent Above Poverty Level
Dickey County	570	4,389	11.5%	88.5%

Source: 2023 American Community Survey

Table 4.4 – Housing Units in Dickey County – Where populations are located.

Housing Units	Dickey County	Ellendale	Forbes	Fullerton	Ludden	Monango	Oakes
Single-Family Homes	1678	312	12	29	9	15	710
Multifamily Homes	184	57	0	5	0	0	104
Mobile Homes	91	24	0	0	0	0	28
Total Housing Units	1953	394	12	34	9	15	842

Source: 2023 Housing and Families Census Data

Major Recreation Areas and Top Attractions

Fullerton City Park Campground, located in Fullerton, ND

James River in Dickey County, located west of Ludden. Boat access on 1,354 acres of Waterfowl Management Area.

Oakes Golf Course is located 2 miles north of Oakes on Highway 11. A 9-hole course is a bent grass course featuring 2,998 yards of golf from the longest tees for a par of 36.

Oakes Irrigation Canal is located 4.5 miles south of Oakes. Fish for bigmouth buffalo, common carp and white sucker.

Oster Park Campground, located in Ellendale, ND

Paul Klinger Eagle Scout Park, located in Oakes, ND

Pheasant Lake is located seven miles west of Ellendale on N.D. Highway 11, which has a public beach, picnic area, fishing, boating, and camping.

Ellendale Country Club is located 3.5 miles south of town along N.D. Highway 28 and is home to a nine-hole golf course and a restaurant.

Westside Mobile Court and Campground, located just west of town, is a full hook-up campground with designated tent camping areas as well as a mobile home park.

Wilson Dam is located 7 miles west of Monango on US Hwy 281. Features a fishing pier, campground and limited playground equipment.

Table 4.5 – Services Provided in Dickey County Jurisdictions

Services	Ellendale	Forbes	Fullerton	Ludden	Monango	Oakes
City Garbage	X		X	X	X	X
Inert Landfill	X	X		X	X	X
Lagoon	X	X		X	X	X
Lift Station(s)	X	X		X	X	X
Septic Systems			X			
Sanitary Sewer System	X	X		X	X	X
Southeast Water Cooperative		X	X	X	X	
Water: Web Water Development						
Water: City Water	X					X
Storm Water System	X					X

Table 4.6 – Dickey County Jurisdictional Buildings – public owned buildings in each jurisdiction

Jurisdictional Buildings	Dickey County	Ellendale	Forbes	Fullerton	Ludden	Monango	Oakes
Airport		X					X
City Hall		X	X	X			X
City Shop		X					X
County Public Health	X*	X					
Golf Course		X					X
County Courthouse	X*	X					
County Shop	X*	X					X
Library		X					X
Park		X	X	X			X
Senior Center		X					X
School		X					X
Swimming pool		X					X
U.S.D.A. Farm Service Agency		X					
U.S. Post Office		X		X			X

X* denotes that the county-owned building is both listed under county and the city of Ellendale, the county seat.

Table 4.7 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. These jurisdictions are marked by an asterisk (*).

Table 4.7 – Dickey County Jurisdictional Emergency Response Services and Facilities

Emergency Response Services/Facilities	Ellendale	Forbes	Fullerton	Ludden	Monango	Oakes
Ambulance	X	X*	X*	X*	X*	X
Ambulance Hall	X	X*	X*			X
County Sheriff	X	X*	X*	X*	X*	
Fire Department	X	X	X	X*	X*	X
Fire District	X					
Fire Hall	X	X	X	X	X	X
Law Enforcement	X	X*	X*	X*	X*	X
Sirens	X	X	X			X

*Denotes jurisdictions with emergency response services provided by an outside entity or another jurisdiction.

Table 4.8 shows the utility providers for jurisdictions in Dickey County. Some providers for utilities, such as fuel oil and propane are unknown as residents choose providers on an individual basis.

Table 4.8 –Utility Providers serving Dickey County

Utility Providers	Ellendale	Forbes	Fullerton	Ludden	Monango	Oakes
Montana Dakota Utilities	X	X	X	X	X	X
Otter Tail Power Company						X
Fuel Oil	X	X	X	X	X	X
Individual Wells				N		
City Water Wells				N		
Natural Gas	N	N	N	N	N	N
Propane	X	X	X	X	X	X
Satellite/DirecTV	X	X	X	X	X	X
Dickey Rural – Phone, Internet, Television	X	X	X	X	X	X

Dickey County. Residents of Dickey receive water from South Central Regional Water District and individual wells. The county does not have a sanitary sewer or storm water system, or a lagoon and lift stations. There is a landfill in the county. The official newspaper of the county is the Dickey County Leader.

Ellendale. The city of Ellendale receives its water from Southeast Water Users District. Montana-Dakota Utilities provide electrical power in the city of Ellendale. In areas outside the city limits, Dakota Valley Electric Cooperative provides electrical power. The city does not have natural gas. Some heating of buildings is done by fuel oil and propane. Sanitary sewer and storm sewer are provided by the city of Ellendale. The city of Ellendale Water Treatment Plant has a generator for the plant to run pumps. The same generator can provide backup power to the master lift station for wastewater in the city. The official newspaper of the county is the Dickey County Leader.

Forbes. The city of Forbes receives its water from Southeast Water Users District. The city maintains an inert landfill. Montana-Dakota Utilities provide electrical power in the city of Forbes. In areas outside the city limits, Dakota Valley Electric Cooperative provides electrical power. The city does not have natural gas. Some heating of buildings is done by fuel oil and propane. Sanitary sewer is provided by the city of Forbes, and the lagoon is located on the east side of the city. The city does not have a storm sewer system.

Fullerton. The city of Fullerton receives its water from Southeast Water Users District. Electrical power to the city is provided by Montana-Dakota Utilities. Dakota Valley Electric Cooperative provides electricity to areas outside city limits. The city does not have natural gas. Propane and fuel oil are used in town for heating. Sanitary sewer needs in the community are met by individual septic systems. The city does not have a storm sewer system, however, drain tile and culverts have been installed on Monroe Street in limited capacity. The official newspaper of the county is the Dickey County Leader.

Ludden. Electrical power to the city is provided by Montana-Dakota Utilities. Dakota Valley Electric Cooperative provides electricity to areas outside city limits. The city does not have natural gas. The community maintains its own sanitary sewer system and potable water system. The city does not have a storm water system. The official newspaper of the county is the Dickey County Leader.

Monango. The city of Monango receives its water from Southeast Water Users District. The city does not have natural gas or a sanitary sewer system. Residents have individual septic systems. There is not a storm water system in the city. The official newspaper of the county is the Dickey County Leader.

Oakes. The city of Oakes receives its water from Southeast Water Users District. The city has a sanitary sewer system and a lagoon with four cells. The city does not have a storm water system. The city has a lift

station for the sanitary sewer system. The city provides sanitation services and delivers to Waste Management. The city maintains an inert and regular landfill. The official newspaper of the county is the Dickey County Leader.

Storm Shelters

Storm shelters provide area of refuges for people during incidents of natural hazards or manmade threats. Information on storm shelters is necessary to mitigation planning to help reduce or eliminate loss of life. Dickey County jurisdictions do not have any American Red Cross shelters.

Freight Railroad Operated in Dickey County

According to the 2023 North Dakota State Rail Plan, two freight rail lines are operated in Dickey County by Dakota Missouri Valley and Western (DMVW) and the Red River Valley and Western (RRVW). Information on the transportation system, including freight railroad, bridges and airports, is important for understanding the transportation system and potential risk involved with transportation accidents, among other hazards. Table 4.7 summarizes this information.

The Wishek-Hankinson line, operated by the DMVW carrier, runs approximately 135.4 miles from Wishek to Hankinson and connects to the RRVW third subdivision at Oakes and the Canadian Pacific Railroad (CPR) Elbow Lake Subdivision main line at Hankinson. The line has a maximum speed of 10 m.p.h. The maximum carload is 143 tons but is restricted to 134 tons between Fullerton and Wishek.

Table 4.7 – 2023 Freight Railroad Operated in Dickey County

Railroad	Rail Line	Subdivision	Length in Miles	Maximum Speed	Maximum Carload
Dakota Missouri Valley and Western (DMVW)	Wishek-Hankinson	Dakota Subdivision	135.4	10 mph	143 tons
Red River Valley and Western (RRVW)	Oakes Junction-Independence	Third Subdivision	88.8	25 mph	143 tons

Source: North Dakota State Rail Plan, 2023

The Oakes Junction-Independence line, operated by the RRVW carrier, connects to the Burlington Northern Santa Fe (BNSF) main line at Wahpeton and runs approximately 88.8 miles to the Independence Station in LaMoure via Oakes. The line has a maximum speed of 25 m.p.h. and a maximum carload capacity of 143 tons.

Dickey County Bridges

There is one scour bridge located in Dickey County as shown in the 2019 NDMHMP from information provided by the North Dakota Department of Transportation. Scour is erosion within a streambed due to flowing water. A bridge is scour critical if the bridge foundation is determined to be unstable for the calculated scour conditions and is especially vulnerable during flooding. The scour bridge in Dickey County is classified as structurally deficient. The location of the scour bridge is unknown but is most likely located outside city jurisdictions and, therefore, is likely to have an extremely low traffic volume.

Dickey County Airports

Information regarding airports in Dickey County is summarized in Table 4.8 and was obtained from the North Dakota Aeronautics Commission (NDAC), the Oakes Community Hospital and Air NAV. The NDAC was established in 1947 by the state legislature, assigning responsibility for state aviation functions and serves the public by providing economic and technical assistance for the aviation community. Air NAV is a website publishing aeronautical and airport information released by the Federal Aviation Administration (FAA). The data shown for aircraft operations was collected for a 12-month period ending August 9, 2013.

There are two city airports in Dickey County located in cities of Ellendale and Oakes. The Ellendale City Airport reported an average of 54 aircraft operations per week consisting of 71 percent local general aviation, 25 percent transient general aviation, 4 percent air taxi and less than 1 percent military. The airport is located one-mile northeast of Ellendale and is situated at an elevation of 1,454 feet above sea level. The Oakes Municipal Airport reported an average of 93 aircraft operations per week, consisting of 62 percent local general aviation, 31 percent transient general aviation, 6 percent air taxi and 1 percent military. The airport is located two miles north of Oakes and is situated at an elevation of 1,335 feet above sea level. Detailed information on the helipad at Oakes Community Hospital is discussed in the medical facilities section.

Aerial photographs of the Ellendale City Airport and Oakes Municipal Airport can be found in Chapter 9.

Table 4.8 – Dickey County Airports

Airport	Jurisdiction	Aircraft Operations August 2016-August 2017			
Ellendale City Airport	Ellendale	Operations avg. 54/wk.	71 percent local general aviation	25 percent transient general aviation	4 percent air taxi, <1 percent military
Oakes Municipal Airport	Oakes	Operations avg. 93/wk.	62 percent local general aviation	31 percent transient general aviation	6 percent air taxi, 1 percent military
Oakes Hospital Helipad	Oakes	LifeFlight avg. 1/month	Aberdeen via Careflight	Fargo via Sanford LifeFlight	

Sources: AirNAV,

Medical Facilities

The Dickey County Health District provides locations of the medical facilities in Dickey County. Information was collected on the medical facilities by contacting the business office of each facility. Medical facilities are critical infrastructure in the county for emergency services and play an important role in determining the vulnerabilities of the county for mitigation. Table 4.8 summarizes these facilities.

The only hospital in Dickey County is Oakes Community Hospital in Oakes. The hospital has a total bed capacity of 20 and a total staff of 102, including doctors. The hospital is designated as Trauma Level V and provides medical and surgical services. The hospital also has a helicopter pad for transporting patients to larger hospitals in Aberdeen, South Dakota via Careflight and Fargo, North Dakota via Sanford LifeFlight. On average, one patient per month is transported via helicopter. The hospital also operates a clinic certified through rural health. The clinic is open Monday through Friday all day and half days on Saturday. The clinic has five exam rooms and provides family practice, internal medical and primary care services. There are no future expansion plans for the hospital or clinic as of October 2026.

The Sanford Health-Ellendale Clinic is open three, half-days and two, full-day per week and is staffed by a full-time physician assistant. The clinic is certified rural health with three exam rooms. Services

provided are family practice. The Sanford Health-Oakes Clinic is open from 7:30 a.m. to 4:30 p.m. Monday through Friday and 8 a.m. to 12 p.m. The clinic has 12 exam rooms. Services provided include family practice, internal medicine, physical therapy, full lab and x-ray.

The Avera Clinic of Ellendale is a certified rural health clinic providing six exam rooms. Family practice services are provided. Hours of operations are 8 a.m. to 5 p.m. Thursday. The clinic is closed on the weekends.

Table 4.9 – 2026 Dickey County Medical Facilities

Facility Name	Type	City	Capacity	Services
CHI Oakes Hospital	Hospital – Trauma Level V	Oakes	20 Beds	Medical/surgery, Careflight and Sanford LifeFlight
Sanford Health-Ellendale Clinic	Certified Rural Health	Ellendale	3 exam rooms	Family practice, internal medicine
Sanford Health-Oakes Clinic	--	Oakes	12 exam rooms	Family practice, internal medicine, physical therapy, full lab and x-ray
Avera Clinic of Ellendale	Certified Rural Health	Ellendale	6 exam rooms	Family practice

Special Needs/Age Restricted Facilities

Dickey County has three facilities housing the elderly or individuals with special needs. Information on these facilities was obtained from the Housing Needs Assessment for The North Dakota Planning Region VI. The needs assessment was conducted in 2022. This information is included to show populations that would need assistance in evacuation during times of hazards and is summarized in Table 4.10.

Facilities catering to special population groups such as the disabled, elderly and incarcerated are often more vulnerable during disasters. There are a total of 33 assisted living units and 11 memory care units for a total of 44 special needs/age-restricted housing units in Dickey County. The assisted living units comprise 52 percent of the total units in Dickey County. No market rate independent/active adult rental or for-sale units, affordable/subsidized independent/active adult units or skilled nursing was identified in the county.

Table 4.10 – 2022 Special Needs/Age Restricted Facilities in Dickey County

Building Name	Type	City	Total Units
Good Samaritan Society	Assisted Living	Oakes	28
Benedictine Evergreen Place	Assisted Living	Ellendale	5
Benedictine Evergreen Place	Memory Care	Ellendale	11

Source: Housing Needs Assessment for the North Dakota Planning Region VI

Primary Education

Students in Dickey County are served primarily by the Ellendale and Oakes school districts, which geographically cover approximately 75 percent of Dickey County. Neighboring LaMoure County school districts of Kulm, Edgeley and LaMoure, and Ashley in McIntosh County also provide services to students in Dickey County. The North Dakota Office of Public Instruction provided information on the enrollment of the Oakes and Ellendale school districts. Table 4.10 summarizes enrollments of the school districts in Dickey County. Figure 4.3 shows the school districts and their respective geographic extent in Dickey County. Information on the location of primary education buildings was needed for mitigation to identify vulnerable populations that would need assistance in evacuating during hazard events.

The Ellendale Public School District covers central and southeast Dickey County and operates the Ellendale Public School and the Maple River Elementary school, which is located at the Maple River Hutterite Colony. Enrollment has declined 13 percent from 339 students in 2019 to 296 students in 2024.

The Oakes School District covers the eastern third of Dickey County and includes a high school and elementary school. Enrollment has varied over the past six years with 498 students in 2019 declining to 462 in 2024. Table 4.11 shows the enrollment trends of school districts in Dickey County.

Table 4.11 – 2019-2024 Dickey County School District Enrollments

	Number of Students (K-12) by School Year					
Jurisdiction	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Ellendale Public School and Maple River Elementary School	339	309	297	335	303	296
Oakes High School and Elementary School	498	500	502	478	467	462

Source: North Dakota Department of Public Instruction

Higher and Secondary Education

There is one private community college and one vocational technology center located in Dickey County. Enrollment figures represent fall-term full-time enrollment. Information on the location of higher and secondary education buildings is needed for mitigation to identify vulnerable populations would need assistance in evacuating during hazard events.

Trinity Bible College is a private community college located in Ellendale. The Southeast Regional Career and Technology Center is a vocational school for high school students and adults located in Oakes.

The Trinity Bible College admissions office provided data on enrollment, which represents full-time fall-term enrollment and is summarized in Table 4.12. Figure 4.1 shows a photo of the Trinity Bible College Campus.

Table 4.12 – 2013 to 2015 and 2018-2022 Private Community College Enrollment in Dickey County

College	Location	2013	2014	2015	2018	2019	2020	2021	2022
Trinity Bible College	Ellendale	187	220	237	39	36	28	20	29

Source: Trinity Bible College

Figure 4.1 – Trinity Bible College Campus

Source: Trinity Bible College website with permission.

Southeast Region Career and Technology Center classes are held at Oakes, the North Dakota State College of Science Campus, Edgeley High School, Lidgerwood High School, Lisbon High School, North

Sargent High School, Richland #44 High School, Wyndmere High School, Wahpeton High School, the Center Office in Wahpeton, and over the Greater Southeast Interactive TV System.

Housing Units

The U.S. Census Bureau-American Community Survey and the Housing Needs Assessment for the North Dakota Planning Region VI provided information on housing units for Dickey County and city jurisdictions. Housing unit information presented includes total housing units, median year built and median value of owner-occupied units in 2020. This information is important for understanding the potential impact hazards will have on property and the potential magnitude of damage. Table 4.17 summarizes this information.

Table 4.17 – 2020 Dickey County Housing Units Statistics

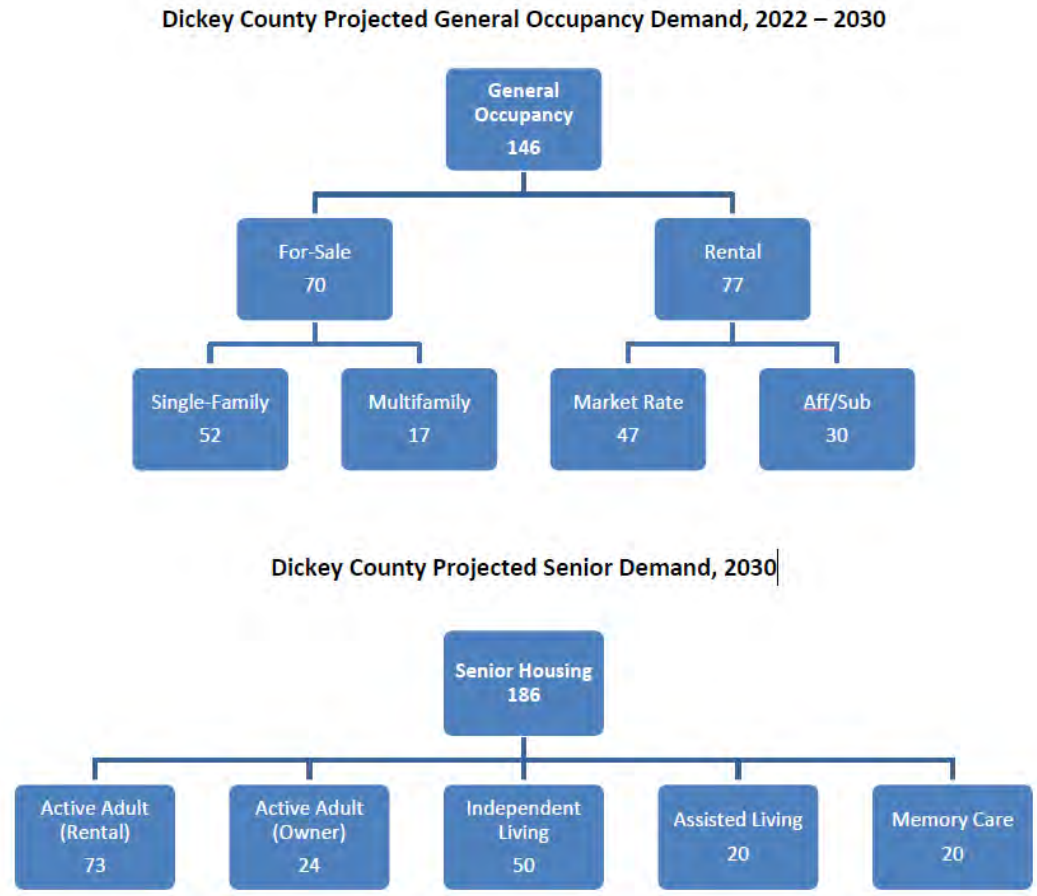
	Number of Housing Units 2020	Total Area Per Square Mile	Number of Housing Units per Square Mile
Dickey County	2383	1,131.49	4.4
Ellendale	455	1.52	299.34
Forbes	29	0.25	7.25
Fullerton	34	0.39	13.26
Ludden	9	0.77	6.93
Monango	15	0.37	5.55
Oakes	771	1.64	470.12

Sources: U.S. Census: American Fact Finder, Housing Needs Assessment for The North Dakota Planning Region VI

Housing

Figure 4.2 shows projected demand for housing in Dickey County from 2022 to 2030 from the Housing Needs Assessment for The North Dakota Planning Region VI. Projected increases in housing are critical to understanding where emergency services will be needed and where mitigation projects will have the significant impact to mitigate hazards.

Figure 4.2 – 2022 to 2030 Projected General Occupancy Demand Dickey County



Source: Housing Needs Assessment for The North Dakota Planning Region VI

5. Threat and Hazard Identification and Risk Assessment

Dickey County has a history of damages from disasters. In the updating of this plan, the Planning Committee and county and city officials identified 12 hazards to be included 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 Dickey County and each of its jurisdictions for each of the 12 hazards.

The 12 hazards are:

- Communicable Disease
- Dam Failure
- Drought
- Flood
- Hazardous Material Release
- Homeland Security Incident
- Shortage or Outage of Critical Materials or Infrastructure
- Severe Summer Weather
- Transportation Accident
- Severe Winter Weather
- Structure Fire and Structure Collapse
- Wildland Fire and Rural Fire
- Windstorm

Dickey County history shows a high risk of damage from disasters. The FEMA Presidential Disaster Declaration map in Figure 5.1 shows that North Dakota and Dickey County are one of the areas in the nation with the most presidential disaster declarations in the past 50 years.

Dickey County has had 33 Presidential Disaster Declarations (Table 5.1), including declarations for flooding, severe storms, ice jams, snowmelt, and ground saturation. These declarations highlight the large level of losses experienced in Dickey County and the value of mitigation actions.

Table 5.1 – 1953 through 2026 Presidential Disaster Declarations for Dickey County, N.D.

Dec. Num.	Date	Disaster Description	Statewide Costs	President
216	03/23/1969	Flooding	6,144,924	Johnson
256	04/18/1969	Flooding	20,349,850	Nixon
475	07/11/1975	Severe Storms, Flooding	18,771,101	Ford
554	04/17/1978	Storms, Ice Jams, Snowmelt, Flooding	11,165,307	Carter
581	04/26/1979	Severe Storms, Snowmelt, Flooding	57,100,615	Carter
581	04/26/1979	Severe Storms, Snowmelt, Flooding	57,100,615	Carter
1001	07/26/1993	Flooding, Severe Storms		Clinton
1032	07-01-1994	Severe Storm, Flooding		Clinton
1050	05/16/1995	Severe Storms, Flooding, Ground Sat.	24,294,145	Clinton
1118	06/05/1996	Severe Storms, Flooding, Ice Jams	18,135,392	Clinton
1157	01/12/1997	Severe Winter Storms, Blizzard	21,264,168	Clinton
1174	04/07/1997	Severe Flooding, Severe Winter Storm	531,404,655	Clinton
1220	06/15/1998	Flooding, Ground Sat, Severe Storms	24,468,099	Clinton
1279	06/08/1999	Severe Storms, Flooding, Snow, Ice	145,619,808	Clinton
1334	06/27/2000	Severe Storms, Flooding, Ground Sat	113,151,807	Clinton
1376	05/28/2001	Severe Storms, Flooding, Ground Sat	45,117,082	GWBush
1597	07/22/2005	Severe Storms, Flooding, Ground Sat	19,237,140	GWBush
3247	09/13/2005	Hurricane Katrina Evacuation		GWBush
1616	11/21/2005	Severe Winter Storm and Record and/or Near Record Snow		GWBush
1713	07/17/2007	Severe Storms, Flooding	4,938,793	GWBush

1829	03/24/2009	Severe Storms, Flooding	107,590,628	Obama
1879	02/26/2010	Severe Winter Storm	20,602,060	Obama
1907	04/30/2010	Flooding	6,212,845	Obama
1981	05/10/2011	Flooding	43,547,540	Obama
4553	07/09/2020	Flooding	1,642,978.92	Trump
4509	04/01/2020	Covid-19 Pandemic	184,361,597.77	Trump
4475	01/21/2020	Flooding	12,807,582.76	
3477	03/13/2020	Covid-19		Trump
4444	06/12/2019	Flooding	8,253,412.84	Trump
4660	07/13/2022	Severe Winter Storm, Flooding		Biden
4686	02/05/2023	Severe Winter Storm, Snowstorm, Straight-line Winds	1,748,257	Biden
4717	07/05/2023	Flooding	2,481,988	Biden
4760	02/15/2024	Severe Winter Storm, Straight-Line Winds	11,556,823	Biden

Source: FEMA

In addition, Dickey County has had 19 disasters where the governor requested a Presidential Disaster Declaration but was turned down. These turndowns assist in showing the history of damages from drought, high winds, and wildfire threats.

Table 5.2 – 1953 through 2023 Declined State Requested Disaster Declarations for N.D.

Number	Turn Down Date	Type	Disaster Description	President
61005	08/31/1961	Major	Drought	Kennedy
69006	03/21/1969	Major	Snow Removal, Flood Preparations	Nixon
71045	06/24/1971	Major	Flooding	Nixon
72022	04/25/1972	Major	Flooding	Nixon
75079	04/09/1975	Major	Snow, Floods	Ford
76010	09/03/1975	Major	Storms, High Winds	Ford
76211	09/10/1975	Emergency	Severe Thunderstorm & Flooding	Ford
78018	01/25/1978	Major	Severe Winter Storms	Carter
78289	07/26/1978	Emergency	Tornado	Carter
78042	02/16/1978	Emergency	Snowstorm	Carter
80045	06/16/1980	Emergency	Drought	Carter
88022	11/18/1988	Major	Drought	Reagan
96176	11/19/1996	Major	Severe Storms	Clinton
2106	09/05/2002	Emergency	ND-Wildfire Threat	GWBush
9027	11/4/2008	Emergency	Snow	GWBush
14090	11/26/2014	Major	Flood	Obama
17084	11/14/2017	Major	Severe Storm	Trump
17136	10/07/2017	Major	Drought	Trump
23026	05/09/2023	Major	Freezing	Biden

Source: Federal Emergency Management Agency; Public Entity Risk Institute

Each jurisdiction conducted a risk assessment of each hazard and threat. Each was scored as defined below for impact, frequency, likelihood, vulnerability and capability.

Impact is what damage or losses/consequence/effects the hazard causes in a community annually.

Scored 1	Negligible – Minimal damage to jurisdiction/people/property
Scored 2	Limited – Noticeable damage to jurisdiction/people/property
Scored 3	Critical – Considerable damage to jurisdiction/people/property
Scored 4	Catastrophic – Substantial damage to jurisdiction/people/property

Frequency is how often the hazard occurs annually.

Scored 1	Unlikely – history of events shows less than 1% chance hazard occur
Scored 2	Possible – history of events shows between 1% to 10% chance hazard occurs
Scored 3	Likely – history of events shows between 10% to 100% chance hazard occurs
Scored 4	Highly likely – history of events shows nearly 100% chance hazard occurs

Likelihood is how probable it is that the hazard will occur annually.

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

Vulnerability is the characteristics of the community assets making them susceptible to damage

1. vulnerable areas, such as trailer courts, building construction, and blocked roads and
2. vulnerable population, individuals with special needs, elderly, day cares, and schools

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

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 on the following pages summarizes the risk assessment scoring of each hazard at county and city jurisdictions. The individual results of each hazard assessment are repeated in each hazard section.

Table 5.3 – Dickey County Jurisdiction Risk Assessment Scoring Summary

Risk Assessment **Jurisdiction: Dickey County**

Hazard	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Communicable Disease	4	4	4	3	1	**14**
Drought	4	2	3	4	2	**11**
Flood	4	4	4	3	3	**12**
Hazardous Material Release	3	4	4	4	0	**15**
Homeland Security Incident	3	2	2	3	0	**10**
Shortage or Outage of Critical Materials or Infrastructure	4	3	3	4	2	**12**
Severe Summer Weather	4	4	4	3	2	**13**
Transportation Accident	4	4	4	4	2	**14**
Severe Winter Weather	4	4	4	3	2	**13**
Urban Fire/Structure Collapse	3	3	3	3	2	**10**
Wildland Fire	4	4	4	3	2	**13**
Windstorm	3	3	3	3	2	**10**
Dam Failure	4	2	2	2	2	**8**

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

Ellendale Risk Assessment						
Hazard	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Communicable Disease	3	4	4	3	2	**12**
Drought	4	2	2	3	3	**8**
Flood	3	4	4	2	3	**10**
Hazardous Material Release	3	4	4	2	2	**11**
Homeland Security Incident	2	1	1	1	2	**3**
Severe Summer Weather	3	4	4	3	3	**11**
Severe Winter Weather	3	4	4	4	2	**13**
Shortage or Outage of Critical Materials or Infrastructure	3	2	2	2	3	**6**
Transportation Accident	4	4	4	3	3	**12**
Urban Fire/Structure Collapse	2	1	1	3	3	**4**
Wildland Fire	3	2	2	2	2	**7**
Windstorm	3	4	4	3	2	**13**
Dam Failure – no threat	N/A	N/A	N/A	N/A	N/A	N/A

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

Forbes Risk Assessment						
Hazard	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Communicable Disease	2	1	1	1	1	**4**
Drought	4	2	3	1	2	**8**
Flood	4	4	4	1	2	**11**
Hazardous Material Release	4	2	2	1	1	**8**
Homeland Security Incident	4	1	1	1	1	**6**
Severe Summer Weather	4	4	4	4	1	**15**
Severe Winter Weather	3	4	4	4	2	**13**
Shortage or Outage of Critical Materials or Infrastructure	4	4	4	3	1	**14**
Transportation Accident	4	2	3	1	1	**9**
Urban Fire/Structure Collapse	4	2	3	3	2	**10**
Wildland Fire	4	2	3	1	2	**8**
Windstorm	3	3	3	4	1	**12**
Dam Failure – not a threat	N/A	N/A	N/A	N/A	N/A	N/A

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

Fullerton Risk Assessment						
Hazard	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Communicable Disease	4	4	4	3	1	**5**
Drought	4	1	2	3	1	**9**
Flood	4	4	4	3	1	**14**
Hazardous Material Release	4	1	2	2	2	**7**
Homeland Security Incident	3	1	1	1	1	**5**
Severe Summer Weather	3	4	4	4	1	**14**
Severe Winter Weather	3	4	4	4	2	**13**
Shortage or Outage of Critical Materials or Infrastructure	4	4	4	3	1	**14**
Transportation Accident	4	2	3	3	1	**11**
Urban Fire/Structure Collapse	3	2	3	4	2	**10**
Wildland Fire	3	4	4	4	2	**10**
Windstorm	3	4	4	4	1	**14**
Dam Failure – no threat	N/A	N/A	N/A	N/A	N/A	N/A

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

Ludden Risk Assessment						
Hazard	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Communicable Disease	4	4	4	3	2	**13**
Drought	2	2	2	2	3	**5**
Flood	3	2	2	4	2	**9**
Hazardous Material Release	3	2	2	3	1	**9**
Homeland Security Incident	3	2	1	1	2	**5**
Severe Summer Weather	3	4	4	4	2	**13**
Severe Winter Weather	3	4	4	4	2	**13**
Shortage or Outage of Critical Materials or Infrastructure	3	2	2	1	2	**6**
Transportation Accident	3	2	2	3	2	**8**
Urban Fire/Structure Collapse	3	2	2	3	1	**9**
Wildland Fire	4	2	2	3	1	**10**
Windstorm	3	4	4	4	1	**14**
Dam Failure	1	1	1	1	1	**3**

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

Monango Risk Assessment						
Hazard	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Communicable Disease	2	4	4	2	2	**10**
Drought	3	3	3	3	1	**11**
Flood	4	2	2	3	1	**10**
Hazardous Material Release	3	3	3	4	1	**12**
Homeland Security Incident	3	1	1	4	1	**8**
Severe Summer Weather	4	3	3	3	1	**12**
Severe Winter Weather	3	4	4	4	1	**14**
Shortage or Outage of Critical Materials or Infrastructure	3	2	2	3	1	**9**
Transportation Accident	3	2	2	2	2	**7**
Urban Fire/Structure Collapse	3	3	3	1	1	**7**
Wildland Fire	4	2	2	1	1	**8**
Windstorm	4	2	2	1	1	**8**
Dam Failure – not a threat	N/A	N/A	N/A	N/A	N/A	N/A

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

Oakes Risk Assessment						
Hazard	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Communicable Disease	4	4	4	3	2	**13**
Drought	3	3	3	3	1	**11**
Flood	3	4	2	2	3	**8**
Hazardous Material Release	4	4	4	3	2	**13**
Homeland Security Incident	3	1	1	4	1	**8**
Severe Summer Weather	3	4	4	3	1	**13**
Severe Winter Weather	3	4	4	4	1	**14**
Shortage or Outage of Critical Materials or Infrastructure	4	2	2	3	1	**10**
Transportation Accident	4	4	4	3	2	**13**
Urban Fire/Structure Collapse	3	3	3	2	3	**8**
Wildland Fire	3	4	4	3	2	**12**
Windstorm	3	4	4	4	1	**14**
Dam Failure	1	1	1	1	1	**3**

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

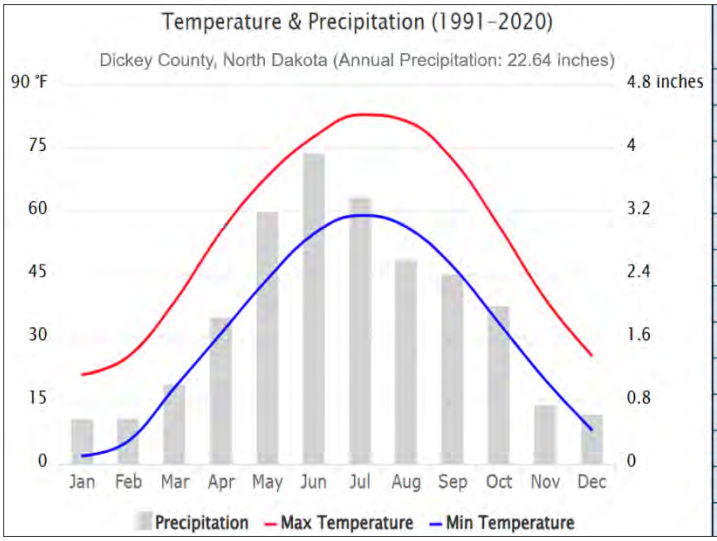
5. Climate [Basic: Historical, Current Variability, Trends, and Projections]

5.1. Historical. Historical Climate is derived from documented weather and climate observational data and is usually discussed in terms of its Long-Term mean, or average, and its extremes. Long-Term can refer to the entire Period of Record (POR) or its most current 30-year Climate Normal, a sliding scale that is updated every decade. Short-Term refers to variations in climate that occur over periods of a few years to a decade or more (SUNY/OER, 2025). The most common of these are oscillations between El Nino and La Nina conditions in the equatorial Pacific Ocean, which often affect the Northern Plains states.

5.1.1. General Climate Type - Continental. Temperature and precipitation are the two parameters traditionally used to describe general, large-scale climate types.

Temperature. The Northern Great Plains (NGP) region in general and Southeast North Dakota (Dickey County) in particular, has an extreme continental climate characterized by a very high annual variation in temperature (warm summers and cold winters) and a high daily range in temperatures, as compared to maritime climates. These high ranges in temperature are mainly due to the area's location: in the mid-north latitudes (between 45.935° and 49.00 ° N), along the north border of the continental United States, centered in the North American Continent, and far from the modifying effect of oceans.

Precipitation. Moisture is a second key component of climate, with North Dakota effectively straddling "the transition from the moist eastern United States and the semiarid West" (Frankson, 2022). A high daily range in temperature is primarily due to the lower heat capacity of dry air and dry soils as compared to humid air and either moist soils or large bodies of water, so that dryer air and dryer soil will both warm and cool at a faster rate than wetter air or soil (Wikipedia: Climate of ND, 2023).



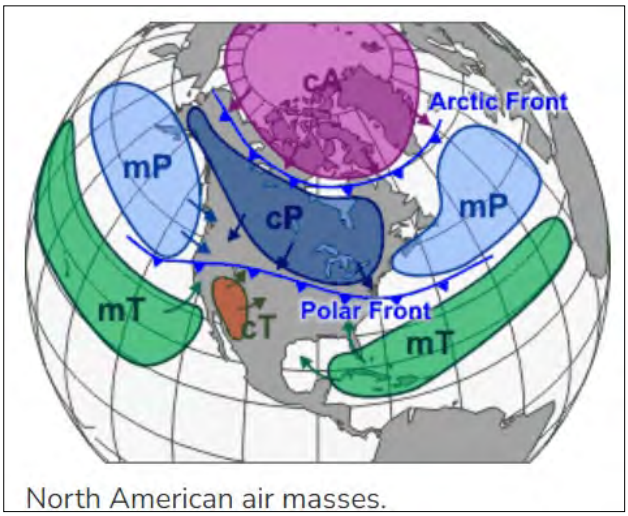
Month	Pcpn(in.) Normal	Tmax(F) Normal	Tmin(F) Normal	Tavg(F) Normal
Jan	0.57	20.6	1.7	11.2
Feb	0.59	25.1	5.2	15.1
Mar	1.00	37.7	18.1	27.9
Apr	1.84	54.3	30.6	42.5
May	3.15	67.8	43.5	55.7
Jun	3.89	76.9	54.2	65.5
Jul	3.34	82.0	58.4	70.2
Aug	2.54	80.8	55.8	68.3
Sep	2.38	71.6	46.5	59.0
Oct	1.98	56.1	33.1	44.6
Nov	0.73	38.7	19.5	29.1
Dec	0.63	25.3	7.9	16.6
Annual	22.64	53.1	31.2	42.1

Figure 5.1, above, shows the average monthly precipitation and the range of monthly average high and low temperatures for the Dickey County area during the most recent 30-year climate normal period, 1991-2020 (XM-ACIS, 2025; Climate Toolbox, 2024; NOAA/CAAG, 2025).

Dickey County's longest running record of daily maximum and minimum temperature and precipitation reports are for the Ellendale and Fullerton areas (XM-ACIS, 2025). The NOAA Cooperative Observer station located in Ellendale ran from January 1, 1893, through August 31, 2019. The station at Fullerton 1ESE ran from January 1, 1898, through February 29, 2024. As of May 21, 2025, there is a North Dakota Agricultural Weather Network (NDAWN) station located at Ellendale 4NE to help fill this data gap.

According to NOAA's Climate-at-a-Glance (NOAA/CAAG, 2025), the average annual precipitation for Dickey County during the most recent 30-year climate normal period is around 22.64 inches, about 3.79 inches higher than the statewide average, while the average annual temperatures is around 42.1°F, about 1.1°F warmer than the statewide average. This composite record of daily temperature and precipitation reports covers most areas of the state, dating from 1895 to the present, and will be used for climate comparisons throughout this section.

Figure 5.2. Common Air Mass Types. The dominant airmass types which affect all areas of North Dakota are Continental Polar (cP), which originates over the high latitudes of central Canada, and Continental Tropical (cT), which originates over the upland areas of the western United States. A third common airmass type is Maritime Polar (mP), which originates over the Gulf of Alaska and far-north Pacific Ocean. Note that maritime air from the Pacific Ocean loses most of its moisture in transiting the western mountain ranges. Two other and more extreme airmass types also affect North Dakota, generally over shorter and more variable periods of time. Midwinter will often be impacted by the extreme cold of Continental Arctic (cA) air, originating near the North Pole, while the midsummer will often be impacted by very humid Maritime Tropical (mT) air, originating over the Gulf of Mexico. Image courtesy of NOAA (NOAA: Airmasses, 2023).



Continental Arctic air is characterized by very cold and dry air, typically well below zero (F), and is responsible for ND's coldest wintertime temperatures. *Continental Tropical* air is typically warm (or hot) and dry and results in ND's highest summertime air temperatures. *Maritime Tropical* air is typically hot and humid, and though the air temperature can be less extreme than with cT air, the increased humidity often results in ND's highest Heat Index days. Local, near-surface humidity levels may be reported in terms of either *Relative Humidity* or *Dewpoint Temperature* readings.

Relative Humidity is the ratio of how much water vapor is in the air compared to how much the air can hold at a given temperature and pressure (AMS Glossary, 2013) and is often referred to as a comfort index. The ideal relative humidity level for humans ranges from 30 to 50 percent, according to a Mayo Clinic report. Where lower levels can result in dry skin, respiratory issues, etc., and higher levels can make it difficult for the human body to cool itself through the evaporation of sweat.

Dewpoint Temperature is a measure of the quantity of moisture in the air. When the Dewpoint equals the Air Temperature, Relative Humidity is maximized at 100 percent, and either dew, frost, or fog forms (AMS Glossary, 2013). Heat Index is calculated using Air Temperature and either Dewpoint or Relative Humidity.

The record maximum dewpoint for ND was set at 89F near the communities of Wahpeton ND (Richland County) and **Oakes ND** (Dickey County), on 19 July 2011 (Mesowest, 2025). And with a concurrent air temperature of 91.4F, the maximum Heat Index (apparent temperature) near these two communities ranged from 130 to 135F. On that same day, the record dewpoints for Minnesota (Moorhead MN: 88F) and for Manitoba (Brandon MB: 82F) were also set. That day, dewpoint temperatures reaching more than 80F overspread most all of North Dakota along and east-northeast of the Missouri River, western MN, much of northeast South Dakota, and well into southwestern Manitoba past Canada Hwy 1 (Gust, 2018).

That same day, the Edgeley NDAWN station measured a peak dewpoint of 85.4F (NDAWN, 2025). With high temperatures that afternoon ranging from 92 to 95F, the peak Heat Index (apparent temperature) across most of both LaMoure and Dickey Counties ranged from 122 to 135F.

5.1.2. Sub-climate differences across the region are primarily driven by the range of temperature and precipitation extremes experienced in any given year or over a series of years. Average temperatures are generally cooler across northern ND and northward, generally warmer in southern ND and southward.

In contrast, conditions are generally wetter and more humid in the somewhat lower elevations of eastern ND and points further eastward towards the Great Lakes. The somewhat higher elevations of far western ND, and the high plains region stretching westward to the Rocky Mountain Front Range, are drier and less humid.

Figure 1.3. Köppen-Geiger Climate Classification

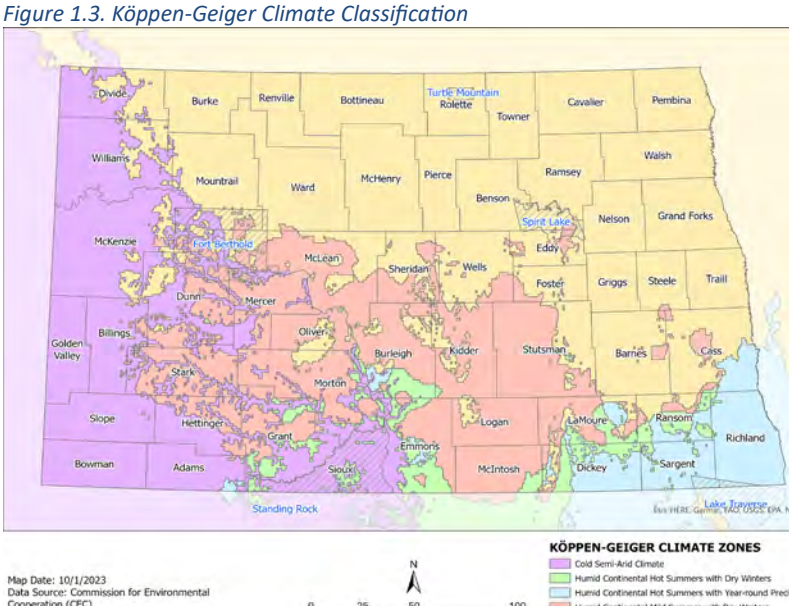


Figure 5.3. (CEC, 2021: at right) shows that most of North Dakota, *including all of Dickey County,* falls under a Köppen-Geiger climate classification, ***Dfb*** (continental: cold/snowy winters, humid, with warm to hot summers). While extreme west-southwestern North Dakota, *including most areas west of the Missouri River, r*esembles more of a Steppe type climate, ***BSk*** (continental: arid/semi-arid, steppe, cold).

For Dickey County, and North Dakota in general, the *average climate* can be best described as a statistical position between climate extremes **(Wikipedia: Köppen, Steppe, Semi-Arid, 2013).**

5.1.3. Micro-Climates in any county, tribal land or community depend on a variety of factors such as soil type, land-use/land-cover, slope, elevation, drainage, and wind/exposure.

Soil Type. Across the eastern seven-eighths of Dickey County, predominant soil types are the result of glacial drift, with alluvial deposits (Edland, 1993; USDA, 1998). Soils are a combination of loam, clay loam, and sandy loam from the Barnes Series, which consists of very deep, well drained soils that formed in loamy glacial deposits. Sand and gravel deposits can be found in the upper banks of the James River Valley. The western one-eighth or less of the county lies in the Missouri Coteau District, which has more hills and areas of collapsed glacial till with shaly gravel deposits (Bluemle, 1979). Wetlands are more numerous here, than on the central and eastern portions of the county (ND Game and Fish, 2023).

Land-Use. The predominant land use is farmland (84% total) with a mixture of soybeans, corn, wheat, small grain, and other small grains or dry edible beans (71%) along with livestock pastureland (13%). Limiting factors for agriculture can be thin, light soils, poor drainage, and inadequate precipitation (USDA, 2022). Undeveloped rangeland or river bottom makes up about 12 percent of the landscape. Short to mid-grass prairies are native to the western portions of the county, mid to tall-grass prairies in the east, with cottonwood, elm, green ash and various shrubs occurring in draws and valleys (Herman, 2008; Claeys, 2020). Woodlands make up less than 1 percent of the landscape in the county, primarily as

homestead shelter belts or urban plantings. Ponds and small lakes also cover less than 1 percent of the landscape.

Slope and Drainage. Dickey County has a primary but subtle slope gradient from west to east and a secondary slope gradient from north to south. Primary drainages are along Cottonwood and Bear Creeks into the south flowing James River, draining the eastern 40% of the county. The central and western 55% of the county drains along either the Elm or Maple Rivers, southward into northeastern South Dakota, where they eventually flow into the James River (Google Earth, 2024; NDDWR, 2011). The southwest corner of the county, roughly 5 percent, is part of the West Missouri River Coteau, with a poorly defined (pothole) drainage to the southwest, and eventually to the Missouri River in northcentral South Dakota.

Elevation. The highest elevation is between 2240 and 2250 ft MSL, in the far southwest corner of Dickey Couty, within a series of low hills in the southwest corner of Albertha Township currently occupied by a wind farm, about 9 miles west-northwest of the community of Forbes (Peakbagger, 2004). The lowest elevations of around 1290 ft MSL are located along the James River, at the South Dakota state line, roughly 5.5 miles south-southwest of Ludden, below the CR1 bridge (Google Earth, 2024; Edland, 1993).

Short-term micro-climates can form within a county or community under a variety of conditions. For example, areas which receive significantly more rainfall or snowfall than other areas, typically through spotty convective rain or snow showers, can develop temporary warm or cool zones. In the winter season, areas with heavier and/or fresher snowfall may cool more sharply overnight due to increased insulation from any lingering soil heat, or warm less quickly the following day due to increased reflection of solar energy off the fresh snow surface. A township sized area that is largely snow-free may warm by 10-20F over a similar sized areas covered with fresh snow, with greater temperature differences occurring when winds speeds and mixing are low.

During the summer months, a township sized area with recently wetted soils will generally remain a bit cooler than surrounding dry areas during the day, due to the solar energy used to evaporate moisture from the soil, and stay a bit warmer during the night, due to the higher retained heat in the near surface moist air and the moist soil (Trenberth, 2003, p.1212). These small-scale temperature differentials often persist during periods of calm or light winds and dissipate quite quickly under high wind conditions.

5.1.4. Importance of Wind Direction and Speed. Changes in windspeed and/or direction often indicate the passage of airmass boundaries, cold fronts or warm fronts, and related changes in weather. Winds vary significantly with height above the terrain and are often much stronger some tens to hundreds of feet above the terrain where the frictional forces of surface roughness, structures, and trees diminish.

In current weather observation practice, windspeed and direction are measured at most automated and manual weather stations, but not necessarily at climate reporting stations. An “instantaneous windspeed” is measured at 3-second intervals. **Sustained winds** reflect the highest windspeed average over any 2-minute period within the 10 minutes preceding the observation time. **Wind gusts** are the highest 3-second measurement during that same 10-minute period. **Peak wind** is the maximum 3-second gust measured *at any time* during the hour (FCM-H1, 2019, pp.28-30).

Gradient winds are those sustained winds at various atmospheric levels and produced by larger scale pressure differences in the atmosphere. Daytime warming of the terrain by sunshine gives rise to convective mixing of the lower atmosphere, which can then mix higher gradient windspeeds down to the surface, often in the form of buffeting wind gusts.

According to Gust (2022), the standard height for measuring surface winds for aviation purposes is at 10 meters (32.8 ft.) Above Ground Level (AGL), with wind speed measurements available at most airports around the state. Wind measurements for agricultural purposes (example NDAWN: North Dakota Agricultural Weather Network) are often as low as 3 meters (9.8 ft.) and for fire-weather monitoring purposes (example RAWS: Remote Automated Weather Stations) at around 6 meters (19.7 ft.) AGL.

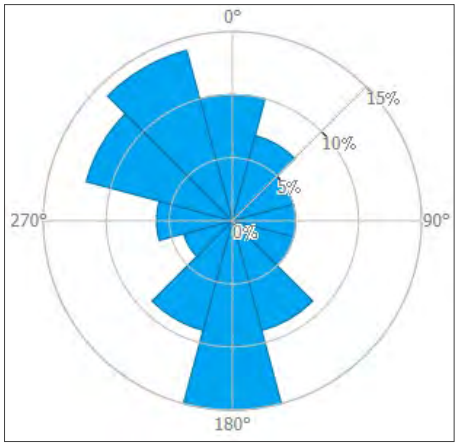
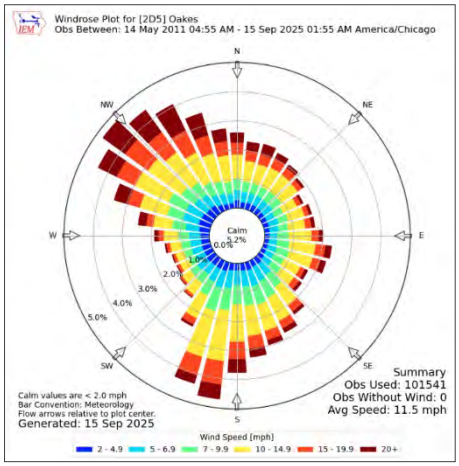


Figure 5.4. Multi-source/composite wind energy estimates indicate that derived winds across **central Dickey County** average near 10.5 mph, at 10 meters AGL, and near 17.5 mph at 100 meters AGL (Global Wind Atlas, 2023). Strongest winds are most often from the north-northwest, with southerly winds coming in at second place. These estimates are consistent with a wind rose from the Oakes Municipal Airport (K2D5), as displayed at the right. Seasonal wind roses for those airports show that during the winter months (DJF), winds are predominately from the north-northwest (IEM, 2023). During the summer months (JJA), winds are more equally split between a north-northwest and a southerly direction.



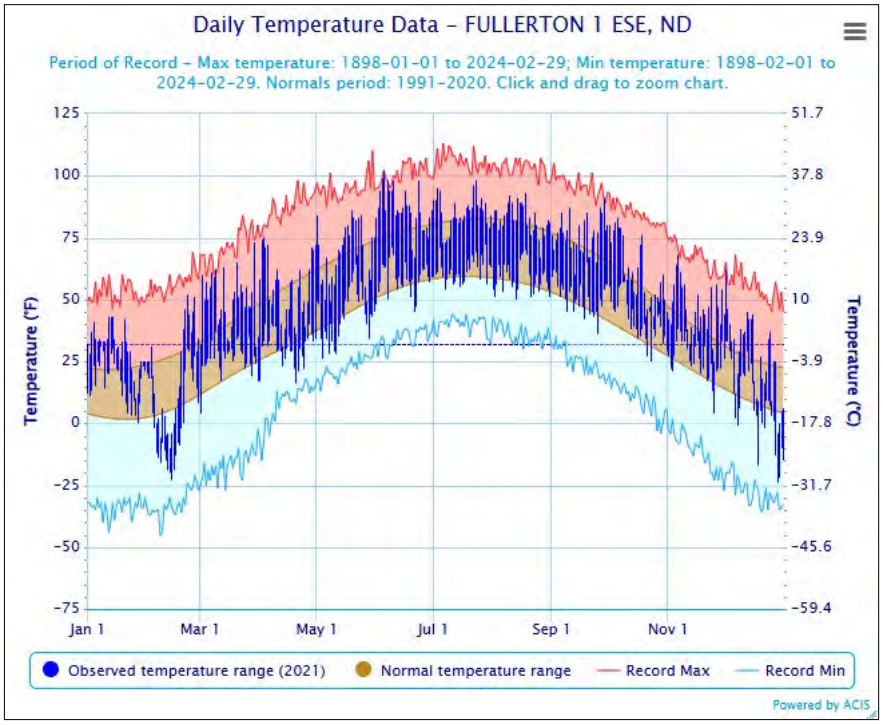
The **highest non-tornadic wind record of 125 mph for Dickey County** was estimated based on extreme wind damage produced along a 45 mile long and 4 mile wide cross-county, diagonal swath, extending from northwest of Merricourt to southeast of Oakes, between 3:40 and 4:50 pm CDT on the afternoon of 10 July 2011. An NWS damage survey team noted that numerous hardwood trees were snapped or uprooted, while numerous house roofs, pole sheds, and grain bins across the county were heavily damaged or destroyed.

During that 2011 storm, a 200 foot tall radio tower was destroyed in Dickey County. In neighboring Sargent County, 2NW of Straubville, an instrumented wind energy tower recorded peak winds of 127 mph (NOAA/StormData, 2025). Storm damages in Dickey County alone were estimated at $2.25M in 2011 dollars, or $3.34M in 2025 dollars (Webster, 2025). The larger thunderstorm complex produced widespread damaging winds, large hail, and embedded tornadoes (rated EF0-EF2) across much of south central and southeastern ND through the course of that late morning and afternoon. And at least three of the seven reported tornadoes from this episode (rated EF0 to EF1) occurred in Dickey County.

Dickey County's **strongest tornadoes include an F2 (pre 2007) episode that occurred on 27 July 1999** which tracked for roughly 2 miles, passing about a mile south of Ellendale. This tornado uprooted a number of trees along its path and completely destroyed 3 trailer homes, scattering their debris a half mile downstream (StormData, 2025). From January 1950 through December of 2024 there have been 35 reported tornadoes in Dickey County, with no associated serious injuries or deaths.

5.2. North Dakota Extreme Climate Variability. Located near the geographical center of the North American Continent and furthest from the modifying effects of oceans or seas, Dickey County, North Dakota, epitomizes the concept of extreme continentality. It has some of the highest degrees in day-to-day, week-to-week, month-to-month, year-to-year, and multi-decadal variability in both temperature and precipitation of anywhere on the continent (Franksen et al., 2023).

Figure 5.2.1. Fullerton ND, Extreme Daily through Annual Variability. The graph below contrasts the range in daily temperatures with their recent 30-year climate normal period, and the extreme range in temperature that's occurred over the entire Period of Record for the Fullerton area (XM-ACIS, 2025).



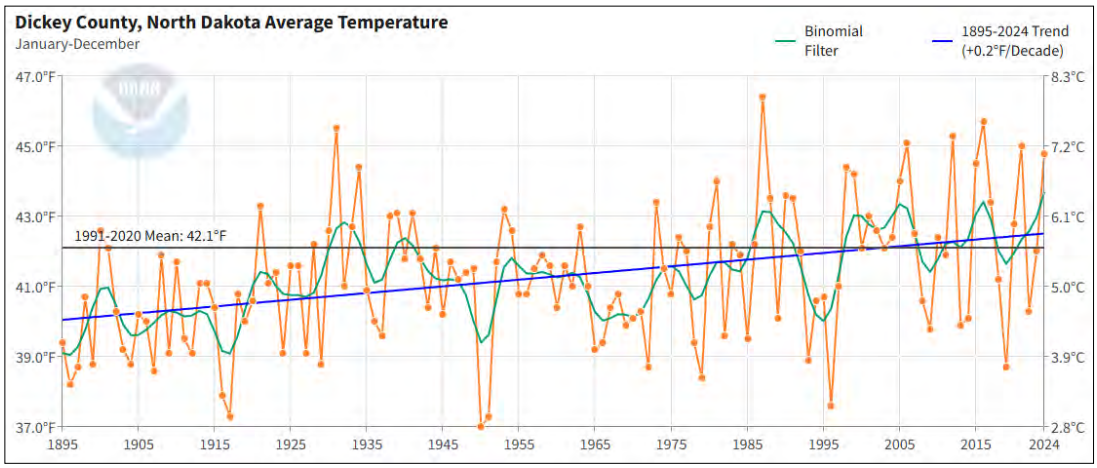
The dark blue line indicates the daily maximum and minimum temperatures from January 1 through December 31, 2021. Note that day-to-day and week-to-week temperatures are highly variable.

The golden band represents the range of daily average maximum and minimum temperatures, based on the recent 1991-2020 period. The red line indicates the daily record high temperatures for the entire Period-of-Record while the light blue line indicates the daily record low temperatures (XM-ACIS, 2025). Note that at Fullerton1SE, the *all-time* record high temperature was 113F, set on 6 July 1936, while the *all-time* record low temperature was -45F, set on 8 Feb 1984.

The statewide extremes of 121F (Steele ND) and -60F (Parshall ND) were both set during the same year, on 6 July 1936 and 15 February 1936, respectively. No doubt, the protracted dry conditions of the Great Plains Dust Bowl era led to the dramatically cold winter and dramatically hot summer conditions experienced statewide, and throughout that period.

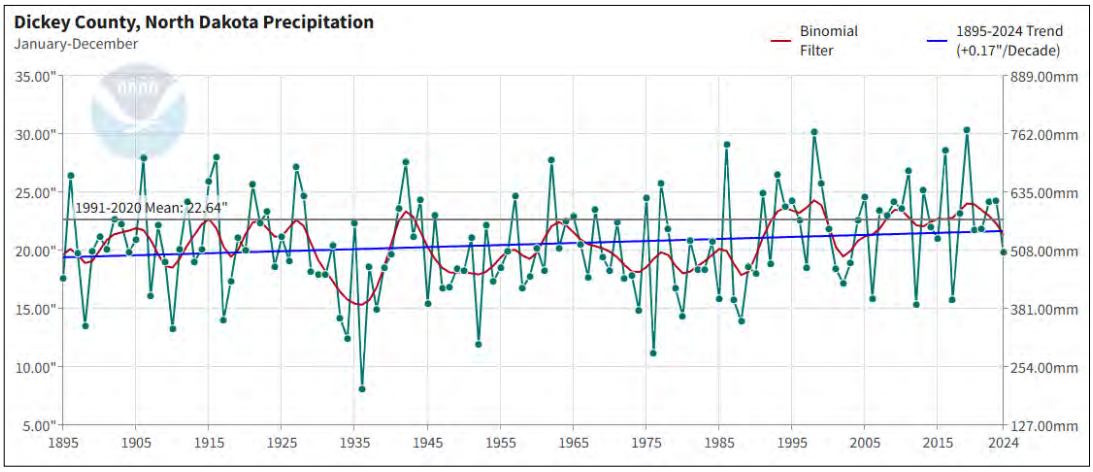
ND's range of extremes in heat and cold are only exceeded by two other states, those being the intermountain states of Montana and Utah (Statewide Extremes, 2023). These two states have markedly larger variations in elevation which likely led to the markedly colder minimum temperatures recorded at locations several thousand feet higher in elevation than that of the record cold ND location.

Figure 5.2.2. Dickey Co. ND Extreme Interannual to Multi-Decadal Variability in Temperature. The graph below shows the annual temperature pattern for Dickey County, and covers the long-term Period-of-Record, which extends back through 1885 and includes all available climate data from stations located within or near the county (NOAA/CAAG, 2025).



Note the frequent changes from warmer to colder years, with patterns of change that occur over a period of a few years to decades, and the subtle but steady warming trend of around 0.2F per decade (2.0F per century). The average temperature of 42.1F for Dickey County ND is about 2.1F warmer than the statewide average, while the rate of increase (trend) is one tenth of a degree Fahrenheit (0.1F) per decade slower than the statewide average.

Figure 5.2.3. Dickey Co. ND Extreme Interannual to Multi-Decadal Variability in Precipitation. The graph below shows the annual precipitation pattern for Dickey County, and covers the long-term Period-of-Record, which extends back through 1885 and includes all available climate data from stations located within or near the county (NOAA/CAAG, 2025).



Again, one can see the frequent changes from much drier to much wetter years, the patterns of changes that occur over a period of a few years to decades, and the subtle but steady trend for increasing precipitation at around 0.17 inches per decade (1.7 inches per century). The current 30-year average precipitation of 22.64 inches for Dickey County is about 3.79 inches higher than the statewide average, while the rate of increase (trend) is about 0.50 inches per century faster than the statewide average.

5.3. Future Conditions in North Dakota (Climate Variability, Trends, and Projections).

As of April 2023, the Federal Emergency Management Agency (FEMA) requires the inclusion of information regarding the effects of short-term climate variability, long-term climate trends, and future climate projections on identified hazards and their potential impacts in both state and local hazard mitigation plans. The 2025 Dickey County, ND, Multi-Hazard Mitigation Plan incorporates this information in coordination with state and federal guidance.

X.3.1. Primary Sources. Information for this section was extracted from the 2022 North Dakota State Climate Summary, the Fifth National Climate Assessment (2023), the 2024-2029 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP), related research as identified by these sources, and by various regional and local experts identified and contacted throughout the plan development process.

- 2022 North Dakota State Climate Summary.

Prepared and updated by the NOAA National Centers for Environmental Information (NCEI) and select regional and state climate experts, the 2022 ND State Climate Summary contains detailed information regarding the state's extremely variable climate and recent climate trends, as evidenced by the historical climate record, along with a summary of computer model-based projections of its potential future climate (Frankson, 2022).

- Fifth National Climate Assessment (NCA5).

Developed by the U.S. Global Change Research Program (USGCRP), *NCA5* is a synthesis of climate knowledge, impacts, and trends across regions and sectors of the United States to help inform decision-making concerning a changing climate.

Chapter 25 of the NCA5 focuses on the Northern Great Plains, and explores specific trends and impacts in more detail, while discussing uncertainties that exist in the underlying science, the modelling process, the analysis of climate model results, and their potential impacts. This synthesis helps planners to ascribe levels of confidence and likelihood to potential impacts and to identify resilience-building activities that can be incorporated locally through mitigation planning (Knapp, 2023).

- 2024-2029 North Dakota Enhanced Mitigation Mission Area Operations Plan (MAOP).

Developed by the ND State Hazard Mitigation Team, the 2024 MAOP builds on the 2018 Enhanced MAOP and incorporates updated information as provided by team members, analysts and consultants, and guidance as provided by federal law; FEMA's state, tribal, and local mitigation planning policy guides; and mitigation planning experts at local, state, and federal levels (ND eMAOP, 2024).

5.3.2. Current belief regarding ND climate variability, trend, and potential change. North Dakota has the highest degree of day-to-day, week-to-week, month-to-month, and year-to-year variability in both temperature and precipitation in the nation. This **variability has increased in both frequency and magnitude over the past century and is likely to continue to increase.** According to Frankson et al. (2022), through the end of this century: North Dakota's extreme climate variability will likely continue to be the primary influencer or signal within each of the natural hazards which directly or indirectly impact jurisdictions and peoples across the state, over days to decades long timescales, *and* the much more subtle and gradual trends of climate change over the rest of this century may act to further extend the range of such variability beyond that which has previously been documented in the historical record.

As discussed in section X.2., temperatures across North Dakota, the Northern Great Plains Region, and across much of the globe have been increasing at a slow but quite variable rate throughout the 20th century and the beginning of the 21st century. National and global rates of increase are similar at roughly 1.60F (0.89C) per century. However, northern latitudes in general, and particularly North Dakota and the Northern Great Plains are seeing markedly higher rates of change.

At 2.6F (1.44C) per century, North Dakota's statewide average *rate of* annual temperature increase is *one of* the fastest *(tied for 6th highest)* in the contiguous United States and is driven primarily by warming winter temperatures - *especially by warming wintertime low temperatures*. And the Dickey County area has a similarly rapid rate of increase, while all of the state is prone to such extremes. Given the relatively flat, low-relief nature of the terrain in North Dakota, most areas in the state have a similar high degree of variability in temperature and precipitation, with only a slight difference in average value from one climate division, county, and/or community to the next.

Figure 5.3.1. Observed and Projected Temperature Change Across North Dakota. According to the 2022 North Dakota State Climate Summary, the statewide average annual temperature has increased by over 2.6F in the past 122 years (since 1901), and projections indicate the potential for an additional 1 to 9F (0.6-5.0C) increase above the current 1991-2020 average through mid-century (Frankson, 2022). This amounts to a projected 2.5 to 10.5F (1.4 to 5.8C) increase above the 1901-1960 average, as indicated in the image below.

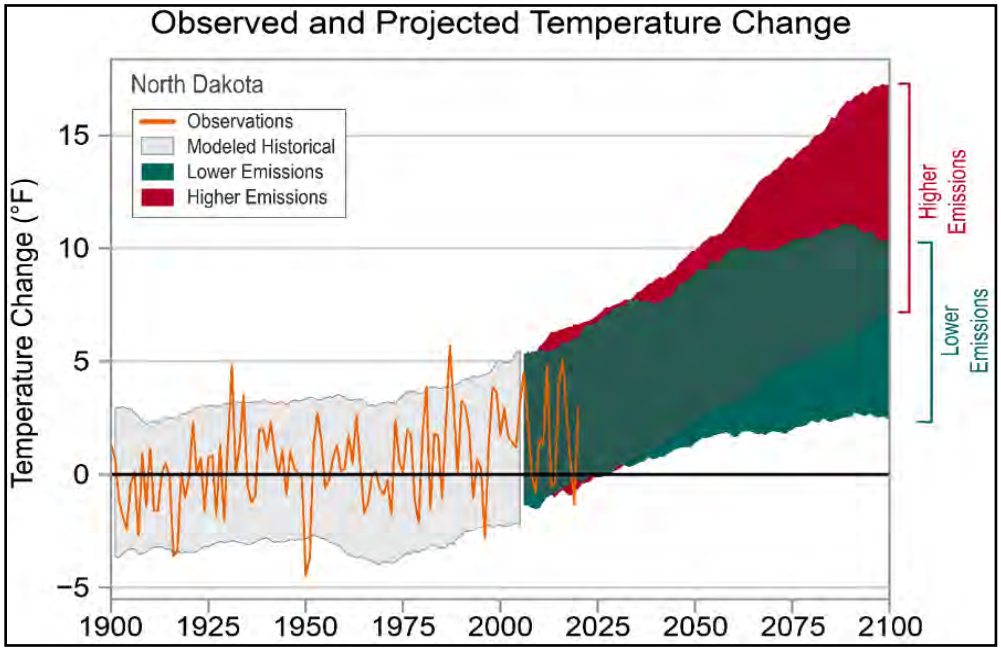


Figure 5.3.1: Observed and projected changes (compared to the 1901–1960 average) in near-surface air temperature for North Dakota. Observed data are for 1900–2020. Projected changes for 2006–2100 are from global climate models for two possible futures, one with emissions increasing at a higher rate (RCP8.5) and one with emissions increasing at a slower rate (RCP4.5). As of 2022, temperatures in North Dakota (orange line) have risen more than 2.6°F since the beginning of the 20th century. Shading indicates the range of annual temperatures from the set of climate models (CMIP5). Observed temperatures are generally within the envelope of model simulations of the historical period (gray shading). Sources: CISESS and NOAA NCEI.

5.3.3. General Climate Pattern Changes. Recent climate change trends have shown, and future projections suggest that the state can expect continued gradual warming in all seasons, with greatest warming in the winter season. Overall precipitation is likely to increase, but with a high degree of inter-seasonal and interannual variability, which could lead to longer and stronger droughts interspersed with more frequent and more intense flooding. Severe summer and winter season storms will likely continue to occur in both drier, drought-prone periods, and wetter, flood-prone periods within the state's overall high climate variability.

According to the NCA5 and information included in the 2024-2029 ND Enhanced Mitigation Mission Area Operations Plan (eMAOP) chapter on *ND Extreme Climate Variability and Potential Climate Change,* the state of North Dakota will *likely* 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 cool season precipitation - late fall, winter, and early spring.
- Warming winters.

5.3.4. Anticipated Future Climate Impacts on Natural Hazards and Man-Made Threats.

A highly variable and/or changing climate will affect more than just temperatures and precipitation levels. An increase in the frequency and severity of extreme heat events and severe summer weather will adversely affect public health, water resources, and the production of agriculture (crops and livestock). A changing climate will increase the incidence of warm wintertime temperatures while simultaneously increasing the frequency and severity of extreme cold and severe winter weather episodes, adversely impacting public health, water resources, and essential services. The average length of the growing season could increase by up to 12 days per century in North Dakota.

According to the 2024-2029 ND Enhanced Mitigation Mission Area Operations Plan (MAOP), the expected impact of climate change on the 15 natural hazards and man-made threats detailed in this plan are outlined below**.**

1. **Flood Hazard.** Future climate conditions are expected to produce increased precipitation across North Dakota, with winter and early spring precipitation expected to see the greatest increase, along with an increased risk of rainfall occurring during the traditional spring snowmelt period. In addition to increased precipitation during the cool/cold season, the number of days with strong thunderstorms and heavy rainfall is expected to increase by mid-century, especially in the eastern half of the state. Increased rainfall rates typically result in increased runoff rates and an increase in flash flooding, overland flooding, and/or riverine flooding in any season. However, rain occurring when the ground is frozen produces even more and faster runoff and is most likely to exacerbate the flood threat.

2. **Fire (Wildland/Urban) Hazard.** Droughts are projected to increase in size, frequency, and duration. The expected increases in temperatures and frequency of droughts translate into an increase in the size, frequency, and intensity of both wildland and urban fires, with an added risk due to increasing development in the Wildland-Urban Interface. Also, water supplies used for fire suppression may become compromised during drought conditions. Total acres burned have markedly increased over the past 10-15 years, while rural fire departments across ND are largely staffed by volunteers. As the frequency and intensity of wildfires are projected to increase, volunteer fire departments are projected to lose personnel strength due to general rural population

declines and/or staff retirements. These trends will likely stress unit resources and increase fire response times.

3. **Drought Hazard.** Through the end of this century, expect larger and more intense droughts, with increasing frequency and/or longer duration of drought periods in North Dakota. Potential impacts include more episodes of extreme heat/heat index with increased human, animal, and crop stress; more rapid onset of drought conditions or flash drought; more drought related (both wind and rapid rainfall runoff) erosion, riverbank destabilization, etc.; reductions in overall agricultural economy. Drought impacts on vulnerable water users, such as the agriculture industry and municipal systems, will likely be exacerbated.

4. **Cyberattack Hazard.** There is no known direct connection between cyberattacks and future climate conditions, though attackers may take advantage of inclement weather periods and other social, infrastructure, or economic stressors to mask or otherwise facilitate their attacks.

5. **Severe Winter Weather.** Through the end of this century in North Dakota, expect larger, more frequent, and more intense periods of heavy wet snow, mixed precipitation or ice storms, and freezing drizzle or mist, with somewhat warmer temperatures. Potential Impacts include a likely increase in winter season precipitation, overall, along with more periods of heavy snowfall and/or freezing rain/ice events. Warmer winter season temperatures will support a higher incidence of mixed precipitation (sleet), freezing rain, or ice storms, which will likely impact transportation, power transmission, roof loading, critical facilities, and infrastructure, along with general health and safety. Human health impacts include an increased incidence of heart, back, and/or muscle related injuries from shoveling snow or falling on ice.

6. **Severe Summer Weather.** Through the end of this century in North Dakota, expect more frequent, larger, and longer duration storms with an increase in intense rain and flooding, and an increase in large hail. Potential Impacts include an expected increase (high confidence) in heavy precipitation events overall, higher in NC and NE ND and somewhat lesser in SW ND, with a likely increase in areal and/or flash flooding but less certain impacts on summertime riverine flooding. Hail size, frequency of large hail, and length of the hail season should increase (medium confidence) with a commensurate increase in the frequency and intensity of lightning and damaging downburst winds which are tied to hail production. Expected increases in temperature are likely to lead to an increase in days with a high Heat Index and the potential for lost workhours during such periods.

7. **Infectious Disease and Pest Infestation.** North Dakota should expect larger, more frequent, and more intense outbreaks of certain infectious diseases and pests, though some human and animal diseases may also decrease in occurrence. As a result of slightly warmer and longer summers, more pests and invasive weeds will be able to thrive and spread, contributing to increases in insect populations such as *Emerald Ash Borers* and *Elm Bark Beetles*, or certain vector-borne diseases such as *Dutch Elm Disease Spores* or *West Nile Disease*. Somewhat shorter and less cold winter seasons could also lead to decreased incidents of certain infectious diseases among both human and animal populations during this period, depending on how and where population growth (or withdrawal) and development occur.

8. **Dam Failure Hazard.** The expected increase in size, intensity, and frequency of both drought and heavy precipitation episodes, or an increased frequency in change between drought and flood intervals may put more dams at risk of scenarios that exceed the original design criteria of each respective dam. Aging dams are most at risk for this expected impact.

9. **Space Weather.** Through the end of this century in North Dakota, future climate conditions are not expected to directly impact the occurrence of space weather events, though indirectly the Extent, Intensity, and Frequency of hazard related impacts could potentially be increased. Indirectly, if extreme climate variability and/or climate change begin to stress area power grids, satellite and terrestrial communications infrastructure, and other critical facilities then there is a potential for increased (compounding) impacts from any concurrent Space Weather Hazard phenomena in these and related areas.

10. **Hazardous Material Release.** Although this hazard is largely human-caused, future climate conditions may cause both direct and indirect impacts. Warmer temperatures may directly result in the expansion of gases, increases in biologic agents, or other such actions that could put hazardous material storage containers, transporters, applicators (i.e., anhydrous), or facilities at an increased risk. Increased summer and winter storms, wildfires, floods, transportation incidents, etc. could indirectly put hazardous material containers, transports, applicators (i.e., anhydrous), or facilities at an increased risk.

11. **Geologic Hazard.** Through the end of this century in North Dakota, expect more frequent, larger, and more intense geologic hazards, such as landslides, riverbank collapse, sink holes, and expansive (clay) soils. Both Drought and Heavy Precipitation events are projected to occur more frequently, which is expected to contribute to an increased frequency of expansive soils alternately cracking and swelling, landslides where steep slopes are present, or to riverbank collapse where undercutting due to subsoil flow and/or antecedent flooding is possible. Both extremes also increase the potential for wind and water erosion. Increased development pressure and the impacts of future climate conditions may increase the risk to a variety of state infrastructure and assets if constructed or situated in areas prone to geologic hazards.

12. **Criminal, Terrorist or Nation-State Attack Hazard (Active Threat).** There is no known direct connection between future climate conditions and the location, extent, intensity, or duration of specific adversarial threats, though indirect connections are possible. For instance, future climate would not necessarily promote or prevent a specific threat, while a specific weather episode may help to delay or advance such actions. And Increased heat stress, along with increased summer and winter storms, wildfires, floods, transportation incidents, etc. could increase social unrest, which could encourage increased criminal and/or adversarial threats.

13. **Civil Disturbance.** There is no known direct connection between future climate conditions and civil disturbance, though some research links the effects of climate change anxiety to an increasing intensity of civil disturbance in a variety of developing and developed countries. And research shows that increased heat stress, along with increased summer and winter storms, wildfires, floods, transportation incidents, etc. could increase social unrest, which could encourage general civil unrest. Likewise, there is an increased risk of civil disturbances targeted toward the oil and gas industry in North Dakota from growing public concern over potential impacts of climate change.

14. **Transportation Incident.** Through the end of this century in North Dakota, expect more frequent, larger, more intense, and/or longer duration droughts, floods, summer storms, winter storms, and attendant impacts - most of which are expected to adversely impact corresponding transportation corridors and lead to more frequent transportation incidents. Projected changes in these natural hazards will indirectly impact transportation incidents, primarily through a potential increase in hazardous road, rail, and runway conditions. These conditions may strain existing emergency response services and require increased sheltering capacities.

5.3.3. Other Potential Impacts

In addition to the above identified direct and indirect impacts of future climate conditions on the identified major hazards areas, there are other potential societal impacts which include:

- Increase in demand for energy during the summer (air conditioning).
- Decrease in demand for energy during the winter (heating).
- Decrease in culturally significant animal and plant life in tribal communities.

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5. Risk Assessment/Hazard Profiles

5.1 Communicable Disease

Including Human, Animal, and Plant Diseases.

Characteristics

Communicable disease is an illness that is caused by an infectious agent, such as bacteria, virus, fungi or parasites and/or toxin microorganisms and is transmittable from an infected person, animal or plant to another person, animal or plant. Some diseases are passed by direct or indirect contact with infected person or with excretions. Most diseases are spread through contact or proximity because the causative bacteria or viruses are airborne. Diseases can be spread by plants, animals and insects. The causes and significance of diseases vary. Such diseases can devastate human, animal, and plant populations as well as the economy.

A communicable disease could affect anywhere from only a few individuals, animals or plants to covering a large geographic or numeric extent. The entire county could be impacted affecting schools, businesses, and medical facilities. Elderly, young children, and individuals with suppressed immune systems are at greatest risk. It could overwhelm local health care resources, force quarantines, and result in mass casualties, requiring the need for mass care facilities. Through the use of vaccines, members of the community can be protected against such diseases if the vaccines are available. Points of distribution may be required to administer mass vaccinations.

Disease transmission may occur naturally or intentionally, as in the case of bioterrorism, and infect populations rapidly with little notice. New diseases regularly emerge or mutate. Known diseases, such as influenza, can be particularly severe in any given season, like the H1N1 flu of 2009. Terrorism experts also theorize the possibility of attack using biological agents.

Natural illnesses of concern include Covid, Influenza, Meningitis, Pertussis (Whooping Cough), Measles, Norwalk Virus, Severe Acute Respiratory Syndrome (SARS), and food-borne illnesses, such as E. Coli and Salmonella outbreaks, among others. These diseases can infect populations rapidly, particularly through groups of people in close proximity such as schools, assisted living and nursing facilities, and workplaces.

Animal and plant diseases, those that infect livestock and crops, can hurt the agricultural community and lead to severe economic loss. They often have negative economic impact and lead to a loss of jobs. Anthrax is a disease found in livestock. The bacteria Bacillus Anthracis causes anthrax. Spores of the bacteria lie dormant in the ground for decades and become active under ideal conditions, such as heavy rainfall, flooding and drought. When animals graze or consume forage or water contaminated with spores, they can possibly develop anthrax (Source: N.D. Department of Agriculture).

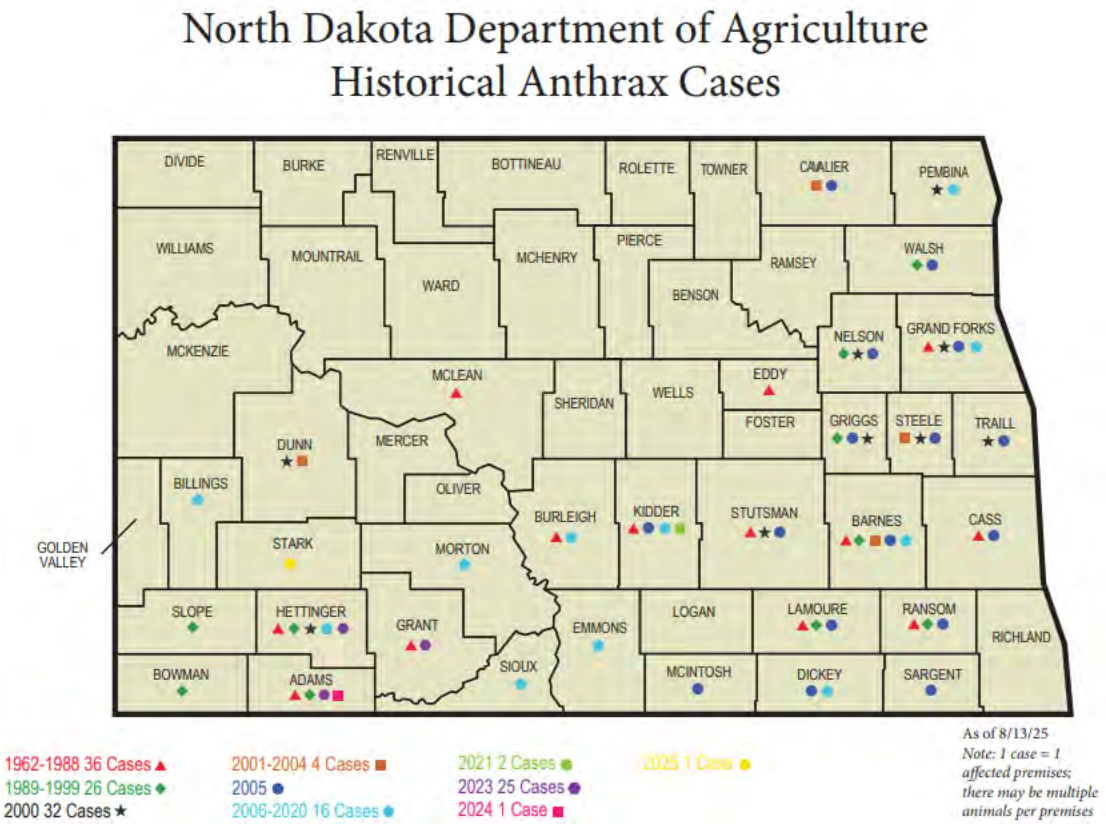
History

According to the North Dakota Department of Health, Dickey County had not experienced a pandemic outbreak in years until the Covid-19 outbreak in 2020. During the time period of January 20, 2020, and May 11, 2023, the covid-19 Pandemic affected the entire world. A presidential disaster was declared on April 1, 2020. In Dickey County there were 1,481 reported cases of covid-19 and 39 deaths due to covid during the pandemic. In the 2024-2025 season there have been no reported cases of covid-19 in Dickey County.

Seasonal influenza outbreaks do occur annually. Dickey County reported ten confirmed West Nile Cases in humans 2007, seven in 2012,three in 2016 and 0 in 2025.

Anthrax is most frequently reported in northeast, southeast and south-central North Dakota, but has been suspected in almost every part of the state. Dickey County reported seven cases in 2005 and one case in 2010. Due to efforts by veterinarians and extension agents to encourage producers to vaccinate their animals there has been a dramatic reduction in livestock deaths according to the North Dakota Department of Agriculture. Figure 5.1.1 shows the number of incidents of anthrax in North Dakota from 1962-2025.

Figure 5.1.1 – 1962 to 2025 North Dakota Anthrax Cases



Source: N.D. Department of Agriculture

Probability and Magnitude

Based on data gathered, the probability of communicable disease in humans, animals and plants is 100 percent, as incidences occur each year. The magnitude of such events is subjective to each year and depends on precipitation for plants and animals, and overall weather patterns for all diseases.

Risk Assessment

Table 5.1.1 shows the risk assessment as determined by individual jurisdictions and the planning committee for communicable disease. The risk assessment methodology can be found in the beginning of Chapter 5 Risk Assessment Hazard Profiles. The total in Table 5.1.2 represents the sum of each jurisdiction's impact, frequency, likelihood and vulnerability to a hazard less the jurisdiction's capabilities to respond to the hazard.

Table 5.1.1 – Risk Assessment Summary Communicable Disease Scored Chart

Communicable Disease	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Dickey County	4	4	4	3	1	**14**
Ellendale	3	4	4	3	2	**12**
Forbes	2	1	1	1	1	**4**
Fullerton	4	4	4	3	1	**14**
Ludden	4	4	4	3	2	**13**
Monango	2	4	4	2	2	**10**
Oakes	4	4	4	3	2	**13**

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

Seasonal Pattern	None, Flu has been fall and winter, now can be year-round
Duration	Could be multiple waves, 9 months, could be ongoing
Speed of Onset	6 weeks or less
Location	Entire planning area is equally at risk

Capabilities of and Vulnerabilities to Jurisdictions

Upon review of the statistics from the N.D. Department of Health and crop loss data from plant disease from the Risk Management Agency, the frequency and likelihood of communicable disease in Dickey County varied based on site specific accounts by residents, the agricultural industry and weather patterns for each specific year.

Capabilities and vulnerabilities of jurisdictions were scored at jurisdictional meetings with participation from the mayor and city auditor, in addition to members from the city council, business owners, emergency services representatives, and members of the general public. Participants discussed the incidents that occur in their jurisdiction and how frequent impacts are from the hazard to score impact and frequency. Participants compared the impacts and frequency of the hazard to determined future prevalence. The likelihood of the hazard was then scored. Vulnerability was scored with participants stating what makes the jurisdiction less vulnerable given their resources or more vulnerable by identifying resources not available.

Risk assessment hazard scoring and notes for the county are contained in the following graphic. The jurisdictional risk assessments can be found in Chapter 8, Jurisdictions.

Dickey County

Communicable Disease - 14

Impact	4	• Covid Pandemic – 2020-2023 - Global supply chain disruptions. - Economic and family disruption from covid precautions. Churches, couldn't visit family in hospitals - Shortage of hospital beds, staff and medical stress until vaccines were put out. - Isolation - Businesses Shut Down - Cost of living increases - Mental Health Issues - Loss of Life

		- Initial Covid Vaccine Shortage and PPE Shortage - Strain on emergency services as a whole • • U.S. declared an H1N1 was a declared pandemic in 2009 • Generalized shortage of essential medical supplies. • U.S. experienced a vaccine shortage in 2009 • Rural impact zoonotic social stigmas • Loss of Economy from Crop and/or livestock loss can be severe • Potential Loss of Life
Frequency	4	• Seasonal flu happens every year. • Tuberculosis in very low numbers for the area. • West Nile virus is a deadly disease that occurred in the county on multiple occasions between 2007 and 2011. • Rabies in very low numbers for the area.
Likelihood	4	• Seasonal flu happens every year. • Hepatitis A risk due to seasonal flooding, high elderly population, ag lifestyle • Tuberculosis in very low numbers for the area. • Rabies in very low numbers for the area.
Vulnerability	3	• More vulnerable: Shortage of Housing in the entire county • More vulnerable: Shortage of Senior Housing • More vulnerable: Influx of Population has prompted sudden rent increases that have displaced residents • More vulnerable: New nationalities can make communication with other languages difficult • More vulnerable: Shortage of emergency services due to influx of population • More vulnerable: New steady population of transient, construction and operation workers in the area due to new energy bursts and data centers. • More vulnerable: Emergency services must travel long distances to reach county populations spread out in rural areas. • More vulnerable: Always susceptible to diseases which can spread throughout the world population • More Vulnerable: College and active church groups with frequent international travel • More vulnerable: High elderly population • More vulnerable: Lack of specialized medical care and facilities • More vulnerable: Due to rural nature, lack of ability to recruit and retain medical personnel. Desperate need for emergency credentialing and accountability system • More Vulnerable: Due to rural agricultural economy, foreign, seasonal, transient workers abound. • More vulnerable: Low number of staff/volunteers in the area to be able to support isolation and quarantine • More vulnerable: Long response times due to rural nature • More vulnerable: Dependent on vaccines being developed for any new viruses and picking the right strains of flu for the flu vaccine. • Less vulnerable: County has an active emergency management department with detailed plans

		• Less vulnerable: Robust public health department to educate the public on communicable disease available on the department's website and social media
Capability	1	• Active and responsive county commission • Active emergency management department with detailed plans • County web site, social media, mass notification system available for education and information • Lack of personnel in emergency services and funding to acquire and adapt new personnel and situational changes.

The city of Ellendale - Communicable Disease - 12

Impact	3	• Covid Pandemic – 2020-2023 - Global supply chain disruptions. - Economic and family disruption from covid precautions. Churches, couldn't visit family in hospitals - Shortage of hospital beds, staff and medical stress until vaccines were put out. - Isolation - Businesses Shut Down - Cost of living increases - Mental Health Issues - Loss of Life - Initial Covid Vaccine Shortage and PPE Shortage - Strain on emergency services as a whole • U.S. declared an H1N1 was a declared pandemic in 2009. • U.S. experienced a vaccine shortage in 2009 • Potential loss of life • Potential loss of economy • Entire City could be impacted by an outbreak • Emergency services can become quickly overwhelmed during an outbreak • Bird Flu – in dairy cattle and people – goats - could impact these things • Bio Security – From game illnesses. • Wild game illnesses can become an issue for local domestic animals • Chronic Wasting – deer could impact
Frequency	4	• Seasonal flu happens every year • West Nile Disease occurs frequently • Crop and localized livestock loss occur every year to a varying degree
Likelihood	4	• Seasonal flu happens every year • West Nile has happened in the past
Vulnerability	3	• More vulnerable: 26.9 percent of the population is over 65 • More vulnerable: Some abandoned buildings and homes in town • More vulnerable: No stockpile of medical supplies, vaccines • More vulnerable: Some lots in town are overgrown with vegetation • More vulnerable: Blighted structures occupied by individuals who hoard or collect • More vulnerable: Dependent on vaccines being developed for any new viruses and picking the right strains of flu for the flu vaccine • More vulnerable: First Responders often over stretched by mutual aid requests • Less vulnerable: City mows overgrown lots • Less vulnerable: Internet connections and TV help inform residents

		• Less vulnerable: Fire Service and First Responders • Less vulnerable: Two clinics • Less vulnerable: City has an app that can be used to get information out to the public.
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish large projects independently

The city of Forbes - Communicable Disease - 4

Impact	2	• Covid Pandemic – 2020-2023 - Global supply chain disruptions. - Economic and family disruption from covid precautions. Churches, couldn't visit family in hospitals - Shortage of hospital beds, staff and medical stress until vaccines were put out. - Isolation - Businesses Shut Down - Cost of living increases - Mental Health Issues - Loss of Life - Initial Covid Vaccine Shortage and PPE Shortage - Strain on emergency services as a whole • U.S. declared an H1N1 was a declared pandemic in 2009 • U.S. experienced a vaccine shortage in 2009 • Potential loss of life • Entire City could be impacted by an outbreak
Frequency	1	• Seasonal flu happens every year • Crop and localized livestock loss occur every year to a varying degree
Likelihood	1	• Seasonal flu happens every year • Tuberculosis and rabies are very low numbers for the area
Vulnerability	1	• More vulnerable: Some abandoned buildings and homes in town • More vulnerable: No stockpile of medical supplies • More vulnerable: The city has no medical facilities • More vulnerable: Some lots in town are overgrown with vegetation • More vulnerable: Blighted structures occupied by individuals who hoard or collect • More vulnerable: Dependent on vaccines being developed for any new viruses and picking the right strains of flu for the flu vaccine • Less vulnerable: 0 percent of population is over 65 • Less vulnerable: Residents mow lawns to keep vegetation under control • Less vulnerable: City mows overgrown lots • Less vulnerable: Internet connections and TV help inform residents • Less vulnerable: Fire Service and First Responders
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish large projects independently

City of Fullerton - Communicable Disease - 14

Impact	4	• Covid Pandemic – 2020-2023 - Global supply chain disruptions. - Economic and family disruption from covid precautions. Churches, couldn't visit family in hospitals - Shortage of hospital beds, staff and medical stress until vaccines were put out. - Isolation - Businesses Shut Down - Cost of living increases - Mental Health Issues - Loss of Life - Initial Covid Vaccine Shortage and PPE Shortage - Strain on emergency services as a whole • U.S. declared an H1N1 was a declared pandemic in 2009 • U.S. experienced a vaccine shortage in 2009 • Potential loss of life • Entire City could be impacted by an outbreak
Frequency	4	• Seasonal flu happens every year • Crop and localized livestock loss occur every year to a varying degree
Likelihood	4	• Seasonal flu happens every year • Tuberculosis and rabies are very low numbers for the area
Vulnerability	3	• More vulnerable: 28.4% of the population is over age 65 • More vulnerable: Some abandoned buildings and homes in town • Less vulnerable - Has fire department • More vulnerable: No stockpile of medical supplies • More vulnerable: The city has no medical facilities, public fueling capacity or lodging • More vulnerable: Some lots in town are overgrown with vegetation • More vulnerable: Blighted structures occupied by individuals who hoard or collect • More vulnerable: Dependent on vaccines being developed for any new viruses and picking the right strains of flu for the flu vaccine • Less vulnerable: Residents mow lawns to keep vegetation under control • Less vulnerable: Small gathering spaces such as Ranch House and Carroll House, limiting spread of disease as gathering of large crowds does not occur • Less vulnerable: Increased awareness and education of city residents • Less vulnerable: City mows overgrown lots • Less vulnerable: Internet connections and TV help inform residents • Less vulnerable: Fire Service and First Responders
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish large projects independently

City of Ludden - Communicable Disease – 13

Impact	4	• Covid Pandemic – 2020-2023 - Global supply chain disruptions. - Economic and family disruption from covid precautions. Churches, couldn't visit family in hospitals - Shortage of hospital beds, staff and medical stress until vaccines were put out. - Isolation - Businesses Shut Down - Cost of living increases - Mental Health Issues - Loss of Life - Initial Covid Vaccine Shortage and PPE Shortage - Strain on emergency services as a whole • U.S. declared an H1N1 pandemic in 2009 • U.S. experienced a vaccine shortage in 2009 • Potential loss of life • Entire City could be impacted by an outbreak
Frequency	4	• Seasonal flu happens every year • Crop and localized livestock loss occur every year to a varying degree
Likelihood	4	• Seasonal flu happens every year • Tuberculosis and rabies are very low numbers for the area
Vulnerability	3	• More vulnerable: 79 percent of the population is over age 65 • More vulnerable: Some abandoned buildings and homes in town • More vulnerable: No stockpile of medical supplies • More vulnerable: The city has no medical facilities, public fueling capacity or lodging • More vulnerable: Some lots in town are overgrown with vegetation • More vulnerable: Blighted structures and by individuals who hoard or collect • More vulnerable: Dependent on vaccines being developed for any new viruses and picking the right strains of flu for the flu vaccine • More vulnerable: No local ambulance, prolonged response times • Less vulnerable: Residents mow lawns to keep vegetation under control • Less vulnerable: City mows overgrown lots • Less vulnerable: Internet connections and TV help inform residents • Less vulnerable: Fire Service and First Responders
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish large projects independently

The city of Monango Communicable Disease - 10

Impact	2	• Covid Pandemic – 2020-2023 - Global supply chain disruptions. - Economic and family disruption from covid precautions. Churches, couldn't visit family in hospitals - Shortage of hospital beds, staff and medical stress until vaccines were put out. - Isolation

		- Businesses Shut Down - Cost of living increases - Mental Health Issues - Loss of Life - Initial Covid Vaccine Shortage and PPE Shortage - Strain on emergency services as a whole • U.S. declared an H1N1 pandemic in 2009 • U.S. experienced a vaccine shortage in 2009 • Potential loss of life • Entire City could be impacted by an outbreak
Frequency	4	• Seasonal flu happens every year • Crop and localized livestock loss occur every year to a varying degree
Likelihood	4	• Seasonal flu happens every year • Tuberculosis and rabies are very low numbers for the area
Vulnerability	2	• More vulnerable: Some abandoned buildings and homes in town • More vulnerable: No stockpile of medical supplies • More vulnerable: The city has no medical facilities • More vulnerable: Some lots in town are overgrown with vegetation • More vulnerable: Blighted structures occupied by individuals who hoard or collect • More vulnerable: Dependent on vaccines being developed for any new viruses and picking the right strains of flu for the flu vaccine • More vulnerable: Located on U.S. Highway 281 • Less vulnerable: 0 percent of population is over age 65 • Less vulnerable: Residents mow lawns to keep vegetation under control • Less vulnerable: City mows overgrown lots • Less vulnerable: Internet connections and TV help inform residents • Less vulnerable: Fire Service and First Responders
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish large projects independently

City of Oakes – Communicable Disease – 13

Impact	4	• Covid Pandemic – 2020-2023 - Global supply chain disruptions. - Economic and family disruption from covid precautions. Churches, couldn't visit family in hospitals - Shortage of hospital beds, staff and medical stress until vaccines were put out. - Isolation - Businesses Shut Down - Cost of living increases - Mental Health Issues - Loss of Life - Initial Covid Vaccine Shortage and PPE Shortage - Strain on emergency services as a whole • U.S. declared an H1N1 was a declared pandemic in 2009. • U.S. experienced a vaccine shortage in 2009.

		• Potential loss of life • Entire City could be impacted by an outbreak • Bird Flu – in dairy cattle and people – goats - could impact these things • Chronic Wasting – deer could impact • Wild game illnesses can become an issue for local domestic animals • Bio Security – From game illnesses.
Frequency	4	• Seasonal flu happens every year. • West Nile Disease occurs frequently • Crop and localized livestock loss occur every year to a varying degree
Likelihood	4	• Seasonal flu happens every year • West Nile has happened in the past few years • Tuberculosis and rabies are very low numbers for the area
Vulnerability	3	• More vulnerable: 17.6% of the population is over 65 • More vulnerable: Some abandoned buildings and homes in town • More vulnerable: No stockpile of medical supplies, vaccines (Little better because of covid issues) • More vulnerable: Some lots in town are overgrown with vegetation • More vulnerable: Blighted structures occupied by individuals who hoard or collect • More vulnerable: Dependent on vaccines being developed for any new viruses and picking the right strains of flu for the flu vaccine. • Less vulnerable: City mows overgrown lots • Less vulnerable: Internet connections and TV help inform residents • Less vulnerable: Volunteer Fire Service and First Responders • More Vulnerable - Influx of non-English speaking individuals • More Vulnerable – Influx of people brings in more communicable diseases that we were isolated from previously or not immune to. • Less people vaccinating in general
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish large projects independently

Vulnerabilities to County-Owned Buildings and Property

Most structures remain unaffected by impacts from communicable disease as people, plants and animals are susceptible to the hazard. Buildings can potentially become contaminated with a communicable disease such as mold, which can potentially render the building uninhabitable.

Vulnerabilities of Critical Facilities and Infrastructure

Since humans, plants and animals are affected by communicable disease, critical facilities and infrastructure is relatively unaffected in structural terms. However, critical facilities such as hospitals and clinics can become quickly overwhelmed if an outbreak of communicable disease occurs in humans. Due to the high quantities of livestock in the county, veterinary services can also become overwhelmed in the case of an outbreak in farm animals. The onset of stress to medical facilities can occur quickly with limited personnel and resources in rural areas such as Dickey County. Likewise, emergency services can also be stressed as the county, and its population is spread over a large geographic area. Other facilities at risk are those that house large populations in close quarters such as the Trinity Bible College, public

schools, assisted living facilities and nursing homes. Due to an aging population with projected population increases, the vulnerability and exposure to communicable diseases is likely to increase.

As shown in Table 5.1.2, youth populations age 19 and under consisted of 1.08 percent of the Dickey County population in 2020; conversely, the 65 to 74 and 75+ population age groups consisted of 5.4 percent and 14.38 percent of the Dickey County population in 2020.

Table 5.1.2 – 2020 Dickey County Vulnerable Populations

Age Group	2020	Percent of Population 2020
Under 19	719	14.38%
65 to 74	270	5.4%
75+	54	1.08%

Source: Census Data

Due to the high numbers of livestock in the county, veterinary services can also become overwhelmed in the case of an outbreak in farm animals and livestock. The onset of stress to veterinarian and medical facilities can occur quickly with limited personnel and resources in rural areas such as Dickey County.

Vulnerabilities to New and Future Development

New development would largely not be impacted by communicable disease. However, with the lack of building codes in smaller jurisdictions, new structures could be susceptible to deterioration from contamination if structures are not constructed properly lacking windows and other construction materials of higher quality.

Data Limitations and Other Key Documents

Increased public awareness and education is a primary reason for decreases in losses from communicable disease. The lack of emergency action plans in most jurisdictions in Dickey County result in the inability to track loss estimates. Statistics were not available for Winter Wheat in North Dakota as the Risk Management Agency does not insure this type of crop.

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

- North Dakota Department of Health, Pandemic Influenza Plan
- North Dakota Department of Health, Public Health & Medical All-Hazards Plan
- North Dakota Department of Health, Specific Disease Agent Plans
- North Dakota Department of Agriculture, Foreign Animal Disease Plan
- North Dakota Emergency Operations Plan, Animal Health, Infectious Diseases & Plant Health Annex
- Dickey County 2019 Multi-Hazard Mitigation Plan
- Dickey County Emergency Operations Plan
- Dickey County Sheltering/Mass-Care Plan

5.2 Drought

Characteristics

Definition: 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 are normal, as in a desert. Drought characteristics usually include precipitation levels well below normal and temperatures higher than normal.

In addition to severe damage to vegetation, soil in a drought area becomes dry and crumbles. Often topsoil is blown away by hot, dry winds. Streams, ponds, and wells often dry up during a drought, thus wildlife and livestock can suffer and even die.

Human factors, such as water demand and water management, can affect the impact that drought has on a region. Below are four commonly used definitions by the National Drought Mitigation Center.

- Meteorological drought is defined based on the degree of dryness (in comparison to some "normal" or average) and the duration of the dry period. Drought onset generally occurs with a meteorological drought.
- Agricultural drought occurs when there isn't enough soil moisture to meet the needs of a crop at a particular 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 usually occurs following periods of extended precipitation shortfalls that impact water supply (examples: stream flow, reservoir and lake levels, ground water), potentially resulting in significant social impacts.
- Socioeconomic drought occurs when physical water shortage starts to affect people, individually and collectively. Or, drought associated with the supply and demand of an economic good.

Weather forecasters cannot predict just when a drought will occur. However, drought tends to alternate with wetter than normal periods. Droughts of the past can be read in the growth rings of trees. In wet periods, the ring is thicker than in dry periods. It is a fact that precipitation deficits as little as four to six inches can cause severe drought conditions. Drought severity regarding agricultural procedures depends on the time of year, timing of precipitation, amount of stored soil water, type of crop, stage of growth, and meteorological variables such as temperature, humidity, and wind.

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.

Several secondary hazards are generally associated with drought. Rural grassland fires increase because of dry vegetation. Reduction in vegetation cover will expose the soil to wind, and dust storms and soil erosion will occur. Because of reduction in flow, the chemical quality of river and lake water will change, and sediment transport regimes of streams will be altered.

Deterioration in water quality, in turn, results in injury and death to plants and animals. Stagnant pools along river courses provide favorable habitats for insects, particularly mosquitoes and grasshoppers. Finally, with the return of rain, the dry and unstable topsoil is vulnerable to gullying and flooding.

Drought produces a complex web of impacts that spans many sectors of the economy and reaches well beyond the area experiencing physical drought. The complexity exists because water is integral to our ability to produce goods and provide services.

Impacts are commonly referred to as direct or indirect. Reduced crop, rangeland, and forest productivity; increased fire hazard; reduced water levels; increased livestock and wildlife mortality rates; and damage to wildlife and fish habitat are a few examples of direct impacts. The consequences of these impacts illustrate indirect impacts. For example, a reduction in crop, rangeland, and forest productivity may result in reduced income for farmers and agribusiness, increased prices for food and timber, unemployment, reduced tax revenues, crime, foreclosures on bank loans to farmers and businesses, mitigation, and disaster relief programs. In fact, the web of impacts becomes so diffuse that it's very difficult to come up with financial estimates of damages.

The U.S. Department of Agriculture frequently declares agricultural disasters because of drought as is noted in the history section. In Dickey County, the impacts would first be realized in agricultural losses as the county's economy primarily relies on agricultural.

History

Information provided by the Spatial Hazard Events and Losses Database for the United States (SHELDUS) indicates one period of drought in 1988 for Dickey County. Information gathered from committee and jurisdiction meetings have indicated that while dryer periods have come and gone, the one true drought was in 1988. The 1988 drought was so severe that nearly all aspects of local economies were affected. Table 5.2.1 summarizes the history of drought in Dickey County. The data is also shown in Appendix 8.3.

Table 5.2.1 – 1988 Drought Hazard History Summary

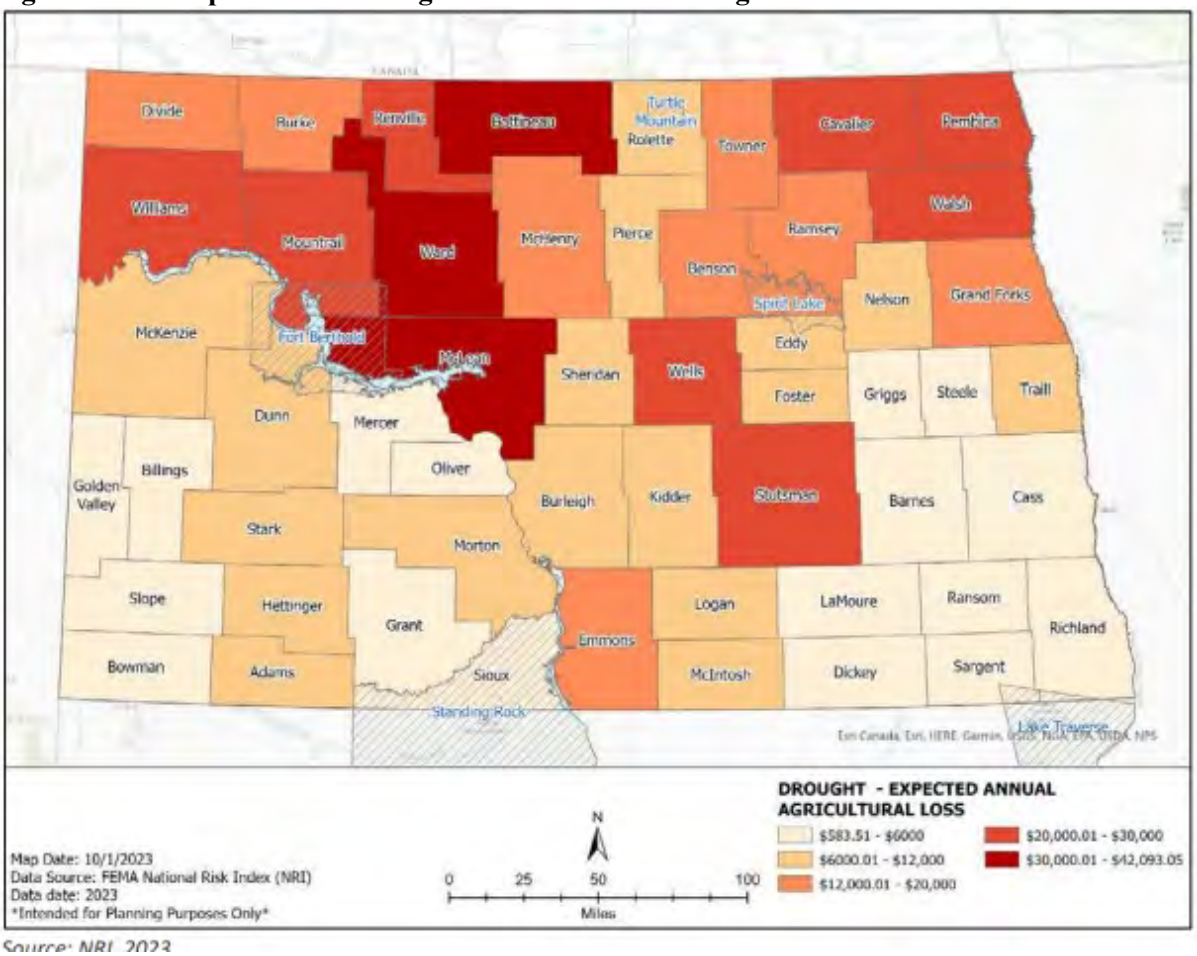
Date	Injuries	Fatalities	Property Damage	Crop Damage	Remarks
6/1/1988	0.00	0.00	$113,611.01	$113,611.01	Drought - Heat

Source: Source: Spatial Hazard Events and Losses Database for the United States (SHELDUS)

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, net claimed acres, indemnity, loss liability, loss cost and the number of policies covered. The net claimed acres are the total acres planted for crops in the county for the given year. Liability is the total value in crops planted in the county for the given year and indemnity is the amount paid to cover insurance claims from crop loss due to drought.

Figure 5.2.1 shows the expected annualized estimated agricultural losses expected in Dickey County from drought for the year 2024 from the 2024-2029 Enhanced Mitigation Operations Plan. Although only one true drought event has been recorded, dry conditions persist from year to year and impact all types of crops to a varying degree.

Figure 5.2.1 – Expected Annual Agricultural Loss for Drought



Source: NRI 2023

Dickey County has not had any Disaster Declarations for drought. North Dakota had three requests that were turned down. Table 5.2.2 summarizes this information. Two requests for drought disasters declarations were requested in 1961 and 1980. Categories of potential drought losses are shown in Appendix 8 and provide information in understanding the various types of drought, related causes and types of loss expected. This data helps in determining why losses from drought have occurred in Dickey County in years in addition to the official drought in 1988.

Table 5.2.2 – Turned Down State Requested Disaster Declarations for North Dakota

Requested Number	Turn Down Date	Type	Disaster Description	President
61005	08/31/1961	Major	Drought	Kennedy
80045	06/16/1980	Emergency	Drought	Carter
88022	11/18/1988	Major	Drought	Reagan

Source: FEMA

Probability and Magnitude

Hazard history was gathered from the SHELDUS, which showed one occurrence of drought in 1988. Due to one instance of an official drought declaration, the probability of drought is very low in Dickey County. However, dry weather always persists year to year and varies in intensity. Due to the local economy being heavily reliant on the agriculture industry, the probability and magnitude of drought can be measured by crop loss. There are 423 farms, 41,714 head of cattle, and 4,905 head of sheep (2022 Census) that would be impacted if there were a drought. As shown from data provided by the 2019 NDMHMP and the RMA, crop losses from drought in Dickey County averaged between $1,424,902 and $1,439,377 annually. Therefore, the probability of crop loss from drought is 100 percent and magnitude depends on the weather conditions in the given year.

Drought in Dickey County would be a huge economic impact for a county which Ag is the largest tax base and employer in the county. Drought would dry any vegetation in the area increasing the frequency and severity of a wildfire threat for the whole county and all of its entities.

Drought could potentially impact the aquifer and threaten potable water supplies. Long term drought could also affect the game hunting industry which also which also is significant source of tax / income revenue for the county.

Risk Assessment

Table 5.2.3 shows the risk assessment as determined by individual jurisdictions and the planning committee for drought. The risk assessment methodology can be found in the beginning of Chapter 5, Risk Assessment Hazard Profiles. The total in Table 5.2.3 represents the sum of each jurisdiction's impact, frequency, likelihood and vulnerability to a hazard less the jurisdiction's capabilities to respond to the hazard.

Table 5.2.3 – Risk Assessment Summary Drought Scored Chart

Drought	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Dickey County	4	2	3	4	2	**11**
Ellendale	4	2	2	3	3	**8**
Forbes	4	2	3	1	2	**8**
Fullerton	4	1	2	3	1	**9**
Ludden	2	2	2	2	3	**5**
Monango	3	3	3	3	1	**11**
Oakes	3	3	3	3	1	**11**

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

Seasonal Pattern	Starts with limited Snowfall/Rain
Duration	1 to 5 years, up to a decade in severe cases
Speed of Onset	Slow and gradual
Location	Entire planning area is equally at risk

Capabilities of and Vulnerabilities to Jurisdictions

Upon review of the statistics from SHELDUS and the 2014 NDMHMP, the frequency and likelihood of drought in Dickey County was scored low. However, impact across most jurisdictions was scored high due to local economics relying on the agriculture industry.

Capabilities and vulnerabilities of jurisdictions were scored at committee meetings with participants

including the mayor and city auditor, in addition to members from the city council, business owners, emergency services representatives, and members of the general public. Participants discussed the incidents that occur in their jurisdiction and how frequent the impacts are from the hazard. Afterwards, they scored the impacts and frequency of the hazard. Participants compared the impacts and frequency of the hazard and determined future prevalence. The likelihood of the hazard was then scored. Vulnerability was scored with participants stating what makes the jurisdiction less vulnerable given their resources at hand or more vulnerable by identifying resources not available.

Risk assessment hazard scoring and notes for the county are contained in the following. The jurisdictional risk assessments can be found in Chapter 8, Jurisdictions.

Dickey County – Drought – 11

Impact	4	• Water holes that supply livestock are impacted • Hay shortages during times of drought impact livestock • Loss of farm economy impacts service industries • Drought would hinder fire suppression efforts as water would not be readily available • Concern for potable water for the population • Multiple years of drought would have a severe impact
Frequency	2	• Dry conditions during the 1980's • A drought event was recorded by SHELDUS in June 1988 • Moderate drought going into the 2018 winter – dry conditions
Likelihood	3	• Cyclical pattern to rains so there is always a possibility of a severe drought
Vulnerability	4	• Depending on duration, vulnerability changes • More vulnerable: Large cattle population • More vulnerable: Economy relies heavily on farming • More vulnerable: Lack of water sources for drought relief • More vulnerable: Potable Water • More vulnerable: Special needs population in County makes potable water essential • Less vulnerable: Public Awareness training and warning systems, cell phones, internet, radio and TV • Less vulnerable: Burn bans implemented during dry periods • Less vulnerable: Local fire departments conduct fire awareness and education programs for schools • More vulnerable: Private potable water wells within the county have been capped recently
Capability	2	• The county has fire protection • Active county commission • Lacks technical, administrative and financial resources for mitigation • Relies on regional, state and other agencies for assistance • Dickey County has an active emergency management department that maintains a website with detailed plans to educate the public on drought

City of Ellendale– Drought – 8

Impact	4	• Range Land Fire Index Used • Hay shortages during times of drought impact livestock. • Potential severe loss of economy due to reliance on agriculture • Water holes that supply livestock are impacted • Increased frequency and severity of wildland fires
Frequency	2	• Cyclical patterns make droughts possible • Dickey County was very dry during the 1980's • 1988 was an especially dry year, along with 2016
Likelihood	2	• Cyclical patterns make droughts possible • 2016 this pattern was reversed. • High possibility of drought in any year
Vulnerability	3	• Depending on duration, vulnerability changes • More vulnerable: Economy relies heavily on farming • Less vulnerable: City has adequate fire suppression equipment to assist in providing water to dry areas for crops or livestock • Less vulnerable: Burn bans implemented during dry periods
Capability	3	• The city has fire protection, however, is dependent on access to water • City is base headquarters of the county emergency management department • County emergency management has detailed plans to educate public on drought • Active city council • The elevator in town has some manpower and equipment • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance

City of Forbes – Drought - 8

Impact	4	• Potential of severe economic loss due to being reliant on agricultural sector • Range Land Fire Index Used • Burn bans happened in 2016 • Hay shortages during times of drought impact livestock • Loss of farm economy impacts service industries • Water holes that supply livestock are impacted
Frequency	2	• Although dry in spring of 2013, the last real drought was in 1988 • Dickey County was very dry during the 1980's • 1988 was an especially dry year, along with 2016
Likelihood	3	• Cyclical pattern to rains normally wetter in the east than in the west. In 2016 this pattern was reversed • High possibility of drought in any year due to the clay soil
Vulnerability	1	• Depending on duration, vulnerability changes • More vulnerable: There are several ag fires a year (tractors, hay bales, field fires) most all are mutual aided to Ellendale when Forbes doesn't answer two pages adding up to 15 minutes before Ellendale Fire is paged • The city has no public works personnel or equipment. All maintenance is contracted out as needed • More vulnerable: Local Fire department has one tanker, one brush truck, one pumper-the newest is a 1980's model. Most of the departments "able body firemen" work out of town during the days leaving town virtually uncovered.

		• More vulnerable: Economy relies heavily on farming • Less vulnerable: 0 percent of population is over 65 • Less vulnerable: Burn bans implemented during dry periods • Less vulnerable: City has reserves tanks located in their city hall and has surrounding sloughs as sources of water
Capability	2	• The city has fire protection, however, dependent on access to water. • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Fullerton - Drought – 9

Impact	4	• Possible economic loss • Range Land Fire Index Used • Burn bans occur annually • Hay shortages during times of drought impact livestock • Loss of farm economy impacts service industries • Water holes that supply livestock are impacted
Frequency	1	• Drought possible every year • Last dry conditions were spring 2013, but last real drought was in 1988 • Dickey County was very dry during the 1980's • 1988 was an especially dry year, along with 2016
Likelihood	2	• Cyclical pattern to rains normally wetter in the east than in the west. In 2016 this pattern was reversed • High possibility of drought in any year due to the soil conditions
Vulnerability	3	• Depending on duration, vulnerability changes • More vulnerable: 28.4% of the population is over 65 • More vulnerable: There are several Ag fires a year (tractors, hay bales, field fires). Fire response is 20 min away coming from Oakes • More vulnerable: The city has no public works personnel or equipment. All maintenance is contracted out as needed • More vulnerable: There is a voluntary fire department, but no EMS or law in Fullerton. All responders come from Oakes with a 20-minute average response • More vulnerable: There are no public works personnel or equipment; all maintenance is contracted out as needed. • More vulnerable: Economy relies heavily on farming • More vulnerable: City does not have water reserves, such as a water tower • Less vulnerable: City purchased floating pumps and discharge hoses to use in pumping water for general use • Less vulnerable: Burn bans implemented during dry periods
Capability	1	• The city has fire department that has limited access to water • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • Siren system can be radio actuated by law enforcement or Dickey County Emergency Management

City of Ludden - Drought - 5

Impact	2	• Range Land Fire Index Used • Hay shortages during times of drought impact livestock • Loss of farm economy impacts service industries • Water holes that supply livestock are impacted
Frequency	2	• High possibility of drought in any year due to the clay soil in the county • Burn bans happen yearly • Dickey County was very dry during the 1980's • 1988 was an especially dry year, along with 2016
Likelihood	2	• Depending on duration, vulnerability changes • More vulnerable: 79% of the population is over 65 • More vulnerable: There are several ag fires a year (tractors, hay bales, field fires) most all are mutually aided to Ellendale when Ludden doesn't answer two pages adding up to 15 minutes before Ellendale Fire is paged • The city has no public works personnel or equipment • More vulnerable: There is no fire, EMS or law. All responders come from Oakes with a 20-minute average response • More vulnerable: There is no public works personnel or equipment-all maintenance is contracted out as needed • More vulnerable: City does not have water reserves, like a water tower • More vulnerable: Economy relies heavily on farming • More vulnerable: New equipment is needed for neighboring fire departments and ambulance services • Less vulnerable: Burn bans implemented during dry periods • Less vulnerable: City located adjacent to James River and surrounding sloughs, which acts as a source of backup water if necessary • Less vulnerable: City purchased floating pumps and discharge hoses to use in pumping water for general use
Vulnerability	2	• Depending on duration, vulnerability changes • More vulnerable: 79% of the population is over 65 • More vulnerable: There are several ag fires a year (tractors, hay bales, field fires) most all are mutual aided to Ellendale when Ludden doesn't answer two pages adding up to 15 minutes before Ellendale Fire is paged • The city has no public works personnel or equipment • More vulnerable: There is no fire, EMS or law. All responders come from Oakes with a 20-minute average response • More vulnerable: There is no public works personnel or equipment-all maintenance is contracted out as needed • More vulnerable: City does not have water reserves, like a water tower • More vulnerable: Economy relies heavily on farming • More vulnerable: New equipment is needed for neighboring fire departments and ambulance services • Less vulnerable: Burn bans implemented during dry periods • Less vulnerable: City located adjacent to James River and surrounding sloughs, which acts as a source of backup water if necessary • Less vulnerable: City purchased floating pumps and discharge hoses to use in pumping water for general use
Capability	3	• Active city council • The elevator in town has some manpower, heavy equipment and work with area farmers to be pro-active in protecting the city

		• Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Monango - Drought - 11

Impact	3	• Range Land Fire Index Used • Hay shortages during times of drought impact livestock • Loss of farm economy impacts service industries • Water holes that supply livestock are impacted
Frequency	3	• High possibility of drought in any year due to the clay soil in the county. Dickey County was very dry during the 1980's • 1988 was an especially dry year, along with 2016
Likelihood	3	• Cyclical pattern to rains normally wetter in the east than in the west. In 2016 this pattern was reversed • High possibility of drought in any year due to the clay soil
Vulnerability	3	• Depending on duration, vulnerability changes • More vulnerable: There are several Ag fires a year (tractors, hay bales, field fires); fire response is 20 min away coming from Ellendale • The city has no public works personnel or equipment • More vulnerable: There is no fire, EMS or law in Monango. All responders come from Ellendale with a 20-minute average response on a good weather day • More vulnerable: There is no public works personnel or equipment; all maintenance is contracted out as needed • More vulnerable: There is no water storage within the city • More vulnerable: Economy relies heavily on farming • Less vulnerable: 0 percent of population is over age 65 • Less vulnerable: Burn bans implemented during dry periods
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Oakes - Drought - 11

Impact	3	• Hay shortages during times of drought impact livestock. • Loss of farm economy impacts service industries. • Water holes that supply livestock are impacted. • Increased risk of fires – wildland • Increased large fires
Frequency	3	• High possibility of drought in any year due to type of soil in the county. • Dickey County was very dry during the 1980's. • 1988 was an especially dry year, along with 2016.
Likelihood	3	• Cyclical pattern to weather patterns makes it possible
Vulnerability	3	• Depending on duration, vulnerability changes. • More vulnerable: 17.6% of the population is over 65 • More vulnerable: There are several ag fires a year (tractors, hay bales, field fires) • More vulnerable: Economy relies heavily on farming • Less vulnerable: Burn bans implemented during dry periods

		• More vulnerable: New fire equipment needed
Capability	1	• The city has fire protection, however, dependent on access to water. • Active city council • The elevator in town has some manpower and equipment • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • New fire equipment needed • Have many volunteers but getting them there when they are needed can be an issue due to working jobs.

Vulnerabilities to County-Owned Buildings and Property

Drought does not have an impact on structures in the county. However, loss of water supply would influence the function of county-owned buildings. Disruptions in service and extended periods of closure may occur. Drought would threaten county-owned property from the increase in fire threat and the potential decreases in available water supplies for fire suppression.

Vulnerabilities of Critical Facilities and Infrastructure

Critical facilities that rely on water for operation and continued use are most susceptible 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. Critical infrastructures that are vulnerable to drought are public water systems that provide drinking water for the general public and disposal of waste water. Many public water systems extract water from surface bodies of water. If water levels become too low, public water systems may be forced to ration water or cease operation altogether. As a result, Dickey County and jurisdictions would have less access to water for fighting fires. A summary of county and city owned property in Dickey County is provided in Chapter 4.

Vulnerabilities to New and Future Development

The greatest vulnerability from drought to new and future development would be underground water sources. New development has the potential to diminish underground sources with increases in population and economic activity. The N.D. Department of Health monitors public water systems. Individuals with wells and septic systems are not regulated and would be more susceptible to drought.

The agriculture sector, with high crop prices and increasing yields, is becoming increasingly mechanized and requires larger amounts of water. Increased demand for water in the agriculture sector may increase vulnerability of drought in the county.

Based on information in the 2019 NDMHMP obtained from the Drought Impact Reporter, the state can expect drought conditions affecting certain counties and regions on a more reoccurring basis. With the possibility of climate change, this hazard may impact more regions of the State with more frequency.

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; 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 are 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 nearly impossible.

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

- North Dakota Drought Response Plan
- North Dakota Emergency Operations Plan
- Dickey County Emergency Operations Plan
- 2019 Dickey County Multi-Hazard Mitigation Plan

5.3 Flood

Including River Flooding, Overland Flooding, Ice Jams, and Flash Floods

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, man often intensifies flood hazards when he interferes with or alters natural conditions.

Flood hazards arise from the complex effects of water on land surfaces and by water pressure. Flooding and its impact occur from the overflow of rivers, creeks, drainage channels, streams, lakes, and other bodies of standing water. Also, the inundation of lowlands, the temporary backup of sewer and storm water systems, the rise of ground water, and finally the failure of flood control facilities such as dams, dikes, and levees.

Floods can occur when the ground in frozen and/or saturated with moisture and cannot absorb any further moisture and also result from ice jamming or blocking streams.

Flash flooding occurs when heavy rain falls in such a short time that the soil cannot absorb it and/or drainage systems (natural or man-made) cannot carry the volume of water away as quickly as it accumulates. A flash flood can happen in any jurisdiction in the county and is caused by: thunderstorms, heavy rains or snowpack, dam, dike or levee failures. This type of flood happens with little warning and response.

Overland flooding occurs when waterways or other bodies of water quickly fill with rainwater or rapid snowmelt, jump their banks and cause flooding to surrounding areas.

High runoff produced by excessive rainfall and/or sudden spring thaws after periods of heavy snowfall will cause a river or other bodies of water to overflow and inundate areas, causing or threatening damage. The loss of life and severe damages may result when floodwaters strike cities, industries, and farms located in or near river valleys. Usually, the damaged area is in a floodplain, which is a strip of relatively level land bordering a stream.

History

Before settlers came to North Dakota, there were few flood damages. River and streams carved the valleys and the nomadic peoples who inhabited the territory moved to higher lands. Today, however, these valleys are populated with people and development needed to sustain those people has taken place.

Flooding of land adjoining the normal course of a stream or river has been a natural occurrence since the beginning of time. If these floodplain and floodway areas were left in their natural state, the floods would not cause any major damage. However, the economic attractiveness of the vacant land has resulted in the development of some floodplain areas despite the risk. The urban, industrial, and agricultural encroachment on natural floodplains areas has increased the potential for dangerous flooding and causes the flood waters to adversely affect land that formally was considered safe. The flood potential is increased because rainfall that used to soak into the ground or take several days to reach a stream/river via a natural drainage basin now quickly runs off streets, parking lots, rooftops, and through man-made channels and pipes.

A tremendous amount of soil erosion takes place throughout all river basins, drainage areas, streams, etc., by water movement and its pressure on land surfaces. Runoff from the eroded areas is swift, thus

contributing to flood magnitude. Additionally, the eroded materials settle within runoff channels taking up space that previously was occupied by water during runoff periods. This sedimentation increases flood potential.

The spring flood danger occurs during March and April. A wet fall and early freeze up with saturated ground at the time of freezing, heavy winter precipitation, and warm rains during and after spring thaw adds to the seriousness of the spring flooding situation.

Flood control development had its beginning with the Flood Control Act of 1936. This act provided a basic plan and authorized program for the control of water resources. In the early 1940s, the North Dakota Water Commission cooperated with the Federal agencies to plan and engineer the overall program for North Dakota.

The U.S. Army Corps of Engineers occupies one of the major roles in flood control planning and construction. Two reservoirs built by the U.S. Soil Conservation Service have contributed materially to flood control through the construction of watershed projects in North Dakota. These watershed projects include channel work and flood retention structures. In such projects, the Soil Conservation District has the responsibility for assuring that 50 percent of the farms above a structure are under a basic conservation plan.

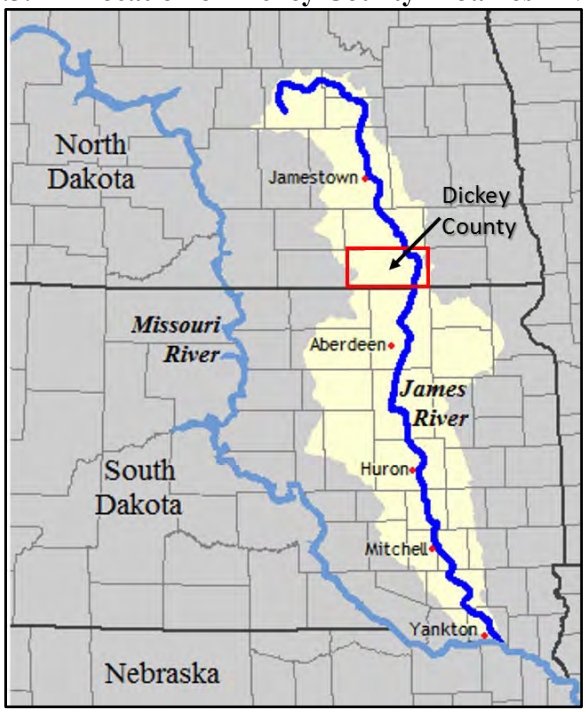
Floodplain Management in North Dakota: North Dakota has recognized that good floodplain management involves the utilization of a variety of tools to reduce the impact of flood disasters. It is also recognized that a balance must be reached between the three aspects of floodplain management, which are structural works designed to modify the flood itself, regulatory functions and emergency preparedness actions which may reduce susceptibility to flooding, and emergency preparedness actions which minimize a flood's effect during a disaster.

The Federal Disaster Protection Act of 1973 requires state and local government to participate in the National Flood Insurance Program (NFIP) as a condition to the receipt of any federal loan or grant for construction projects in flood prone areas. Participation in the NFIP requires communities to adopt floodplain regulations that meet NFIP objectives, which are: Buildings must be protected from flooding damages that occur because of the 100-year flood and new development must not cause an increase in flood damages to other property.

Communities have been provided assistance through passage, in 1981, of the state's first Floodplain Management Act that directs the State Engineer to aid local government to reduce flood damages through floodplain management. As a start, the state legislature provided the State Engineer with an appropriation to be used in assisting communities to obtain base 100-year flood elevation data. With appropriate planning, we will see continued reduction in flood damage susceptibility across the state. It will likely take many years to achieve the established goals.

Dickey County is in the James River Basin. The James River is the largest river in the basin; tributaries include Pipestem, Maple, Beaver, Bone Hill, and Cottonwood Creeks. As shown, nearly all of Dickey County is geographically located in the James River Basin.

Figure 5.3.1 -- Location of Dickey County in James River Basin



Source: US Geological Survey

The Jamestown Reservoir Dam and the Pipestem Dam, both located north of the city of Jamestown, hold water throughout the year and provide flood protection to areas along the James River from Jamestown to the South Dakota state line. Dickey County borders South Dakota. The dam on the Pipestem Lake is managed by the U.S. Army Corps of Engineers, and the dam on the Jamestown Reservoir is managed by U.S. Department of Interior, Bureau of Reclamation. These dams provide 90 percent flood damage reduction along the James River. During flood stage, the U.S. Army Corps of Engineers manages the release of flows from both dams. The releases from the dams are closely monitored with readings at several locations downriver of the dams. The flows are only increased when properties downstream are protected and are closely managed.

Flooding has occurred in the James River Basin. Flooding in this area is often caused by rapid runoff from steep tributaries to the nearly flat main channel of the James River, which can be obstructed by log jams, vegetation, sediment deposits, inadequate bridge capacities, or smaller jams. Tributary discharge can exceed the channel capacity of the James.

Periodic flooding of agricultural cropland, hay land, pasture, and communities are the major water problems in the James River Basin. Dickey County communities affected by the James River include Oakes and Ludden. (U.S. Geological Survey)

Table 5.3.1 – 1988 to 2018 Flood Event History Summary in Dickey County

Number of Occurrences	Date Range	Property Damage
9	1988-2018	$3,820,694.14

Sources: SHELDUS

According to the N.D. Department of Emergency Services, there are no repetitive loss properties from flooding in Dickey County

Table 5.3.2 lists the Presidential Disaster Declarations for flooding in Dickey County. A total of 17 declarations were made in Dickey County between 1969 and 2025. The absence of turned down requests after 1975 indicates an increasing intensity of losses from flooding.

Table 5.3.2 – 1969 to 2025 Presidential Disaster Declarations for Flooding in Dickey County

Decision Number	Date	Type	Disaster Description	Statewide Costs Constant	President
216	03/23/1969	F	Flooding	6,144,924	Johnson
256	04/18/1969	F	Flooding	20,349,850	Nixon
475	07/11/1975	F	Severe Storms, Flooding	18,771,101	Ford
554	04/17/1978	F	Storms, Ice Jams, Snowmelt, Flooding	11,165,307	Carter
581	04/26/1979	F	Severe Storms, Snowmelt, Flooding	57,100,615	Carter
1050	05/16/1995	W	Severe Storms, Flooding, Ground	24,294,145	Clinton
1118	06/05/1996	W	Severe Storms, Flooding, Ice Jams	18,135,392	Clinton
1174	04/07/1997	F	Severe Flooding, Severe Winter Storm	531,404,655	Clinton
1220	06/15/1998	F	Flooding, Ground Saturation, Severe	24,468,099	Clinton
1279	06/08/1999	S	Severe Storms, Flooding, Snow, Ice	145,619,808	Clinton
1334	06/27/2000	F	Severe Storms, Flooding, Ground Saturation	113,151,807	Clinton
1376	05/28/2001	F	Severe Storms, Flooding, Ground Saturation	45,117,082	GWBush
1597	07/22/2005	W	Severe Storms, Flooding, Ground Saturation	19,237,140	GWBush
1713	07/17/2007	W	Severe Storms, Flooding	4,938,793	GWBush
1829	03/24/2009	W	Severe Storms, Flooding	107,590,628	Obama
1907	04/30/2010	NA	Flooding	6,212,845	Obama
1981	05/10/2011	NA	Flooding	43,547,540	Obama
4444	06/12/2019	F	Flooding	9,825,869.51	Trump
4475	01/21/2020	F	Flooding	14,761,806.47	Trump
4553	07/09/2020	F	Flooding	12,758,222.35	Trump
4660	07/13/2022	W	Severe Winter Storm and Flooding	66,109,183.81	Biden
4717	07/05/2023	F	Flooding	5,421,024.85	Biden

Source: FEMA

Crop loss from flooding is tracked by the United States Department of Agriculture Risk Management Agency (RMA). The RMA provides data on the crop type affected, net claimed acres, indemnity, loss liability, loss cost and the number of policies covered. The net claimed acres are the total acres planted for crops in the county for the given year. Liability is the total value in crops planted in the county for the given year and indemnity is the amount paid to cover insurance claims from crop loss due to flooding.

Table 5.3.3 shows the state requested disaster declarations for flooding in North Dakota that impacted Dickey County and were turned down. Four requests were turned down between 1969 and 1975 with no requests turned down thereafter. Losses from flooding have been enough to grant declarations for each request after 1975.

Table 5.3.3 – Turned Down State Requested Disaster Declarations for North Dakota

Number	Date	Type	Disaster Description	President
69006	03/21/1969	Major	Snow Removal, Flood, Preparations	Nixon
71045	06/24/1971	Major	Flooding	Nixon
72022	04/25/1972	Major	Flooding	Nixon
75079	04/09/1975	Major	Snow, Floods	Ford

Source: FEMA

Probability and Magnitude

Based on hazard history information provided by NOAA, NCDC and SHELDUS, the probability of flooding events in Dickey County is 40 percent based on 12 events occurring between 1989 and 2019. Crop losses data from flooding provided by the RMA over the 30-year period resulted in an annual average indemnity paid of $12,801. The magnitude can be classified as moderate due to recorded losses. Damage from flooding commonly occurs to homes, roads, agricultural land and public infrastructure.

The population and housing units of townships and cities bordering the James River were compiled to provide the worst-case scenario of the number of people needing to be evacuated and the number of housing units impacted. The townships bordering the James River are: Bear Creek, Clement, Divide, Hudson, James River Valley, Lovell, Port Emma, Riverdale and Wright. The cities of Ludden and Oakes border the James River. These nine townships and two cities have a combined population of 2,597 people based on data from the 2020 U.S. Census.

Figure 5.3.2 – Prairie Pothole Region Map

Sources: ppjv.org/prairie-conservation

Risk Assessment

Table 5.3.4 shows the risk assessment as determined by individual jurisdictions and the committee. The total in this chart represents the sum of each jurisdiction's impact, frequency, likelihood and vulnerability to a hazard less the jurisdiction's capabilities to respond to the hazard.

Table 5.3.4 – Risk Assessment Summary Flood Scored Chart

Flood	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Dickey County	4	4	4	3	3	**12**
Ellendale	3	4	4	2	3	**10**
Forbes	4	4	4	1	2	**11**
Fullerton	4	4	4	3	1	**14**
Ludden	3	2	2	4	2	**9**
Monango	4	2	2	3	1	**10**
Oakes	3	4	2	2	3	**8**

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

Seasonal Pattern	Spring snow melt off, Summer flash flooding, seasonal rain
Duration	2 weeks
Speed of Onset	More than 24 hours warning

Table 5.3.5 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 that occur because of the 100-year flood
- New development must not cause an increase in flood damages to other property

Table 5.3.5 – Communities Participating in National Flood Insurance Program

Community Name	**INIT FHBM Identified**	**INIT FIRM Identified**	**Current Effective Map Date**	**Reg-Emer Date**
Dickey County	-	6/18/25	6/18/25	7/23/25
City of Ellendale	09/12/75		(NSFHA)	08/20/10
City of Oakes	02/14/75	6/18/25	6/18/25	11/01/79

Source: FEMA Community Status Book Report, North Dakota

Capabilities of and Vulnerabilities to Jurisdictions

Upon review of the statistics and data regarding flooding; the impact and frequency of flooding was ranked a “3” or “4” in the county and all jurisdictions except for the cities of Ludden and Monango. Flooding is a concern for residents in the county given past losses and frequency of the hazard. The ranking for likelihood, vulnerabilities and capabilities for flooding varied between jurisdictions.

Capabilities and vulnerabilities of jurisdictions were scored at jurisdictional meetings with participants including the mayor and city auditor, in addition to members from the city council, business owners, emergency services representatives, and members of the general public. Participants discussed the incidents that occur in their jurisdiction and how frequent impacts result from the hazard. Afterwards, impacts and frequency of the hazard were scored. Participants compared the impacts and frequency of the hazard and determined future prevalence. The likelihood of the hazard was also scored. Vulnerability was scored with participants stating what makes the jurisdiction less vulnerable given their resources at hand or more vulnerable by identifying resources not available.

Dickey County – Flood - 12

Impact	4	• Blocked roads can lead to delayed emergency response from flooding from County River Systems • Heavy rains and snow melt can also cause flooding of city streets and county roads causing inaccessibility from overland flooding and river system flooding. • Culverts wash out blocking access to rural residents • Farmland loss, entire farms have experienced long-term inundation from overland flooding, displacing families • Loss of power • Loss of transportation routes • Potential ice jams in creeks and rivers • Water seepage into basements • Power outage can result in inoperable sump pumps flooding basements • Critical infrastructure in city jurisdictions, such as lift stations, can experience disruption in service and results in sewer backups • Increased mosquito population and transmitting of diseases • Potential loss of life • Access to Oakes Hospital and economic activity can be restricted
Frequency	4	• Areas of the county experience various types of flooding – overland, riverine, flash floods – on a yearly basis from multiple causes
Likelihood	4	• There is always a possibility of flooding occurring each year in the county and in the future
Vulnerability	3	• More vulnerable: Shortage of Housing in the entire county • More vulnerable: Shortage of Senior Housing • More vulnerable: Influx of Population has prompted sudden rent increases that have displaced residents • More vulnerable: New nationalities can make communication with other languages difficult • More vulnerable: Shortage of emergency services due to influx of population • More vulnerable: New steady population of transient, construction and operation workers in the area due to new energy bursts and data centers. • More vulnerable: county is bisected by the James River, which impacts all emergency responses, and can extend response times • More vulnerable: Individuals living on a road must go 10 miles instead of 5 to go through dry roads • More vulnerable: Vulnerable populations dependent on electricity • More vulnerable: Individuals driving on flooded highways • Less vulnerable: The county emergency management is equipped to enforce regulations and can coordinate between agencies
Capability	3	• Limited tax base • Active county commission • County has a floodplain administrator/manager, who is the Emergency Manager, for administrative capabilities • Relies on regional, state and other agencies for assistance • The emergency management department maintains a website with beneficial information, serving as a resource of education for county residents

City of Ellendale Flood - 10

Impact	3	• Areas surrounding the town suffer from damaged roads, bridges and culverts creating emergency access problems as well as the occasional downed power lines • Washed out culverts • Cemeteries under water • Water seepage into basements • Blocked roads limit access for emergency services and daily routines. • Increased mosquito population and transmitting of diseases from standing water. • Property and crop damage or loss • Potential loss of life • Flooded roads block bus routes transporting kids to school • Wastewater outage
Frequency	4	• Depends largely on weather patterns but overland flooding occurs annually • In 2012, flash flooding caused the sanitary sewer system to blow resulting in 30 percent of homes experiencing sewer backups • In 2018 Flash Flooding caused sewage backup damaged 24 houses, two churches and one apartment complex.
Likelihood	4	• Heavy spring melting and heavy rains cause flooding annually
Vulnerability	2	• More vulnerable: Ambulances, school buses, fire protection have to detour • More vulnerable: Individuals driving on flooded highways • More vulnerable: 26.9 percent of population is over 65 • More vulnerable: Lift Station and lagoon could be inundated • More vulnerable: Flat terrane and lakes are filled and result in flooding due to the lack of rivers • More vulnerable: Overland flooding can damage roads and impede access • More vulnerable: Basements in town flood frequently • More vulnerable: Overland flooding produces puddles of water and full ditches that breed mosquitoes • Less vulnerable: Tree trimming and drainage ditch maintenance programs are in place to ensure proper drainage of water to mitigate overland flooding. • Less vulnerable: The City participates in the NFIP • Less vulnerable: Replaced and repaired sewer system to prevent this in the future.
Capability	3	• Flood Plan In Development - NFIP • Active city council and well-equipped City Public works crew • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • Siren can be radio actuated by law enforcement or emergency management

City of Forbes - Flood - 11

Impact	4	• There are no rivers, most flooding is overland flooding • Washed out culverts • Cemeteries under water • Water seepage into basements • Blocked roads limit access for emergency services and daily routines • Increased mosquito population and transmitting of diseases from standing water • Property and crop damage or loss • Potential loss of life

		• Flooded roads block bus routes transporting kids to school • Wastewater outage • Flat terrane and lakes filled to capacity result in overland flooding due to the lack of rivers
Frequency	4	• Depends largely on weather patterns but significant flooding to roads, buildings and homes occurs every two to three years
Likelihood	4	• Heavy spring melting and heavy rains cause flooding
Vulnerability	1	• More vulnerable: Ambulances, school buses, fire protection having to detour • More vulnerable: One highway serves the city on a north and south direction • More vulnerable: Individuals driving on flooded highways • More vulnerable: City lacks equipment and infrastructure and has no public works personnel or equipment. All maintenance is contracted out as needed. • More vulnerable: Lift Station and lagoon would be inundated • More vulnerable: Lack of proper storm water system • More vulnerable: Lack of drain tile in the area • More vulnerable: Individuals living on a road must go 10 miles instead of 5 • More vulnerable: Flat area at the base of the hills drains a huge area through town which inundates the town and leaves puddles in low areas and ditches which breeds mosquitos. Overland flooding can damage roads and impede access to rural farms as well as the town. This event happens to some level every spring and after significant rain events. Overland flooding has dropped the occasional power pole resulting in power outages • More vulnerable: Lack of manpower by the city and public • Less vulnerable: 0 percent of population is over 65 • Less vulnerable: No school within city • Less vulnerable: 2-foot berm surrounding the city constructed by a local resident to shield the city from flood waters during the spring thaw
Capability	2	• City does have a flood plan, but it was created in 1980 • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Fullerton - Flood - 14

Impact	4	• Overland flooding is not much of an issue for the town as it is on high ground directly off the major north/south county road DC8 • Areas surrounding the town suffer from damaged roads, bridges and culverts creating emergency access problems as well as the occasional downed power lines • Washed out culverts • Water seepage into basements • Blocked roads limit access for emergency services and daily routines • Increased mosquito population and transmission of diseases due to standing water • Property and crop damage or loss • Potential loss of life • Flooded roads block bus routes transporting kids to school • Wastewater outage

		• Flat terrane and lakes filled to capacity result in overland flooding due to the lack of rivers
Frequency	4	• Depends largely on weather patterns • City has lost power lines three times in recent years from flooding
Likelihood	4	• Heavy spring melting and heavy rains cause flooding
Vulnerability	3	• More vulnerable: Ambulances, school buses, fire protection having to detour • More vulnerable: Individuals driving on flooded highways • More vulnerable: 28.4% of the population is over age 65 • More vulnerable: City lacks equipment and infrastructure and has no public works personnel or equipment. All maintenance is contracted out as needed. • More vulnerable: septic tanks can become inundated • More vulnerable: Lack of proper storm water system • More vulnerable: Lack of drain tile in the area • More vulnerable: Individuals living on a road must go 10-20 miles instead of 5 to go through dry roads • More vulnerable: Flat area at the base of the hills drain a huge area through town which inundates the town and leaves puddles in low areas and ditches which provides an excellent mosquito breeding environment. Overland flooding has dropped the occasional power pole resulting in power outages • More vulnerable: City becomes an island for up to a week or more when the Maple River leaves its banks. Often this occurs with accompanying power failures due to down lines • More vulnerable: Lack of manpower by the city and public • Less vulnerable: No school within city • Less vulnerable: City has installed drain tile on Monroe Street and the likelihood of overland flooding in the city is somewhat diminished
Capability	1	• No flood plan • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Ludden - Flood - 9

Impact	3	• Areas surrounding the town suffer from damaged roads, bridges and culverts creating emergency access problems as well as the occasional downed power lines • Washed out culverts • Cemeteries under water • Water seepage into basements because water table is high • Blocked roads limit access for emergency services and daily routines. • Increased mosquito population and transmitting of diseases from standing water. • Property and crop damage or loss • Potential injury or loss of life • Flooded roads block bus routes transporting kids to school • Wastewater outage • Flat terrane and lakes filled does result in overland flooding due to the lack of rivers
Frequency	2	• Depends largely on weather patterns

Likelihood	2	• Heavy spring melting and heavy rains cause flooding
Vulnerability	4	• More vulnerable: Ambulances, school buses, fire protection having to detour • More vulnerable: Individuals driving on flooded highways • More vulnerable: 79 percent of the population is over age 65 • More vulnerable: City lacks equipment and infrastructure and has no public works personnel or equipment. All maintenance is contracted out as needed • More vulnerable: Lift Station and lagoon would be inundated • More vulnerable: Lack of proper storm water system • More vulnerable: Lack of drain tile in the area • More vulnerable: Individuals living on a road must go 10 miles instead of 5 to go through dry roads • More vulnerable: Overland flooding and yearly snow melt are huge issues in this low-lying town. They have invested in ditches and pumps to remove water. Overland flooding can damage roads and impede access to rural farms as well as the town. This event happens to some level every spring and after significant rain events • More vulnerable: James River flooding is an issue for Ludden • More vulnerable: 2009 and 2010 flooding saw the river within five feet of the houses • More vulnerable: Lack of manpower by the city and public • Less vulnerable: No school within city • Less vulnerable: Elevation of city would protect from flood waters
Capability	2	• Have flood plane • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • Siren system can be radio actuated by law enforcement or Dickey County Emergency Management • The elevator in town has some manpower, heavy equipment and work with area farmers to be pro-active in protecting the city

City of Monango - Flood - 10

Impact	4	• There are no rivers. Overland flooding is not much of an issue for the town as it is on high ground directly off of US Hwy 281. Areas surrounding the town suffer from damaged roads, bridges and culverts creating emergency access problems as well as the occasional downed power lines • Washed out culverts • Cemeteries under water • Water seepage into basements • Blocked roads limit access for emergency services and daily routines. • Increased mosquito population and transmission of diseases from standing water • Property and crop damage or loss • Potential loss of life • Flooded roads block bus routes transporting kids to school • Wastewater outage
Frequency	2	• Depends largely on weather patterns
Likelihood	2	• Heavy spring melting and heavy rains cause flooding

Vulnerability	3	• More vulnerable: Ambulances, school buses, fire protection having to detour • More vulnerable: Individuals driving on flooded highways • More vulnerable: City lacks equipment and infrastructure and has no public works personnel or equipment. All maintenance is contracted out as needed • More vulnerable: Septic tanks can become inundated • More vulnerable: Lack of proper storm water system • More vulnerable: Lack of drain tile in the area • More vulnerable: Individuals living on a road must go 10 miles instead of 5 • More vulnerable: Lack of manpower by the city and public • Less vulnerable: 0 percent of population is over age 65 • Less vulnerable: No school within city • Less vulnerable: No river or large body of water and therefore is not vulnerable to severe flooding • Less vulnerable: Elevation of city would protect from flood waters
Capability	1	• No flood plan • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Oakes - Flood - 8

Impact	3	• Areas surrounding the town suffer from damaged roads, bridges and culverts creating emergency access problems • Downed power lines • Washed out culverts • Cemeteries under water • Water seepage into basements • Blocked roads limit access for emergency services and daily routines. • Increased mosquito population and transmitting diseases from standing water. • Property and crop damage or loss • Potential loss of life • Flooded roads block bus routes transporting kids to school • Waste water outage
Frequency	4	• Depends largely on weather patterns • Always possible as culverts and drainage have become blocked from flash flooding due to heavy precipitation and low-lying areas filling with water that lack proper drainage.
Likelihood	2	• Heavy spring melting and heavy rains cause flooding
Vulnerability	2	• More vulnerable: Ambulances, school buses, fire protection having to detour around flooding. • More vulnerable: Individuals driving on flooded highways • More vulnerable: 24.1% of population is over 65 • More vulnerable: Lift Station and lagoon would be inundated • More vulnerable: Lack of proper storm water system • More vulnerable: Lack of drain tile in the area • More vulnerable: When James River floods it cuts the county in half requiring the redistricting of all emergency services causing a huge strain

		in the system and citizens. • More vulnerable: Overland flooding and yearly snow melt are huge issues in this low-lying town. They have invested in ditches and pumps to remove water. Overland flooding can damage roads and impede access to rural farms as well as the town. This event happens to some level every spring and after significant rain events • More vulnerable: James River flooding is also a major issue for Oakes. • More vulnerable: 2009 and 2010 flooding saw the river within five feet of the houses • More vulnerable: Lack of manpower by the city and public • Less vulnerable: Elevation of city would protect from flood waters • Less vulnerable: City has their own water modern plant, city water and sewer infrastructure
Capability	3	• The City also participates in the NFIP, which requires communities to adopt and enforce ordinances that meet or exceed the requirements of FEMA. • Active city council and well-equipped City Public works crew • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Vulnerabilities to County-Owned Buildings and Property
Vulnerabilities to county-owned buildings and properties from floods are always present whether flooding is due to flash flooding, overland, basement, riverine or closed basin. Locations of county-owned buildings will largely determine vulnerabilities to riverine and overland flooding. Basement flooding is mostly a site-specific issue occurring when mechanical systems fail or high precipitation causes water tables to rise. A summary of city and county owned buildings is provided in Chapter 4, Profile and Inventory.

Vulnerabilities of Critical Facilities and Infrastructure
Damage to critical infrastructure, mainly drinking water and sewer systems, roadways and electric power lines can occur when flooding of any kind occurs. Drinking water and sewer systems can be shut down as power to lift stations and water treatment facilities can be suspended. Roads can be washed out or blocked from overland flooding, which limits access to critical facilities such as emergency services and hospitals. An inventory of county and city owned property in Dickey County is provided in Chapter 4.

Vulnerabilities to New and Future Development
New and future development in Dickey County is at high risk to flooding if allowed in a known floodplain. With projected population increases in Dickey County through 2030, more people can be vulnerable to flooding if development is not restricted from flood prone areas. Dickey County is in the process of being mapped (to identify the appropriate areas to ban development); this will require the development of appropriate zoning, permitting and enforcement codes meeting the needs of both the cities and county.

Data Limitations and Other Key Documents
The absence of flood mapping for Dickey County was the largest data limitation to understanding the impact and extent of flooding.

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

- North Dakota Emergency Operations Plan, Flood Annex
- North Dakota Water Development Reports
- 2019 North Dakota State Multi-Hazard Mitigation Plan

5.4 Hazardous Material Release

Characteristics

Hazardous materials are any substance posing an unreasonable risk to the safety, health, environment, and property of citizens and defined and/or managed under several federal, state, and local laws, regulations, plans and ordinances. The term "hazardous material" covers a wide array of products, from relatively innocuous ones such as hair spray in aerosol dispensers and wash preservatives such as creosote to highly toxic or poisonous material such as anhydrous ammonia and phosgene gas. The potential severity of hazards of these materials is varied but the primary reason for their designation is the risk to public safety.

The Federal Motor Carrier Safety Administration has nine categories of hazardous materials that are:

- Explosives (Class 1)
- Oxidizing substances and organic peroxides (Class 5)
- Miscellaneous hazardous materials/products, substances, or organisms (Class 9)
- Radioactive materials (Class 7)
- Flammable and combustible liquids (Class 3)
- Gases (Class 2)
- Flammable solids, spontaneously combustible, and dangerous when wet (Class 4)
- Toxic/poisonous substances poison inhalation (Class 6)
- Corrosive substances (Class 8)

Further definitions can be found in laws, i.e., Federal Water Pollution Act, Clean Water Act, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) commonly known as Superfund, and Amendments, Low Level Radioactive Waste Policy Act, Nuclear Waste Policy Act, and the Hazardous Materials Transportation Act.

A stationary hazardous material release is any occurrence resulting in the uncontrolled release of materials from a fixed site capable of posing risk to health, safety, and property, as determined in Environmental Protection Agency regulations. Areas at risk include the locations of hazardous material manufacturing, processing, or storage facilities, as well as all hazardous waste treatment, storage, and disposal (legal and illegal) sites.

Other significant hazardous material concerns are the hazardous by-products from the production of the drug methamphetamine. This drug is easily "cooked" up using readily available hazardous materials in clandestine labs. These labs may then be contaminated with a variety of toxic chemicals such as methanol, ether, benzene, methylene chloride, trichloroethane, toluene, muriatic acid, sodium hydroxide, anhydrous ammonia, and red phosphorus. Hazardous materials are often used during terrorist attacks. They can cause damages to the water supply and food supply.

It is common to view hazardous material releases in a worst-case scenario. However, most incidents involve small spills and releases requiring little response or recovery action. The problem for decision makers at all levels of government is creating a safe system for the use, storage, transportation, etc. of hazardous materials while retaining the state's economic viability.

Although many of the spills and releases are small, a single hazardous material release can result in the loss of many lives and cause millions of dollars of property damage. Water supplies, sewer lagoons, fish and wildlife habitats can be threatened if hazardous materials leak into rivers, streams, and underground water resources.

Hazardous materials have major components that affect incident related response and recovery. These components include planning, organization of responders, training, equipment, and exercises. These elements combined can provide for an less effective overall response. The chance remains that first

responders or the public may incur major harm. Due to the potential exposure of a hazardous material release at a fixed facility, the population in the related jurisdiction could be in the impact zone.

History

There have been no declared disasters or emergencies pertaining to hazardous material release in Dickey County.

Figure 5.4.1 shows the extremely hazardous substance facilities in North Dakota in 2025. These facilities are required under the Occupational Safety and Health Administration (OSHA) regulations to maintain data on material safety and report quantities of chemicals that are equal or greater than 500 pounds.

Figure 5.4.1 – North Dakota Active Hazardous Waste Facilities

Source: EPA ArcGis Mapping 2025

Probability and Magnitude

Given that the local economy is heavily reliant on agriculture and the amount of extremely hazardous substance facilities in Dickey County, as shown in Figure 5.4.1, it is likely a hazardous material release will occur in Dickey County in the future. Therefore, the probability is assumed to be 100 percent. The magnitude of a hazardous material release can vary from minimal in localized incidents to catastrophic in situations of explosions or high wind.

Risk Assessment

Table 5.4.1 – Risk Assessment Summary Hazardous Material Release Scored Chart

Hazardous Material Release	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Dickey County	3	4	4	4	0	**15**
Ellendale	3	4	4	2	2	**11**
Forbes	4	2	2	1	1	**8**
Fullerton	4	1	2	2	2	**7**
Ludden	3	2	2	3	1	**9**
Monango	3	3	3	4	1	**12**
Oakes	4	4	4	3	2	**13**

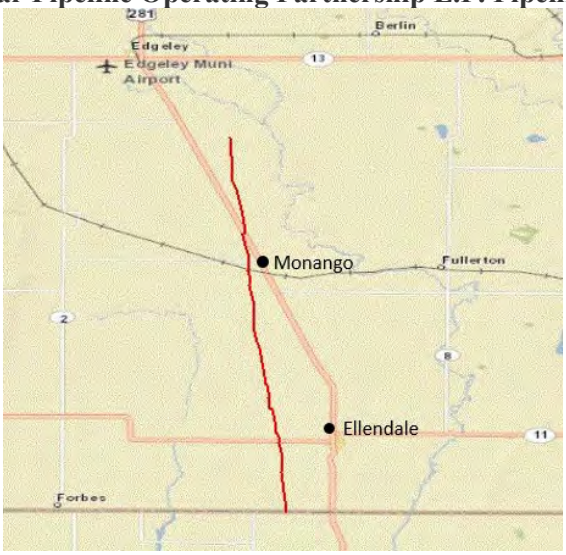
(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Seasonal Pattern	Summer
Duration	Application of chemicals
Speed of Onset	Immediate

Mapping

There is a pipeline traversing Dickey County. The pipeline carries fuel oil and passes by the city of Monango one-half mile to the west of city limits. It crosses U.S. Highway 281 just to the north of Monango and crosses the D.M.V.W. rail line to the west of the city with approximately 26 miles of hazardous material liquid pipeline of refined petroleum, shown in figure 5.4.2.

Figure 5.4.2 – Nustar Pipeline Operating Partnership L.P. Pipeline in North Dakota



Source: National Pipeline Mapping System

Capabilities of and Vulnerabilities to Jurisdictions

Upon review of the National Pipeline Mapping System and the Oakes Fire Department Incident Report, the impact, frequency, likelihood and vulnerabilities of hazardous material release varied based on the location of industry and infrastructure. The capabilities for hazardous material release is shared across the county by the Emergency Management Department.

Capabilities and vulnerabilities of jurisdictions were scored at jurisdictional meetings with participants including the mayor and city auditor, in addition to members from the city council, business owners, emergency services representatives, and members of the general public. Participants discussed the incidents that occur in their jurisdiction and how frequent impacts are from the hazard. Afterwards, they scored impacts and frequency of the hazard. Participants compared the impacts and frequency of the hazard and determined future prevalence. The likelihood of the hazard was then scored. Vulnerability was scored with participants stating what makes the jurisdiction less vulnerable given their resources at hand or more vulnerable by identifying resources not available.

Risk assessment hazard scoring and notes for the county are contained in the following graphic. The jurisdictional risk assessments can be found in Chapter 8, Jurisdictions.

Dickey County – Hazardous Material Release - 15

Impact	3	• County has a large quantity of chemicals stored in uncontrolled environments. • Unmapped locations of these chemicals can cause loss of life and damage for emergency responders • Anhydrous spills have occurred • Potential explosions, spills and contamination • Blocked roads • Potential loss of life • Property damage and loss of economy • Spills can occur on farms where chemicals are stored • Clean up crews running through the county • Potential financial impacts due to clean-up
Frequency	4	• Minor spills happen frequently
Likelihood	4	• Minor spills happen frequently
Vulnerability	4	• More vulnerable: Shortage of Housing in the entire county • More vulnerable: Shortage of Senior Housing • More vulnerable: Influx of Population has prompted sudden rent increases that have displaced residents • More vulnerable: New nationalities can make communication with other languages difficult • More vulnerable: Shortage of emergency services due to influx of population • More vulnerable: New steady population of transient, construction and operation workers in the area due to new energy bursts and data centers. • More vulnerable: Wind in the right direction in relationship to a spill makes the population in the city and surrounding areas susceptible • More vulnerable: Transportation of hazardous materials along major highways and railroads • More vulnerable: Nustar Pipeline 3 miles west of 281 • More vulnerable: No local hazmat capability • More vulnerable: Farm and city infrastructure in surrounding area • Less vulnerable: County Emergency Department has trained personnel such as the Emergency Manager to respond to releases • Less vulnerable: County has equipment and various resources • More vulnerable: Underground 400k plus fuel storage on the applied digital site • More vulnerable: Massive amount of lithium battery storage on applied digital site

		•
Capability	0	• Capabilities for minor spills • Active county commission • Active and well-trained County Emergency Manager • Lacks technical, administrative and financial resources for mitigation • Relies on regional, state and other agencies for assistance • Not capable of handling a large spill or fire at the applied digital industrial site • No ladder truck to get people off of the second floor • Need more training annually and there is a lack of emergency services personnel

City of Ellendale Hazardous Material Release – 11

Impact	3	• Potential loss of life • Crop and livestock loss • Economy loss • Fire potential • Blocked roads leading to loss of mobility • Small size of city could lead to large percentage of population affected
Frequency	4	• Minor spills happen yearly • No major occurrences or incidences • Major highway transporting chemicals through city.
Likelihood	4	• Minor spills happen yearly
Vulnerability	2	• More vulnerable: Propane and diesel fuel are used for heating alternative • More vulnerable: Located on US 281 and ND 11 junction • More vulnerable: Trucks and farmers transporting larger tanks more frequently on highways through the city limits • More vulnerable: Elevator complex, industrial plant, 2 fertilizer operations and seed vendors, bulk propane plant with storage, bulk fuels plant with storage • More vulnerable: Pipeline runs to the west of the city and could release fuel • Less vulnerable: There is public lodging and two public fueling facilities. • More vulnerable: No stockpile of medical supplies • More vulnerable: Limited hazmat capabilities • More vulnerable: Lithium Ion Batteries in the City
Capability	2	• Active city council • City has zoning in place restricting where hazardous material can be stored • City has a radio-operated storm siren operated by Emergency Management • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Forbes - Hazardous Material Release - 8

Impact	4	• Potential loss of life • Crop and livestock loss • Economy loss • Fire potential • Blocked roads leading to loss of mobility • Small size of city could lead to large percentage of population affected

Frequency	2	• Minor spills happen yearly • No major occurrences or incidences
Likelihood	2	• Minor spills will happen
Vulnerability	1	• More vulnerable: Propane is used for heating alternative • More vulnerable: Trucks and farmers transporting larger tanks more frequently • More vulnerable: High Risk of Hazardous chemical release or transportation accident as it is on a major county road as well as a state line road • More vulnerable: The city has no public works personnel or equipment • More vulnerable: No stockpile of medical supplies • Less vulnerable: 0 percent of population is over 65
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Fullerton - Hazardous Material Release - 7

Impact	4	• Potential loss of life • Crop loss • Livestock loss • Economy loss • Fire potential • Blocked roads leading to loss of mobility • Small size of city could lead to large percentage of population affected
Frequency	1	• Minor spills happen yearly • No major occurrences or incidences
Likelihood	2	• Minor spills will happen
Vulnerability	2	• More vulnerable: 28.4% of the population is over age 65 • More vulnerable: Propane is used for heating alternative • More vulnerable: Trucks and farmers transporting larger tanks more frequently on highways through the city limits • Less vulnerable: No Anhydrous tanks driven through and parked in the city. • More vulnerable: The city has no public works personnel, or equipment-all maintenance is contracted out as needed • More vulnerable: No stockpile of medical supplies
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Ludden - Hazardous Material Release - 9

Impact	3	• Potential injury or loss of life • Crop and livestock loss • Economy loss • Fire potential • Blocked roads leading to loss of mobility • Small size of city could lead to large percentage of population affected
Frequency	2	• Minor spills happen yearly

		• No major occurrences or incidences
Likelihood	2	• Minor spills will happen
Vulnerability	3	• More vulnerable: 79 percent of the population is over age 65 • More vulnerable: Propane is used for heating alternative • More vulnerable: Trucks and farmers transporting larger tanks more frequently • More vulnerable: High Risk of Hazardous chemical release or transportation accident as it is on state highway • More vulnerable: The city has no public works personnel or equipment • More vulnerable: There is no public fueling capacity or public lodging • More vulnerable: No stockpile of medical supplies
Capability	1	• Active city council • City has a radio-operated storm siren operated by Emergency Management • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Monango - Hazardous Material Release - 12

Impact	3	• Potential injury or loss of life • Crop or livestock loss • Economy loss • Fire potential • Blocked roads leading to loss of mobility • Small size of city could lead to large percentage of population affected
Frequency	3	• Minor spills happen yearly • No major occurrences or incidences
Likelihood	3	• Minor spills will happen
Vulnerability	4	• More vulnerable: Propane is used for heating alternative • More vulnerable: Trucks and farmers transporting larger tanks more frequently on highways through the city limits • More vulnerable: The city has no public works personnel or equipment; all maintenance is contracted out as needed • More vulnerable: No stockpile of medical supplies • Less vulnerable: 0 percent of population is over age 65
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Oakes Hazardous Material Release - 13

Impact	4	• Potential loss of life • Crop loss • Livestock loss • Economy loss • Fire potential • Blocked roads leading to loss of mobility • Small size of city could lead to large percentage of population affected
Frequency	4	• Minor spills happen yearly • No major occurrences or incidences

Likelihood	4	• Minor spills will happen
Vulnerability	3	• More vulnerable: 17.6% of the population is over 65 • More vulnerable: Propane is used for heating alternative • More vulnerable: Trucks and farmers transporting larger tanks more frequently on highways through the city limits. • More vulnerable: High Risk of Hazardous chemical release or transportation accident as it is on ND Hwy 1 and there is a fertilizer, seed, two railroad tracks and elevator operation in town • More vulnerable: City has a bulk propane plant, bulk fuels plant and storage facility. • More vulnerable: City does not have hazardous material route • Less vulnerable: There is public lodging and three public fueling facilities. • More vulnerable: No stockpile of medical supplies • More vulnerable: No stockpile of Hazmat capability and PPE • More vulnerable: 4 hours from hazmat capabilities • More vulnerable: Electric Cars – Fires in electric vehicles powered by high-voltage lithium-ion batteries pose a risk of electric shock to emergency responders from exposure to the high-voltage components of the damaged battery.
Capability	2	• Active city council • City has a radio-operated storm siren operated by Dickey County Emergency Management • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Vulnerabilities to County-Owned Buildings and Property

All county-owned buildings are at risk to hazardous material release as this type of hazard can occur anywhere at any given time for a multitude of reasons. However, facilities located near or adjacent to transportation modes, such as highways, railroads or airports, are more at risk as the hazard typically occurs during transportation of hazardous material. If facilities are located near fixed hazardous material sites, such as propane or anhydrous ammonia tanks, the risk is increased as the source for the hazard will always be present. If an explosion were to occur, critical facilities located in close proximity could experience moderate to severe damage, depending on the intensity and duration of the release. Chapter 4 provides a summary of county and city owned buildings in Dickey County.

Vulnerabilities of Critical Facilities and Infrastructure

Similarly, to county-owned buildings, the vulnerability of the hazard to critical facilities and infrastructure depends largely on location. Critical facilities and infrastructure located near hazardous material storage sites are most at risk. Depending on the facility or infrastructure, impact could range from moderate to severe. Water infrastructure could become contaminated and threat public health. Critical facilities such as hospitals or emergency services could be shut down temporarily or indefinitely. If a release were to occur on a major roadway, emergency services would be limited, and response times could be drastically reduced. Chapter 4 provides a summary of county and city owned buildings Dickey County.

Vulnerabilities to New and Future Development

The vulnerability of new and future development depends largely on the type and density being proposed and where development is allowed. Residential development should be developed in areas away from hazardous material storage sites or major transportation arteries where chemicals are transported. If new development is already in progress and near the hazard area, a development moratorium should be implemented to stop future growth, or densities should be limited to reduce the number of people potentially at risk. Industrial development is a sector that maintains demand for hazardous material and is best situated near storage sites or transportation arteries to limit time spent in transit. Ultimately, hazardous material should be prohibited from locating in residential or commercial areas, near hospitals, schools or community gathering spaces. If already existing, plans should be put into place for relocation at a future time when funding permits or an appropriate site becomes available.

Data Limitations and Other Key Documents

The difficulty in understanding the particulars of a hazardous material release (location, time of day, and what material are involved) limits the ability to understand the true impact of the hazard. With numerous sources for potential release, whether from the agriculture sector, oil and gas sector, commercial and residential entities, or a combination from another hazard such as a transportation accident, understanding how releases occur and identifying ways to mitigate this hazard proves impractical. Developing an inventory from agriculture and commercial operations on the location and type of hazardous material being used in economic activity, and what mode is being utilized for transportation, would assist in understanding the hazard. Similarly, details regarding the amount, type and timing of liquid passing through the Northern Border Pipeline Company pipeline that traverses the county.

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

- North Dakota Emergency Operations Plan, Hazardous Material Annex
- 2019 Dickey County Multi-Hazard Mitigation Plan
- North Dakota State Multi-Hazard Mitigation Plan
- National Pipeline Mapping System
- Dickey County Emergency Operations Plan

5.5 Homeland Security Incident

Characteristics

A homeland security incident is any intentional adversarial human-caused incident, domestic or international, that causes mass casualties, large economic losses, or widespread panic in the country. Terrorism and civil unrest are examples of human-caused hazards that are intentional and often planned. Terrorism, both domestic and international, is a violent act done to try and influence government or the population of some political or social objective. Terrorist acts can come in many forms or may be subtle using untraditional methods.

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.

- Chemical Terrorism – use of chemical agent to poison, kill, or incapacitate the population or animals, destroy crops or national resources, or deny access to certain areas.
- Explosive Terrorism – use of explosive and incendiary devices including bombs and any other technique that creates an explosive, destructive effect.
- Biological Terrorism – use of biological agents, such as Anthrax, Ricin, or Smallpox, to infect the population, plants, or animals with disease
- Radiological/Nuclear Terrorism – use of radiological dispersal devices, nuclear weapons, or nuclear facilities to attack the population.
- Cyber Terrorism – attack or hijack of the information technology infrastructure that is critical to the functions controlled by computer networks such as: operating, financial, communications, and trade systems.
- Civil Unrest – typically occur on a smaller scale than other types of terrorism. Civil unrest can occur when large groups, organizations or distraught individuals take action with potentially disastrous or disruptive results.

History

No history was available pertaining to homeland security incidents in Dickey County. Oral history from county residents indicates that bomb and other security threats to public schools have occurred sparingly over the past decade.

Probability and Magnitude

Determining the probability of the homeland security incident hazard on Dickey County is difficult at best. However, during jurisdictional meetings, city council members and meeting participants said that there is always a chance for an incident to occur at any time and no community is immune to the hazard. The probability is much lower in jurisdictions without schools since schools in the United States have had numerous incidents. An incident could have a large magnitude. However, impact would be limited due to the rural nature of Dickey County, which has a population density of four people per square mile. Since the economy of Dickey County is largely based on agriculture, an incident involving agriculture has the potential to be disastrous and large in magnitude. Crops and agricultural products are shipped across the United States. If a homeland incident were to target agriculture products through contamination using chemicals, the impact could be far-reaching with the potential to affect hundreds to tens-of-thousands of people.

Risk Assessment

Table 5.5.1 shows the risk assessment as determined by individual jurisdictions and the committee. The risk assessment methodology can be found on page 5-3 of Chapter 5, Threat and Hazard Identification and Risk Assessment. The total in this chart represents the sum of each jurisdiction's impact, frequency, likelihood and vulnerability to a hazard less the jurisdiction's capabilities to respond to the hazard.

Table 5.5.1 – Risk Assessment Summary Homeland Security Incident Scored Chart

Homeland Security Incident	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Dickey County	3	2	2	3	0	**10**
Ellendale	2	1	1	1	2	**3**
Forbes	4	1	1	1	1	**6**
Fullerton	3	1	1	1	1	**5**
Ludden	3	2	1	1	2	**5**
Monango	3	1	1	4	1	**8**
Oakes	3	1	1	4	1	**8**

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

Seasonal Pattern	None
Duration	Low
Speed of Onset	Little time or warning
Location	Entire planning area is equally at risk

Capabilities of and Vulnerabilities to Jurisdictions

Data and statistics pertaining to homeland security incident was unavailable primarily due to the lack of any incident of the hazard occurring in the county. As such, the impact, frequency, likelihood and vulnerabilities, and capabilities of homeland security incident scored relatively low, with the exception impact for the city of Forbes. The capabilities for hazardous material release are mostly shared across the county by the Emergency Management Department.

Capabilities and vulnerabilities of jurisdictions were scored at jurisdictional meetings with participants including the mayor and city auditor, in addition to members from the city council, business owners, emergency services representatives, and members of the general public.

Risk assessment hazard scoring and notes for the county are contained in the following graphic. The jurisdictional risk assessments can also be found in Chapter 8, Jurisdictions.

Dickey County – Homeland Security Incident - 10

Impact	3	• Potential targeting of critical facilities • Potential targeting of public entities including schools, churches, public gatherings • Potential disruption of government and emergency services • Potential loss of life, economy and livestock • Cyber security – loss of confidential information, need stronger firewalls, better anti-virus, cyber response person • Potential loss of fiber grid, and communication systems - including communication between emergency officials

		• Transient and construction worker population has increased the potential
Frequency	2	• History of the hazard occurring in jurisdictions in the county
Likelihood	2	• Homeland security incidents always have the potential to occur • Social media makes this type of activity more active
Vulnerability	3	• More vulnerable: Shortage of Housing in the entire county • More vulnerable: Shortage of Senior Housing • More vulnerable: Influx of Population has prompted sudden rent increases that have displaced residents • More vulnerable: New nationalities can make communication with other languages difficult • More vulnerable: Shortage of emergency services due to influx of population • More vulnerable: New steady population of transient, construction and operation workers in the area due to new energy bursts and data centers. • More vulnerable: Limited law enforcement personnel and equipment • More vulnerable: Limited emergency services resources • More vulnerable: Limited school safety resources including equipment and personnel. Not all classrooms can be secured from the inside in a lockdown, cameras, secure entrances and windows, metal detectors and/or wands, weapon detection equipment • More vulnerable: Limited security in courthouses and city halls • More vulnerable: Limited ability to access mental health • More vulnerable: County does have vulnerable populations and critical infrastructure • More vulnerable: The county is located on U.S. Highway 281, which is a major transportation route in the area and supports economic activity • More vulnerable: US. Highway 281 provides access to the county • More vulnerable: College campus within the county • More vulnerable: Major electrical grid hub within the county • More vulnerable: Petroleum Pipeline within the county • Less vulnerable: County Emergency Department has trained personnel such as the Emergency Manager to respond to releases • Less vulnerable: County has equipment and various resources
Capability	0	• Few abilities for a major homeland security threat. • Lacks technical, administrative and financial resources for mitigation • Active county commission • Active Emergency Management • Relies on regional, state and other agencies for assistance • Law Enforcement shortage

City of Ellendale - Homeland Security Incident - 3

Impact	2	• Potential injury or loss of life • Loss of economy • Loss of livestock • Potential for large percentage of population loss • Emergency services could be overwhelmed
Frequency	1	• Always the possibility of an event occurring • Trinity Bible College was the scene of protest by a liberal political group in the early 2000s, but the demonstration was said to be peaceful

Likelihood	1	• Always the possibility of an event occurring
Vulnerability	1	• More vulnerable: Limited mental health services • More vulnerable: Located on US 281 and ND 11 junction • More vulnerable: 26.9 percent of the population is over 65 • More vulnerable: Small town, everyone is impacted, fearful and anxious • More vulnerable: Influx of population from other parts of the U.S • More vulnerable: Trinity Bible College within city limits • More vulnerable: County Courthouse within city limits • Less vulnerable: City has assisted living and rest home with generators • More vulnerable: No Hospital • Less vulnerable: Two clinics • Less vulnerable: Sparse population and rural nature of the city
Capability	2	• Headquarters of Dickey County Emergency Services located in Ellendale • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Forbes - Homeland Security Incident – 6

Impact	4	• Potential injury or loss of life • Loss of economy • Loss of livestock • Potential for significant percentage of population loss • Emergency services could be overwhelmed
Frequency	1	• Always a possibility of an event occurring • No incidents have occurred
Likelihood	1	• Always a possibility of an event occurring.
Vulnerability	1	• More vulnerable: Limited mental health services. • More vulnerable: Small town, everyone is impacted, fearful and anxious • More vulnerable: Influx of population from other parts of the U.S. • More vulnerable: No local law enforcement, depends on County Sheriff • Less vulnerable: 0 percent of population is over 65 • Less vulnerable: Sparse population and rural nature of the city • Less vulnerable: No school
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Fullerton - Homeland Security Incident – 5

Impact	3	• Potential loss of life • Loss of economy • Loss of livestock • Potential for large percentage of population loss • Emergency services could be overwhelmed
Frequency	1	• Always a possibility of an event occurring • No incidents have occurred

Likelihood	1	• Always a possibility of an event occurring
Vulnerability	1	• More vulnerable: Limited mental health services or medical facilities • More vulnerable: 28.4 percent of population is over age 65 • More vulnerable: Small town, everyone is impacted, fearful and anxious • More vulnerable: Influx of population from other parts of the U.S. • More vulnerable: No local law enforcement, depends on County Sheriff • Less vulnerable: Sparse population and rural nature of the city • Less vulnerable: City has neighborhood watch program in place • Less vulnerable: No school in city
Capability	1	• Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Ludden - Homeland Security Incident – 5

Impact	3	• Potential injury or loss of life • Loss of economy • Loss of livestock • Potential for substantial percentage of population loss • Emergency services could be overwhelmed
Frequency	2	• Always a possibility of an event occurring • No incidents have occurred
Likelihood	1	• Always a possibility of an event occurring.
Vulnerability	1	• More vulnerable: Limited mental health services • More vulnerable: 79 percent of population is over age 65 • More vulnerable: Small town, everyone is impacted, fearful and anxious • More vulnerable: Influx of population from other parts of the U.S. • More vulnerable: No local law enforcement, depends on County Sheriff • More vulnerable: Located at the crossroads of two major highways • Less vulnerable: Sparse population and rural nature of the city
Capability	2	• Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Monango - Homeland Security Incident – 8

Impact	3	• Potential loss of life • Loss of economy • Loss of livestock • Potential for large percentage of population loss • Emergency services could be overwhelmed
Frequency	1	• Always a possibility of an event occurring • No incidents have occurred
Likelihood	1	• Always a possibility of an event occurring
Vulnerability	4	• More vulnerable: Limited mental health services. • More vulnerable: Small town, everyone is impacted, fearful and anxious • More vulnerable: Influx of population from other parts of the U.S. • More vulnerable: No local law enforcement, depends on County Sheriff • More vulnerable: Located on Hwy 281

		• Less vulnerable: 0 percent of population is over age 65 • Less vulnerable: Sparse population and rural nature of the city
Capability	1	• Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Oakes - Homeland Security Incident - 8

Impact	3	• Potential loss of life • Loss of economy • Loss of livestock • Potential for large percentage of population loss • Emergency services could be overwhelmed
Frequency	1	• Always a possibility of an event occurring. • No incidents have occurred
Likelihood	1	• Always a possibility of an event occurring.
Vulnerability	4	• More vulnerable: Limited mental health services. • More vulnerable: 17.6% of the population is over 65 • More vulnerable: Small town, everyone is impacted, fearful and anxious • More vulnerable: Influx of population from other parts of the U.S. • More vulnerable: City has assisted living and rest home services. The rest home is not generated. • More vulnerable: The K-12 School and vocational tech are not generated • Less vulnerable: City has a hospital and two clinics. • Less vulnerable: Sparse population and rural nature of the city
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Vulnerabilities to County-Owned Buildings and Property

County-owned buildings and infrastructure are vulnerable to homeland security incidents. Facilities supporting functions key to daily operations of the county, such as buildings supporting emergency services and county shops for snow removal, would be the most vulnerable as an attack. A summary of county-owned buildings is provided in Chapter 4.

Vulnerabilities of Critical Facilities and Infrastructure

The Dickey County Courthouse in Ellendale would be the critical facility most at risk to a homeland security incident. Government facilities are typically targeted for public protests or other attacks. Individuals or political groups in disagreement with local government action taken would be an entity most likely to carry out an attack. Incidents affecting infrastructure such as roads, hospitals, water pipes and power lines can disrupt economic activity, limit access for emergency services, and put people at risk due to a shortage or outage of critical materials and infrastructure. The loss of critical facilities and infrastructure could lead to rapid spread of communicable diseases or possibly dam failures if these structures were targeted.

According to the 2019 NDMHMP, the North Dakota Critical Infrastructure Program identified specific facilities, also referred to as Critical Infrastructure and Key Resources, are critical to homeland security in seven different sectors. These sectors are:

- Food / Agriculture: major food distribution centers
- Public Health: hospitals and public health offices
- Emergency Services: police, fire and dispatch centers
- Water: treatment facilities
- Energy: power generation/chemical facilities
- Transportation: bridges and major highways
- Communications: communications towers

According to the 2019 NDMHMP, in Dickey County, there are two public health CIKR facilities, one transportation CIKR facility, two emergency services CIKR facilities; and one communications CIKR for a total of six CIKR facilities. Chapter 4 provides an inventory of county and city owned property in Dickey County.

Vulnerabilities to New and Future Development

Since incidents of the homeland security incident hazard are nearly impossible to predict, vulnerabilities to new and future development will be difficult to determine. However, new and future development constructed near major highways or critical facilities and infrastructure would be more vulnerable to incidents of homeland security.

Data Limitations and Other Key Documents

The plan does not document history of homeland security hazard incidents in Dickey County. The rarity of the hazard and confidentiality limit the data that is available.

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

- North Dakota Emergency Operations Plan, Terrorism Annex
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)
- Dickey County Emergency Operations Plan, CERT Teams
- 2019 Dickey County MHMP
- 2024-2029 Enhanced Mitigation MAOP ND

5.6 Severe Summer Weather

Including Tornadoes, hail, downbursts, thunderstorm winds, lightning and extreme heat.

Characteristics

Severe summer storms can result in loss of life, injuries, and damage to property and crops. Every thunderstorm produces lightning, which kills more people each year than tornadoes.

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 flooding), lightning, hail, and high winds. Downburst or straight-line winds can be as deadly as tornados. 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.

Downburst/Strong Winds/Straight-line Winds: A downburst is created by an area of significantly rain-cooled air that, after reaching ground level, spreads out in all directions producing strong winds. Unlike winds in a tornado, winds in a downburst are directed outwards from the point where it hits land or water. Dry downbursts are associated with thunderstorms with very little rain, while wet downbursts are created by thunderstorms with high amounts of rainfall. The number one cause of wind damage in North Dakota is from downburst winds, not tornados.

Straight-line winds cause the most thunderstorm wind damage. Straight-line winds are winds not associated with the rotation of a tornado. Straight-line winds come in speeds that can exceed 125 mph.

Extreme Heat: Heat kills by pushing the human body beyond its limits. In extreme heat and high humidity, evaporation is slowed, and the body must work extra hard to maintain a normal temperature. When the body heats too quickly to cool itself safely, or when it loses too much fluid or salt through dehydration or sweating, the body temperature rises, and heat-related illness may develop.

As the days get warmer, State and Federal emergency management officials warn that extreme heat can be very dangerous and, in some instances, even fatal. Older adults, young children and those who are sick or overweight are most vulnerable to extreme heat. Conditions that can induce heat-related illnesses include stagnant atmospheric conditions and poor air quality. Consequently, people living in urban areas may be at greater risk from the effects of a prolonged heat wave than those living in rural areas.

Each year, dozens of children left in parked vehicles die from hyperthermia. Hyperthermia is an acute condition that occurs when the body absorbs more heat than it can handle. Hyperthermia can occur even on a mild day.

The most common heat disorders are:

- Sunburn – Redness and pain, in severe cases swelling of skin, blisters, fever, headaches
- Heat Cramps – Painful spasms usually in the muscles of legs and abdomen with heavy sweating
- Heat Exhaustion – Heavy sweating, weakness, cold, pale, clammy skin, unsteady pulse, fainting, and vomiting, but may have normal temperature
- Heat Stroke (or Sunstroke) – High body temperature (106 degrees F or higher), hot dry skin, rapid and strong pulse, possible unconsciousness. Heat stroke is a severe medical emergency that can be life-threatening

During extremely hot weather, individuals should take the following precautions:

- Stay indoors as much as possible, on lower floors if possible
- Limit exposure to the sun and use sun block with a high sun protector factor rating
- If a home does not have air conditioning, spend the hottest part of the day in public buildings such as libraries, schools, movie theaters, shopping malls, and other community facilities
- Use fans. Circulating air can cool the body by increasing the perspiration rate of evaporation
- If there is a window air conditioning, eliminate any holes or gaps around the installation
- Check air-conditioning ducts for proper insulation
- Eat well-balanced, light, and regular meals. Avoid using salt tablets unless directed by physician
- Drink plenty of water
- Dress in loose-fitting, lightweight, and light-colored clothes that cover as much skin as possible
- Protect the face and head by wearing a wide-brimmed hat
- Check on family, friends, and neighbors who do not have air conditioning
- Never leave children or pets alone in a closed vehicle
- Avoid strenuous work during the warmest part of the day, 11 a.m. to 4 p.m. Have a buddy system when working in extreme heat and take frequent breaks
- Exercise should be done in the early morning hours between 4-7 a.m.
- Make sure there is enough food and water for pets

Livestock/animals and extreme heat: Extreme heat causes significant stress for all animals. Managing animals in high temperatures requires good forward planning. Water, shelter, and proper handling are important considerations during periods of extreme heat. Location of water should be familiar to animals before days of extreme heat. Shelter should be provided if possible or an alternative such as shelter belts.

Hail: Strong rising currents of air within a storm, called updraft, carry water droplets to a height where they freeze. Ice particles grow in size, becoming too heay to be supported by the updraft, and fall to the ground as hail. Hail is larger than sleet and forms only in thunderstorms. Hail can be larger than a softball which is a 5 inch diameter. Hail tends to fall in swaths that range from 20 to 150 miles in length and 5 to 30 miles wide. Large hailstones can fall in speeds over 100 mph. The major hazard is to crops, aircraft, automobiles, roofs, and windows. Hail causes more than $1 billion dollars in crop and property damage each year. The destructiveness of hailstorms is not due to the hailstones alone. Hail damage is difficult to determine as hail, wind, and rain frequently occur at he same time.

Lightning: The rising air in a thunderstorm cloud causes various types of frozen precipitation to form within the cloud. Included in these precipitation types are very small ice crystals and much larger pellets of ice. The smaller ice crystals are carried upward towards the top of the clouds by the rising air while the heavier and denser pellets are eithier suspended by the rising air or start falling toward the ground. Collisions occur between the ice crystals and the pellets, and these collisions serve as the charging mechanism of the thunderstorm. The small ice crystals become positively charged while the pellets become negatively charged. At the same time, the ground underneath the cloud becomes charged oppositely of the charges directly overhead.

The vast majority of lightning victims were going to a safe place, but waited to long before seeking shelter. More than 80 percent of lightning fatality victims are male, typically between the ages of 15 and 40. Lightning fatalities are most common during summer afternoons and evenings. The energy from one lightning flash could light a 100-watt light bulb for more than three months. Many wildfires are ignitied by lightning.

The channel of air through which lightning passes can be heated to 50,000 F, hotter than the surface of the sun. The rapid heating and cooling of the air near the lightning channel causes a shockwave that results in the sound we know as thunder.

Almost all lightning deaths have occurred outdoors. In recent years, fatal activities have included:

- Boating
- Walking
- Swimming
- Fishing
- Riding horse
- Mountain climbing
- Playing sports
- Running to shelter
- Riding on a lawn mower
- Camping
- Watching the storm
- Showering
- Golfing
- Standing under a tree
- Loading a truck
- Inside near open windows or doors

Tornados: Although tornados occur in many parts of the world, they are found most frequently in the United States. In an average year, 1,200 tornados cause 60-65 fatalities and 1,500 injuries nationwide. The peak time of the year that tornados occur is from the end of May through the beginning of August. As with thunderstorms that create them, tornados can form anytime day or night. The peak time, however, is during the evening hours from 6:00 to 8:00 p.m.

A tornado is a violently rotating column of air extending from a cumuliform cloud, such as a thunderstorm, to the ground. Tornados may appear nearly transparent until dust and debris are picked up or a cloud form within the funnel. The average tornado moves from southwest to northeast, but tornados can move in any direction and can suddenly change their direction of motion. The average speed of a tornado is 30 mph but may vary from nearly stationary to 70 mph. The strongest tornados have rotating winds of more than 200 mph. The typical tornado is on the ground for less than ten minutes. However, tornados may only touchdown for one second and then go back up or be on the ground for an hour or longer. Their funnel-shapes clouds can affect areas ranging from ¼ mile to a full mile wide and upward to 16 miles long. Extreme events have been known to travel over areas up to a mile wide and 300 miles long.

The National Weather Service uses the Enhanced Fujita Scale or EF-Scale to assign a tornado a rating based on estimated wind speeds and related damage.

Table 5.6.1 – Tornado Scale

Enhanced Fujita Scale Rating	3 Second Wind Gust (mph)		
0	65 mph	-	85 mph
1	86 mph	-	110 mph
2	111 mph	-	135 mph
3	136 mph	-	165 mph
4	166 mph	-	200 mph
5	200+ mph	-	

Source: National Weather Service

Before thunderstorms develop, winds change direction and increase in speed and altitude. This creates an invisible, horizontal spinning effect in the lower atmosphere. Rising air within the thunderstorm updraft tilts the rotating air from horizontal to vertical. An area of rotation, 2-6 miles wide, now extends through much of the storm. Most tornados form within this area of strong rotation.

Figure 5.6.1 Tornado Strengths

Weak Tornados

- 88 percent of all tornados
- Cause less than 5 percent of tornado deaths
- Lifetime 1-10+ minutes
- Winds less than 110 mph
- Produces EF0 or EF1 damages

Strong Tornados

- 11 percent of all tornados
- Cause nearly 30 percent of all tornado deaths
- May last 20 minutes or longer
- Winds 111-165 mph
- Produces EF2 or EF3 damage

Violent Tornados

- Less than 1 percent of all tornados
- Cause 70 percent of all tornado deaths
- Can exceed 1 hour
- Winds greater than 166 mph
- Produces EF4 or EF5 damage

Source: National Weather Service

The National Weather Service has a Doppler radar network strategically located across the country that can detect air movement toward or away from the radar. Early detection of increasing rotation aloft within a thunderstorm can allow lifesaving warnings to be issued before a tornado forms.

Flying debris kills over 90 percent of all people killed by tornados. The winds of a tornado can reach extreme speeds, and at these speeds, neither man nor nature makes many things that can hold together. The one thing to remember about a tornado is that nothing can be done about them and they will go where

they want. Get to a shelter immediately. The best place to go is underground, or as underground as possible to avoid wind and flying debris.

History

Dickey County has a documented hazard history that shows a 100 percent frequency and likelihood of the hazard occurring based on past occurrences. Approximately 145 occurrences of the hazards were recorded over a span of 56 years between 1966 and 2022, resulting in 4.12 injuries and no fatalities. Property damage was approximately $6.4 million, and crop damage was $3.6 million. Table 5.6.2 summaries the presidential declarations for Dickey County for the hazards. Table 5.6.4 summarizes the turned down state requested disaster declarations.

Table 5.6.2 – Severe Summer Weather Summary

Severe Summer Weather						
Number of Occurrences	**Date Range**	**Probability**	**Injuries**	**Fatalities**	**Property Damage**	**Crop Damage**
145	1960-2022	100 %	4.12	0	$6,392,122.04	$3,625,513.53

Sources: Spatial Hazard Events and Losses Database of the United States (SHELDUS)

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, net claimed acres, indemnity, loss liability, loss cost and the number of policies covered. The net claimed acres is the total acres planted for crops in the county for the given year. Liability is the total value in crops planted in the county for the given year and indemnity is the amount paid to cover insurance claims from crop loss due to flooding.

Table 5.6.3 shows the Presidential Disaster Declarations for North Dakota for severe summer weather that included Dickey County. A total of 10 disaster declarations have been declared between 1975 and 2022. Presidential Declarations for sever summer weather have become more frequent in in North Dakota

Table 5.6.3 – 1975 to 2022 Presidential Disaster Declarations for North Dakota

	Date	**Type**	**Disaster Description**	**Statewide Costs (2009 dollars)**	**President**
1829	03/24/2009	W	Severe Storms, Flooding	$107,590,628	Obama
1713	07/17/2007	W	Severe Storms, Flooding	$4,938,793	GWBush
1597	07/22/2005	W	Severe Storms, Flooding, Ground Saturation	$19,237,140	GWBush
1376	05/28/2001	F	Severe Storms, Flooding, Ground Saturation	$45,117,082	GWBush
1334	06/27/2000	F	Severe Storms, Flooding, Ground Saturation	$113,151,807	Clinton
1220	06/15/1998	F	Flooding, Ground Saturation, Severe Storms	$24,468,099	Clinton
1174	04/07/1997	F	Severe Flooding, Severe Winter Storm	$531,404,655	Clinton
1050	05/16/1995	W	Severe Storms, Flooding, Ground	$24,294,145	Clinton
581	4/26/1979	F	Severe Storms, Snowmelt, Flooding	$57,100,615	Carter
475	7/11/1975	F	Severe Storms, Flooding	$18,771,101	Ford

Source: FEMA

Probability and Magnitude

Hazard history was gathered from NOAA, NCDC, SHELDUS, newspaper accounts, and the previous FEMA-approved Dickey County Mitigation Plan. This data covers a 62-year period from 1960 through 2022, and documents 87 notable severe summer weather occurrences, which equates to a probability of 100 percent, or guaranteed instances of severe summer weather each year. The magnitude of the hazard ranges from large tornados and hail causing massive property damage, to heavy rain blocking roads.

All areas of Dickey County have been and will be in the future affected by Severe Summer Weather.

Risk Assessment

Table 5.6.4 shows the risk assessment as determined by individual jurisdictions and the committee. The risk assessment methodology can be found on page 5-3 of Chapter 5, Threat and Hazard Identification and Risk Assessment. The total in this chart represents the sum of each jurisdiction's impact, frequency, likelihood and vulnerability to a hazard less the jurisdiction's capabilities to respond to the hazard.

Table 5.6.4 – Risk Assessment Summary Severe Summer Weather Scored Chart

Severe Summer Weather	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Dickey County	4	4	4	3	2	**13**
Ellendale	3	4	4	3	3	**11**
Forbes	4	4	4	4	1	**15**
Fullerton	3	4	4	4	1	**14**
Ludden	3	4	4	4	2	**12**
Monango	4	3	3	3	1	**12**
Oakes	3	4	4	3	1	**13**

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

Seasonal Pattern	None
Duration	24 hours
Speed of Onset	12 to 16 hours warning

Capabilities of and Vulnerabilities to Jurisdictions

According to the 2019 NDMHMP, Dickey County has a low vulnerability to tornados, hail, lightning, thunderstorm winds, and a low-moderate vulnerability to extreme heat. The county has an overall vulnerability raking of low to severe summer weather.

Capabilities and vulnerabilities of jurisdictions were scored at committee meetings and at each jurisdictional meeting with participants including the mayor and city auditor, in addition to members from the city council, business owners, emergency services representatives, and members of the general public. Participants discussed the incidents that occur in their jurisdiction and how frequent impacts are from the hazard. Afterwards, they scored impacts and frequency of the hazard. Participants compared the impacts and frequency of the hazard and determined future prevalence. The likelihood of the hazard was also scored. Vulnerability was scored with participants stating what makes the jurisdiction less vulnerable given their resources at hand or more vulnerable by identifying resources not available.

Risk assessment hazard scoring and notes for the county are contained in the following graphic. The jurisdictional risk assessments can be found in Chapter 8, Jurisdictions.

Dickey County – Severe Summer Weather - 13

Impact	4	• Possible loss of life • Potential hail damage • Crop and livestock damage • Blocked road access • Potential property damage • Ambulance and first responders are sent out during severe weather. • Down powerlines block roads and cause power outages • Heavy rains cause overland flooding • Lightning strikes cause fires • Dry thunderstorms produce thunder and lightning • Haystacks are frequently struck by lightning resulting in fires • Home and public facilities damage • Possible downed trees • Prolonged heat could cause loss of life, economy, equipment, livestock
Frequency	4	• Multiple summer storms are experienced annually
Likelihood	4	• More intense weather has been experienced in recent years
Vulnerability	3	• More vulnerable: Shortage of Housing in the entire county • More vulnerable: Shortage of Senior Housing • More vulnerable: Influx of Population has prompted sudden rent increases that have displaced residents • More vulnerable: New nationalities can make communication with other languages difficult • More vulnerable: Shortage of emergency services due to influx of population • More vulnerable: New steady population of transient, construction and operation workers in the area due to new energy bursts and data centers. • More vulnerable: Nursing homes in the county • More vulnerable: Topography in the county is generally flat open farmland with little to no obstruction to wind, rain, hail, and heavy rain • More vulnerable: Populations that lack a backup power source • More vulnerable: No public storm shelters in the county • More vulnerable: Large vulnerable populations due to college campus and apartment complexes • More vulnerable: Large transient population moving through on highways • More vulnerable: Large transient population due to seasonal farm and construction labor • Less vulnerable: Web site featuring beneficial information to educate residents
Capability	2	• Lacks technical, administrative and financial resources for mitigation • County-wide educational events during the year • Active County Emergency Management • Evacuation and shelter plans are in place • Active county commission • Relies on regional, state and other agencies for assistance • NWS Skywarn training is now unavailable

City of Ellendale - Severe Summer Weather - 11

Impact	3	• Hail damage to homes/community buildings (broken windows, siding and shingles) • Power outages • Economy loss • Lightning strikes cause fires • Potential injury or loss of life • High winds damage property – Tornados and Straight-Line Winds • Heavy rain produces flash flooding • Fire potential if lightning occurs during drought
Frequency	4	• Multiple storms are experienced annually causing property damage • Extreme summer weather seasons occur every two to three years
Likelihood	4	• Multiple storms are experienced annually causing property damage. • More intense weather in recent years • More rapid, heavy rain events occurring each year
Vulnerability	3	• More vulnerable: 26.9 percent of the population is over 65 • More vulnerable: Fuel and propane tanks within city limits adjacent to infrastructure and critical facilities that are vulnerable to severe summer weather incidents • Less vulnerable: Sparse population and rural nature of the city • Less vulnerable: Roads in and out of town are well maintained
Capability	3	• Limited tax base • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Siren is radio actuated by law enforcement or by Emergency Management

City of Forbes - Severe Summer Weather – 15

Impact	4	• Hail damage to homes and community buildings including broken windows, siding and shingles • Power outages • Economy loss • Lightning strikes cause fires • Potential injury • Potential loss of life • High winds damage property • Heavy rain produces flash flooding • Fire potential if lightning occurs during drought. • Prolonged response times and limited access for emergency services
Frequency	4	• Multiple storms are experienced annually causing property damage • Extreme summer weather seasons occur every two to three years • In 2010 we bused vulnerable people to Ellendale and sheltered them in a local restaurant meeting area during the days for warmth and hot food
Likelihood	4	• Multiple storms are experienced annually causing property damage • More intense weather in recent years • More rapid, heavy rain events occurring each year
Vulnerability	4	• More vulnerable: Lack of manpower at emergency services

		• More vulnerable: Populations that lack a backup power source • More vulnerable: No local law enforcement, depends on County Sheriff • More vulnerable: No generated public building or storm shelter in town. Area receives 4-5 power outages lasting more than 8 hours and usually at least one which lasts 2-3 days • More vulnerable: There are two trailer homes in the city • Less vulnerable: 0 percent of population is over 65 • Less vulnerable: Sparse population and rural nature of the city • Less vulnerable: City lacks early warning system and has a radio controlled for remote storm warning • Less vulnerable: Roads in and out of town are well maintained
Capability	1	• Limited tax base • No Building Code enforcement • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Fullerton - Severe Summer Weather - 14

Impact	3	• Hail damage to homes and community buildings (broken windows, siding and shingles) • Power outages • Economy loss • Lightning strikes cause fires • Potential injury or loss of life • High winds damage property • Heavy rain produces flash flooding • Fire potential if lightning occurs during drought. • Prolonged response times and limited access for emergency services
Frequency	4	• Multiple storms are experienced annually causing property damage • Extreme summer weather seasons occur every two to three years
Likelihood	4	• Multiple storms are experienced annually causing property damage • More intense weather with rapid, heavy rain events in recent years annually
Vulnerability	4	• More vulnerable: 28.4% of the population is elderly over age 65 • More vulnerable: Lack of manpower at emergency services • More vulnerable: Populations that lack a backup power source • More vulnerable: No local law enforcement, depends on County Sheriff • More vulnerable: No generated public building or storm shelter in town. Area receives 4-5 power outages lasting more than 8 hours and usually at least one which lasts 2-3 days. In 2010, vulnerable people were bused to Ellendale and sheltered in a local restaurant meeting area during the days for warmth and hot food • Less vulnerable: Sparse population and rural nature of the city • Less vulnerable: Siren system can be radio actuated by law enforcement or Dickey County Emergency Management • Less vulnerable: Roads in and out of town are well maintained • Less vulnerable: Residents possess equipment to clean up debris

Capability	1	• Limited tax base • No Building Code enforcement • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • Radio operated storm siren operated by Dickey County Emergency Management.

City of Ludden - Severe Summer Weather - 13

Impact	3	• Hail damage to homes and buildings (broken windows, siding and shingles) • Power outages • Economy loss • Lightning strikes cause fires • Potential injury or loss of life • High winds damage property • Heavy rain produces flash flooding • Fire potential if lightning occurs during drought • Prolonged response times and limited access for emergency services
Frequency	4	• Multiple storms are experienced annually causing property damage • Extreme summer weather seasons occur every two to three years
Likelihood	4	• Multiple storms are experienced annually causing property damage. • More intense weather in recent years • More rapid, heavy rain events occurring each year
Vulnerability	4	• More vulnerable: 79% of the population is elderly over age 65 • More vulnerable: No EMS in the town. All responders come from Oakes with a 20-minute average response on a good weather day • More vulnerable: Populations that lack a backup power source • More vulnerable: No local law enforcement, depends on County Sheriff • More vulnerable: No generated public building or storm shelter in town. Area receives 4-5 power outages lasting more than 8 hours and at least one lasting 2-3 days • More vulnerable: City has no public works personnel or equipment • More vulnerable: No medical facilities, public fueling capacity or lodging • More vulnerable: The immediate area surrounding the city is grassland and farmland allowing wind direct access on the community • More vulnerable: The city does not have a shelter • More vulnerable: New equipment is needed for neighboring fire departments and ambulance services • Less vulnerable: Sparse population and rural nature of the city • Less vulnerable: City lacks early warning system and has a radio controlled for remote storm warning • Less vulnerable: Roads in and out of town are well maintained • Less vulnerable: The City purchased discharge hoses to pump excess water out of the city
Capability	2	• Limited tax base • No Building Code enforcement • Lacks technical, administrative and financial resources for mitigation

		• Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • City has a radio operated storm siren operated by Emergency Management

City of Monango - Severe Summer Weather - 12

Impact	4	• Hail damage to homes and community buildings including broken windows, siding and shingles. • Power outages • Economy loss • Lightning strikes cause fires • Potential injury • Potential loss of life • High winds damage property • Heavy rain produces flash flooding • Fire potential if lightning occurs during drought • Prolonged response times and limited access for emergency services
Frequency	3	• Multiple storms are experienced annually causing property damage • Extreme summer weather seasons occur every two to three years • 2011 storm took out half of the city's trees
Likelihood	3	• Multiple storms are experienced annually causing property damage • More intense weather in recent years • More rapid, heavy rain events occurring each year
Vulnerability	3	• More vulnerable: Lack of manpower at emergency services • More vulnerable: Populations that lack a backup power source • More vulnerable: No local law enforcement, depends on County Sheriff • More vulnerable: No generated public building or storm shelter in town. Area receives 4-5 power outages lasting more than 8 hours and usually at least one which lasts 2-3 days • Less vulnerable: 0 percent of population is over age 65 • Less vulnerable: Sparse population and rural nature of the city • Less vulnerable: City lacks early warning system and has a radio controlled for remote storm warning • Less vulnerable: Roads in and out of town are well maintained
Capability	1	• Limited tax base • No Building Code enforcement • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • City has a radio operated storm siren operated by Dickey County Emergency Management

City Oakes Severe Summer Weather - 13

Impact	3	• Hail damage to homes and community buildings including broken windows, siding and shingles. • Power outages • Economy loss • Lightning strikes cause fires

		• Potential injury • Potential loss of life • High winds damage property • Heavy rain produces flash flooding • Fire potential if lightning occurs during drought.
Frequency	4	• Multiple storms are experienced annually causing property damage. • Extreme summer weather seasons occur every two to three years.
Likelihood	4	• Multiple storms are experienced annually causing property damage. • More intense weather in recent years • More rapid, heavy rain events occurring each year
Vulnerability	3	• More vulnerable: 17.6% of the population is elderly over 65 • More vulnerable: Populations that lack a backup power source. • More vulnerable: Rest home, K-12 school and vocational tech are not generated • More vulnerable: City contains fuel and propane tanks within city limits adjacent to infrastructure and critical facilities • Less vulnerable: Sparse population and rural nature of the city • Less vulnerable: City has a shelter • Less vulnerable: Building codes and ordinances in place to assure safety in construction of buildings • Less vulnerable: City has clinic • Less vulnerable: Siren system can be radio actuated by law enforcement or Dickey County Emergency Management. • Less vulnerable: Roads in and out of town are well maintained
Capability	1	• Limited tax base • No Building Code enforcement • The elevator in town has some manpower, heavy equipment and work with area farmers to be pro-active in protecting the city. • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • The siren can be radio actuated by law enforcement or Dickey County Emergency Management.

Vulnerabilities to County-Owned Buildings and Property

County-owned buildings are susceptible to severe summer weather in many forms. Buildings are often constructed to adequately withstand impacts from severe summer weather, but may not sustain high wind speeds, tornados or large hail. Large hail can damage building roofs, break windows and injure people. 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 Dickey County Courthouse in Ellendale to severe for county shops in smaller cities, which are considerably less sturdy. A summary of city and county owned buildings is provided in Chapter 4.

Vulnerabilities of Critical Facilities and Infrastructure

Building codes ensure buildings and structures are built adequately to withstand severe weather of any kind. The cities of Ellendale and Oakes have building codes and extensive ordinances regulating the

construction height of everything from fencing and materials used for construction, to location of trees and other vegetation. The smaller cities of Forbes, Fullerton, Ludden and Monango lack building codes and do not have a common standard for new and future development. These cities are more at risk to damage and impacts from sever summer weather and windstorms as a result.

Critical facilities such as schools, water towers, roadways, county-owned buildings and other specialty facilities such as hospital, nursing homes and assisted living facilities are vulnerable to severe summer weather in a similar fashion to county-owned buildings and property. In terms of infrastructure, power lines are susceptible to wind and debris, which can disrupt service and cause power outages. Disruptions in water service can be caused by damage to water towers or lift stations. Roadways can become blocked due to windblown debris and limit access for emergency services.

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 NOAA and other agencies can be incomplete. Fewer storm spotters reduce the amount of reported weather information.

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

- Dickey County Emergency Operations Plan
- North Dakota State Building Code
- Ellendale City Ordinances
- Oakes City Ordinances
- 2019 Dickey County Multi-Hazard Mitigation Plan

5.7 Severe Winter Weather

Including Blizzards, Heavy Snow, Recycled Snow, Ice Storms, and Extreme Cold.

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, extended extreme cold temperatures and ice storms. Each in its own way is a potential killer of hundreds of people whenever the storm strikes. A brief explanation of each follows:

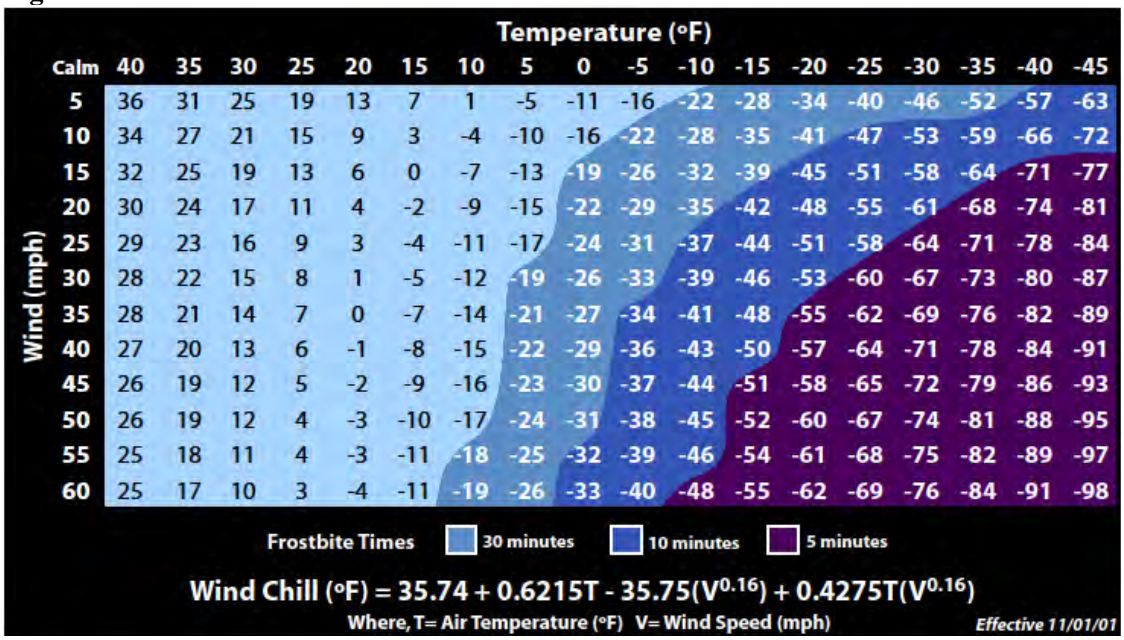
Blizzards are a combination of sustained winds or frequent gusts of 35mph or greater and visibilities of less than a quarter mile from falling or blowing snow for 3 hours or more. Blizzards are usually characterized by low temperatures and by strong winds bearing large amounts of snow. The impact of a severe blizzard with low visibility, heavy snow, and cold temperatures can bring the entire county to a standstill.

Heavy Snowstorms do not meet the criteria of a blizzard but are also hazardous. Six inches of snow or more in 12 hours or eight inches or more in 24 hours constitutes conditions that may significantly hamper travel or crate hazardous conditions. Snow can be continuous, intermittent, flurries or if showery in nature, snow squalls.

Ice Storms develop when a layer of warm (above freezing), moist air aloft coincides with a shallow cold (below freezing) pool of air at the surface. As snow falls into a warm layer of air, it melts to rain and then freezes on contact when hitting the frozen ground or cold objects at the surface, creating a smooth layer of ice. Extended periods of freezing rain can lead to accumulations of ice on roadways, walkways, power lines, trees, and buildings. Thick accumulations can bring down trees and power lines.

Extreme Cold includes long periods of cold temperatures throughout the winter months. People are forced to limit time spent outdoors in extreme cold conditions. When cold temperatures combine with wind, dangerous wind chill occurs. Wind chill is how cold it feels when outside.

Figure 5.7.1 Wind Chill Chart



Source: National Weather Service

The winter season can begin as early as September and last into May. Generally, a period from mid-November through early April provides the bulk of winter storms.

Each year, dozens of Americans die due to exposure to cold. Add to that number, vehicle accidents and fatalities, fires due to dangerous use of heaters and other winter weather fatalities and you have a significant threat. People can be hurt or killed in traffic accidents on icy roads, while shoveling snow, or from hypothermia due to prolonged esposure to cold.

Blizzards can last from 24 hours (in faster moving storms) to more than four days (in slower moving ones). There are two major winter storm tracks that can be explained. The northern track produces the Alberta Low Pressure System, commonly called the Alberta Clipper. This is usually a fast moving storm producing blizzard conditions for a relatively short period of time. They are usually followed by extreme low temperatures. Alberta Lows have traveled as fast as 90 mph and have not been known to stop and become stationary. The southern track produces the Colorado Low Pressure System. This type of storm moves more slowly and more erratically than the Alberta Low. The Colorado Lows have traveled as fast as 60 mph, but have also been known to stop and become stationary for as long as 18 hours. Both of these storms can be deadly.

Low temperatures combined with high winds are extremely dangerous. Each year a number of people, stranded in a blizzard attempt to walk to safety and become lost. Lowering of the body core temperature leads to the condition known as “hypothermia.” Hypothermia has often been called “The killer of the unprepared”. The blood is cooled, thereby reducing the amount of oxygen which is carried to the brain, thus dulling the senses. The victim becomes fatigued, delirious, and loses dexterity in thier arms and legs. If the body’s core temperature continues to drop to about 85 degrees F, the victim eventually slips into unconsciosness. If the treatment is not started immediately, the result is arrest of the circulatory and respiratory systems and death.

Wind chill is not the actual temperature but rather how wind and cold feel on exposed skin.

The livestock industry can be severely impacted during winter storm situations. The snow can prevent cattlemen from getting feed and water to their livestock.

History

Dickey County has a documented hazard history that shows a 100 percent frequency and likelihood of the hazard occurring in the future.

Severe winter weather events such as the spring storm last year traps residents in their home and places of work sometimes for days as roads are blown shut. The amount of snow is seldom the issue it is usually the amount of wind and the duration of time it blows. A 6 inch snow fall (nothing exciting) coupled with 2-3 days of 50+ MPH winds can leave roads with 6-10 foot drifts sometimes a quarter mile long. Normal snowplows cannot clear these types of snow plugs.

In recent years Dickey County hired six (6) bull dozers and operators from contractors which operated around the clock to marginally get one lane access to most of the county. Local Farmers also contracted with the county or volunteered their time with large tractor mounted snow blowers to provide access to themselves and isolated neighbors. With the exception of Ellendale and Oakes, none of other cities in the county own snow removal equipment and must rely on contractors or county roads department to open their roads.

In addition to the eight disaster declarations listed in the table, North Dakota also had four requests turned down. Table 5.7.1 details turned down requests. The span of time since a turned down requests indicates

that losses from severe weather have been substantial enough to make a declaration, potentially from increasing strength of impacts and storm intensity.

Table 5.7.1 – 1996 to 2025 Dickey County Severe Winter Weather History Summary

Severe Winter Weather					
Number of Occurrences	**Date Range**	**Injuries**	**Fatalities**	**Property Damage**	**Crop Damage**
149	1996-2025	2	0	$11,578,215.67	$246,605.87

Sources: Spatial Hazard Events and Losses Database for the United States (SHELDUS); National Oceanic and Atmospheric Administration (NOAA); Information Service/National Climatic Data Center (NCDC)

Table 5.7.2 – 1953 through 2009 Granted Disaster Declarations for Dickey County

#	Date	Type	Disaster Description	Statewide Costs Constant 2009 $	President
554	04/17/1978	F	Storms, Ice Jams, Snowmelt, Flooding	11,165,307	Carter
581	04/26/1979	F	Severe Storms, Snowmelt, Flooding	57,100,615	Carter
1001	07/26/1993	F	Severe Storms, Flooding	48,607,868	Clinton
1118	06/05/1996	W	Severe Storms, Flooding, Ice Jams	18,135,392	Clinton
1157	01/12/1997	S	Severe Winter Storms, Blizzard	21,264,168	Clinton
1174	04/07/1997	F	Severe Flooding, Severe Winter Storm	531,404,655	Clinton
1279	06/08/1999	S	Severe Storms, Flooding, Snow, Ice	145,619,808	Clinton
1879	02/26/2010	NA	Severe Winter Storm	20,602,060	Obama
4660	07/13/2022	W	Severe Winter Storm and Flooding	66,109,183.81	Biden
4686	02/05/2023	W	Severe Winter Storm, Snowstorm, and Straight-line Winds	2,187,821.03	Biden
4760	02/15/2024	W	Severe Winter Storm and Straight-line Winds	Unknown	Biden

Source: FEMA

Probability and Magnitude

Hazard history was gathered from NOAA, NCDC, SHELDUS, newspaper accounts, and the previous FEMA-approved Dickey County Mitigation Plan. This data covers a 30-year period from 1996 through 2025, and documents 149 notable severe winter weather occurrences, which equates to a probability of 100 percent, or roughly three significant instances of severe winter weather per season. The magnitude of a severe winter weather storm categorized as catastrophic results in an estimated 50 percent or more of Dickey County being affected.

Risk Assessment

The table below, Table 5.8.5, shows the risk assessment as determined by individual jurisdictions and the planning committee. The table represents the sum of each jurisdiction's impact, frequency, likelihood and vulnerability to a hazard less the jurisdiction's capabilities to respond to the hazard. Impact, frequency, likelihood, vulnerability and capabilities are defined and scored as:

Table 5.7.4 – Risk Assessment Summary Severe Winter Weather Scored Chart

Severe Winter Weather	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Dickey County	4	4	4	3	2	**13**
Ellendale	3	4	4	4	2	**13**
Forbes	3	4	4	4	2	**13**
Fullerton	3	4	4	4	2	**13**
Ludden	3	4	4	4	2	**13**
Monango	3	4	4	4	1	**14**
Oakes	3	4	4	4	1	**14**

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

Seasonal Pattern	October through May
Duration	2 to 3 days
Speed of Onset	6 to 12 hours
Location	Entire planning area is equally at risk

Capabilities of and Vulnerabilities to Jurisdictions

Upon review of the statistics and oral history of residents, the frequency and likelihood of severe winter weather in Dickey County and all jurisdictions are ranked as "4" as this type of weather takes place in the county and its jurisdictions on an annual basis with multiple occurrences. Scoring for impact, vulnerability and capability is specific to each jurisdiction based on past experiences.

Capabilities and vulnerabilities of jurisdictions were scored at committee meetings and at each jurisdictional meeting with participants including the mayor and city auditor, in addition to members from the city council, business owners, emergency services representatives, and members of the general public. Participants discussed the incidents that occur in their jurisdiction and how frequent impacts are from the hazard. Afterwards, they scored impacts and frequency of the hazard. Participants compared the impacts and frequency of the hazard and determined future prevalence. The likelihood of the hazard was then scored. Vulnerability was scored with participants stating what makes the jurisdiction less vulnerable given their resources at hand or more vulnerable by identifying resources not available.

Risk assessment hazard scoring and notes for the county are contained in the following graphic. The jurisdictional risk assessments can be found in Chapter 8, Jurisdictions.

Dickey County – Severe Winter Weather - 13

Impact	4	• Potential Property damage • Blocked roads – lack of critical emergency access • Cattle, crop and economic loss • Property damage or loss including structure collapse • Winter weather related school closures occur frequently • Downed power lines • Potential injury • Potential loss of life • Potential loss of infrastructure • Power Outages • Economic loss due to school closures • Potential school transportation accidents or incidents • Potential transportation accidents or incidents

		• Had to open a shelter for the transient and construction population that are unaware of the severe winter weather in Dickey County
Frequency	4	• Years with multiple winter events are the normal
Likelihood	4	• Will happen in the future due to the climate, occurs annually
Vulnerability	3	• More vulnerable: Shortage of Housing in the entire county • More vulnerable: Shortage of Senior Housing • More vulnerable: Influx of Population has prompted sudden rent increases that have displaced residents • More vulnerable: New nationalities can make communication with other languages difficult • More vulnerable: Shortage of emergency services due to influx of population • More vulnerable: New steady population of transient, construction and operation workers in the area due to new energy bursts and data centers. • More vulnerable: Emergency Services access is limited • More vulnerable: Have unburied power lines • More vulnerable: Do not have large snow removal equipment for long-term storm activity • More vulnerable: No public generated shelters • Less vulnerable: County road department is aggressive in clearing roads to maintain access • Less vulnerable: County has snow removal equipment in remote shops • Less vulnerable: Residents possess individual snow removal equipment • Less vulnerable: recent buried power lines to mitigate power outages • More vulnerable: Increase in the non-English speaking population • More vulnerable: Increase in unprepared and uneducated transient and construction working population unaware of winter in Dickey County
Capability	2	• Snow removal equipment and labor force to address average storms • Active county commission • Active County Emergency Management • Lacks technical, administrative and financial resources for mitigation • Relies on regional, state and other agencies for assistance • Building to use for a shelter, donations for the shelter have been made and it is ready for use

City of Ellendale - Severe Winter Weather - 13

Impact	3	• Ice storms, heavy and blowing snow cause travel issues, power outages, and property damage • Potential isolation of community • Severe low temperatures increase utility costs and affect alternative fuel • Potential injury or loss of life • Economy loss • Increased cost for snow removal • Highways and city streets become icy and blocked • Heavy snow results in potential flooding in the spring • City streets build up with compacted snow causing damage to streets • Increased potential for hazardous material release • Temporary outage of emergency services
Frequency	4	• Occurs annually

		• Years with multiple winter events are normal • 2023 – Power outages out of city and minimal power outage in Ellendale
Likelihood	4	• Will happen in the future due to the climate, occurs annually
Vulnerability	4	• More vulnerable: 26.9 percent of the population is over 65 • More vulnerable: Trinity College does not have generators, and those students are dependent on the City during hazards • Less vulnerable: K-12 School has generators • Less vulnerable: The rest home has generators • Less vulnerable: City maintains a capital improvements plan • Less vulnerable: Small community where neighbors help neighbors • Less vulnerable: City has multiple power sources
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • There are a few certified, trained and equipped citizens in the community • Siren is radio actuated by law enforcement or by Emergency Management • The elevator in town has some manpower, heavy equipment and work with area farmers to be pro-active in protecting the city

City of Forbes - Severe Winter Weather - 13

Impact	3	• Storms cause travel issues, power outages, and property damage • Potential isolation of community • Severe low temperatures increase utility costs and affect alternative fuel sources • Potential injury or loss of life • Economy loss • Increased cost for snow removal • Highways and city streets become icy and blocked • Heavy snow results in potential flooding in the spring • City streets build up with compacted snow causing damage to streets • Increased potential for hazardous material release • Temporary outage of emergency services
Frequency	4	• Occurs annually, few years without severe winter weather • Years with multiple winter events are the normal
Likelihood	4	• Will happen in the future due to the climate, occurs annually
Vulnerability	4	• More vulnerable: Lack of manpower at emergency services • More vulnerable: No local law enforcement depends on County Sheriff which takes a minimum of one-half hour to arrive. EMS is out of Ellendale again twenty-minute response on a good weather day • More vulnerable: Removal of shelter belts increases ground blizzard conditions • More vulnerable: There are two mobile homes in the area • Less vulnerable: City lacks early warning system and has a radio controlled remote storm warning • Less vulnerable: Small community where neighbors help neighbors
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • There are a few certified, trained and equipped citizens in the community

City of Fullerton - Severe Winter Weather - 13

Impact	3	• Storms cause travel issues, power outages, and property damage • Potential isolation of community • Severe low temperatures increase utility costs and affect alternative fuel • Potential injury and loss of life • Economy loss • Increased cost for snow removal • Highways and city streets become icy and blocked • Heavy snow results in potential flooding in the spring • City streets build up with compacted snow causing damage to streets • Increased potential for hazardous material release • Temporary outage of emergency services
Frequency	4	• Occurs annually, few years without severe winter weather • Years with multiple winter events are the normal
Likelihood	4	• Will happen in the future due to the climate, occurs annually
Vulnerability	4	• More vulnerable: 28.4% of the population is elderly over age 65 • More vulnerable: Lack of manpower at emergency services • More vulnerable: No city equipment • More vulnerable: No local law enforcement, depends on County Sheriff • More vulnerable: Removal of shelter belts increases ground blizzard • Less vulnerable: Siren system can be radio actuated by law enforcement or Dickey County Emergency Management • Less vulnerable: Small community where neighbors help neighbors
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • There are a few certified, trained and equipped citizens in the community • Siren system can be radio actuated by law enforcement or Dickey County Emergency Management

City of Ludden - Severe Winter Weather - 13

Impact	3	• Storms cause travel issues, power outages, and property damage • Potential isolation of community • Severe low temperatures increase utility costs and affect alternative fuel • Potential injury or loss of life • Economy loss • Increased cost for snow removal • Highways and city streets become icy and blocked • Heavy snow results in potential flooding in the spring • City streets build up with compacted snow causing damage to streets • Increased potential for hazardous material release • Temporary outage of emergency services
Frequency	4	• Occurs annually, few years without severe winter weather • Years with multiple winter events are the normal
Likelihood	4	• Will happen in the future due to the climate, occurs annually
Vulnerability	4	• More vulnerable: 79% of population is elderly over age 65

		• More vulnerable: No fire, medical facilities or EMS. All responders come from Oakes with a 20-minute average response • More vulnerable: No local law enforcement, depends on County Sheriff which takes a minimum of one-half hour to arrive • More vulnerable: Removal of shelter belts increases ground blizzard conditions • More vulnerable: No shelter • More vulnerable: City has no public works personnel or equipment • More vulnerable: No public fueling capacity or public lodging • Less vulnerable: Small community where neighbors help neighbors
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • There are a few certified, trained and equipped citizens in the community • City has a radio operated storm siren operated by Emergency Management • The elevator in town has some manpower, heavy equipment and work with area farmers to be pro-active in protecting the city

City of Monango - Severe Winter Weather - 14

Impact	3	• Storms cause travel issues, power outages, and property damage • Potential isolation of community • Severe low temperatures increase utility costs and affect alternative fuel • Potential loss of life • Potential injury • Economy loss • Increased cost for snow removal • Highways and city streets become icy and blocked • Heavy snow results in potential flooding in the spring • City streets build up with compacted snow causing damage to streets • Increased potential for hazardous material release • Temporary outage of emergency services
Frequency	4	• Occurs annually, few years without severe winter weather • Years with multiple winter events are the normal
Likelihood	4	• Will happen in the future due to the climate, occurs annually
Vulnerability	4	• More vulnerable: Lack of manpower at emergency services • More vulnerable: No local law enforcement depends on County Sheriff which takes a minimum of one-half hour to arrive. EMS is out of Ellendale again twenty-minute response on a good weather day • More vulnerable: Removal of shelter belts increases ground blizzard • More vulnerable: No gas station • More vulnerable: No city shelter • More vulnerable: No grocery store • Less vulnerable: 0 percent of population is over age 65 • Less vulnerable: City lacks early warning system and has a radio controlled for remote storm warning. • Less vulnerable: Small community where neighbors help neighbors
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation

		• Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • There are a few certified, trained and equipped citizens in the community • City has a radio operated storm siren operated by Emergency Management

City of Oakes - Severe Winter Weather - 14

Impact	3	• Ice storms, heavy and blowing snow cause travel issues, power outages, and property damage • Potential isolation of community • Severe low temperatures increase utility costs and affect alternative fuel sources • Potential loss of life • Potential injury • Economy loss • Increased cost for snow removal • Highways and city streets become icy and blocked • Heavy snow results in potential flooding in the spring • City streets build up with compacted snow causing damage to streets • Increased potential for hazardous material release • Temporary outage of emergency services
Frequency	4	• Occurs annually, few years without severe winter weather • Years with multiple winter events are the normal
Likelihood	4	• Will happen in the future due to the climate, occurs annually
Vulnerability	4	• More vulnerable: 17.6% of the population is elderly over 65 • More vulnerable: Removal of shelter belts increases ground blizzard • More vulnerable: City Hall, K-12 and Vocational tech are not generated • Less vulnerable: The rest home, fire department, and hospitals have generators • Less vulnerable: City possesses street cleaning equipment • Less vulnerable: City shelter • Less vulnerable: City maintains a capital improvements plan • Less vulnerable: City has adopted building codes and ordinances • Less vulnerable: Only hospital in Dickey County • Less vulnerable: Small community where neighbors help neighbors • More vulnerable: City equipment is worn out – need new equipment
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • There are a few certified, trained and equipped citizens in the community • City siren can be radio actuated by law enforcement or by Dickey County Emergency Management • The elevator in town has some manpower, heavy equipment and work with area farmers to be pro-active in protecting the city

Vulnerabilities to County-Owned Buildings and Property

Most structures remain unaffected by impacts from severe winter weather except for heavy snow loads, frozen pipes, utility failures or potential damage to structural foundations from freezing and thawing of soil. Roof collapses are the biggest single event resulting from heavy snow loads. Human life is also at risk from roof collapses. A summary of county and city owned property in Dickey County is provided in Chapter 4.

Vulnerabilities of Critical Facilities and Infrastructure

The greatest issues for critical facilities resulting from severe winter weather impacts are inaccessibility due to blocked roads and utility and power outages. Emergency services can experience difficulty in providing services during power outages and are limited in responding to emergencies when roads are blocked. Critical facilities with backup generators are better equipped to handle impacts from severe winter weather if loss of power does occur.

The greatest issue for critical infrastructure is maintenance of the road system during severe winter weather. During blizzards or snowstorms, cars and trucks can become stranded as roads become blocked with heavy snow and ice. This can result in extended response times for emergency services and prevent access to communities. Prolonged closures of roads can threaten propane, fuel and food supplies.

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.

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 been proven difficult and increases 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.

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.

Data Limitations and Other Key Documents

The severity and magnitude are not always distinguishable as significant damage does not always occur. This results in data limitations regarding the true impact of the hazard. Fewer storm spotters reduce the amount of reported weather information. Weather data provided by NOAA and other entities can be incomplete.

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

- Dickey County Sheltering and Emergency Operations Plan
- Dickey County Emergency Preparedness Education – 72-hour emergency kit
- North Dakota Emergency Operations Plan
- 2019 North Dakota Multi Hazard Mitigation Plan

5.8 Shortage or Outage of Critical Materials or Infrastructure

Characteristics

A shortage of critical materials or infrastructure occurs when the demand for a life sustaining product exceeds the supply. These shortages and outages may include a wide variety of resources including energy-related products, power transmission, medical products, food, and water.

The disruption of a critical material supply system may be caused by weather conditions (severe low temperatures, ice/winter storm high winds, space weather such as solar flares), other natural disasters such as flooding and tornadoes, lack of infrastructure maintenance, human error, global conflict, oil embargo, major work stoppage, cyber security or a national security emergency. Any disruption, regardless of the cause could have immediate adverse impacts as well as severely diminish existing supplies, thereby threatening the long-term health, safety, and well-being of Dickey County citizens.

Examples of shortages or outages of critical material or infrastructure include:

- Widespread and prolonged electrical power failure, which impacts both day-to-day and emergency communications capability.
- A lack of transportation fuels, causing surface movement gridlock and disruption of commerce.
- Diminished supplies of heating fuels during winter causing severe economic and health impacts.
- A lack of medical supplies, especially vaccines, antibiotics, and anti-viral medications, pose a public health and safety threat.
- Private hoarding, compounding a shortage problem.
- A lack of adequate food, water, and shelter.

Every hazard, natural or manmade, can cause a shortage or outage of critical materials or infrastructure. According to the 2019 NDMHMP, the public relies upon utility, communication, and fuel services for everyday life and basic survival. Many in North Dakota depend on the typical utility and communication infrastructure such as water, sewer, electricity, propane, natural gas, telephone, internet, and gasoline. Water and sewer services are either provided through a public system or through individual wells and septic systems. Electricity is primarily provided by regional power companies through overhead or buried lines.

Homes and businesses are heated with fuels such as natural gas, propane, oil, and electricity. Buildings heated with propane or oil typically have a nearby tank that is refilled regularly by a local vendor but still rely on electricity to power their heating systems. Natural gas is provided through underground piping. Telephone, cellular telephone, and internet services are provided by several local and national companies. Privately-owned gas stations are located throughout the county.

History

Power outages in the county are the primary incident involved in the shortage or outage of critical materials or infrastructure. Electrical power in the county is provided by Montana Dakota. Planned outages are described as outages put into place intentionally by the utility for maintenance purposes. An unplanned outage is described as an outage caused without warning from outside causes, such as severe weather. A momentary outage is described as an outage lasting less than five minutes, while a sustained power outage is described as an outage lasting five minutes or more.

Probability and Magnitude

The probability of the shortage or outage of critical materials or infrastructure hazard in Dickey County is hard to determine as the cause can either be natural or manmade. Power outage frequency has a 100 percent probability of power outages will occur in the future. Aside from the power outage frequency, the lack of data results in an inability to calculate a probability for the hazard. However, during committee meetings and jurisdictional meetings, participants said there is always a chance the jurisdiction can experience shortage or outage of critical materials or infrastructure from threats and hazards. The probability is much lower in jurisdictions with redundancy in power connections to the grid, numerous grocery stores and gas stations; and other resources to sustain the daily routine of people's lives.

The probability of 100 percent can be justified as power outages occur on an annual basis at varying frequencies to some or all jurisdictions. Power outages occur with little to no warning. They generally result from other hazards. Calculating the probability of the shortage or outage of critical materials or infrastructure pertaining to roads, water systems, food supplies, fuel, is difficult to determine due to the lack reporting when such incidents occur. Magnitude for shortage or outage of critical materials or infrastructure can range from minimal to severe, depending on the location, length of shortage or outage, infrastructure affected, the number of people affected and weather conditions.

Risk Assessment

Table 5.8.1 shows the risk assessment as determined by individual jurisdictions and the planning committee. Dickey County is susceptible to shortage or outage of critical materials or infrastructure because of the rural nature of the entire area.

Table 5.8.1 – Risk Assessment Summary Shortage or Outage of Critical Materials or Infrastructure

Shortage or Outage of Critical Materials or Infrastructure	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Dickey County	4	3	3	4	2	**12**
Ellendale	3	2	2	2	3	**6**
Forbes	4	4	4	3	1	**14**
Fullerton	4	4	4	3	1	**14**
Ludden	3	2	2	1	2	**6**
Monango	3	2	2	3	1	**9**
Oakes	4	2	2	3	1	**10**

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

Seasonal Pattern	Spring, Fall, Summer, Winter
Duration	Year Round
Speed of Onset	Slow
Location	Entire planning area is equally at risk

Capabilities of and Vulnerabilities to Jurisdictions

According to the 2019 NDMHMP, the risk to jurisdictions in Dickey County from a shortage or outage of critical materials or infrastructure was ranked low based on the number of people affected. The 2020 U.S. Census population for Dickey County was 4,999.

Capabilities and vulnerabilities of jurisdictions were scored at committee meetings and at each jurisdictional meeting with participants including the mayor and city auditor, in addition to members from

the city council, business owners, emergency services representatives, and members of the public. Risk assessment hazard scoring and notes for the county are contained in the following graphic.

Dickey County – Shortage or Outage of Critical Materials or Infrastructure - 12

Impact	4	• Utility outages resulting in unheated homes causing frozen pipes, property damage and food loss • Shortages of fertilizers, diesel fuel and gas/propane hinder economic activity and endanger community safety • Loss of sanitary sewer service causing sewer backups • Disruption in medications and supplies • Potential loss of economy • Potential loss of life • Potential loss of potable water • Potential loss of sewer due to power outages.
Frequency	3	• Short-term power outages are experienced periodically • Ellendale lost power to the entire critical infrastructure due to one line feeding that downtown area. Economy loss was experienced in the downtown business area. 2002 or 2003
Likelihood	3	• Short-term power outages are experienced periodically
Vulnerability	4	• More vulnerable: Shortage of Housing in the entire county • More vulnerable: Shortage of Senior Housing • More vulnerable: Influx of Population has prompted sudden rent increases that have displaced residents • More vulnerable: New nationalities can make communication with other languages difficult • More vulnerable: Shortage of emergency services due to influx of population • More vulnerable: New steady population of transient, construction and operation workers in the area due to new energy bursts and data centers. • More vulnerable: Individuals with special needs, elderly, day cares and schools all require special assistance during outages • More vulnerable: Heavily dependent on agriculture • More vulnerable: Limited grocery and fuel throughout county • More vulnerable: Snow drifts can hinder delivery of fuel • More vulnerable: 74 electricity dependent vulnerable populations that need electricity to run medical devices to live. Per the publichealthemergency.gov Empower map • More vulnerable: A gravel road infrastructure is vulnerable to nature (flooding and snow drifts) • Less vulnerable: Generators to maintain minimal water service during times of power outage • More vulnerable: Rural water does not have generators to produce potable water to communities and rural homes • More vulnerable: Multiple lift stations and water pumps would make it challenging to maintain minimum services over an extended period
Capability	2	• Active county commission • Active County Emergency Management • Lacks technical, administrative and financial resources for mitigation • Relies on regional, state and other agencies for assistance • Limited education or outreach programs

City of Ellendale - Shortage or Outage of Critical Materials or Infrastructure - 6

Impact	3	• Long periods of time without power or water could lead to loss of life, due to the winter climate and high population over 65 • Reduced mobility from blocked roads • Limited drinking water and functionality of sanitary sewer • City could be left without power for heating and cooling • Loss of power can limit accessibility to fuel sources • Loss of food sources as refrigeration units are without power • Loss of economy • Loss of internet affects individuals and businesses • Delayed emergency services • Mail outages for a day or longer in winter of 2016-2017 • Loss of agriculture – no power no water
Frequency	2	• In 2016, areas in and surrounding Ellendale experienced power outages from 3 hours to 2 to 3 days • Power outages are experienced annually • Have had shortages of fertilizers, diesel fuel, and gas/propane recently • 2023 outages
Likelihood	2	• No improvements to power infrastructure planned • Power poles and wires of the power grid are outdated and suspended overhead • Power outages are experienced annually
Vulnerability	2	• More vulnerable: 26.9 percent of the population is elderly over 65 • More vulnerable: 18 electricity dependent vulnerable populations that need electricity to run medical devices to live. Per the publichealthemergency.gov Empower map. • More vulnerable: No hospital in city • More vulnerable: Assisted living center and rest home both located in City • More vulnerable: Access to rural areas limited during a storm • Less vulnerable: The K-12 school, Vocational Tech and the rest home are generated • Less vulnerable: Rest Homes and school are generated • Less vulnerable: Some residents grow local food supply • Less vulnerable: Water is provided by the city • Less vulnerable: Some residents have their own generator • Less vulnerable: Medical Clinic
Capability	3	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • Siren is radio actuated by law enforcement or by Emergency Management

City of Forbes - Shortage or Outage of Critical Materials or Infrastructure – 14

Impact	4	• Long periods of time without power or water could lead to loss of life, due to the winter climate and high population over age 65 • Reduced mobility from blocked roads • Limited drinking water and functionality of sanitary sewer • City could be left without power for heating and cooling • Loss of power can limit accessibility to fuel sources • Loss of food sources as refrigeration units are without power • Loss of economy • Loss of internet affects individuals and businesses • Delayed emergency services • Mail outages for a day or longer in winter of 2016-2017
Frequency	4	• 2009 during an outage of electric elderly residents were taken to Ellendale • In 2016, areas in and surrounding Forbes experienced power outages from 3 hours to 2 to 3 days without power • Short-term power outages are experienced annually
Likelihood	4	• No improvements to power infrastructure planned - located on the end of the MDU transmission line and there are no plans to improve or duplicate service • Power poles and wires of the power grid are outdated and overhead
Vulnerability	3	• More vulnerable: No backup generator for city infrastructure may cause sewer backup or outage of drinking water • More vulnerable: 11 electricity dependent vulnerable populations that need electricity to run medical devices to live. Per the publichealthemergency.gov Empower map. • More vulnerable: No public fueling capacity • More vulnerable: No medical facility • More vulnerable: Access to rural areas limited during a blizzard • More vulnerable: No generated public building or storm shelter in town • Less vulnerable: 0 percent of population is over 65 • Less vulnerable: Some residents grow local food supply • Less vulnerable: Water is provided by the city • Less vulnerable: Some residents have their own generator • Less vulnerable: There is a non-profit grocery store located in the city
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Fullerton - Shortage or Outage of Critical Materials or Infrastructure – 14

Impact	4	• Long periods of time without power or water could lead to loss of life, due to the winter climate and high population over age 65 • Reduced mobility from blocked roads • Limited drinking water and functionality of sanitary sewer • City could be left without power for heating and cooling • Loss of power can limit accessibility to fuel sources • Loss of food sources as refrigeration units are without power • Loss of economy • Loss of internet affects individuals and businesses

		• Delayed emergency services • Mail outages for a day or longer in winter of 2016-2017
Frequency	4	• Short-term power outages are experienced annually
Likelihood	4	• No improvements to power infrastructure planned • Power poles and wires of the power grid are outdated/suspended
Vulnerability	3	• More vulnerable: 28.4% of the population is elderly over age 65 • More vulnerable: No backup generator for city infrastructure may cause sewer backup or outage of drinking water • More vulnerable: 11 electricity dependent vulnerable populations that need electricity to run medical devices to live. Per the publichealthemergency.gov Empower map. • More vulnerable: No public fueling capacity or public lodging • More vulnerable: No EMS or law in town • More vulnerable: Access to rural areas limited during a blizzard • More vulnerable: No generated public building or storm shelter in town • Less vulnerable: Some residents grow local food supply • Less vulnerable: Water is provided by the city • Less vulnerable: Some residents have their own generator • Less vulnerable: Have Volunteer Fire Department
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • Radio operated storm siren operated by Dickey County Emergency Management

City of Ludden - Shortage or Outage of Critical Materials or Infrastructure – 6

Impact	3	• Long periods of time without power or water could lead to loss of life, due to the winter climate and high population over age 65 • Reduced mobility from blocked roads • Limited drinking water and functionality of sanitary sewer • City could be left without power for heating and cooling • Loss of power can limit accessibility to fuel sources • Loss of food sources as refrigeration units are without power • Loss of economy • Loss of internet affects individuals and businesses • Delayed emergency services • Mail outages for a day or longer in winter of 2016-2017
Frequency	2	• Short-term power outages are experienced annually but are infrequent
Likelihood	2	• No improvements to power infrastructure planned • Power poles and wires of the power grid are outdated/suspended
Vulnerability	1	• More vulnerable: 79 percent of population is elderly over age 65 • More vulnerable: No backup generator for city infrastructure may cause sewer backup or outage of drinking water • More vulnerable: No public fueling capacity or public lodging • More vulnerable: No fire, medical facilities, EMS or law in town • More vulnerable: Access to rural areas limited during a blizzard • More vulnerable: No generated public building or storm shelter in town

		• Less vulnerable: Some residents grow local food supply • Less vulnerable: Water is provided by the city • Less vulnerable: Some residents have their own generator
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • City has a radio operated storm siren operated by Emergency Management

City of Monango - Shortage or Outage of Critical Materials or Infrastructure – 9

Impact	3	• Long periods of time without power or water could lead to loss of life, due to the winter climate and high population over age 65 • Reduced mobility from blocked roads • Limited drinking water and functionality of sanitary sewer • City could be left without power for heating and cooling • Loss of power can limit accessibility to fuel sources • Loss of food sources as refrigeration units are without power • Loss of economy • Loss of internet affects individuals and businesses • Delayed emergency services • Mail outages for a day or longer in winter of 2016-2017
Frequency	2	• Short-term power outages are experienced annually
Likelihood	2	• No improvements to power infrastructure planned • Power poles and wires of the power grid are outdated and suspended overhead
Vulnerability	3	• More vulnerable: No backup generator for city infrastructure may cause sewer backup or outage of drinking water • More vulnerable: 18 electricity dependent vulnerable populations that need electricity to run medical devices to live. Per the publichealthemergency.gov empower map • More vulnerable: No public fueling capacity • More vulnerable: No fire, EMS or law in town • More vulnerable: Access to rural areas limited during a blizzard • More vulnerable: No generated public building or storm shelter in town • Less vulnerable: 0 percent of population is over age 65 • Less vulnerable: Some residents grow local food supply • Less vulnerable: Water is provided by the city • Less vulnerable: Some residents have their own generator
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • City has a radio operated storm siren operated by Dickey County Emergency Management

City of Oakes - Shortage or Outage of Critical Materials or Infrastructure - 10

Impact	4	• Long periods of time without power or water could lead to loss of life, due to the winter climate and high population over 65. • Reduced mobility from blocked roads • Limited drinking water and functionality of sanitary sewer • City could be left without power for heating and cooling • Loss of power can limit accessibility to fuel sources • Loss of food sources as refrigeration units are without power • Loss of economy • Loss of internet affects individuals and businesses • Delayed emergency services • Mail outages for a day or longer in winter of 2016-2017 • Ice storms took out power for almost a month in some areas. Oakes did not go out, but the rural communities did
Frequency	2	• Oakes hospital has experienced a shortage of medical supplies in the past • Roads have been blocked • Short-term power outages are experienced annually
Likelihood	2	• No improvements to power infrastructure planned • Power poles and wires of the power grid are outdated and suspended overhead
Vulnerability	3	• More vulnerable: 17.6% of the population is elderly over 65 • More vulnerable: No backup generator for city infrastructure may cause sewer backup or outage of drinking water – mobile unit on a trailer as needed. • More vulnerable: 23 electricity dependent vulnerable populations that need electricity to run medical devices to live. Per the publichealthemergency.gov Empower map. • More vulnerable: Access to rural areas limited during a blizzard or ice storm. • More vulnerable: The K-12 school, Vocational Tech and the rest home is not generated • Less vulnerable: The rest home, fire department, and hospitals have generators • Less vulnerable: Some residents grow local food supply • Less vulnerable: Water is provided by the city • Less vulnerable: Some residents have their own generators • More vulnerable: fuel becomes an issue in an outage. Have to travel to obtain fuel for generators.
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • City siren system can be radio actuated by law enforcement or by Dickey County Emergency Management

Vulnerabilities to County-Owned Buildings and Property

County-owned buildings and property are vulnerable to shortage or outage of critical materials and infrastructure because of other natural and manmade disasters. Power outages may occur due to downed power lines resulting from summer or winter storms, buildings can become flooded due to sewer backups from loss of power, water main breaks, traffic accidents, or overland flooding due to clogged drainage systems and heavy rain. Structures are not vulnerable directly, but damage can result from occurrences of other hazards. Chapter 4 provides a summary of county-owned buildings and property in Dickey County.

Vulnerabilities of Critical Facilities and Infrastructure

Disruptions to critical facilities and infrastructure can occur due to natural and manmade disasters, human error, low supplies of fuel or other resources, and failures of mechanical systems. The access to critical materials such as medical supplies and mediations can be prolonged from blocked roads that do not allow residents to travel.

Vulnerabilities to New and Future Development

The size and intensity of new and future development can have a varying impact on the demand for electricity, food, water and medical supplies. Dickey County projects limited new development and increased population.

Data Limitations and Other Key Documents

The shortage or outage of critical materials or infrastructure hazard is a result of other natural or man-made hazards, and, therefore, it is not feasible to quantify an accurate amount of losses from the hazard. In addition, limited data is documented in Dickey County.

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

- Dickey County Emergency Operations Plan
- 2019 Dickey County Multi-Hazard Mitigation Plan

5.9 Transportation Accident

Including Vehicle, Railway, and Aircraft Accidents.

Characteristics
A transportation accident, as defined by the 2019 NDMHMP, is any large-scale vehicular, railroad, or aircraft accident 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 ability of local resources to adequately respond. In most disasters death and injury represent one of the effects of the hazard, while in transportation accidents, mass casualties are often the primary impact and focus of the event.

Transportation accidents occur with little or no warning. Cargo trains, buses, large-truck traffic, other highway vehicles, and passenger and cargo airplanes pose the highest risk. Due to the sparse population in Dickey County, even an incident involving a small number of deaths and/or injuries could overwhelm local resources.

Vehicle: Motorized passenger, school bus, cargo, off-road or watercraft.
Railroad: Cargo trains such as BNSF.
Aircraft: Small passenger planes, spraying planes, others traveling over the area

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

History
According to the 2019 NDMHMP, there have been no State Executive Orders or federal declarations dealing with transportation accidents in North Dakota. Accidents typically occur on major roadways and highways that require emergency services and can result in inconveniently long travel times for the public and hinder economic activity.

In 2023 there were 39 vehicle crashes that included 1 fatality and 9 injuries.

Probability and Magnitude
According to the data provided by the N.D. Department of Transportation, there is 100 percent probability of the occurrence of an accident. In terms of magnitude, smaller and less severe accidents occur more frequently. The probability of transportation accidents varies by seasons and local weather patterns.

Since the number of fatalities from transportation accidents in Dickey County was low to moderate, the magnitude can be expressed qualitatively. According to the 2019 NDMHMP, transportation accidents can be classified as high frequency, low impact versus low frequency, high impact. Incidents involving buses or plane crashes can be classified as high magnitude events due to the potential to overwhelm local emergency services and the limited capacity of medical facilities in Dickey County. In Dickey County, the magnitude of transportation accidents can be classified as low frequency, high impact.

Risk Assessment

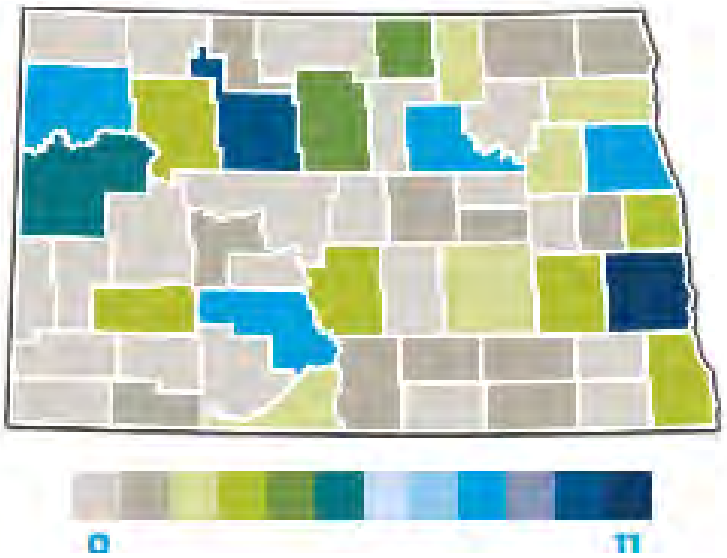
Table 5.9.1 shows the risk assessment as determined by individual jurisdictions and the planning committee. The risk assessment methodology can be found on page 5-3 of Chapter 5, Threat and Hazard Identification and Risk Assessment. The total in this chart represents the sum of each jurisdiction's impact, frequency, likelihood and vulnerability to a hazard less the jurisdiction's capabilities to respond to the hazard.

Table 5.9.1 – Risk Assessment Summary Transportation Accident Scored Chart

Transportation Accident	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Dickey County	4	4	4	4	2	**14**
Ellendale	4	4	4	3	3	**12**
Forbes	4	2	3	1	1	**9**
Fullerton	4	2	3	3	1	**11**
Ludden	3	2	2	3	2	**8**
Monango	3	2	2	2	2	**7**
Oakes	4	4	4	3	2	**13**

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

Figure 5.9.1 – 2023 Fatal Motor Vehicle Crashes Per North Dakota County



Source: North Dakota Department of Emergency Services

Capabilities of and Vulnerabilities to Jurisdictions

Capabilities and vulnerabilities of jurisdictions were scored at committee meetings and at each jurisdictional meeting with participants including the mayor and city auditor, in addition to members from the city council, business owners, emergency services representatives, and members of the general public. Participants discussed the incidents that occur in their jurisdiction and how frequent impacts are from the hazard. Afterwards, they scored impacts and frequency of the hazard.

Risk assessment hazard scoring and notes for the county are contained in the following graphic. The jurisdictional risk assessments can be found in Chapter 8, Jurisdictions.

Dickey County – Transportation Accident - 14

Impact	4	• Potential of a hazardous material release incident • Potential of large-scale explosive incident (propane, fuel and anhydrous) • Potential injury and loss of life • Potential economic loss • Emergency services could be impacted resulting in prolonged times for other needs in the county • Larger transient and construction population is adding to the risk of transportation accident
Frequency	4	• Accidents involving cars, trucks, farm equipment, railroads and airplanes occur on a yearly basis with multiple instances in various areas in the county • Multiple car deer accidents have occurred
Likelihood	4	• Annual occurrence with vehicle accidents • Accidents involving cars, trucks, railroads and airplanes occur on a yearly basis with multiple instances in various areas in the county
Vulnerability	4	• More vulnerable: Shortage of Housing in the entire county • More vulnerable: Shortage of Senior Housing • More vulnerable: Influx of Population has prompted sudden rent increases that have displaced residents • More vulnerable: New nationalities can make communication with other languages difficult • More vulnerable: Shortage of emergency services due to influx of population • More vulnerable: New steady population of transient, construction and operation workers in the area due to new energy bursts and data centers. • More vulnerable: Hwy 281, Hwy 11, Hwy 1 and rail transportation corridors traverses through the middle of the cities and county. Traffic includes tanker traffic, pedestrian traffic • More vulnerable: Pipeline running along 281 is vulnerable to explosions along the highway • More vulnerable: Increased traffic has been noticed on smaller highways and roads in jurisdictions and rural areas of the county due to increased economic activity including wind towers being constructed • More vulnerable: Some county roads do not have adequate signage pertaining to speed limits. Very few hazardous material routes identified • More vulnerable: Roads vary in condition and lack signage displaying roadway names and numbers for navigation • Less vulnerable: Emergency services in county have equipment and training for extraction • More vulnerable: Non English speaking population has increased
Capability	2	• City and County web sites • Active county commission • Lacks technical, administrative and financial resources for mitigation

City of Ellendale - Transportation Accident - 12

Impact	4	• Potential injury or loss of life • Economy loss • Property loss • Potential hazardous materials release

		• Potential fire • Potential Blocked Roads
Frequency	4	• Accidents happen in the area each year
Likelihood	4	• Accidents happen in the area each year
Vulnerability	3	• More vulnerable: 26.9 percent of the population is over 65 • More vulnerable: Located on US 281 • More vulnerable: Bulk fuels transported through City • More vulnerable: Increased amount of time students spend on buses • More vulnerable: Trucks and farmers transporting larger tanks more frequently • More vulnerable: Anhydrous tanks driven through and parked in the city • More vulnerable: High risk of hazardous chemical release or transportation accident as it is located close to highway • More vulnerable: No hospital, all patients must be transported to Oakes or Aberdeen Hospitals • More vulnerable: City has an airport • Less vulnerable: City has clinic • Less vulnerable: Freight rail lines have been removed and no longer run through city limits
Capability	3	• Siren is radio actuated by law enforcement or by Emergency Management • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Forbes - Transportation Accident - 9

Impact	4	• Potential injury or loss of life • Economy and property loss • Potential hazardous materials release • Potential fire
Frequency	2	• No major accidents in the area in recent years
Likelihood	3	• No major accidents in the area in recent years
Vulnerability	1	• More vulnerable: Increased amount of time students spend on buses • More vulnerable: Trucks and farmers transporting larger tanks more frequently on Hwy 30 through the city limits • More vulnerable: Anhydrous tanks driven through and parked in the city • More vulnerable: No medical supplies in stock • More vulnerable: Fire Department has no equipment for accident extraction • More vulnerable: County Highway 2 traverses the city, people are not obeying the signs or speed laws • More vulnerable: No local law enforcement, depends on County Sheriff • Less vulnerable: 0 percent of population is over 65 • Less vulnerable: No airport • Less vulnerable: City lacks early warning system and has a radio controlled remote storm warning
Capability	1	• Fire Department has no extraction capabilities for grain bin and vehicle accidents • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Fullerton Transportation Accident - 11

Impact	4	• Potential injury and loss of life • Economy and property loss • Potential hazardous materials release • Potential fire
Frequency	2	• No major accidents in the area in recent years • Accidents have happened in recent years
Likelihood	3	• No major accidents in the area in recent years
Vulnerability	3	• More vulnerable: 28.4% of the population is over age 65 • More vulnerable: Increased amount of time students spend on buses • More vulnerable: Trucks and farmers transporting larger tanks more frequently on highways and through the city limits • More vulnerable: Anhydrous tanks driven through and parked in the city • More vulnerable: No medical supplies in stock • More vulnerable: Fire Department has no equipment for extraction • More vulnerable: No local law enforcement, depends on County Sheriff • More vulnerable: Railroad within city • Less vulnerable: No airport • Less vulnerable: City lacks early warning system
Capability	1	• First Responder Group in Ellendale and Oakes • City has a radio operated storm siren operated by Emergency Management • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Ludden - Transportation Accident - 8

Impact	3	• Potential injury or loss of life • Economy and property loss • Potential hazardous materials release • Potential fire
Frequency	2	• No major accidents in the area in recent years • Many cars to deer accidents in the past several years • Plan crash involving an area farmer
Likelihood	2	• No major accidents in the area in recent years
Vulnerability	3	• More vulnerable: 79 percent of population is over age 65 • More vulnerable: Increased amount of time students spend on buses • More vulnerable: Trucks and farmers transporting larger tanks more frequently on highway through the city limits • More vulnerable: Anhydrous tanks driven through and parked in the city. • More vulnerable: High risk of hazardous chemical release or transportation accident as it is located close to highway • More vulnerable: No fire, EMS, medical facility in town • More vulnerable: No local law enforcement, depends on County Sheriff • Less vulnerable: No airport • Less vulnerable: City lacks early warning system and has a radio-controlled remote storm warning
Capability	2	• First Responder Group in Ellendale and Oakes

		• City has a radio storm siren operated by Emergency Management • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Monango - Transportation Accident - 7

Impact	3	• Potential loss of life • Potential injury • Economy loss • Property loss • Potential hazardous materials release • Potential fire
Frequency	2	• No major accidents in the area in recent years
Likelihood	2	• No major accidents in the area in recent years
Vulnerability	2	• More vulnerable: Increased amount of time students spend on buses • More vulnerable: Anhydrous tanks driven through and parked in the city • More vulnerable: High risk of hazardous chemical release or transportation accident as it is on US Hwy 281. There is a fertilizer, seed operation in town • More vulnerable: Vehicles speed through town on US Hwy 281 • More vulnerable: No medical supplies in stock • More vulnerable: Fire Department has no equipment for accident extraction • More vulnerable: No local law enforcement, dependent on County Sheriff • Less vulnerable: 0 percent of population is over age 65 • Less vulnerable: No airport
Capability	2	• First Responder Group in Ellendale • City has a radio operated storm siren operated by Dickey County Emergency Management • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Oakes Transportation Accident - 13

Impact	4	• Potential loss of life • Potential injury • Economy loss • Property loss • Potential hazardous materials release • Potential fire • Loss of Access • Mass Casualty Incident
Frequency	4	• Accidents happen in the area each year
Likelihood	4	• Accidents happen in the area each year
Vulnerability	3	• More vulnerable: 17.6% of the population is over 65 • More vulnerable: Increased amount of time students spend on buses • More vulnerable: Trucks and farmers transporting larger tanks more frequently on highway through the city limits.

		• More vulnerable: Anhydrous tanks driven through and parked in the city. Not parking in the city and less frequently coming through town. • More vulnerable: N.D. Highway 1 runs through the city • More vulnerable: High risk of hazardous chemical release or transportation accident as it is located close to highway • More vulnerable: City has an airport • Less vulnerable: City has a hospital and two clinics • Less vulnerable: City siren system can be radio activated by law enforcement or by Dickey County Emergency Management. • More vulnerable: Electric Cars – Fires in electric vehicles powered by high-voltage lithium-ion batteries pose a risk of electric shock to emergency responders from exposure to the high-voltage components of the damaged battery.
Capability	2	• First Responder Group in Oakes and public works crew • Siren system can be radio actuated by Law enforcement or by Dickey County Emergency Management • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Vulnerabilities to County-Owned Buildings and Property

County-owned property should not be affected by transportation accidents except in an instance where a train derails or vehicle crashes into a building. Should an accident involving a vehicle crashing into a county-owned building occur, damage could exceed hundreds of thousands of dollars, depending on the structure impacted. A summary of city- and county-owned buildings and property in Dickey County is provided in Chapter 4.

Vulnerabilities of Critical Facilities and Infrastructure

Like county-owned buildings, critical facilities and infrastructure should not be affected by transportation accidents, except in rare occurrences. Vulnerabilities could include a closure of a major transportation artery or primary route due to an accident, which can block emergency services access. A transportation accident can disrupt power lines if it occurred on a highway where power lines were in close proximity.

Vulnerabilities to New and Future Development

New and future development could result in increased traffic related to residential development or development of industrial areas. Any additional traffic will increase the probability of minor, moderate or major transportation accidents.

Data Limitations and Other Key Documents

A data limitation relating to transportation accidents is the lack of geographic details where the accidents are occurring. Without this knowledge, allocating resources and funding for mitigation of the hazard is challenging. Transportation accidents and related impacts vary depending on the jurisdiction and the mode of transportation involved. Some accidents, especially those on farmsteads involving equipment, trucks, cars and aircraft, may not be reported. This data limitation makes understanding the true impact and formulating a probability for transportation accidents difficult. If data was provided on the route schedules for cargo trains, industrial trucking patterns and times of the year when aircraft is used for

agricultural purposes, it would aid in quantifying the potential for transportation accidents and allow local jurisdictions to plan for the hazard.

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

- 2023 North Dakota Crash Summary – Vision Zero
- Dickey County Emergency Operations Plan
- 2024-2026 North Dakota Highway Safety Plan
- 2019 Dickey County Multi-Hazard Mitigation Plan

5.10 Urban Fire/Structure Collapse

Characteristics

Fire is the rapid oxidation of a material in the exothermic chemical process of combustion, releasing heat, light, and various reaction products.

Structure Fire is the result of three components: a heat source, a fuel source, and an oxygen source according to the U.S. Fire Administration. When combined, these three sustaining factors will allow a fire to ignite and spread. Within a structure, a small flame can get completely out of control and turn into a major fire within seconds. Thick black smoke can fill a structure within minutes. The heat from a fire can be 100 degrees Fahrenheit at floor level and rise to 600 degrees at eye level. In five minutes, a room can get so hot that everything in it ignites at once; this is called flashover.

Winter weather can have a major effect on the number of fires that occur. Increasing costs of electricity, natural gas, propane, and fuel oil has led many people to look for alternative heating methods for their homes. Consequently, the use of space heaters, fireplaces, wood-burning stoves, and even continued use of coal stoves has created an increased fire hazard. Wood burning for heating has a poor safety record. Codes for the installation of stoves and chimneys may not be followed strictly, leading to increased fire risk. Many communities in North Dakota have not adopted building codes. Other energy sources include portable LP (propane) gas or kerosene heaters with self-contained fuel supplies. These are hazardous appliances, even when used according to manufacturer's instructions. Open flames and the leakage of fuel from containers are fire hazards and could cause explosions.

Although structure fires are usually individual disasters and not community-wide, the potential exists for widespread structure fires that displace several businesses or families and exceed local and even state resources. The “downtown” urban areas of North Dakota are particularly vulnerable to this hazard. A structure fire that rages uncontrollably despite firefighting efforts and burns a large portion of a downtown area or an important structure could have significant economic impact. Large fires of this nature have also been known to require significant community resources. North Dakota has the potential for large scale residential fires, commercial fires, and fires in public venues. In industrial areas pose the potential of chemical plant fires producing hazardous smoke and fumes.

Smoke detectors, automatic fire alarm systems, automatic sprinkler systems, fire doors, and fire extinguishers can all prevent deaths, injuries, and damages from fire. Automatic sprinkler systems are especially important in preventing a small fire from growing.

Structure Collapse occurs when the forces of gravity or other external forces overcome the structural integrity of a building. The reasons for structure collapse can vary from poor construction, explosions, extreme winds, or heavy snow loads. Structure collapse can trap occupants and damage property. In Dickey County, numerous commercial and private elevators and large storage bins could be subject to structure collapse. Cattle operations have large cattle confinement structures that are also at risk of collapse. Urban/structure collapse can happen independently from other types of incidents.

History

Table 5.10.1 summarizes structure fire and structure collapses in Dickey County. NFIRS only documents those fires that have been reported to the NFIRS.

Data provided by the National Fire Incident Reporting System (NFIRS) summarizes by fire department and district the number of structure fires, vehicle fires and unclassified fires from January 1, 2020, through December 31, 2024.

Table 5.10.1 – 2020 to 2024 Dickey County Fire Summary by Fire Department/District

	Frequency 2020-2024				
Fire Protection Agency	**Structure Fire**	**Vehicle Fires**	**Outside Fires**	**Other Fires**	**Totals**
Ellendale Fire Department	9	7	31	7	54
Oakes Fire Department	20	14	53	2	89
Forbes Fire Department	0	1	1	0	2
Fullerton Fire Department	1	2	5	0	8
Totals	**30**	**24**	**90**	**9**	**153**

Source: National Fire Incident Reporting System Summary By Incident Type. 01/01/2020 to 01/01/2024

There have been no declared disasters or emergencies pertaining to urban fire/structure collapse in Dickey County.

Probability and Magnitude

According to data provided by NFIRS, 30 structure fires occurred between 2020 and 2024, resulting in a probability of 100 percent, or roughly eight incidents per year.

The probability of fires varies on seasons, local weather patterns, traffic conditions, among other variables. The chances of structure fires increase during winter months as people use electric heaters and other alternative sources for heating homes. The chances of rural and wildland fires increase during summer months when the agriculture sector is in full force and natural vegetation can become dry due to extreme heat. Fires from vehicles and transportation accidents can occur at any point in time during the year but are more probable during summer months with higher traffic volumes.

According to the 2019 NDMHMP, Dickey County had a low-moderate structure fire or structure collapse vulnerability rating based on housing density per square mile, which was 2.33. The only cities with building codes are Ellendale and Oakes. The county does not have a building code.

Risk Assessment

Table 5.10.3 shows the risk assessment as determined by individual jurisdictions and the planning committee. The risk assessment methodology can be found on page 5-3 of Chapter 5, Threat and Hazard Identification and Risk Assessment. The total in this chart represents the sum of each jurisdiction's impact, frequency, likelihood and vulnerability to a hazard less the jurisdiction's capabilities to respond to the hazard.

Table 5.10.3 – Risk Assessment Summary Urban fire/structure collapse Scored Chart

Structure fire or Structure Collapse	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Dickey County	3	3	3	3	2	**10**
Ellendale	2	1	1	3	3	**4**
Forbes	4	2	3	3	2	**10**
Fullerton	3	2	3	4	2	**10**
Ludden	3	2	2	3	1	**9**
Monango	3	3	3	1	1	**9**
Oakes	3	3	3	2	3	**8**

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

Seasonal Pattern	Spring to Fall
Duration	April to November
Speed of Onset	No warning
Location	Entire planning area is equally at risk

Capabilities of and Vulnerabilities to Jurisdictions

Capabilities and vulnerabilities of jurisdictions were scored at committee meetings and at each jurisdictional meeting with participants including the mayor and city auditor, in addition to members from the city council, business owners, emergency services representatives, and members of the general public.

Risk assessment hazard scoring and notes for the county are contained in the following graphic. The jurisdictional risk assessments can be found in Chapter 8, Jurisdictions.

Dickey – Urban Fire/Structure Collapse - 10

Impact	3	• Potential injury or loss of life • Loss of critical facilities and infrastructure • Economic loss • Property loss or damage
Frequency	3	• Urban Fire/Structure Collapse has happened annually. • 1-2 structure fires per year. Mainly property damage.
Likelihood	3	• Urban Fire/Structure Collapse has happened annually. • 1-2 structure fires per year. Mainly property damage.
Vulnerability	3	• More vulnerable: Shortage of Housing in the entire county • More vulnerable: Shortage of Senior Housing • More vulnerable: Influx of Population has prompted sudden rent increases that have displaced residents • More vulnerable: New nationalities can make communication with other languages difficult • More vulnerable: Shortage of emergency services due to influx of population • More vulnerable: New steady population of transient, construction and operation workers in the area due to new energy bursts and data centers. • More vulnerable: Seasonal homes, abandoned homes and unoccupied homes • More vulnerable: Derelict unoccupied properties • More vulnerable: Four rural fire departments in rural communities and volunteers are subject to being out of town working

		• More vulnerable: Approximately 50 percent of fire departments in county have equipment capable of handling structure fires • More vulnerable: Long distance responses and mutual aid agreements can put a strain on resources and leave county vulnerable • Less vulnerable: Residents of the county, particularly in rural areas, are self-sufficient and possess knowledge, skills and equipment to mitigate structure fire and collapse independently • More vulnerable: Grain elevator and fertilizer plants within county. • More vulnerable: Fuels, anhydrous and propane storage in city limits.
Capability	2	• Active fire departments with equipment and firefighters • Mutual Aid and Active county commission • Relies on regional, state and other agencies for assistance

City of Ellendale - Urban Fire/Structure Collapse - 4

Impact	2	• Urban fire events have resulted in total losses of homes and businesses • Potential loss of life • Property loss • Building loss • Economy loss • Loss of community assets • Loss of critical facilities and infrastructure • Potential temporary homeless population due to lack of alternative housing
Frequency	1	• House fires have occurred in the past five years • Bans are issued frequently according to the ND Fire Index
Likelihood	1	• High likelihood of house fires • Bans are issued frequently according to the ND Fire Index. • High wind and drought conditions occur annually.
Vulnerability	3	• More vulnerable: Older homes with older wiring • More vulnerable: Seasonal homes unoccupied • More vulnerable: Spacing of houses could lead to loss of multiple structures • More vulnerable: City has a well trained and equipped fire department often over stretched by mutual aid requests • More vulnerable: Lack of alternative housing for displaced residents • More vulnerable: Abandoned buildings and single-family homes • More vulnerable: Fire department limited in resources if multiple fire instances occur • Less vulnerable: Fully functioning fire department with equipment, water sources and staff • Less vulnerable: City maintains ordinances and has adopted ND State Building Codes • Less vulnerable: Less CRP near the city • Less vulnerable: City maintains vegetation on city lots • Less vulnerable: Have been able to contain fires to one building • More vulnerable: Lack of water availability if prolonged fire.
Capability	3	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Mutual Aid with surrounding communities

		• Seed plant in town has some manpower, heavy equipment and work with area farmers to be pro-active in protecting the city • Siren is radio actuated by law enforcement or by Emergency Management

City of Forbes Urban Fire/Structure Collapse - 10

Impact	4	• Potential injury or loss of life • Property, building and economy loss • Loss of community assets and critical facilities and infrastructure • Potential temporary homeless population due to lack of alternative housing
Frequency	2	• No severe structure fires or collapses in recent history
Likelihood	3	• No severe structure fires or collapses in recent history
Vulnerability	3	• More vulnerable: City does not have extensive fire suppression capabilities • More vulnerable: Older homes with older wiring • More vulnerable: Several large structures in the city are abandoned and hazard could go unnoticed or an extended period • More vulnerable: Spacing of houses could lead to loss of multiple structures • More vulnerable: Lack of alternative housing for displaced residents • More vulnerable: Distance from neighboring fire departments can lead to more issues and prolonged response times • More vulnerable: Lack of break between crops and city • Less vulnerable: Local fire department • Less vulnerable: City lacks early warning system and has a radio controlled for remote storm warning • Less vulnerable: City has water storage tank providing water backup for fire suppression
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • Mutual Aid with Ellendale and Fredrick, SD • More vulnerable: Fire siren is radio activated by Emergency Management

City of Fullerton – Urban Fire/Structure Collapse - 10

Impact	3	• Potential injury or loss of life • Property, building and economy loss • Loss of community assets • Loss of critical facilities and infrastructure • Potential temporary homeless population due to lack of alternative housing
Frequency	2	• Bans are issued frequently according to the ND Fire Index
Likelihood	3	• City has experienced dryer fires at the elevator • Bans are issued frequently according to the ND Fire Index
Vulnerability	4	• More vulnerable: Older homes with older wiring • More vulnerable: Seasonal homes unoccupied • More vulnerable: Spacing of houses could lead to loss of multiple structures • More vulnerable: No crop break around the city and crops grown in city limits • More vulnerable: Lack of alternative housing for displaced residents • More vulnerable: Distance from neighboring fire departments can lead to more issues and prolonged response times

		• More vulnerable: Railroad within city limits • Less vulnerable: City has a radio controlled for remote storm warning. • Less vulnerable: Have been able to contain fires to one building • Less vulnerable: City Fire Department • Less vulnerable: Elevator in the city has a 3,000-gallon water tank • Less vulnerable: Fire department has 300, 500, and 2,000-gallon trucks • Less vulnerable: City participates in mutual aid agreements
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • Mutual Aid with Ellendale • City has a radio operated storm siren operated by Emergency Management

City of Ludden – Urban Fire/Structure Collapse - 9

Impact	3	• Potential injury or loss of life • Property, building or economy loss • Loss of community assets • Loss of critical facilities and infrastructure • Potential temporary homeless population due to lack of alternative housing
Frequency	2	• Always possible • Bans are issued frequently according to the ND Fire Index
Likelihood	2	• Always possible • Bans are issued frequently according to the ND Fire Index.
Vulnerability	3	• More vulnerable: Older homes with older wiring • More vulnerable: Seasonal homes unoccupied • More vulnerable: Lack of alternative housing for displaced residents • More vulnerable: Distance from neighboring fire departments can lead to more issues and prolonged response times. • More vulnerable: No Emergency Services • More vulnerable: Abandoned buildings and single-family homes • More vulnerable: Lack of crop break around city • More vulnerable: Lack of fire department • Less vulnerable: Have been able to contain fires to one building
Capability	1	• Active City Council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Monango – Urban Fire/Structure Collapse - 7

Impact	3	• Potential injury or loss of life • Property, building and economy loss • Loss of community assets • Loss of critical facilities and infrastructure • Potential temporary homeless population due to lack of alternative housing
Frequency	3	• Bans are issued frequently according to the ND Fire Index
Likelihood	3	• Bans are issued frequently according to the ND Fire Index

Vulnerability	1	• More vulnerable: Older homes with older wiring • More vulnerable: Seasonal homes unoccupied • More vulnerable: Spacing of houses could lead to loss of multiple structures • More vulnerable: Lack of alternative housing for displaced residents • More vulnerable: Distance from neighboring fire departments can lead to more issues and prolonged response times • More vulnerable: Abandoned buildings and single-family homes • Less vulnerable: City has a radio controlled for remote storm warning.
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Oakes - Urban Fire/Structure Collapse - 8

Impact	3	• Potential loss of life • Property loss • Building loss • Economy loss • Loss of community assets • Loss of critical facilities and infrastructure • Potential temporary homeless population due to lack of alternative housing
Frequency	3	• House fires have occurred in the past five years. • Bans are issued frequently according to the ND Fire Index
Likelihood	3	• Bans are issued frequently according to the ND Fire Index.
Vulnerability	2	• More vulnerable: Older homes with older wiring • More vulnerable: Seasonal homes unoccupied • More vulnerable: City has a well trained and equipped fire department often over stretched by mutual aid requests • More vulnerable: Lack of alternative housing for displaced residents • Less vulnerable: Enforces building codes and zoning ordinances • Less vulnerable: Newer structures are being built with better technology and safe design • Less vulnerable: Less CRP near the city • Less vulnerable: The rest home, fire department, and hospitals have generators
Capability	3	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Mutual Aid with surrounding communities • Siren system can be radio actuated by law enforcement or Dickey County Emergency Management

Vulnerabilities to County-Owned Buildings and Property

All county-owned buildings are vulnerable to urban fire/structure collapse. The risk to the hazard depends on the location of the building and if it is equipped with fire suppression mechanisms, such as sprinkler systems and smoke detectors. Risk to building and property depends on the proximity of fire suppression equipment and response times from fire departments. Older county-owned buildings may be more susceptible to fire being built to older building and electrical codes. County-owned buildings with flat roofs are more at risk to building collapse from snow loads. Chapter 4 provides a summary of city- and county-owned buildings and property in Dickey County.

Vulnerabilities of Critical Facilities and Infrastructure

Similar to county-owned buildings and property, critical facilities and infrastructure are vulnerable to urban fire/structure collapse. If an incident were to occur, the facility or infrastructure could result in loss of or delay in services. A fire affecting critical infrastructure such as power lines or lift stations could leave residents without power, potable water or sanitary sewer for days, depending on the severity of the incident.

Vulnerabilities to New and Future Development

New and future development could be more vulnerable in communities that lack building codes. Buildings in jurisdictions that lack building codes could be more susceptible to snow loads, structural instability and may lack fire suppression systems. In addition, new development located near or adjacent to industrial facilities housing hazardous chemicals could be more at risk. Dickey County has adopted the state building code which covers new and future development in the county. Adoption and enforcement of building codes should reduce the risk and vulnerability to new and future development.

Data Limitations and Other Key Documents

Fire data provided by the Oakes Fire Department provides an estimation of future problems, but does not provide specific details on property damage, location, among other descriptions. The lack of detailed data limits identification of problem areas regarding fire and does not allow for improvements to be made to fire suppression techniques by local fire departments and districts.

The Oakes Fire Department Incident Report and the NFIRS do not distinguish between a structure fire and structure collapse. As a result, determining the true probability and overall impact of a structure collapse cannot be determined. Conversely, several fire departments and districts in Dickey County provide coverage to neighboring counties as well. The data does not disclose the geographic location of each fire and therefore limits the understanding of where fires are actually occurring in Dickey County.

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

- Dickey County Emergency Operations Plan
- North Dakota Emergency Operations Plan, Fire Annex
- 2019 North Dakota State Multi-Hazard Mitigation Plan

5.11 Wildland Fire

Including Wildland Fire and Rural Fire.

Characteristics

Fire is the rapid oxidation of a material in the exothermic chemical process of combustion, releasing heat, light, and various reaction products.

Wildland Fire. A wildland fire is an uncontrolled fire in a vegetated area. Wildland fires are a natural part of the ecosystem. They have a purpose in nature and following years of fire suppression, many areas have built up fuels that can lead to larger, more intense fires.

Any flame source can trigger a wildland fire. Once ignited, ambient conditions dictate whether the fire will spread or not. Moist, cool, and calm conditions or a lack of fuels will suppress the fire, whereas, dry, warm, windy conditions and dry fuels will contribute to fire spread. The terrain, accessibility, and capabilities of the fire agencies are factors in the fire's growth potential. People and structures near wildland fire can be threatened unless adequately protected through evacuation, mitigation, or suppression.

The general wildland fire season runs from April 1st through October 31st. There are three critical periods during wildland fire season: early spring prior to green-up, late summer due to higher temperatures, and fall following heavy frosts through snowfall. The first peak occurs during the spring before vegetation turns green. This tends to be a very critical time due to the fuel buildup from the previous growing season, drying winds, decreasing humidity, warmer temperatures, and increased human activity outdoors. In general, statewide, the month of April accounts for about 20 percent of the total wildland fires and over a third of the total acreage burned. The second peak in the fire season coincides with the increase in harvesting activities during mid to late summer. Temperatures remain hot, humidity is at its lowest, and precipitation has declined significantly. The third and final peak in fire season occurs between September 1st and October 31st when wildland fuels are fully cured out due to hard frosts, winds are frequent and high, humidity is low, and human activity remains high. Forty percent of the annual fire starts occurring in this third peak, accounting for 50 percent of the annual burned acreage. This third fire season typically extends until a season-ending snowfall.

The charred ground and thick smoke plumes that can be produced by wildland fire creates other, cascading hazards. The heavy smoke may lead to unhealthy air conditions affecting those with respiratory problems and otherwise healthy people. Smoky conditions can also lead to poor visibility and an increased probability of transportation accidents. With vegetation removed and the ground seared from a wildland fire, the area also becomes more prone to flash floods and landslides because of the ground's reduced ability to hold water.

Humans and human activity cause most of the wildland fires in North Dakota based on historical data. Loss of fire containment while attempting controlled burns of fields, ditches, and sloughs is a source of fires in Dickey County. Other sources of fire are related to recreational activities such as hunting, camping, off-road vehicle travel, when conditions are right, occasionally along railroad rights-of-way, and through the annual use of fireworks around the 4th of July. There are also natural causes of wildland fires such as lightning.

Rural Fire. Rural fires result from farming activities whereby farm equipment may ignite a fire while haying, harvesting and other farming activities. Burning is critical to the AG industry for the maintenance of ditches and the removal of Ag Waste. With continued controlled burns by farmers, there is always a possibility for the hazard in the future in Dickey County.

History

The National Fire Incident Reporting System provided history on wildland fire and rural fire. Approximately 90 wildland fire and rural fire occurrences were recorded between 2020and 2024.

Wildfires in Dickey County are generally caused by lightning strikes into haystacks, agricultural farming operations (hot bearings etc.) or from malfunctioning brakes on railroad cars. Common mitigation practice in our area is for farmers to leave one large tractor set up with a disk plow to rapidly respond to field fires. It is nothing to have 2-3 of them show up without being called to support firefighting operations. Before any large, prescribed burns, most farmers will circle the area to be burned and even place "Black Lines" around area homes and farms before initiating the fire.

Dickey County also institutes a burn ban yearly which bans all open fires when the rangeland index is very high or in the extreme ranges and requires notification of the local FD or Sherriff's department prior to any burning operations. Open burning, as well as all open flame activities (welding in the field, campfires etc.) is absolutely prohibited when the wildland fire index is VERY HIGH or EXTREME or should the National Weather Service issue a RED FLAG WARNING for high wind and low humidity days.

There have been no declared disasters or emergencies pertaining to wildland fire or rural fire.

Data provided by the National Fire Incident Reporting System (NFIRS) summarizes by fire department and district the number of structure fires, vehicle fires, outside fire and other fires from January 1, 2020, to June 30, 2024. Table 5.11.1 shows fires in Dickey County. NFIRS does not detail incident locations. The data is attributed to the responding department or district.

Table 5.10.2 – 2020 to 2024 Dickey County Fire Summary by Fire Department/District

	Frequency 2020-2024				
Fire Protection Agency	**Structure Fire**	**Vehicle Fires**	**Outside Fires**	**Other Fires**	**Totals**
Ellendale Fire Department	9	7	31	7	54
Oakes Fire Department	20	14	53	2	89
Forbes Fire Department	0	1	1	0	2
Fullerton Fire Department	1	2	5	0	8
Totals	**30**	**24**	**90**	**9**	**153**

Probability and Magnitude

According to the data provided by the National Fire Incident Reporting System Summary, 90 incidents of wildland fire occurred between 2020 and 2024, resulting in a probability of approximately 100 percent, as fires will occur on an annual basis. Discussions in jurisdictional meetings revealed that farmers conduct controlled burns each year and several become uncontrollable evolving into wildland fires.

In terms of magnitude, smaller and less severe fires are typically occurring more frequently with larger and more severe fires happening sparingly. The probability of fires fluctuates based on season, local weather patterns, traffic conditions, among other variables. The chance of wildland fires increases during summer months when the agriculture sector is in full force and natural vegetation can become dry due to

extreme heat. The magnitude of wildland fires can be assumed to be small as wildland fires remain less than 1,000 acres in the county.

Risk Assessment
Table 5.11.2 shows the risk assessment as determined by individual jurisdictions and the planning committee. The total in this chart represents the sum of each jurisdiction's impact, frequency, likelihood and vulnerability to a hazard less the jurisdiction's capabilities to respond to the hazard.

Table 5.11.2 – Risk Assessment Summary Wildland Fire and Rural Fire Scored Chart

Rural Fire and Wildland Fire	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Dickey County	4	4	4	3	2	**13**
Ellendale	3	2	2	2	2	**7**
Forbes	4	2	3	1	2	**8**
Fullerton	3	4	4	4	2	**10**
Ludden	4	2	2	3	1	**10**
Monango	4	2	2	1	1	**8**
Oakes	3	4	4	3	2	**12**

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

Seasonal Pattern	Spring to Fall
Duration	April to November
Speed of Onset	No warning
Location	Entire planning area is equally at risk

Capabilities of and Vulnerabilities to Jurisdictions

Capabilities and vulnerabilities of jurisdictions were scored at committee meetings and at each jurisdictional meeting with participants including the mayor and city auditor, in addition to members from the city council, business owners, emergency services representatives, and members of the general public.

Risk assessment hazard scoring and notes for the county are contained in the following graphics. The jurisdictional risk assessments can be found in Chapter 8, Jurisdictions.

Dickey County – Wildland Fire - 13

Impact	4	• Loss of economy, crops, bales, grazing forage, farm equipment and livestock • Strain on local fire departments and resources • Power line sparks have caused fires. • Railroad causes fires • Cigarettes thrown from vehicles cause fires in ditches • Lightning strikes to hay bales cause fire • Grain and hay can spontaneously combust • Farm equipment frequently causes fires each year
Frequency	4	• Controlled burns each year become uncontrollable • Farm equipment frequently causes fires each year • 11 sections began burning in 2017. All fire departments were already committed elsewhere.
Likelihood	4	• Controlled burns each year become uncontrollable
Vulnerability	3	• More vulnerable: Farmland, CRP and open areas

		• More vulnerable: Agriculture industry, which dominates the local economy, is highly mechanized and utilizes chemicals and fertilizers that can ignite wildland and rural fires • More vulnerable: large geographic extent of each fire department or district can lead to prolonged response times and may allow fires to spread rapidly or grow in size • More vulnerable: Many smaller communities have fire departments and offer limited mutual aid, which strains resources in communities • Less vulnerable: Elevators and irrigators are source of water for rural fire departments • More vulnerable: There are limited hydrants to rural water
Capability	2	• Active fire departments with limited equipment and firefighters • Active county commission • Lacks technical, administrative and financial resources for mitigation • Relies on regional, state and other agencies for assistance • Mutual Aid within region • Annual Burn Ban Plan which bans all open fires when the rangeland index is very high or in the extreme ranges and requires notification of the local FD or Sherriff's department prior to any burning operations. The ban also is in effect on any declared (NWS) RED FLAG WARNING DAY which indicates low humidity and high winds

City of Ellendale - Wildland Fire – 7

Impact	3	• Potential Economy loss • Potential crop, livestock, equipment and graze land loss • Potential injury or loss of life • Potential hazardous material release • Health hazards due to poor air quality • Loss of wildlife habitat • Farm equipment, lightning strikes, power line sparks, and controlled burns cause fires
Frequency	2	• Wildland fires occur annually due to climate and economy
Likelihood	2	• With continued controlled burns by farmers there is always a possibility for the hazard in the future • Happens yearly to some degree
Vulnerability	2	• More vulnerable: Farmland and open areas • More vulnerable: Mutual aid fire department response times lengthen • More vulnerable: Windy conditions each year • More vulnerable: Lack reliable source of water for fire suppression • More vulnerable: Lack of fire break around the city • More vulnerable: No rural water for fire suppression • More vulnerable: Lack reliable source of water for fire suppression • Less vulnerable: City maintains overgrown lots • Less vulnerable: City has a fire district with a fire hall, adequate manpower, equipment and resources of water for fire suppression • Less vulnerable: Participates in Mutual Aid
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation

		• Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Forbes - Wildland Fire - 8

Impact	4	• Economy loss • Crop and bale and graze land loss • Farm equipment and livestock loss • Potential injury or loss of life • Potential hazardous material release • Health hazard due to poor air quality • Loss of wildlife habitat • Farm equipment, lightning strikes, power line sparks, and controlled burns cause fires annually
Frequency	2	• Wildland fires occur annually due to climate and economy.
Likelihood	3	• Continued controlled burns by farmers there is always a possibility for the hazard • Dry conditions experienced annually for a couple of weeks • Farm equipment, lightning strikes, power line sparks, and controlled burns cause fires annually
Vulnerability	1	• More vulnerable: Farmland and open areas • More vulnerable: Mutual aid fire department response times lengthen. • More vulnerable: Windy conditions each year • More vulnerable: Lack reliable source of water for fire suppression • More vulnerable: Strain on local fire departments and resources • More vulnerable: Lack of fire break around the city • More vulnerable: Age of structures and wiring • Less vulnerable: Decreasing CRP • Less vulnerable: City maintains overgrown lots
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • There are few certified trained and equipped citizens in the community • Mutual Aid with Ellendale and Fredrick, SD

City of Fullerton - Wildland Fire – 13

Impact	3	• Economy loss • Crop, bale, livestock, farm equipment and graze land loss • Potential injury or loss of life • Potential hazardous material release • Health hazard due to poor air quality • Loss of wildlife habitat • Farm equipment, lightning strikes, power line sparks, and controlled burns cause fires
Frequency	4	• Wildland fires occur annually due to climate and economy
Likelihood	4	• With continued controlled burns by farmers there is always a possibility for the hazard in the future • Dry conditions experienced annually for a couple of weeks • Farm equipment, lightning strikes, power line sparks, and controlled burns

		cause fires annually
Vulnerability	4	• More vulnerable: Farmland and open areas • More vulnerable: Mutual aid fire department response times lengthen • More vulnerable: Windy conditions each year • More vulnerable: Lack reliable source of water for fire suppression • More vulnerable: Strain on local fire departments and resources • More vulnerable: Spacing of houses could lead to loss of multiple structures • More vulnerable: Lack of fire break around the city • More vulnerable: Age of structures and wiring • More vulnerable: Lack reliable source of water for fire suppression • More vulnerable: Slough with cattails on one side and corn is grown • More vulnerable: Railroad within city • Less vulnerable: City has a volunteer fire department • Less vulnerable: 300, 500- and 2,000-gallon water trucks • Less vulnerable: Elevator in the city also has a 3,000-gallon water holding tank
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • There are few certified trained and equipped citizens in the community • Mutual Aid with Ellendale

City of Ludden - Wildland Fire – 10

Impact	4	• Economy loss • Crop, bale, farm equipment, livestock and graze land loss • Potential injury or loss of life • Potential hazardous material release • Health hazard due to poor air quality • Loss of wildlife habitat • Farm equipment, lightning strikes, power line sparks, and controlled burns cause fires
Frequency	2	• Wildland/grass fires occur annually due to climate and economy.
Likelihood	2	• With continued controlled burns by farmers there is always a possibility for the hazard • Dry conditions experienced annually for a couple of weeks • Farm equipment, lightning strikes, power line sparks, and controlled burns cause fires annually
Vulnerability	3	• More vulnerable: Farmland and open areas • More vulnerable: Windy conditions each year • More vulnerable: Lack reliable source of water for fire suppression • More vulnerable: Strain on surrounding fire departments and resources – No Emergency Services • More vulnerable: Spacing of houses could lead to loss of multiple structures • More vulnerable: Lack of fire break around the city • More vulnerable: Age of structures and wiring • More vulnerable: Lack reliable source of water for fire suppression

		• Less vulnerable: Decreasing CRP • Less vulnerable: City maintains overgrown lots • Less vulnerable: City has a radio siren operated by Emergency Management • More vulnerable: New equipment is needed for neighboring fire departments and ambulance services
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • There are few certified trained and equipped citizens in the community • Mutual Aid with Ellendale and Oakes

City of Monango - Wildland Fire – 8

Impact	4	• Economy loss • Crop, bale, graze land, farm equipment and livestock loss • Potential injury or loss of life • Potential hazardous material release • Health hazard due to poor air quality • Loss of wildlife habitat • Farm equipment, lightning strikes, power line sparks, and controlled burns cause fires
Frequency	2	• Wildland fires occur annually due to climate and economy
Likelihood	2	• With continued controlled burns by farmers there is always a possibility for the hazard in the future • Dry conditions experienced annually for a couple of weeks • Farm equipment, lightning strikes, power line sparks, and controlled burns cause fires annually
Vulnerability	1	• More vulnerable: Farmland and open areas • More vulnerable: Mutual aid fire department response times lengthen. No fire, EMS or law in the city. All responders come from Ellendale with a 20-minute average response on a good weather day • More vulnerable: Windy conditions each year • More vulnerable: Lack reliable source of water for fire suppression • More vulnerable: Strain on local fire departments and resources • More vulnerable: Spacing of houses could lead to loss of multiple structures • More vulnerable: Lack of fire break around the city • More vulnerable: State building codes not adopted or enforced • More vulnerable: Age of structures and wiring • More vulnerable: Lack reliable sources of water for fire suppression
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • There are few certified trained and equipped citizens in the community • Mutual Aid with Ellendale

City of Oakes - Wildland Fire - 12

Impact	3	• Economy loss • Crop and Bale loss • Graze land loss • Farm equipment loss • Livestock loss • Potential loss of life • Potential injury • Potential hazardous material release • Health hazard due to poor air quality • Loss of wildlife habitat • Farm equipment, lightning strikes, power line sparks, and controlled burns cause fires • Cigarettes
Frequency	4	• Wildland fires occur annually due to climate and economy.
Likelihood	4	• With continued controlled burns by farmers there is always a possibility for the hazard in the future • Dry conditions experienced annually for a couple of weeks • Farm equipment, lightning strikes, power line sparks, and controlled burns cause fires annually.
Vulnerability	3	• More vulnerable: Farmland and open areas • More vulnerable: Mutual aid fire department response times lengthen • More vulnerable: Windy conditions each year • More vulnerable: Lack reliable source of water for fire suppression • More vulnerable: Strain on surrounding fire departments and resources • More vulnerable: Spacing of houses could lead to loss of multiple structures • More vulnerable: Lack of fire break around the city • More vulnerable: Age of structures and wiring • More vulnerable: Lack reliable source of water for fire suppression • Less vulnerable: Decreasing CRP • Less vulnerable: City maintains overgrown lots • Less vulnerable: City has a radio operated storm siren operated by law enforcement or Dickey County Emergency Management • Burn bans • Drought
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • Mutual Aid with surrounding communities • New fire equipment needed

Vulnerabilities to County-Owned Buildings and Property

County-owned buildings and property located in remote areas of the county are vulnerable to wildland fire. The risk of the hazard depends on building and property location and if emergency services can reach the property in a timely manner.

Lacks of firebreaks around jurisdictions in Dickey County pose a vulnerability to county-owned buildings and property. If a wildland fire were to grow and become uncontrollable, buildings and property would be at risk from the spread of the fire.

Vulnerabilities of Critical Facilities and Infrastructure

Similar to county-owned buildings and property, critical facilities and infrastructure are vulnerable to wildland fire. If an incident were to occur, the facility or infrastructure could result in loss of or delay in services. An inventory of county and city owned property in Dickey County is provided in Chapter 4.

Vulnerabilities to New and Future Development

Rural homesteads on large parcels of land in remote areas are a trend in residential development in North Dakota. Dickey County does not have planning regulations limiting lot size or directing where new residential development can occur. All types of development could be more vulnerable to wildland fire and located farther from fire departments and emergency services. Residential development in remote areas increase the opportunity for human caused fires.

Data Limitations and Other Key Documents

Data provided by the National Fire Incident Reporting System, a data limitation is the lack of the location and details of wildland fires. Dickey County departments provide and receive mutual aid from neighboring counties within ND.

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

- ND Enhanced State Mitigation Mission Area Operations Plan
- Dickey County Emergency Operations Plan
- North Dakota Emergency Operations Plan, Fire Annex
- North Dakota Forest Service, Building Sustainable Communities Through Forestry
- North Dakota Statewide Assessment of Forest Resources and Forest Resource Strategy
- Fire Management Plans for federal lands
- 2019 Dickey County Multi-Hazard Mitigation Plan
- Fire Management Plans for Federal Lands

5.12 Windstorm

Including high wind events that occur separately from tornados and severe thunderstorms.

Characteristics

Strong winds can occur year-round in Dickey County. 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. Objects like trees, barns, outbuildings, high-profile vehicles, and power lines/poles can be toppled or destroyed in high winds. Roofs, windows, and homes can be damaged as wind speeds increase. Strong winds can be particularly dangerous to aviation.

In the U.S., FEMA recognizes four wind zones. Dickey County falls into Zone III. Winds speeds reach up to 200 miles per hour in Zone III. No special wind regions are identified in Dickey County.

History

Based on hazard history information provided by NOAA, NCDC and SHELDUS, and the previously FEMA-approved Dickey County Mitigation Plan, Dickey County has 47 reported high wind events between 1960 and 2022 resulting in no injuries or deaths. Table 5.12.1 summarizes the history of windstorm occurrences in Dickey County. Detailed history can be found in Appendix 8.

Figure 5.12.1 Wind Zones in the Unites States

Source: FEMA

Table 5.12.1 – Dickey County Windstorm Summary

Windstorm						
Number of Occurrences	**Date Range**	**Probability**	**Injuries**	**Fatalities**	**Property Damage**	**Crop Damage**
47	1960-2022	100%	5	0	$2,153,050.57	$1,176,274.03

Sources: Spatial Hazard Events and Losses Database for the United States (SHELDUS); National Oceanic and Atmospheric Administration (NOAA); Information Service/National Climatic Data Center (NCDC)

Probability and Magnitude

Hazard history was gathered from NOAA, NCDC, SHELDUS, the previously FEMA-approved Dickey County Mitigation plan and newspaper accounts. The data covers a 62-year period from 1960 through 2022, and documents 47 notable windstorm occurrences, which equates to a probability of 100 percent. A windstorm on average could produce $26,518 in property damage and $30,530 in crop damage. (Sources: Spatial Hazard Events and Losses Database for the United States (SHELDUS); National Oceanic and Atmospheric Administration (NOAA); Information Service/National Climatic Data Center (NCDC))

The magnitude of the hazard can range from broken windows, damaged roofs to homes and businesses, toppled trees, power outages from downed power lines and the collapse of poorly constructed structures.

Risk Assessment

Table 5.12.2 shows the risk assessment as determined by individual jurisdictions and the planning committee. The risk assessment methodology can be found on page 5-3 of Chapter 5, Threat and Hazard Identification and Risk Assessment. The total in this chart represents the sum of each jurisdiction's impact, frequency, likelihood and vulnerability to a hazard less the jurisdiction's capabilities to respond to the hazard.

All areas of Dickey County have been and will be in the future affected by Windstorm.

Table 5.12.2 – Risk Assessment Summary Windstorm Scored Chart

Rural Fire and Wildland Fire	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Dickey County	3	3	3	3	2	**10**
Ellendale	3	4	4	3	1	**13**
Forbes	3	3	3	4	1	**12**
Fullerton	3	4	4	4	1	**14**
Ludden	3	4	4	4	1	**14**
Monango	4	2	2	1	1	**8**
Oakes	3	4	4	4	1	**14**

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

Seasonal Pattern	None
Duration	2 to 6 hours
Speed of Onset	12 to 16 hours warning

Capabilities of and Vulnerabilities to Jurisdictions

Capabilities and vulnerabilities of jurisdictions were scored at committee meetings and at each jurisdictional meeting with participants including the mayor and city auditor, in addition to members from the city council, business owners, emergency services representatives, and members of the general public.

Risk assessment hazard scoring and notes for the county are contained in the following graphic. The jurisdictional risk assessments can be found in Chapter 8, Jurisdictions.

Dickey County – Windstorm - 10

Impact	3	• Potential injury or loss of life • Potential loss of economy, property and livelihood • Damage to critical infrastructure and essential services • Potential loss of crops, livestock and agricultural economy
Frequency	4	• Tornados and straight-line winds occur each year • Major straight-line wind occurrence each year • Straight line wind occurrence in Oakes 2010 • Monango community was highly affected in 2010 - Tornado and Straight-line wind • Straight line winds in Ellendale in 2023
Likelihood	4	• Tornados and straight-line winds occur each year • Major straight-line wind occurrence each year
Vulnerability	3	• More vulnerable: Lack of public storm shelters • More vulnerable: Large mobile home population within cities in county. • More vulnerable: Approximately 50% of fire departments in county have equipment capable of handling search, rescue and recovery • More vulnerable: Long distance responses and mutual aid agreements can put a strain on resources and leave county vulnerable • Less vulnerable: High citizen volunteer and equipment to clean up debris • More vulnerable: These tend to produce large amounts of debris that hinder rescue operations as well as block roads • More vulnerable: Debris management causes financial strain and strain on services
Capability	2	• Active fire departments with limited equipment and firefighters • Active county commission • Warning sirens in each community • Lacks technical, administrative and financial resources for mitigation • Relies on regional, state and other agencies for assistance • Mutual Aid within region

City of Ellendale - Windstorm - 13

Impact	3	• Downed trees • Buildings loss • Downed power poles and lines • Economy loss • Damage to homes and community buildings such as broken windows, loss of shingles • Potential loss of life • Potential injury • Potential structure fires • Contributes to spread of wildland fire • Straight line winds occur in summer months
Frequency	4	• Hazard occurs multiple times each year and is a secondary result from severe summer weather or severe winter weather • Strong winds are common in the city in all weather conditions • Blizzard conditions occur frequently in winter months due to climate • Power lines are damaged causing outages annually

Likelihood	4	• Strong winds are common in the city
Vulnerability	3	• More vulnerable – loss of trees leads to more ground blizzard conditions • More vulnerable: Power lines providing power to the city are not buried and outdated • More vulnerable: EMS is over stretched by mutual aid • More vulnerable: No storm shelters in City • More vulnerable: Age of structures and housing stock • Less vulnerable: City has an inert landfill for debris and branches
Capability	1	• Capabilities to respond, but nothing can be done to prepare. • LEPC – Local Emergency Planning Committee • Mutual aid agreements for emergency services with surrounding communities • Active county commission • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Siren is radio actuated by law enforcement or Emergency Management

City of Forbes - Windstorm - 12

Impact	3	• Downed trees, power poles and lines • Buildings and economy loss • Damage to homes and buildings (broken windows, loss of shingles) • Potential injury or loss of life • Potential structure fires • Contributes to spread of wildland fire • City has lost many trees, buildings and structures due to high winds • Straight line winds occur in summer months
Frequency	3	• Hazard occurs multiple times each year as a secondary result from severe weather • Strong winds are common in the city in all weather conditions • Blizzard conditions occur frequently in winter months due to climate • Power lines are damaged causing outages annually
Likelihood	3	• Strong winds are common in the city in all weather conditions
Vulnerability	4	• More vulnerable: There are two trailer homes in the city • More vulnerable – loss of trees leads to more ground blizzard conditions • More vulnerable: Power lines providing power to the city are not buried • Less vulnerable: Residents have equipment to clear debris or move snow • More vulnerable: Age of structures and housing stock • More vulnerable: Has not adopted state building codes • Less vulnerable: City has an inert landfill for debris and branches
Capability	1	• Mutual aid agreements for emergency services • Active county commission • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Fullerton - Windstorm - 14

Impact	3	• Downed trees • Buildings loss • Downed power poles and lines • Economy loss • Damage to homes/community buildings - broken windows, loss of shingles • Potential loss of life • Potential injury • Potential structure fires • Contributes to spread of wildland fire • City has lost many trees, buildings and structures due to high winds. • Increase in traffic accidents from low visibility during severe weather • Straight line winds occur in summer months
Frequency	4	• Hazard occurs multiple times each year • Strong winds are common in the city in all weather conditions • Blizzard conditions occur frequently in winter months due to climate • Power lines are damaged causing outages annually
Likelihood	4	• Strong winds are common in the city in all weather conditions
Vulnerability	4	• More vulnerable: There are two trailer homes in the city • More vulnerable: Loss of trees leads to more ground blizzard conditions • More vulnerable: Power lines providing power to the city are not buried • Less vulnerable: Residents have equipment to clear debris or move snow • More vulnerable: Age of structures and housing stock • More vulnerable: Has not adopted state building codes • Less vulnerable: City has an inert landfill for debris and branches • Less vulnerable: City has a volunteer fire department
Capability	1	• Capabilities to respond, but nothing can be done to prepare • Mutual aid agreements for emergency services • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • City has a radio operated storm siren operated by Emergency Management

City of Ludden - Windstorm - 13

Impact	3	• Downed trees • Buildings loss • Downed power poles and lines • Economy loss • Damage to homes and community buildings such as broken windows, loss of shingles • Potential loss of life • Potential injury • Potential structure fires • Contributes to spread of wildland fire • Increase in traffic accidents from low visibility during severe summer and/or winter weather • Straight line winds occur in summer months
Frequency	4	• Hazard occurs multiple times each year and is a secondary result from severe

		summer weather or severe winter weather • Strong winds are common in the city in all weather conditions • Approximately 50 incidents of windstorms occurred between 1960 and 2016 • Blizzard conditions occur frequently in winter months due to climate • Power lines are damaged causing outages annually
Likelihood	4	• Strong winds are common in the city in all weather conditions
Vulnerability	4	• More vulnerable: Power lines providing power to the city are not buried and outdated • More vulnerable: There is no fire, EMS, medical or law in the town. All responders come from Oakes with a 20-minute average response on a good weather day • Less vulnerable: Residents have equipment to clear debris or move snow • More vulnerable: Age of structures and housing stock • More vulnerable: Has not adopted state building codes • More vulnerable: New equipment is needed for neighboring fire departments and ambulance services • Less vulnerable: City has an inert landfill for debris and branches
Capability	1	• Capabilities to respond, but nothing can be done to prepare. • Mutual aid agreements for emergency services • No emergency services • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • Elevator in town has some manpower, heavy equipment and work with area farmers to be pro-active in protecting the city • City has a radio operated storm siren operated by Dickey County Emergency Management

City of Monango - Windstorm - 8

Impact	4	• Downed trees, power poles and power lines • Economy loss • Damage to homes and buildings (broken windows, loss of shingles) • Potential injury or loss of life • Potential structure fires • Contributes to spread of wildland fire • City has lost many trees, buildings and structures due to high winds • Straight line winds occur in summer months
Frequency	2	• Hazard occurs multiple times each year and is a secondary result from severe summer weather or severe winter weather • Strong winds are common in the city in all weather conditions • Blizzard conditions occur frequently in winter months due to climate • Power lines are damaged causing outages annually
Likelihood	2	• Strong winds are common in the city in all weather conditions
Vulnerability	1	• More vulnerable: There are two mobile homes in the city • More vulnerable: Loss of trees leads to more ground blizzard conditions • More vulnerable: Power lines providing power to the city are not buried • Less vulnerable: Residents have equipment to clear debris or move snow • More vulnerable: Age of structures and housing stock

		• More vulnerable: Has not adopted state building codes • Less vulnerable: City has landfill for debris and branches • Less vulnerable: Fire Hall has truck for fire suppression and assistance
Capability	1	• Capabilities to respond, but nothing can be done to prepare • LEPC – Local Emergency Planning Committee • Mutual aid agreements for emergency services • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

City of Oakes - Windstorm – 14

Impact	3	• Downed trees • Buildings loss • Downed power poles and lines • Economy loss • Damage to homes and community buildings such as broken windows, loss of shingles • Potential loss of life • Potential injury • Potential structure fires • Contributes to spread of wildland fire • The city has lost many trees, buildings and structures due to high winds. • Increase in traffic accidents from low visibility during severe summer and/or winter weather • Straight line winds occur in summer months
Frequency	4	• Hazard occurs multiple times each year and is a secondary result from severe summer weather or severe winter weather. • Strong winds are common in the city in all weather conditions • Blizzard conditions occur frequently in winter months due to climate • Power lines are damaged causing outages annually
Likelihood	4	• Strong winds are common in the city in all weather conditions
Vulnerability	4	• More vulnerable – loss of trees leads to more ground blizzard conditions • More vulnerable: Power lines providing power to the city are not buried and outdated • More vulnerable: Fire and EMS are over stretched by mutual aid requests with surrounding cities • Less vulnerable: Residents have equipment to clear debris or move snow • More vulnerable: Age of structures and housing stock • More vulnerable: Has not adopted state building codes – in process • Less vulnerable: City has an inert landfill for debris and branches
Capability	1	• Capabilities to respond, but nothing can be done to prepare. • LEPC – Local Emergency Planning Committee • Mutual aid agreements for emergency services with surrounding communities • Active city council

		• Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Has a well-equipped city public works crew • Aged city equipment • Siren system can be radio actuated by law enforcement or Dickey County Emergency Management

Vulnerabilities to County-Owned Buildings and Property

County-owned buildings are susceptible to windstorms. Buildings may not be constructed to sustain excessively high wind speeds. Windstorms damage building roofs, break windows, topple trees and cause other objects and debris to become airborne. Airborne debris can injure people or in rare instances cause death. Depending on the size of the building and the role it plays in day-to-day operations, the vulnerability to windstorm can vary from nominal for larger structures such as the Dickey County Courthouse in Ellendale to severe for county shops in smaller cities, which may be considerably less sturdy. A summary of city and county owned buildings is provided in Chapter 4.

Vulnerabilities of Critical Facilities and Infrastructure

Critical facilities such as schools, water towers, roadways and other specialty facilities such as nursing homes and assisted living facilities are vulnerable to windstorms in a similar fashion to county-owned buildings and property. Infrastructure such as power lines are susceptible to wind and debris, which can disrupt service and cause power outages. Disruptions in water service can be caused by damage to water towers or power lines. Roadways can become blocked due to windblown debris, limiting access for emergency services.

Vulnerabilities to New and Future Development

Building codes ensure buildings and structures are built adequately to better withstand high wind. The only cities that have adopted the state building code are Ellendale and Oakes. Jurisdictions with a high number of trailer and mobile homes, which are more susceptible to hazards such as a windstorm, may experience more impact from the hazard.

As populations grow, more people are at risk of injury and potential death from windstorms and windblown debris such as tree branches. Strengthening of buildings codes would mitigate impacts from the hazard.

Data Limitations and Other Key Documents

Recent history indicates more windstorms. This may be an increase in the amount of windstorms, or past windstorms may not have been independently recorded in county history events. High winds are also an aspect of severe summer weather and severe winter weather. Windstorm impacts and damages may be categorized under another hazard and not classified as a windstorm event.

Other key documents related to the windstorm hazard include:

- ND Enhanced State Mitigation Mission Area Operations Plan
- Dickey County Emergency Operations Plan
- North Dakota Emergency Operations Plan, Severe Storms Annex
- Dickey County Emergency Action Plan
- 2014 Dickey County Mitigation Plan
- 2014 ND State Multi-Hazard Mitigation Plan

5.13 Dam Failure

Characteristics

A dam is any artificial man-made barrier that impounds or diverts water or underground streams. The purpose of a dam includes: the storage of water for irrigation, hydro-electric power generation, flood control, water supply, recreation, and wildlife. If a dam should fail, impacts can range from minimal to complete devastation, depending on location and volume of water impounded. The North Dakota State Water Commission and the State Engineer have the power, authority and general jurisdiction to regulate and control activity related to dams. The State Water Commission administers the Dam Safety Program.

A dam failure is defined as a sudden, rapid, and uncontrolled release of impounded water that will create a potential significant downstream hazard. The dam failure hazard is determined by the potential loss of life and downstream property damage it may cause, and not by any particulars of the dam itself.

There are many reasons and/or potential causes for dam failure such as terrorism, earthquakes, etc.

- Hydraulic Failures – Hydraulic failures result from the uncontrolled flow of water, over, around, and adjacent to the dam, the erosion action of the water on the dam and its foundation. Earthen dams are particularly susceptible to hydraulic failures since earthen material erodes at relatively low velocities. Hydraulic failures account for approximately 30 percent of all dam failures. A hydraulic failure may occur due to wave action, erosion, and excessive spillway erosion, and overtopping as a result of insufficient reservoir storage and insufficient spillway capacity.

- Seepage Failure – All dams do have some seepage. Seepage occurs through the structure and its foundation. Seepage, if uncontrolled, can erode material from the downstream slope or foundation and work backwards toward the upstream slope to form a “scour hole” which often leads to a complete failure of the structure. Seepage accounts for approximately 40 percent of all dam failures. Piping is a special seepage problem where soil particles are transported by a flow of water from one area to another. Soil particles are transported, the flow becomes larger and the soil particles move faster until a tunnel of flowing water is created.

- Structural Failure – Structural failures involve the rupture or movement of monolithic components of the dam and/or its foundation. This is a particularly important hazard on large earthen dams and on dams built of low strength material such as silts. Structural failure accounts for approximately 30 percent of all dam failures.

Generally speaking, these type of failures are interrelated and complex. For example, uncontrolled seepage may weaken the soil of an earthen dam and lead to an embankment failure. A structural failure may shorten the seepage path and lead to a “piping” failure. Surface erosion may lead to embankment failures.

Time itself can also have an impact on dam integrity. Such things as weathering, mechanical changes, and the influence of chemical agents can affect a dam in the following ways:

- Engineering properties of the foundation and materials composing the dam may change
- Chemical properties of the contents may change
- Concrete can gradually deteriorate and weaken from leaching and frost, and the amount of sulfate present in the surrounding soil
- Monolithic behavior is affected causing high stress concentrations and water pressure that has free access to the interior of the structure
- Freeze/thaw damage is accelerated by these cracks
- Metal components can corrode unless maintained
- Timber structures such as cribbing will eventually decay from the change of water content as well as infestation by insects or attack by other organisms

Few man-made facilities pose a greater potential for the loss of life and property than the failure of a dam. Pent-up waters suddenly unleashed can have catastrophic effects on life and property downstream. Homes, bridges, and roads can be demolished in minutes.

Dams are categorized according to the potential hazard for loss of life and property damage, should the dam suddenly fail. Existing development must be considered when categorizing a dam. The hazard category is based on potential hazard from failure and not on the selected design criteria or storage capacity.

Although it is recognized that loss of life is possible with any dam failure, the following categories of dams have been established for North Dakota:

- Low Hazard – Dams located in rural or agricultural areas where there is little possibility of future development. Failure of low hazard dams may result in damage to agricultural land, township and county roads, and farm buildings other than residences. No loss of life is expected if the dam fails.
- Medium Hazard – Dams located in predominantly rural or agricultural areas where failure may damage isolated homes, main highways, railroads or cause interruption of minor public utilities. The potential for the loss of lives may be expected if the dam fails.
- High Hazard – Dams located upstream of developed and urban areas where failure may cause serious damage to homes, industrial and commercial building, and major public utilities. There is a potential for the loss of more than a few lives if the dam fails. (Dam Safety Performance Report for the State of North Dakota)

Dickey County has eleven dams listed with the National Inventory of Dams. Wilson and Pheasant Lake and Mathern are dirt dams and the only “dams” which hold significant water. Their failure would affect no population centers downstream however access would be affected due to roads washed out. Pheasant lake breach would impact South Dakota only but would threaten nothing but Ag land in ND.

The dams mentioned on the Lower James- Hyayt Slough and Dakota Lake is irrigation locks /dams and all south of Ludden on the state line. All water held by these would affect SD only. Those on the Maple River are six to seven feet tall concrete dams which assure small amounts of water are held back for wildlife and fish production (to assure there is always some water in the river), if these dams would break no one but the game would ever notice their loss until the river went dry. Dams which could potentially threaten the county are Lake Lamoure, Pipestem and Garrison. The major threat in Oakes due to its elevation is only loss of access by flooding of the roads and highways.

A catastrophic failure of Lake Lamoure would only raise the river level three feet in Oakes area. This is an inconvenience for sure but will affect one resident and stress three more. Ludden will be wet but probably not require evacuation.

The catastrophic failure of Pipestem or Garrison (with full pools) would require evacuation of Ludden, as it would be not defendable and estimated 92.6 percent total destruction of the town. Damage to the county residents on the west end of Oakes would be limited to three or four homes and one commercial body shop would be lost. The water would not infiltrate Oakes at all due to its elevation.

According to the Ellendale City Auditor, the Ellendale Water Supply dam, also known as Oster Dam, was decommissioned and the structure was removed in approximately 2004. It is still listed as an active dam on the National Inventory of Dams as of May 2014. Figure 5.2.1 lists the ten other dams in the county, the river, the ownership, and hazard potential.

The National Inventory of Dams consists of dams meeting at least one of the following criteria:

1. High hazard classification-loss of one human life is likely if the dam fails
2. Significant hazard classification-possible loss of human like and likely significant property or environmental destruction
3. Equal or exceed 25 feet in height and exceed 15 acre-feet in storage
4. Equal or exceed 50 acre-feet storage and exceed 6 feet in height

Table 5.13.1 – Dams in Dickey County

Dam Name	River	Owner	Hazard Potential
Maple River NWR 2	Maple River	US Fish & Wildlife	Low
Hyatt Slough WMA 2	James River	ND Game & Fish Dept.	Low
Mathern Dam	South Fork of Maple River	Private	Low
Pheasant Lake	Elm River	Dickey Co WRD	Significant
Dakota Lake Dam	James River	US Fish & Wildlife	Low
Moores Dam	Elm River (James)-TR	Dickey County WRD	Low
Maple River Overflow Dam	Maple River (James)	Dickey County WRD	Low
Wilson Dam	S. Fork Maple River (James)-TR	West Dickey County WRD	Low
Ellendale Township Dam	Klinker Coulee	West Dickey County WRD	Low
Maple River Dam	Maple River	US Fish & Wildlife	Low

Source: National Inventory of Dams

History

According to the Association of State Dam Safety Officials, USA Dam Failure, Dam Incidents, neither Dickey County nor the State of North Dakota have had no reported failures or incidents since 1901. No known instances of dam failures have been recorded in Dickey County.

Table 5.13.2 -- Dickey County Dam Failure Declared Disasters and Emergencies

Declaration	Location	Date	Magnitude	Casualties	Damages
None Reported					

Source: FEMA

Probability and Magnitude

Hazard history was gathered from NOAA, NCDC, SHELDUS, Stanford University National Performance of Dams Program (NPDP), and the previous FEMA-approved Dickey County Mitigation Plan. No known instances of dam failures have been recorded in Dickey County and therefore, the probability of the hazard in Dickey County is zero.

The dam failure of both the Jamestown Dam and Pipestem Dam would impact areas of rural Dickey County. The magnitude would vary depending on extent of overland flooding.

Risk Assessment

Table 5.2.3 shows the risk assessment as determined by individual jurisdictions and the committee in Dickey County. The total in this chart represents the sum of each jurisdiction's impact, frequency, likelihood and vulnerability to a hazard less the jurisdiction's capabilities to respond to the dam failure hazard.

Table 5.13.3 -- Risk Assessment Summary Dam Failure Scored Chart

Dam Failure	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Dickey County	N/A	N/A	N/A	N/A	N/A	**N/A**
Ellendale	N/A	N/A	N/A	N/A	N/A	**N/A**
Forbes	N/A	N/A	N/A	N/A	N/A	**N/A**
Fullerton	N/A	N/A	N/A	N/A	N/A	**N/A**
Ludden	1	1	1	1	1	**3**
Monango	N/A	N/A	N/A	N/A	N/A	**N/A**
Oakes	1	1	1	1	1	**3**

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

Seasonal Pattern	None
Duration	24 hours
Speed of Onset	12 to 16 hours warning

A low–moderate failure risk means the county has at least one significant hazard dam. Table 5.2.4 shows the one "significant hazard" dam in Dickey County.

Table 5.13.4 -- Dickey County Significant Hazard Dams

Pheasant Lake	Elm River	Dickey Co WRD	Significant

Source: North Dakota Department of Emergency Services

Capabilities of and Vulnerabilities to Jurisdictions

Upon review of the statistics and oral history of residents, only the jurisdictions of Ludden and Oakes are subject to impacts from dam failures. Dam failure does not pertain to the cities of Ellendale, Fullerton, Forbes and Monango.

Capabilities and vulnerabilities of jurisdictions were scored at jurisdictional meetings with participation from the mayor and city auditor, in addition to members from the city council, business owners, emergency services representatives, and members of the general public. Participants discussed the incidents that occur in their jurisdiction and how frequent impacts are from the hazard to score impact and frequency. Participants compared the impacts and frequency of the hazard to determined future prevalence. The likelihood of the hazard was then scored. Vulnerability was scored with participants stating what makes the jurisdiction less vulnerable given their resources or more vulnerable by identifying resources not available. Capabilities were scored by the plan consultants based on the capability assessment worksheet found in the 2019 Mitigation Planning Handbook.

The city of Ludden ranked dam failure as:

Impact: Ranked 1. The city ranked impact from dam failure as "1" as residents said enough warning time would be given to evacuate the city and therefore, no loss of life would occur. The city of Ludden would be inundated if there was a dam failure. The arrival time of peak flow of flood waters resulting from a dam failure is roughly 48 hours and 45 minutes according to the Jamestown Dam Emergency Action Plan, allowing ample time for evacuation of city residents.

Frequency: Ranked 1. The city ranked frequency from dam failure as "1" as history shows that dam failure has not occurred in the past at any point.

Likelihood: Ranked 1. The city ranked the likelihood of dam failure as "1" since city residents said enough oversight into dam maintenance was present that a failure of a dam would not occur.

Vulnerability: Ranked 1. The city ranked the vulnerability of dam failure as "1" as the city is small and has limited resources to mitigate impacts from dam failure.

Capabilities: Ranked 1. The city ranked capabilities to dam failure as "1" as the city has a low population, low city services and minimal tax base. The city has a mayor, auditor and city council with no other staff present. The city does have the capability to evacuate all city residents in the event of a dam failure given the extended period of time before peak flood waters would reach the city. The city and residents have access to the county's emergency management department, which maintains a website with a beneficial information and education resources for county residents.

The city of Oakes ranked dam failure as:

Impact: Ranked 1. The city ranked impact from dam failure as "1" as residents said enough warning time would be given to evacuate the city and therefore, no loss of life would occur. Information provided in the Jamestown Dam Emergency Action Plan shows maps of the inundation area of flood waters resulting from a dam failure. Nearly all of the city of Oakes is located just to the east of the inundation area, limiting impact if the hazard were to occur. The arrival time of peak flow of flood waters resulting from a dam failure is roughly 39 hours and 20 minutes according to the Jamestown Dam Emergency Action Plan allowing ample time for evacuation of city residents.

Frequency: Ranked 1. The city ranked frequency of dam failure as "1" as history shows that dam failure has not occurred in the past at any point.

Likelihood: Ranked 1. The city ranked likelihood of dam failure as "1" since city residents said enough oversight into dam maintenance was present that a failure of a dam would not occur.

Vulnerability: Ranked 1. The city ranked the vulnerability of dam failure as "1" as the city does have adequate resources for emergency services and response but is limited in what can be done for impacts from dam failures.

Capabilities: Ranked 1. The city ranked capabilities to dam failure as "1" as the city does have a large tax base compared to other jurisdictions and therefore has financial capabilities, adequate city staff for administration and technical purposes, planning capabilities for mitigation of impacts from dam failures, and a talented populace that can administer and engage the public in education and outreach. However, most of these capabilities are beyond the reach for mitigating dam failure. The city does have the capability to evacuate all city residents in the event of a dam failure given the extended period of time before peak flood waters would reach the city. The city and residents have access to the county's emergency management department, which maintains a website with a beneficial information and education resources for county residents.

Vulnerabilities of County-Owned Buildings and Property

Significant hazard dams have the potential to impact county-owned buildings and property. A summary of county-owned buildings and property is provided in Chapter 4. County shops in Oakes are vulnerable to dam failure. Also located in Oakes are the School House Museum, Depot Museum, Church Museum and Main Museum.

Vulnerabilities of Critical Facilities and Infrastructure

Critical facilities and infrastructure are vulnerable to dam failures similar to county-owned buildings and property. Facilities and infrastructure located in inundation areas is highly susceptible to impacts from flood waters resulting from dam failures. Infrastructure such roads and rail in the transportation network, and power lines in the utility network, are vulnerable with the potential to be completely washed out.

Vulnerabilities to New and Future Development

New and future development located in Ludden, which is geographically located along the James River inundation area, is at risk from dam failure. According to the Emergency Action Plan for the Jamestown Dam, the city of Oakes is located just outside of the inundation area for a dam failure to the east. Vulnerabilities for new and future development for the city of Oakes has the potential to be reduced or eliminated if prohibited on the western side of the city and focused to the north, south or east. Dickey County does not have any known laws to prohibit or mitigate new development in dam inundation areas in addition to ordinances prohibiting development in areas located in designated floodplains. Although flood waters resulting from dam failures tend to flow along the floodplain, they can often extend beyond the floodplain due to the size and volume involved. Development located outside of the floodplain can still be at risk to a dam failure.

Data Limitations and Other Key Documents

Another source of data and statistics from dam failures and incidents was the Stanford University National Performance of Dams Program (NPDP). The NPDP, however, has been replaced by the Significant Incident Reporting Database (SIR), which is located within the Department of Homeland Security. The limitation in data from SIR is that search and retrieval methods for extracting data and incident details are not available. Information provided in the State of North Dakota MHMP 2013 stated that according to NPDP, there were 22 dam incidents in North Dakota between 1970 and April 2013, of which 11 were classified as dam failures and the remainder were classified as dam incidents. It is not known if any of the reported dam failures impacted Dickey County.

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

- North Dakota Dam Design Handbook
- North Dakota Emergency Operations Plan, Dam Failure Annex
- Jamestown Dam Emergency Action Plan
- Pheasant Lake Dam Emergency Action Plan

An Emergency Action Plan (EAP) specifies actions dam owners should take to moderate or alleviate the problems at the dam. It contains procedures and information such as failure inundation maps to assist emergency management officials with early-warning notification and evacuation plans. As stated in the 2014 NDMHMP, according to the North Dakota Century Code, dams with a storage capacity greater than 1,000 acre-feet are required to have an EAP. An EAP is in place for the Pheasant Lake Dam/Elk River Dam located seven miles west of the city of Ellendale. There is also an EAP for the Jamestown Dam located in Jamestown to the north, which if a dam failure were to occur, would impact Dickey County. The Dickey County's Emergency Operations Plan does not have a dam failure annex.

Impact		• Loss of thousands of housing units in Jamestown • Mass casualty due to small warning time • Loss of recreational activities and summertime population • Destruction of potable water infrastructure • Loss of crops and cropland • Loss of bridges and roads in and around inundation areas • Homes and farmsteads would be lost • Possibly temporary homeless population due to lack of facilities to shelter large numbers of people • Statewide interruption of transportation mobility due to impact to Interstate 94 • Loss of wildlife habitat
Frequency		• Never been a dam failure • Spilled over outlet works one time, which was wind driven in 2009 • Spillway never was used before 2009
Likelihood		• Decreases likelihood: The maintenance and security at Jamestown and Pipestem Dams and all other dams are good, and the likelihood of a failure is low • Possible" terrorist" action could target the dams • Historically there is little chance of the event
Vulnerability		• More vulnerable: Lack auxiliary spillway • More vulnerable: BNSF and Interstate 94 – disruption in state and regional transportation mobility • More vulnerable: Bridges structures down the James are all vulnerable • More vulnerable: Outlet works are more vulnerable and if targeted there would be an additional 3,000 c.f.s. • Less vulnerable: non-electrical generator • Less vulnerable: Embankment/earthen dams are hard to damage and able to withstand terrorist attack better than cement structures • Less vulnerable: USACE handles all flood control releases • Less vulnerable: Constructed permanent dikes and raised roads to accommodate increases releases in 2009 and 2011
Capability		• Admin and Technical – Bureau of Reclamation – Bismarck and others from Billings and Denver, USACE • Education and outreach – Exercise of emergency action plan with police, fire, red cross, downstream emergency managers, county emergency manager, fish and wildlife, work close with USACE and coordinate EAP and exercises and events, statewide agencies, NDDES • Financial – Department of Interior / Reclamation money, Department of Interior funding – last areas of funding that would dry up – would need • All agencies that participate on the local level provide their own funding • Planning and Regulatory – EAP, Safety of Dams Program, operation maintenance, Standing Operating Procedure (SOP) – EAP is a part of this

6. Mitigation Strategy

Mitigation Purpose, Goals, and Projects

This update of the Dickey County Multi-Jurisdictional Multi-Hazard Plan includes a mitigation strategy consisting of five goals and specific mitigation projects for each incorporation jurisdiction based on the risk assessment developed at Planning Committee and jurisdictional meetings. The Dickey County Multi-Jurisdictional Multi-Hazard Mitigation Plan will be leveraged to inform planning mechanisms for the county and for the cities of Ellendale, Forbes, Fullerton, Ludden, Monango, and Oakes. The cities of Forbes, Fullerton, Monango and Ludden do not have their own planning mechanisms but participate and support development of county-level plans. The planning committee conducted a county-wide risk assessment for all of the jurisdictions and the county plan's data will be used as they review county and city ordinances.

A total of 18 projects were identified. All hazards and 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 against. The problem statement for Dickey County, which assisted in formulating specific mitigation actions to reduce the impacts of hazards, is shown before the mitigation actions.

Goal 1: Improve public awareness, education and planning of hazard and action to protect themselves
Goal 2: Reduce impacts of floods on people and property
Goal 3. Reduce impacts of fires and drought
Goal 4. Implement cost effective measures to reduce impacts of manmade and natural disasters
Goal 5. Provide safe drinking water, places and early warnings for public to take protective action during hazard events

Mitigation Project Development

The Planning Committee identified the following characteristics of each mitigation project and includes each project profile:

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

Scoring and Prioritization

The Plan Update 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 low, medium or high scoring. A score of low indicated a project is ineffective, not feasible and/or too costly, and a high indicated the project was highly effective, feasible and/or a higher benefit compared to cost. A score of medium was neutral.

Each mitigation project included in the plan is valuable as it addresses needs specific to Dickey 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 Plan Update Committee prioritized each mitigation project on a high, medium and low designation based on scoring of the documentation, past experiences and professional judgment, 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

	Project Number by Prioritization	
Jurisdiction	Medium	High
Dickey County – All Jurisdictions	1, 2, 3, 4, 5, 6, 7, 14, 15,	8, 12, 17, 18
Dickey County	11	9, 10
Oakes	11, 13	9, 10
Ludden	11, 13	9
Ellendale	16	

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
Businesses	Dickey County Businesses
Bureau of Reclamation	Bureau of Reclamation
City Councils	Jurisdictional City Councils
County Commissioners	Dickey County Commissioners
County Public Works	Dickey County Public Works
County Road Dept.	Dickey County Road Department
Dept. of Commerce	N.D. Department of Commerce
Emergency Manager	Dickey County Emergency Manager
Extension Service	NDSU/Dickey County Extension Service
FEMA	Federal Emergency Management Agency
Fire Departments	Jurisdictional Fire Departments
First Responders	Jurisdictional First Responders
FSA	USDA Farm Service Agency
Health Director	Dickey County District Health Unit
MCWRB	Dickey County Water Resource Board
Media	Add Radio and TV Stations
Medical Service Providers	Add Medical Service Providers
NDAC	N.D. Association of Counties
NDDES	N.D. Department of Emergency Services
NDDH	N.D. Department of Health
NDDOT	N.D. Department of Transportation
Game & Fish	N.D. Game & Fish
NDLC	N.D. League of Cities
NDTOA	N.D. Townships Officers Association
NRCS	USDA Natural Resources Conservation Service
NWS	National Weather Service
Police Department	Wishek Police Department
Public Utilities	Dakota Valley Electric; KEM Electric; Montana Dakota Utilities (MDU)

Red Cross	American Red Cross
RD	U.S. Dept. of Agriculture – Rural Development
SCDRC	South Central Dakota Regional Council
Schools	Ellendale Public School, Oakes Public School, Trinity Bible College
Sheriff's Department	Dickey County Sheriff's Department
Social Services	Dickey County Social Services
SWC	N.D. State Water Commission
USACE	United States Army Corps. of Engineers
U.S. Dept. of Interior	United States Department of Interior

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.

Dickey County

Dickey County is impacted by communicable disease, drought, flood, hazardous material release, homeland security incident, severe summer weather, severe winter weather, shortage or outage of critical materials or infrastructure, dam failure, transportation accident, urban fire/structure collapse, wildland fire, and windstorm. The county's distance from major population centers and its sparse population limit and stress the resources to respond to disasters from hazards. Education, public outreach and communicating emergency and disaster messages to the people throughout the county is challenging with the limited local media sources and the limited number of people with the expertise, experience and time to do website and social media development and maintenance. All jurisdictions have limited paid staff to take on additional duties. The energy production in the western portion of the State and the increased agricultural industry has resulted in an increase in hazardous materials being transported through the county by trucks and railroad. The county has planning and regulatory, administrative and technical, financial, and education and outreach capabilities to accomplish mitigation. However, the county relies on outside sources for large-scale mitigation projects. Education and outreach, upgrading of critical facilities and infrastructure, upgrading of emergency sirens, generators to maintain services, improved access for emergency services, and additional storms shelters are a priority in the county.

Mitigation Project 1: Use the county disaster preparedness website to improve household disaster preparedness including safe methods for new construction, disaster resilience.

Description/Benefit	To keep households ready in case of disaster
Hazards Addressed	All
Affected Jurisdictions	All
Project Status	Website developed and maintained. Ongoing / continue
Priority	Medium
Responsible Agency	Emergency Manager
Partners	DES, Red Cross, FEMA, NWS, EM, city & county governments, Health Districts, Social Services
Timeframe for Completion	Ongoing
Cost	Annual $1,500 budget
Funding Source	County, state, federal, city, private

Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Admin.	TOTAL
3	3	1	1	1	1	3	2	15

Mitigation Project 2: Increase awareness of drought tolerant practices in farming.

Description/Benefit	Make public aware of farming, crop programs and practices to make use of green (recycled) water
Hazards Addressed	Drought, Fire
Affected Jurisdictions	Dickey County, Ellendale, Forbes, Fullerton, Ludden, Monango, Oakes
Project Status	Education and awareness programs are done. Ongoing / continue
Priority	Low
Responsible Agency	ND Extension Service
Partners	Fire Dept, County Ext., FSA, Soil Cons., Elevators, City & County Gov., Emergency Mngr., State Water Comm., Garrison Div/Corp of Engineers
Timeframe for Completion	Ongoing
Cost	$15,000 for educational materials and training
Funding Source	Grants (state, federal, utility)

Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Admin.	TOTAL
2	3	1	1	1	2	3	1	14

Mitigation Project 3: Increase awareness of drought tolerant practices in municipalities.

Description/Benefit	Education on public water rationing/restrictions on water usage. Water filtration and cleaning. Restrictions on irrigation to assure water for municipal use
Hazards Addressed	Drought, Fire, Shortage of Critical Materials and/or Infrastructure
Affected Jurisdictions	Dickey County, Ellendale, Forbes, Fullerton, Ludden, Monango, Oakes
Project Status	Education and awareness programs are done. Ongoing / continue
Priority	Medium
Responsible Agency	Extension, Emergency Manager, FSA
Partners	Fires Dept., FSA, Soil Conservation, Elevators, City/County Government, State Water Commission, Garrison Diversion/Corp of Engineers
Timeframe for Completion	Ongoing
Cost	$15,000 for educational materials
Funding Source	Local, Grants (state, federal, utility)

Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Admin.	TOTAL
2	3	1	1	1	2	3	1	14

Mitigation Project 4: Increase Fire Awareness Programs.

Description/Benefit	Make public aware of fire risks. Education and outreach programs. Goal to reach to entire school, not just kindergarten grade
Hazards Addressed	Fire
Affected Jurisdictions	Dickey County, Ellendale, Forbes, Fullerton, Ludden, Monango, Oakes
Project Status	New project from 2004 plan
Priority	Medium
Responsible Agency	Emergency Manager, Fire Department.
Partners	Fire Departments, cities, schools, college, health care, EMS, Social Services, Farm Service Agency, National Weather Services
Timeframe for Completion	Ongoing
Cost	$15,000 per year for educational materials and training
Funding Source	Grants (state, federal, utility)

Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Admin.	TOTAL
3	3	1	2	2	3	2	1	17

Mitigation Project 5: Increase awareness of shortage of critical materials and/or infrastructure

Description/Benefit	Make public aware of risk of shortage of critical materials and/or infrastructure and encourage citizens to be self-sufficient
Hazards Addressed	Shortage or outage of critical materials or infrastructure
Affected Jurisdictions	Dickey County, Ellendale, Forbes, Fullerton, Ludden, Monango, Oakes
Project Status	Education and awareness programs are done. On website. Ongoing / continue
Priority	Low
Responsible Agency	Cities, county, state
Partners	Social Services, Emergency Manager, Fire Departments, Health District, Public Utilities, County/City Government
Timeframe for Completion	Ongoing
Cost	$15,000 for educational materials and training
Funding Source	Grants (state, federal, utilities)

Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Admin.	TOTAL
3	2	2	1	1	3	3	1	16

Mitigation Project 6: Education on public/personal safety - vehicle, railroad and aircraft accidents.

Description/Benefit	Make public aware of hazards and ways to keep themselves and others safe. Allow safety and law enforcement to do their jobs to minimize damage
Hazards Addressed	Transportation Accident
Affected Jurisdictions	Dickey County, Ellendale, Forbes, Fullerton, Ludden, Monango, Oakes
Project Status	Education and awareness programs are done on Website. Ongoing /
Priority	Low
Responsible Agency	Law enforcement, public safety, emergency, fire, ambulance, North Dakota State and Federal DOT
Partners	City, State, Federal, Local government
Timeframe for Completion	Ongoing
Cost	Ongoing – cost of training, giving and receiving – (train the trainer)
Funding Source	Local, state, federal, private

Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Admin.	TOTAL
3	3	1	1	1	2	3	1	15

Mitigation Project 7: Encourage people to have insurance to protect from property losses

Description/Benefit	Crop insurance and residential conservation practices, property insurance
Hazards Addressed	Drought, Flood, Severe Summer Weather
Affected Jurisdictions	Dickey County, Ellendale, Forbes, Fullerton, Ludden, Monango, Oakes
Project Status	Education and awareness programs are done. Ongoing / continue
Priority	Medium
Responsible Agency	FSA
Partners	Extension, Agricultural producers
Timeframe for Completion	Ongoing
Cost	Educational materials and training
Funding Source	Local, state, federal

Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Admin.	TOTAL
1	3	3	3	1	3	1	1	16

Mitigation Project 8: Assure County has FEMA-Approved Mitigation Plan.

Description/Benefit	Continuous assessing of jurisdictional vulnerabilities and update of hazards and impacts
Hazards Addressed	All
Affected Jurisdictions	All
Project Status	Done. Ongoing and continue
Priority	Medium
Responsible Agency	Emergency Manager
Partners	County Commission, City Councils, ND DES
Timeframe for Completion	Ongoing
Cost	$30,000
Funding Source	Local, state, federal

Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Admin.	TOTAL
3	3	3	3	3	3	3	3	24

Mitigation Project 9: Remove existing structures from James River Floodplain.

Description/Benefit	Old bridges, diversions, debris. Silt. Buildings
Hazards Addressed	Flood
Affected Jurisdictions	Oakes, Ludden, Dickey County
Project Status	Drainage plan compiled, awaiting implementation. Ongoing / continue. Floodplain mapping in process
Priority	High
Responsible Agency	Individual jurisdictions
Partners	City, County, Engineering firms
Timeframe for Completion	2 to 5 years
Cost	Project based: $2,000,000 estimated
Funding Source	Local budgets, state, FEMA, homeowners, grants

Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Admin.	TOTAL
3	3	3	2	2	3	2	2	20

Mitigation Project 10: Review of ordinances to assure jurisdictions meet minimum federal and state requirements to comply with NFIP.

Description/Benefit	Program benefits are available to residents and jurisdictions
Hazards Addressed	Flood
Affected Jurisdictions	Dickey County, Oakes, Ludden
Project Status	County New project
Priority	Medium – mapping ongoing. Studying zoning options
Responsible Agency	Emergency Manager, City and County Auditor(s)
Partners	County Commission, City Councils, Regional Council
Timeframe for Completion	Within 4 years
Cost	To be determined
Funding Source	County and city, state, federal, grants

Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Admin.	TOTAL
2	2	2	2	2	2	2	2	16

Mitigation Project 11: Maintain infrastructure improvement plan. Maintain and create Drainage

Description/Benefit	Reduction of damage to roads from annual flooding to assure emergency access and economic activity year-round
Hazards Addressed	Overland flooding
Affected Jurisdictions	All
Project Status	Numerous infrastructure improvements have been made. Ongoing / continue
Priority	Medium
Responsible Agency	City Councils, County Commission, Township Boards
Partners	State Water Commission, Corp of Engineers
Timeframe for Completion	Ongoing
Cost	Project based
Funding Source	County and city, state, federal, grants

Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Admin.	TOTAL
3	3	2	3	3	3	3	1	21

Mitigation Project 12: Improve County Highway 3, N.D. Highway 11 and N.D. Highway 1 over the James River to provide emergency services access during floods.

Description/Benefit	Provide emergency services during floods/improve emergency service access to entire county during a flood event.
Hazards Addressed	River Flooding.
Affected Jurisdictions	Oakes City, Ludden, townships of: Bear Creek, Hudson, Riverdale, Wright, Port Emma, James River Valley, Clement, Lovell
Project Status	New project
Priority	High
Responsible Agency	Cities of Oakes and Ludden and townships
Partners	City, county, townships
Timeframe for Completion	Ongoing
Cost	$10,000,000 redo bridge, roadbed to higher elevation insert culverts
Funding Source	County, state, federal, grants.

Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Admin.	TOTAL
3	1	1	3	3	1	3	1	16

Mitigation Project 13: Educate landowners on the importance of Federal Flood Insurance

Description/Benefit	Encourage landowners to use flood insurance now that Fema Mapping is done
Hazards Addressed	Drought, Flood, Severe Summer Weather, Dam Failure
Affected Jurisdictions	Dickey County, Ellendale, Forbes, Fullerton, Ludden, Monango, Oakes
Project Status	Education and awareness programs are done. Ongoing / continue
Priority	Medium
Responsible Agency	Emergency Management
Partners	FEMA
Timeframe for Completion	Ongoing
Cost	Educational materials and training
Funding Source	Local, state, federal

Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Admin.	TOTAL
1	3	3	3	1	3	1	1	16

Mitigation Project 14: Obtain firefighting equipment

Description/Benefit	Have ladder truck/snorkel truck that will allow for fighting fires and rescue of people from elevators, grain bins, and school. Primary structure truck and storage of this vehicle
Hazards Addressed	Fire, Transportation Accident, Hazardous Material Incident, Severe Winter Weather, Severe Summer Weather, Homeland Security Incident
Affected Jurisdictions	Dickey County, Ellendale, Forbes, Fullerton, Ludden, Oakes
Project Status	Ongoing
Priority	High
Responsible Agency	Emergency Manager, Fire Department.
Partners	Elevators, Cities, County, surrounding fire departments
Timeframe for Completion	Ongoing
Cost	$200,000 – used. $100,000 minimum added to existing fire stations.
Funding Source	Grants (state, federal, utility)

Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Admin.	TOTAL
3	3	2	1	1	1	1	1	13

Mitigation Project 15: Bury power lines.

Description/Benefit	Maintain power for critical services
Hazards Addressed	Severe Winter Weather, Severe Summer Weather, Windstorm
Affected Jurisdictions	All
Project Status	Ongoing / continue
Priority	Medium
Responsible Agency	Power Companies: Otter Tail, Dakota Valley Electric, MDU.
Partners	Cities, county, state
Timeframe for Completion	Ongoing
Cost	Analyzing for identifying power lines needing to be buried Single phase - $30,000 per mile; 3-phase $80,000 per mile
Funding Source	Federal and state grants and utility grant program

Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Admin.	TOTAL
3	3	3	1	1	3	2	1	17

Mitigation Project 16: Assure sanitation system/storm sewer infrastructure is adequate.

Description/Benefit	To reduce storm water runoff and eliminate overland flooding and sewer backup into homes and businesses
Hazards Addressed	Flood (Overland), Severe Summer Weather, Severe Winter Weather
Affected Jurisdictions	All
Project Status	Ongoing / continue
Priority	Medium
Responsible Agency	City, Water / Sewer Treatment facilities
Partners	Cities, county, state
Timeframe for Completion	Ongoing
Cost	To be determined
Funding Source	Local budgets, county, state, federal funding, and grants

Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Admin.	TOTAL

3	3	3	3	3	3	3	3	24

Mitigation Project 17: Provide adequate storm shelters per capita in each jurisdiction.

Description/Benefit	Assure that there are enough designated storm shelters per capita in each jurisdiction
Hazards Addressed	Hazardous Material Incident, Severe Winter Weather, Severe Summer Weather, Homeland Security Incident, Dam Failure, Flood, Firestorm, and Windstorm
Affected Jurisdictions	All
Project Status	Ongoing
Priority	High
Responsible Agency	Emergency Manager, County, City, Fire Department
Partners	Emergency Manager, Cities, County, State, and FEMA
Timeframe for Completion	Ongoing
Cost	To be determined
Funding Source	Grants (state, federal, utility).

Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Admin.	TOTAL
3	3	3	2	2	3	2	2	20

Mitigation Project 18: Provide Public Generated Facilities.

Description/Benefit	Assure that there are Public Generated Facilities in each jurisdiction
Hazards Addressed	All
Affected Jurisdictions	All
Project Status	Ongoing
Priority	High
Responsible Agency	Emergency Manager, County, City, Power Companies
Partners	Emergency Manager, Cities, County, State, Power Companies
Timeframe for Completion	Ongoing
Cost	To be determined
Funding Source	County and city, state, federal, grants

Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Admin.	TOTAL
3	3	3	3	2	3	2	2	21

Dickey County Mitigation Actions Compared to the Hazards Addressed

The following table identifies each of the mitigation strategies by the type of action it is, and the hazard it may mitigate. Many projects reduce loss from more than one hazard.

Table 6.3 shows each mitigation project and the hazard or hazards it addresses. While some projects are specific to one or two hazards, others address all the hazards. Strategies aimed at reducing the effects of hazards on new and existing buildings and infrastructure are marked with an asterisk (*) next to the project number on the far-left column in Table 6.3.

Table 6.3 – Mitigation Project Number and Hazard Addressed by Jurisdiction

Incorporated Jurisdiction and Mitigation Project Number	Communicable Disease	Dam Failure	Drought	Flood	Hazardous Material Release	Homeland Security Incident	Severe Summer Weather	Severe Winter Weather	Shortage of Critical Materials or Infrastructure	Transportation Accident	Urban Fire/Structure Collapse	Wildland Fire	Windstorm
Dickey County – All – Project 1	X	X	X	X	X	X	X	X	X	X	X	X	x
Dickey County – All – Project 2			X								X	X	
Dickey County – All – Project 3			X						X		X	X	
Dickey County – All – Project 4											X	X	
Dickey County – All – Project 5									X				
Dickey County – All – Project 6										X			
Dickey County – All – Project 7		X	X	X			X						
Dickey County – All – Project 8	X	X	X	X	X	X	X	X	X	X	X	X	X
Dickey County, Oakes, Ludden – Project 9		X		X									
Dickey County, Oakes – Project 10		X		X									
Dickey County, Oakes, Ludden – Project 11		X		X									
Dickey County – All – Project 12		X		X									
Dickey County – All – Project 13		X	X	X			X						
Dickey County, Ellendale, Forbes, Fullerton, Ludden, Oakes – Project 14					X	X	X	X		X	X	X	
Dickey County – All – Project 15							X	X					X
Dickey County – Ellendale – Project 16		X		X			X	X					
Dickey County – All – Project 17		X		X	X	X	X	X				X	X
Dickey County – All – Project 18	X	X	X	X	X	X	X	X	X	X	X	X	X

7. 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. The following definitions are provided for each capability category based on information from the Federal Emergency Management Agency. Table 7.1 highlights administrative and technical capabilities, Table 7.2 highlights education and outreach capabilities, Table 7.3 highlights financial capabilities and Table 7.4 shows additional planning and regulatory capabilities of each incorporated jurisdiction, including Dickey County. Table 7.5 lists state and federal sources for mitigation.

Boxes checked with an "X" indicate the jurisdiction possesses the capability; while boxes left blank indicate the jurisdiction is lacking the capability. Narratives following each table detail the capabilities of Dickey County. Information on the capabilities of each jurisdiction was gathered at jurisdictional meetings, committee meetings and interviews during the planning process.

Narratives detailing the capabilities of incorporated jurisdictions can be found in Chapter 8, Jurisdictions.

Each identified resource in the four 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 include: 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 shows the administrative and technical capabilities of Dickey County and incorporated jurisdictions. The fire ISO rating for each jurisdiction is listed in the table and discussed in the following narratives. Boxes marked with an "X" indicates the jurisdiction has or has access to the administrative or technical capability for mitigation. An asterisk (*) indicates a capability in progress.

Table 7.1 – Administrative and Technical Capabilities

Administrative and Technical Capability	Dickey Co.	Ellendale	Forbes	Fullerton	Ludden	Monango	Oakes
9-1-1 Coordinator	X	*	*	*	*	*	*
Chief Building Official	N/A	X	N/A	N/A	N/A	N/A	N/A
County/City Council or Commission	X	X	X	X	X	X	X
Civil Engineer	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Emergency Management	X	*	*	*	*	*	*
Emergency Services GIS/GPS Capable	X	N/A	N/A	N/A	N/A	N/A	N/A
Emergency Siren (manually activated)	X	X	X	N/A	X	X	X
Fire Index Sign	N/A	N/A	X	N/A	X	N/A	N/A
Firewise Certification	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	X	X	N/A	N/A	N/A	N/A	X
Grant Writing Staff	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Infrastructure Maintenance Programs	X	X	X	X	X	X	X
LEPC	X	*	*	*	*	*	*
Mutual Aid Agreements	X	X	X	X	X	X	X
Other Staff for Administration	X	X	X	X	X	X	X
Planning and Zoning Administrator	X	X	N/A	N/A	N/A	N/A	X
Planning and Zoning Board	X	X	N/A	N/A	N/A	N/A	X
Planning Services	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Public Works/Road Department	X	*	*	*	*	*	*
Reporting of Data to Emergency Manager	X	X	X	X	X	X	X
Sheriff	X	*	*	*	*	*	*

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

Dickey County: Dickey County has an active county commission. The county does not have a chief building official or inspector. The county has a Local Emergency Planning Committee (LEPC). The county contracts with an engineering firm for civil engineering services. Charlie Russell is the emergency manager. The county has a 9-11 coordinator. The county can contract with the South Central Dakota Regional Council (SCDRC) or a private firm for planning services. The Highway Department is in charge of various preparatory stages of construction including the acquisition of right-of-way, survey and design requirements, and the letting of contracts in addition to the actual supervision of construction. The Department also maintains all bridges on Dickey County roads and township roads. The Dickey County Water Resource Board is responsible for river channel maintenance and clearing of debris to eliminate snagging. The weed board conducts annual spraying for elimination of noxious weeds. Dickey County has grant writing capabilities. For administration capabilities, the county has the county auditor, deputy auditor, auditor's office administrative assistant, county sheriff, social services, NDSU/Dickey County Extension Service, and the County Highway Department Superintendent. The county can also contract with SCDRC for grant writing and administration. The county is responsible for implementation and

maintenance of signage for navigation for emergency services and first responders on all county roads and most township roads. The county does not own fire index signs but does follow the ND Fire Index rating for burn bans. The Sheriff's Office is in Ashley, which is the location of all county offices, which includes 9-1-1 dispatches and emergency management. Dickey County has no permanent backup generator capable of providing backup power to the central operations of the Sheriff's Office. The Dickey County Sheriff's Department provides law enforcement services. Fire protection is provided by local fire departments. The county does not have Firewise Certification. The county is not StormReady Certified.

Table 7.2 shows the education and outreach capabilities of Dickey County and incorporated jurisdictions. Boxes marked with an "X" indicates the jurisdiction has or has access to the education and outreach capability for mitigation.

Table 7.2 – Education and Outreach Capabilities

Education and Outreach Mitigation Capability	Dickey Co.	Ellendale	Forbes	Fullerton	Ludden	Monango	Oakes
County/City Events	X	X	X	X	X	X	X
County Emergency Management	X	*	*	*	*	*	*
Entities Providing Public Education	X	X	N/A	N/A	N/A	N/A	N/A
Non-Profit Organizations	X	X	N/A	N/A	N/A	N/A	X
Public-Private Partnerships	X	X	N/A	N/A	N/A	N/A	X
School Programs	X	X	N/A	N/A	N/A	N/A	X
Website with Hazard Education/School	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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

Dickey County: Dickey County does not maintain a website with hazard education information. The Dickey District Health Unit, Farm Services Agency (FSA), the Girl Scouts, the Boy Scouts, 4-H, Natural Resources Conservation Service (NRCS), NDSU/Dickey County Extension Service, and Dickey County Emergency Management provide public education on hazards. Brochures, pamphlets and other materials are available at the Dickey County Sheriff's Office. Emergency services (ambulance, fire,) provide education and outreach through programs at local schools. County events where hazard education can be conducted include: Dickey County Fair. The Local Emergency Planning Committee (LEPC) is a public-private partnership consisting of major employers, local government entities, and volunteer organizations that provide education and outreach on hazards.

Table 7.3 shows the financial capabilities of Dickey County and incorporated jurisdictions. Boxes marked with an "X" indicates the jurisdiction has or has access to the financial capability for mitigation.

Table 7.3 – Financial Capabilities

Financial Mitigation Capability	Dickey Co.	Ellendale	Forbes	Fullerton	Ludden	Monango	Oakes
Building Permits	X	X					X
Comm. Dev. Block Grant (CDBG)	X	X	X	X	X	X	X
General Obligation Bond/Special Tax Bond	X	X					X
Sanitary Sewer Fee	X	X	X	X	X	X	X
Special Assessments for New Development	X	X	X	X	X	X	X

Dickey County: There are no private entities providing financial assistance in Dickey County for hazard mitigation. The county does not meet the Low to Moderate Income (LMI) requirements for the Community Development Block Grants (CBDG), but could qualify for urgent need and removal of architectural barriers

The county does not have storm water utility or sanitary sewer fees. The county does levy special assessments for special needs in each city. The county does not incur debt through general obligation bonds or special tax bonds. The county does not issue building permits. However, individual townships, if zoned, require building permits.

In addition to the financial capabilities of the county and city jurisdictions, the following local, regional, state and federal entities can be used as funding sources for mitigation.

- Federal Emergency Management Agency
- Dickey County Water Resource Board
- N.D. Department of Emergency Services
- Other state programs

Table 7.4 shows the planning and regulatory capabilities of Dickey County and incorporated jurisdictions. Boxes marked with an "X" indicates the jurisdiction has or has access to the planning and regulatory capability. An asterisk (*) indicates a capability in progress.

Table 7.4 – Financial Capabilities

Planning and Regulatory Mitigation Capability	Dickey Co.	Ellendale	Forbes	Fullerton	Ludden	Monango	Oakes
Building Codes	X	X					
Building Permits	X	X					X
Chief Building Official		X					
Comprehensive Plan	X	X					X
Continuity of Operations Plan							
FEMA Flood Map	X	X	X	X	X	X	X
Flood Insurance Study	X	X	X	X	X	X	X
Flood Operations/Management Plan							
Flood Ordinance	X	X					X
Hazard Mitigation Plan	X	X	X	X	X	X	X
Local Emergency Operations Plan	X	X	X	X	X	X	X
Planning Commission	X	X					X

Dickey County: Dickey County does not have a strategic, drought management or water conservation plan but does have a comprehensive plan. The county road department maintains a schedule of projects. The county has a local emergency operations plan. The county highway department, townships or individual cities are responsible for their own plans. The county does not have an inspector. There are townships in Dickey County that maintain independent zoning authorities. In addition to the aforementioned planning and regulatory capabilities of the county and city jurisdictions, strategic plans for townships can be used for mitigation purposes.

Mitigation Funding Sources

Table 7.5 lists state and federal sources for mitigation. These sources have been identified to fund and administer mitigation projects in addition to the aforementioned local capabilities of the county and city jurisdictions.

Table 7.5 – State and Federal Mitigation Funding Sources

Name	Managing Agencies
AmeriCorps	Corporation for National & Community Service
Community Development Block Grant (CDBG)	US Housing and Urban Development North Dakota Department of Commerce
North Dakota State Grants	North Dakota Department of Commerce, North Dakota Department of Agriculture, North Dakota Tourism
Economic Development Administration (EDA) Grants and Investments	US Economic Development Administration
Emergency Watershed Protection	US Natural Resources Conservation Service
Environmental Quality Incentives Program	US Natural Resources Conservation Service
Flood Mitigation Assistance Program	North Dakota State Water Commission and FEMA
Hazard Mitigation Grant Program (HMGP)	North Dakota Department of Emergency Services and FEMA
Hazardous Fuels Mitigation Program	North Dakota Department of Transportation
Homeland Security Grants	North Dakota Department of Emergency Services, US Department of Justice, US Department of Homeland Security
Individual Assistance (IA)	FEMA, North Dakota Department of Emergency Services
Map Modernization Program	North Dakota State Water Commission and FEMA
National Fire Plan (NFP)	North Dakota Forest Service and US Forest Service
NRCS Conservation Programs	U.S.D.A. Natural Resources Conservation Service
Pre-Disaster Mitigation (PDM) Grants	North Dakota Department of Emergency Services and FEMA
Public Assistance (PA)	North Dakota Department of Emergency Services and FEMA
Repetitive Flood Claims (RFC) Grant	North Dakota State Water Commission and FEMA
Rural Fire Assistance (RFA) Grant	National Interagency Fire Center
SBA Pre-Disaster Mitigation Loan Program	US Small Business Administration (SBA)
Severe Repetitive Loss (SRL) Grant	North Dakota State Water Commission and FEMA
Small Flood Control Projects	US Army Corps of Engineers (USACE)
Streambank & Shoreline Protection	US Army Corps of Engineers (USACE)
Wetland Program Development Grants	US Environmental Protection Agency

8.1 City of Ellendale

Figure 8.1.1 shows an aerial view of the city of Ellendale.

Figure 8.1.1 – City of Ellendale

8.1.1 Profile and Inventory

The following summarizes the location, total population, vulnerable populations, housing units, services, jurisdictional buildings, emergency response services and utilities of the city of Ellendale. Detailed narratives follow each section heading to profile the city. Additional information on the city of Ellendale and Dickey County can be found in Chapter 4, Profile and Inventory.

Location

The city of Ellendale is located in southeastern North Dakota. Ellendale is located 30.4 miles southwest of Oakes, ND in Dickey County.

Population

The population is 946 per the per the U.S. Census Bureau, U.S. Department of Commerce. "ACS Demographic and Housing Estimates." American Community Survey, ACS 5-Year Estimates Data Profiles, Table DP05, 2023.

Housing Units, Household Size and Population Age Distribution

Per the Decennial Census of 2020, there were 455 households. The average household size was 2.47. Per the 2023 American Community Survey, the median age in the city was 36.6 years. 29.2 percent of residents were under the age of 20; 9.4 percent were between the ages of 20 and 24; 18.7 percent were from 25 to 44; 15.7 percent were from 45 to 64; and 26.9 percent were 65 years of age or older. The gender makeup of the city was 48.4 percent male and 51.6 percent female.

Publicly Owned Jurisdictional Buildings

The city of Ellendale has the Dickey County Courthouse, Dickey County Shop, USDA – FSA office, U.S. post office, fire department-district, City Library, City Shop, City Hall, Community Center, County Public Health, municipal airport, golf course, park, school, swimming pool and a municipal police force.

Services Provided

The city of Ellendale has its own partial storm water system, one water tower and one underground tank, and sanitary sewer system. The city has an old sanitary sewer system and lagoon. The sanitary sewer system is served by four lift stations. Ellendale has full county government to include court services, veteran services and subsidized housing officer. Ellendale contracts with Recycle North Dakota for garbage sanitation services. The city maintains an inert landfill. The official newspaper is The Dickey County Leader.

Emergency Response Services

Law enforcement is provided by the municipal police force. The sheriff's office is located in Ellendale, ND. The city has a fire department, medical, ambulance and EMS available.

Utility Providers

Potable water is provided by the city. Electricity is provided by Montana Dakota Utilities. Natural gas is not available in the city of Ellendale. Fuel oil and propane are used as an alternative heating source and is provided by companies chosen by the individual consumer. Cable, internet, and phone services are provided by BEK Communications, TMobil cell, AT&T and Verizon. Individual homes may choose to subscribe to direct broadcast satellite service providers or use an antenna to receive over the air programming.

8.1.2 Risk Assessment and Hazard Scoring Notes

Table 8.1.1 summarizes the risk assessment scoring of the city of Ellendale. The risk assessment and hazard scoring notes from the jurisdictional meeting for each hazard are shown after Table 8.1.2.

Table 8.1.1 – City of Ellendale Jurisdiction Risk Assessment Scoring Summary

Risk Assessment						
Hazard	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Communicable Disease	3	4	4	3	2	**12**
Drought	4	2	2	3	3	**8**
Flood	3	4	4	2	3	**10**
Hazardous Material Release	3	4	4	2	2	**11**
Homeland Security Incident	2	1	1	1	2	**3**
Severe Summer Weather	3	4	4	3	3	**11**
Severe Winter Weather	3	4	4	4	2	**13**
Shortage or Outage of Critical Materials or Infrastructure	3	2	2	2	3	**6**
Transportation Accident	4	4	4	3	3	**12**
Urban Fire/Structure Collapse	2	1	1	3	3	**4**
Wildland Fire	3	2	2	2	2	**7**
Windstorm	3	4	4	3	1	**13**
Dam Failure – no threat	N/A	N/A	N/A	N/A	N/A	N/A

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

City of Ellendale– Hazard Scoring

Communicable Disease - 12

Impact	3	• Covid Pandemic – 2020-2023 - Global supply chain disruptions. - Economic and family disruption from covid precautions. Churches, couldn't visit family in hospitals - Shortage of hospital beds, staff and medical stress until vaccines were put out. - Isolation - Businesses Shut Down - Cost of living increases - Mental Health Issues - Loss of Life - Initial Covid Vaccine Shortage and PPE Shortage - Strain on emergency services as a whole • U.S. declared an H1N1 was a declared pandemic in 2009. • U.S. experienced a vaccine shortage in 2009 • Potential loss of life • Potential loss of economy • Entire City could be impacted by an outbreak • Emergency services can become quickly overwhelmed during an outbreak • Bird Flu – in dairy cattle and people – goats - could impact these things • Bio Security – From game illnesses. • Wild game illnesses can become an issue for local domestic animals • Chronic Wasting – deer could impact
Frequency	4	• Seasonal flu happens every year • West Nile Disease occurs frequently • Crop and localized livestock loss occur every year to a varying degree
Likelihood	4	• Seasonal flu happens every year

		• West Nile has happened in the past
Vulnerability	3	• More vulnerable: 26.9 percent of the population is over 65 • More vulnerable: Some abandoned buildings and homes in town • More vulnerable: No stockpile of medical supplies, vaccines • More vulnerable: Some lots in town are overgrown with vegetation • More vulnerable: Blighted structures occupied by individuals who hoard or collect • More vulnerable: Dependent on vaccines being developed for any new viruses and picking the right strains of flu for the flu vaccine • More vulnerable: First Responders often over stretched by mutual aid requests • Less vulnerable: City mows overgrown lots • Less vulnerable: Internet connections and TV help inform residents • Less vulnerable: Fire Service and First Responders • Less vulnerable: Two clinics • Less vulnerable: City has an app that can be used to get information out to the public.
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish large projects independently

Drought – 8

Impact	4	• Range Land Fire Index Used • Hay shortages during times of drought impact livestock. • Potential severe loss of economy due to reliance on agriculture • Water holes that supply livestock are impacted • Increased frequency and severity of wildland fires
Frequency	2	• Cyclical patterns make droughts possible • Dickey County was very dry during the 1980's • 1988 was an especially dry year, along with 2016
Likelihood	2	• Cyclical patterns make droughts possible • 2016 this pattern was reversed. • High possibility of drought in any year
Vulnerability	3	• Depending on duration, vulnerability changes • More vulnerable: Economy relies heavily on farming • Less vulnerable: City has adequate fire suppression equipment to assist in providing water to dry areas for crops or livestock • Less vulnerable: Burn bans implemented during dry periods
Capability	3	• The city has fire protection, however, is dependent on access to water • City is base headquarters of the county emergency management department • County emergency management has detailed plans to educate public on drought • Active city council • The elevator in town has some manpower and equipment • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance

Flood - 10

Impact	3	• Areas surrounding the town suffer from damaged roads, bridges and culverts creating emergency access problems as well as the occasional downed power lines • Washed out culverts • Cemeteries under water • Water seepage into basements • Blocked roads limit access for emergency services and daily routines. • Increased mosquito population and transmitting diseases from standing water. • Property and crop damage or loss • Potential loss of life • Flooded roads block bus routes transporting kids to school • Wastewater outage
Frequency	4	• Depends largely on weather patterns but overland flooding occurs annually • In 2012, flash flooding caused the sanitary sewer system to blow resulting in 30 percent of homes experiencing sewer backups • In 2018 Flash Flooding caused sewage backup damaged 24 houses, two churches and one apartment complex.
Likelihood	4	• Heavy spring melting and heavy rains cause flooding annually
Vulnerability	2	• More vulnerable: Ambulances, school buses, fire protection have to detour • More vulnerable: Individuals driving on flooded highways • More vulnerable: 26.9 percent of population is over 65 • More vulnerable: Lift Station and lagoon could be inundated • More vulnerable: Flat terrane and lakes are filled and result in flooding due to the lack of rivers • More vulnerable: Overland flooding can damage roads and impede access • More vulnerable: Basements in town flood frequently • More vulnerable: Overland flooding produces puddles of water and full ditches that breed mosquitoes • Less vulnerable: Tree trimming and drainage ditch maintenance programs are in place to ensure proper drainage of water to mitigate overland flooding. • Less vulnerable: The City participates in the NFIP • Less vulnerable: Replaced and repaired sewer system to prevent this in the future.
Capability	3	• Flood Plan In Development - NFIP • Active city council and well-equipped City Public works crew • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • Siren can be radio actuated by law enforcement or emergency management

Hazardous Material Release – 11

Impact	3	• Potential loss of life • Crop and livestock loss • Economy loss • Fire potential • Blocked roads leading to loss of mobility • Small size of city could lead to large percentage of population affected
Frequency	4	• Minor spills happen yearly

		• No major occurrences or incidences • Major highway transporting chemicals through city.
Likelihood	4	• Minor spills happen yearly
Vulnerability	2	• More vulnerable: Propane and diesel fuel are used for heating alternative • More vulnerable: Located on US 281 and ND 11 junction • More vulnerable: Trucks and farmers transporting larger tanks more frequently on highways through the city limits • More vulnerable: Elevator complex, industrial plant, 2 fertilizer operations and seed vendors, bulk propane plant with storage, bulk fuels plant with storage • More vulnerable: Pipeline runs to the west of the city and could release fuel • Less vulnerable: There is public lodging and two public fueling facilities. • More vulnerable: No stockpile of medical supplies • More vulnerable: Limited hazmat capabilities • More vulnerable: Lithium Ion Batteries in the City
Capability	2	• Active city council • City has zoning in place restricting where hazardous material can be stored • City has a radio-operated storm siren operated by Emergency Management • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Homeland Security Incident - 3

Impact	2	• Potential injury or loss of life • Loss of economy • Loss of livestock • Potential for large percentage of population loss • Emergency services could be overwhelmed
Frequency	1	• Always the possibility of an event occurring • Trinity Bible College was the scene of protest by a liberal political group in the early 2000s, but the demonstration was said to be peaceful
Likelihood	1	• Always the possibility of an event occurring
Vulnerability	1	• More vulnerable: Limited mental health services • More vulnerable: Located on US 281 and ND 11 junction • More vulnerable: 26.9 percent of the population is over 65 • More vulnerable: Small town, everyone is impacted, fearful and anxious • More vulnerable: Influx of population from other parts of the U.S • More vulnerable: Trinity Bible College within city limits • More vulnerable: County Courthouse within city limits • Less vulnerable: City has assisted living and rest home with generators • More vulnerable: No Hospital • Less vulnerable: Two clinics • Less vulnerable: Sparse population and rural nature of the city
Capability	2	• Headquarters of Dickey County Emergency Services located in Ellendale • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Severe Summer Weather - 11

Impact	3	• Hail damage to homes/community buildings (broken windows, siding and shingles) • Power outages • Economy loss • Lightning strikes cause fires • Potential injury or loss of life • High winds damage property – Tornados and Straight-Line Winds • Heavy rain produces flash flooding • Fire potential if lightning occurs during drought
Frequency	4	• Multiple storms are experienced annually causing property damage • Extreme summer weather seasons occur every two to three years
Likelihood	4	• Multiple storms are experienced annually causing property damage. • More intense weather in recent years • More rapid, heavy rain events occurring each year
Vulnerability	3	• More vulnerable: 26.9 percent of the population is over 65 • More vulnerable: Fuel and propane tanks within city limits adjacent to infrastructure and critical facilities that are vulnerable to severe summer weather incidents • Less vulnerable: Sparse population and rural nature of the city • Less vulnerable: Roads in and out of town are well maintained
Capability	3	• Limited tax base • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Siren is radio actuated by law enforcement or by Emergency Management

Severe Winter Weather - 13

Impact	3	• Ice storms, heavy and blowing snow cause travel issues, power outages, and property damage • Potential isolation of community • Severe low temperatures increase utility costs and affect alternative fuel • Potential injury or loss of life • Economy loss • Increased cost for snow removal • Highways and city streets become icy and blocked • Heavy snow results in potential flooding in the spring • City streets build up with compacted snow causing damage to streets • Increased potential for hazardous material release • Temporary outage of emergency services
Frequency	4	• Occurs annually • Years with multiple winter events are normal • 2023 – Power outages out of city and minimal power outage in Ellendale
Likelihood	4	• Will happen in the future due to the climate, occurs annually
Vulnerability	4	• More vulnerable: 26.9 percent of the population is over 65 • More vulnerable: Trinity College does not have generators, and those students are dependent on the City during hazards • Less vulnerable: K-12 School has generators

		• Less vulnerable: The rest home has generators • Less vulnerable: City maintains a capital improvements plan • Less vulnerable: Small community where neighbors help neighbors • Less vulnerable: City has multiple power sources
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • There are a few certified, trained and equipped citizens in the community • Siren is radio actuated by law enforcement or by Emergency Management • The elevator in town has some manpower, heavy equipment and work with area farmers to be pro-active in protecting the city

Shortage or Outage of Critical Materials or Infrastructure - 6

Impact	3	• Long periods of time without power or water could lead to loss of life, due to the winter climate and high population over 65 • Reduced mobility from blocked roads • Limited drinking water and functionality of sanitary sewer • City could be left without power for heating and cooling • Loss of power can limit accessibility to fuel sources • Loss of food sources as refrigeration units are without power • Loss of economy • Loss of internet affects individuals and businesses • Delayed emergency services • Mail outages for a day or longer in winter of 2016-2017 • Loss of agriculture – no power no water
Frequency	2	• In 2016, areas in and surrounding Ellendale experienced power outages from 3 hours to 2 to 3 days • Power outages are experienced annually • Have had shortages of fertilizers, diesel fuel, and gas/propane recently • 2023 outages
Likelihood	2	• No improvements to power infrastructure planned • Power poles and wires of the power grid are outdated and suspended overhead • Power outages are experienced annually
Vulnerability	2	• More vulnerable: 26.9 percent of the population is elderly over 65 • More vulnerable: 18 electricity dependent vulnerable populations that need electricity to run medical devices to live. Per the publichealthemergency.gov Empower map. • More vulnerable: No hospital in city • More vulnerable: Assisted living center and rest home both located in City • More vulnerable: Access to rural areas limited during a storm • Less vulnerable: The K-12 school, Vocational Tech and the rest home are generated • Less vulnerable: Rest Homes and school are generated • Less vulnerable: Some residents grow local food supply • Less vulnerable: Water is provided by the city • Less vulnerable: Some residents have their own generator • Less vulnerable: Medical Clinic
Capability	3	• Active city council

		• Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • Siren is radio actuated by law enforcement or by Emergency Management

Transportation Accident - 12

Impact	4	• Potential injury or loss of life • Economy loss • Property loss • Potential hazardous materials release • Potential fire • Potential Blocked Roads
Frequency	4	• Accidents happen in the area each year
Likelihood	4	• Accidents happen in the area each year
Vulnerability	3	• More vulnerable: 26.9 percent of the population is over 65 • More vulnerable: Located on US 281 • More vulnerable: Bulk fuels transported through City • More vulnerable: Increased amount of time students spend on buses • More vulnerable: Trucks and farmers transporting larger tanks more frequently • More vulnerable: Anhydrous tanks driven through and parked in the city • More vulnerable: High risk of hazardous chemical release or transportation accident as it is located close to highway • More vulnerable: No hospital, all patients must be transported to Oakes or Aberdeen Hospitals • More vulnerable: City has an airport • Less vulnerable: City has clinic • Less vulnerable: Freight rail lines have been removed and no longer run through city limits
Capability	3	• Siren is radio actuated by law enforcement or by Emergency Management • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Urban Fire/Structure Collapse - 4

Impact	2	• Urban fire events have resulted in total losses of homes and businesses • Potential loss of life • Property loss • Building loss • Economy loss • Loss of community assets • Loss of critical facilities and infrastructure • Potential temporary homeless population due to lack of alternative housing
Frequency	1	• House fires have occurred in the past five years • Bans are issued frequently according to the ND Fire Index
Likelihood	1	• High likelihood of house fires • Bans are issued frequently according to the ND Fire Index. • High wind and drought conditions occur annually.
Vulnerability	3	• More vulnerable: Older homes with older wiring

		• More vulnerable: Seasonal homes unoccupied • More vulnerable: Spacing of houses could lead to loss of multiple structures • More vulnerable: City has a well trained and equipped fire department often over stretched by mutual aid requests • More vulnerable: Lack of alternative housing for displaced residents • More vulnerable: Abandoned buildings and single-family homes • More vulnerable: Fire department limited in resources if multiple fire instances occur • Less vulnerable: Fully functioning fire department with equipment, water sources and staff • Less vulnerable: City maintains ordinances and has adopted ND State Building Codes • Less vulnerable: Less CRP near the city • Less vulnerable: City maintains vegetation on city lots • Less vulnerable: Have been able to contain fires to one building • More vulnerable: Lack of water availability if prolonged fire. • More vulnerable: Need for air quality monitoring and public warning capabilities.
Capability	3	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Mutual Aid with surrounding communities • Seed plant in town has some manpower, heavy equipment and work with area farmers to be pro-active in protecting the city • Siren is radio actuated by law enforcement or by Emergency Management

Wildland Fire - 7

Impact	3	• Potential Economy loss • Potential crop, livestock, equipment and graze land loss • Potential injury or loss of life • Potential hazardous material release • Health hazards due to poor air quality • Loss of wildlife habitat • Farm equipment, lightning strikes, power line sparks, and controlled burns cause fires
Frequency	2	• Wildland fires occur annually due to climate and economy
Likelihood	2	• With continued controlled burns by farmers there is always a possibility for the hazard in the future • Happens yearly to some degree
Vulnerability	2	• More vulnerable: Farmland and open areas • More vulnerable: Mutual aid fire department response times lengthen • More vulnerable: Windy conditions each year • More vulnerable: Lack reliable source of water for fire suppression • More vulnerable: Lack of fire break around the city • More vulnerable: No rural water for fire suppression • More vulnerable: Lack reliable source of water for fire suppression • Less vulnerable: City maintains overgrown lots

		• Less vulnerable: City has a fire district with a fire hall, adequate manpower, equipment and resources of water for fire suppression • Less vulnerable: Participates in Mutual Aid
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Windstorm -13

Impact	3	• Downed trees • Buildings loss • Downed power poles and lines • Economy loss • Damage to homes and community buildings such as broken windows, loss of shingles • Potential loss of life • Potential injury • Potential structure fires • Contributes to spread of wildland fire • Straight line winds occur in summer months
Frequency	4	• Hazard occurs multiple times each year and is a secondary result from severe summer weather or severe winter weather • Strong winds are common in the city in all weather conditions • Blizzard conditions occur frequently in winter months due to climate • Power lines are damaged causing outages annually
Likelihood	4	• Strong winds are common in the city
Vulnerability	3	• More vulnerable – loss of trees leads to more ground blizzard conditions • More vulnerable: Power lines providing power to the city are not buried and outdated • More vulnerable: EMS is over stretched by mutual aid • More vulnerable: No storm shelters in City • More vulnerable: Age of structures and housing stock • Less vulnerable: City has an inert landfill for debris and branches
Capability	1	• Capabilities to respond, but nothing can be done to prepare. • LEPC – Local Emergency Planning Committee • Mutual aid agreements for emergency services with surrounding communities • Active county commission • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Siren is radio actuated by law enforcement or Emergency Management

8.1.3 Mitigation Strategy

This update of the Dickey County Multi-Jurisdictional Multi-Hazard Plan includes a mitigation strategy consisting of seven goals in Chapter 6.

Problem Statement

The city of Ellendale identified its high senior population and isolated populations in the surrounding countryside as necessary to mitigate impacts from communicable disease, homeland security incidents, severe summer weather, severe winter weather, windstorm, flood, and shortage or outage of critical materials or infrastructure. The emergency siren can be activated by Law enforcement or Emergency Management for storm warning use. Due to the location of the city, isolation from severe weather and shortage or outage of critical materials or infrastructure such as emergency services, power, and roads is frequent. The number of abandoned buildings, single-family homes, and aging structures increase the impact of and vulnerability to communicable disease, urban fire/structure collapse, wildland fire and windstorm. The increase in economic activity in the area and the main highway running through town, farmers hauling anhydrous and other materials to and from farm sites through the City, and increased storage of chemicals on farm sites used for agriculture production increases the impact of and vulnerability to hazardous material release, homeland security incident, and transportation accident.

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.

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.

Each identified resource in the four categories can be used to implement mitigation strategies and access funding for projects. Information on the capabilities of the city was gathered at its jurisdictional meeting, committee meetings, and interviews during the planning process.

Administrative and Technical

The following narrative details the administrative and technical capabilities of the city of Ellendale.

The city of Ellendale has an active city council. The city does not have a chief building official or inspector. The city has a LEPC through the county. The city does not have a civil engineer on staff but does have the option to contract engineering services when needed. Emergency management is available through the county. The city can contract with SCDRC or a private firm for planning, grant writing and grant administration services. The city conducts infrastructure maintenance on an as-needed basis. The city council staff and fire department volunteers have administration capabilities for mitigation. The Dickey County Sheriff and the N.D. State Highway Patrol assist in law enforcement along with the City municipal police. The City Hall reports hazard data to the emergency manager.

Education and Outreach

The following narrative details the education and outreach capabilities of the city of Ellendale.

The city does not have non-profit organizations providing education on hazards but has an active Emergency Manager in the County. The city does maintain an active web site. The city does not have any entities providing public education on hazards but has access to the NDSU/Dickey County Extension Service, Dickey District Health Unit, and Dickey County Emergency Management for public education on hazards. The city does not conduct events on hazard education. Dickey County Emergency Management conducts education and outreach on hazards in the city.

Financial

The following narrative details the financial capabilities of the city of Ellendale.

The city does set aside revenue for capital improvements. The city does not have storm water utility fees. The city does levy special assessments for new development. The city does not have any private entities providing funding for mitigation. The rural electric cooperative for the surrounding area, water resource board, and surrounding township and school district are other sources of funding for mitigation. The City does meet the LMI requirements to apply for CDBG funding.

Planning and Regulatory

The following narrative details the planning and regulatory capabilities of the city of Ellendale.

The city has a capital improvement, comprehensive, drought management, land use, storm water, strategic, or water conservation plan. The city has a planning commission. The city is included in the county wide flood damage reduction study, flood insurance study, or impact fees. The city has adopted ND state building codes as well as its own city ordinances and required building permits - $0 to $40 depending on the dollar amount. The city is FEMA flood mapped. Since Dickey County is in the process of being mapped, (to identify the appropriate areas to ban development), this will require the development of appropriate zoning, permitting and enforcement codes meeting the needs of both the cities and county.

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.

8.2 City of Forbes

Figure 8.2.1 shows an aerial view of the city of Forbes.

Figure 8.2.1 – City of Forbes

Profile and Inventory

The following summarizes the location, total population, vulnerable populations, housing units, services, jurisdictional buildings, emergency response services and utilities of the city of Forbes. Detailed narratives follow each section heading to profile the city. Additional information on the city of Forbes and Dickey County can be found in Chapter 4, Profile and Inventory.

Location

The city of Forbes is located at the intersections of 102nd St SE and 77th Ave SE, approximately 13 miles east-southeast of Ellendale and about thirty miles southeast of Ashley, right on the South Dakota border in Dickey County.

Population

The population is 23 per the per the U.S. Census Bureau, U.S. Department of Commerce. "ACS Demographic and Housing Estimates." American Community Survey, ACS 5-Year Estimates Data Profiles, Table DP05, 2023.

Vulnerable Populations

Housing Units and Population Age Distribution

Per the 2023 American Community Survey, there were 23 people and 29 housing units in the city. The median age in the city was 44.3 years. 17.3 percent of residents were under the age of 20; 0 percent were between the ages of 20 and 24; 39.1 percent were between the ages of 25 to 44; 43.4 percent were between ages 45 to 64; and 0 percent were 65 years of age or older. The gender makeup of the city was 65.2 percent male and 34.8 percent female.

Publicly Owned Jurisdictional Buildings

Publicly owned buildings in the city of Forbes include a post office and city hall. The city does have an old church used for community events There is no official Red Cross storm shelter or armory.

Services Provided

The city of Forbes obtains potable water from SE Water Cooperative. The city has a sanitary sewer system and lagoon. The sanitary sewer system is served by two lift stations. The city does not have a storm water system. Gahner Sanitation - Forbes provides garbage sanitation services. The city maintains an inert landfill. The official newspaper is the Dickey County Leader.

Emergency Response Services

Law enforcement is provided by the Dickey County Sheriff. The sheriff's office is located in Ellendale, ND. The Forbes Fire Department provides protection to the city and surrounding rural areas. The fire department is located in the city hall. Ambulance comes from Ellendale.

Utility Providers

Potable water is provided by the city SE Water Cooperative. Electricity is provided by Montana Dakota Utilities and Dakota Valley Electric. Natural gas is not available in the city of Forbes. Fuel oil and propane are used as an alternative heating source and is provided by companies chosen by the individual consumer. Cable, internet, and phone services are provided by DRN, TMobil cell, AT&T and Verizon. Individual homes may choose to subscribe to direct broadcast satellite service providers or use an antenna to receive over the air programming.

8.2.2 Risk Assessment and Hazard Scoring Notes

Table 8.2.2 summarizes the risk assessment scoring of the city of Forbes. The risk assessment and hazard scoring notes from the jurisdictional meeting for each hazard are shown after Table 8.2.2.

Table 8.2.2 – City of Forbes Jurisdiction Risk Assessment Scoring Summary

Risk Assessment						
Hazard	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Communicable Disease	2	1	1	1	1	**4**
Drought	4	2	3	1	2	**8**
Flood	4	4	4	1	2	**11**
Hazardous Material Release	4	2	2	1	1	**8**
Homeland Security Incident	4	1	1	1	1	**6**
Severe Summer Weather	4	4	4	4	1	**15**
Severe Winter Weather	3	4	4	4	2	**13**
Shortage or Outage of Critical Materials or Infrastructure	4	4	4	3	1	**14**
Transportation Accident	4	2	3	1	1	**9**
Urban Fire/Structure Collapse	4	2	3	3	2	**10**
Wildland Fire	4	2	3	1	2	**8**
Windstorm	3	3	3	4	1	**12**
Dam Failure – not a threat	N/A	N/A	N/A	N/A	N/A	N/A

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

City of Forbes– Hazard Scoring

Communicable Disease - 4

Impact	2	• Covid Pandemic – 2020-2023 - Global supply chain disruptions. - Economic and family disruption from covid precautions. Churches, couldn't visit family in hospitals - Shortage of hospital beds, staff and medical stress until vaccines were put out. - Isolation - Businesses Shut Down - Cost of living increases - Mental Health Issues - Loss of Life - Initial Covid Vaccine Shortage and PPE Shortage - Strain on emergency services as a whole • U.S. declared an H1N1 was a declared pandemic in 2009 • U.S. experienced a vaccine shortage in 2009 • Potential loss of life • Entire City could be impacted by an outbreak
Frequency	1	• Seasonal flu happens every year • Crop and localized livestock loss occur every year to a varying degree
Likelihood	1	• Seasonal flu happens every year • Tuberculosis and rabies are very low numbers for the area
Vulnerability	1	• More vulnerable: Some abandoned buildings and homes in town • More vulnerable: No stockpile of medical supplies • More vulnerable: The city has no medical facilities • More vulnerable: Some lots in town are overgrown with vegetation

		• More vulnerable: Blighted structures occupied by individuals who hoard or collect • More vulnerable: Dependent on vaccines being developed for any new viruses and picking the right strains of flu for the flu vaccine • Less vulnerable: 0 percent of population is over 65 • Less vulnerable: Residents mow lawns to keep vegetation under control • Less vulnerable: City mows overgrown lots • Less vulnerable: Internet connections and TV help inform residents • Less vulnerable: Fire Service and First Responders
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish large projects independently

Drought - 8

Impact	4	• Potential of severe economic loss due to being reliant on agricultural sector • Range Land Fire Index Used • Burn bans happened in 2016 • Hay shortages during times of drought impact livestock • Loss of farm economy impacts service industries • Water holes that supply livestock are impacted
Frequency	2	• Although dry in spring of 2013, the last real drought was in 1988 • Dickey County was very dry during the 1980's • 1988 was an especially dry year, along with 2016
Likelihood	3	• Cyclical pattern to rains normally wetter in the east than in the west. In 2016 this pattern was reversed • High possibility of drought in any year due to the clay soil
Vulnerability	1	• Depending on duration, vulnerability changes • More vulnerable: There are several ag fires a year (tractors, hay bales, field fires) most all are mutual aided to Ellendale when Forbes doesn't answer two pages adding up to 15 minutes before Ellendale Fire is paged • The city has no public works personnel or equipment. All maintenance is contracted out as needed • More vulnerable: Local Fire department has one tanker, one brush truck, one pumper-the newest is a 1980's model. Most of the departments "able body firemen" work out of town during the days leaving town virtually uncovered. • More vulnerable: Economy relies heavily on farming • Less vulnerable: 0 percent of population is over 65 • Less vulnerable: Burn bans implemented during dry periods • Less vulnerable: City has reserves tanks located in their city hall and has surrounding sloughs as sources of water
Capability	2	• The city has fire protection, however, dependent on access to water. • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Flood - 11

Impact	4	• There are no rivers, most flooding is overland flooding • Washed out culverts • Cemeteries under water • Water seepage into basements • Blocked roads limit access for emergency services and daily routines • Increased mosquito population and transmitting of diseases from standing water • Property and crop damage or loss • Potential loss of life • Flooded roads block bus routes transporting kids to school • Wastewater outage • Flat terrane and lakes filled to capacity result in overland flooding due to the lack of rivers
Frequency	4	• Depends largely on weather patterns but significant flooding to roads, buildings and homes occurs every two to three years
Likelihood	4	• Heavy spring melting and heavy rains cause flooding
Vulnerability	1	• More vulnerable: Ambulances, school buses, fire protection having to detour • More vulnerable: One highway serves the city on a north and south direction • More vulnerable: Individuals driving on flooded highways • More vulnerable: City lacks equipment and infrastructure and has no public works personnel or equipment. All maintenance is contracted out as needed. • More vulnerable: Lift Station and lagoon would be inundated • More vulnerable: Lack of proper storm water system • More vulnerable: Lack of drain tile in the area • More vulnerable: Individuals living on a road must go 10 miles instead of 5 • More vulnerable: Flat area at the base of the hills drains a huge area through town which inundates the town and leaves puddles in low areas and ditches which breeds mosquitos. Overland flooding can damage roads and impede access to rural farms as well as the town. This event happens to some level every spring and after significant rain events. Overland flooding has dropped the occasional power pole resulting in power outages • More vulnerable: Lack of manpower by the city and public • Less vulnerable: 0 percent of population is over 65 • Less vulnerable: No school within city • Less vulnerable: 2-foot berm surrounding the city constructed by a local resident to shield the city from flood waters during the spring thaw
Capability	2	• City does have a flood plan, but it was created in 1980 • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Hazardous Material Release - 8

Impact	4	• Potential loss of life • Crop and livestock loss • Economy loss • Fire potential • Blocked roads leading to loss of mobility

		• Small size of city could lead to large percentage of population affected
Frequency	2	• Minor spills happen yearly • No major occurrences or incidences
Likelihood	2	• Minor spills will happen
Vulnerability	1	• More vulnerable: Propane is used for heating alternative • More vulnerable: Trucks and farmers transporting larger tanks more frequently • More vulnerable: High Risk of Hazardous chemical release or transportation accident as it is on a major county road as well as a state line road • More vulnerable: The city has no public works personnel or equipment • More vulnerable: No stockpile of medical supplies • Less vulnerable: 0 percent of population is over 65
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Homeland Security Incident – 6

Impact	4	• Potential injury or loss of life • Loss of economy • Loss of livestock • Potential for large percentage of population loss • Emergency services could be overwhelmed
Frequency	1	• Always a possibility of an event occurring • No incidents have occurred
Likelihood	1	• Always a possibility of an event occurring.
Vulnerability	1	• More vulnerable: Limited mental health services. • More vulnerable: Small town, everyone is impacted, fearful and anxious • More vulnerable: Influx of population from other parts of the U.S. • More vulnerable: No local law enforcement, depends on County Sheriff • Less vulnerable: 0 percent of population is over 65 • Less vulnerable: Sparse population and rural nature of the city • Less vulnerable: No school
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Severe Summer Weather – 15

Impact	4	• Hail damage to homes and community buildings including broken windows, siding and shingles • Power outages • Economy loss • Lightning strikes cause fires • Potential injury • Potential loss of life • High winds damage property • Heavy rain produces flash flooding • Fire potential if lightning occurs during drought.

		• Prolonged response times and limited access for emergency services
Frequency	4	• Multiple storms are experienced annually causing property damage • Extreme summer weather seasons occur every two to three years • In 2010 we bused vulnerable people to Ellendale and sheltered them in a local restaurant meeting area during the days for warmth and hot food
Likelihood	4	• Multiple storms are experienced annually causing property damage • More intense weather in recent years • More rapid, heavy rain events occurring each year
Vulnerability	4	• More vulnerable: Lack of manpower at emergency services • More vulnerable: Populations that lack a backup power source • More vulnerable: No local law enforcement, depends on County Sheriff • More vulnerable: No generated public building or storm shelter in town. Area receives 4-5 power outages lasting more than 8 hours and usually at least one which lasts 2-3 days • More vulnerable: There are two trailer homes in the city • Less vulnerable: 0 percent of population is over 65 • Less vulnerable: Sparse population and rural nature of the city • Less vulnerable: City lacks early warning system and has a radio controlled for remote storm warning • Less vulnerable: Roads in and out of town are well maintained
Capability	1	• Limited tax base • No Building Code enforcement • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Severe Winter Weather - 13

Impact	3	• Storms cause travel issues, power outages, and property damage • Potential isolation of community • Severe low temperatures increase utility costs and affect alternative fuel sources • Potential injury or loss of life • Economy loss • Increased cost for snow removal • Highways and city streets become icy and blocked • Heavy snow results in potential flooding in the spring • City streets build up with compacted snow causing damage to streets • Increased potential for hazardous material release • Temporary outage of emergency services
Frequency	4	• Occurs annually, few years without severe winter weather • Years with multiple winter events are the normal
Likelihood	4	• Will happen in the future due to the climate, occurs annually
Vulnerability	4	• More vulnerable: Lack of manpower at emergency services • More vulnerable: No local law enforcement depends on County Sheriff which takes a minimum of one-half hour to arrive. EMS is out of Ellendale again twenty-minute response on a good weather day • More vulnerable: Removal of shelter belts increases ground blizzard conditions • More vulnerable: There are two mobile homes in the area

		• Less vulnerable: 0 percent of population is over 65 • Less vulnerable: City lacks early warning system and has a radio controlled remote storm warning • Less vulnerable: Small community where neighbors help neighbors
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • There are a few certified, trained and equipped citizens in the community

Shortage or Outage of Critical Materials or Infrastructure – 14

Impact	4	• Long periods of time without power or water could lead to loss of life, due to the winter climate and high population over age 65 • Reduced mobility from blocked roads • Limited drinking water and functionality of sanitary sewer • City could be left without power for heating and cooling • Loss of power can limit accessibility to fuel sources • Loss of food sources as refrigeration units are without power • Loss of economy • Loss of internet affects individuals and businesses • Delayed emergency services • Mail outages for a day or longer in winter of 2016-2017
Frequency	4	• 2009 during an outage of electric elderly residents were taken to Ellendale • In 2016, areas in and surrounding Forbes experienced power outages from 3 hours to 2 to 3 days without power • Short-term power outages are experienced annually
Likelihood	4	• No improvements to power infrastructure planned - located on the end of the MDU transmission line and there are no plans to improve or duplicate service • Power poles and wires of the power grid are outdated and overhead
Vulnerability	3	• More vulnerable: No backup generator for city infrastructure may cause sewer backup or outage of drinking water • More vulnerable: 11 electricity dependent vulnerable populations that need electricity to run medical devices to live. Per the publichealthemergency.gov Empower map. • More vulnerable: No public fueling capacity • More vulnerable: No medical facility • More vulnerable: Access to rural areas limited during a blizzard • More vulnerable: No generated public building or storm shelter in town • Less vulnerable: 0 percent of population is over 65 • Less vulnerable: Some residents grow local food supply • Less vulnerable: Water is provided by the city • Less vulnerable: Some residents have their own generator • Less vulnerable: There is a non-profit grocery store located in the city
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Transportation Accident - 9

Impact	4	• Potential injury or loss of life • Economy and property loss • Potential hazardous materials release • Potential fire
Frequency	2	• No major accidents in the area in recent years
Likelihood	3	• No major accidents in the area in recent years
Vulnerability	1	• More vulnerable: Increased amount of time students spend on buses • More vulnerable: Trucks and farmers transporting larger tanks more frequently on Hwy 30 through the city limits • More vulnerable: Anhydrous tanks driven through and parked in the city • More vulnerable: No medical supplies in stock • More vulnerable: Fire Department has no equipment for accident extraction • More vulnerable: County Highway 2 traverses the city, people are not obeying the signs or speed laws • More vulnerable: No local law enforcement, depends on County Sheriff • Less vulnerable: 0 percent of population is over 65 • Less vulnerable: No airport • Less vulnerable: City lacks early warning system and has a radio controlled remote storm warning
Capability	1	• Fire Department has no extraction capabilities for grain bin and vehicle accidents • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Urban Fire/Structure Collapse - 10

Impact	4	• Potential injury or loss of life • Property, building and economy loss • Loss of community assets and critical facilities and infrastructure • Potential temporary homeless population due to lack of alternative housing
Frequency	2	• No severe structure fires or collapses in recent history
Likelihood	3	• No severe structure fires or collapses in recent history
Vulnerability	3	• More vulnerable: City does not have extensive fire suppression capabilities • More vulnerable: Older homes with older wiring • More vulnerable: Several large structures in the city are abandoned and hazard could go unnoticed or an extended period • More vulnerable: Spacing of houses could lead to loss of multiple structures • More vulnerable: Lack of alternative housing for displaced residents • More vulnerable: Distance from neighboring fire departments can lead to more issues and prolonged response times • More vulnerable: Lack of break between crops and city • Less vulnerable: Local fire department • Less vulnerable: City lacks early warning system and has a radio controlled for remote storm warning • Less vulnerable: City has water storage tank providing water backup for fire suppression
Capability	2	• Active city council

		• Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • Mutual Aid with Ellendale and Fredrick, SD • More vulnerable: Fire siren is radio activated by Emergency Management

Wildland Fire - 8

Impact	4	• Economy loss • Crop and bale and graze land loss • Farm equipment and livestock loss • Potential injury or loss of life • Potential hazardous material release • Health hazard due to poor air quality • Loss of wildlife habitat • Farm equipment, lightning strikes, power line sparks, and controlled burns cause fires annually
Frequency	2	• Wildland fires occur annually due to climate and economy.
Likelihood	3	• Continued controlled burns by farmers there is always a possibility for the hazard • Dry conditions experienced annually for a couple weeks • Farm equipment, lightning strikes, power line sparks, and controlled burns cause fires annually
Vulnerability	1	• More vulnerable: Farmland and open areas • More vulnerable: Mutual aid fire department response times lengthen. • More vulnerable: Windy conditions each year • More vulnerable: Lack reliable source of water for fire suppression • More vulnerable: Strain on local fire departments and resources • More vulnerable: Lack of fire break around the city • More vulnerable: Age of structures and wiring • Less vulnerable: Decreasing CRP • Less vulnerable: City maintains overgrown lots
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • There are few certified trained and equipped citizens in the community • Mutual Aid with Ellendale and Fredrick, SD

Windstorm - 12

Impact	3	• Downed trees, power poles and lines • Buildings and economy loss • Damage to homes and buildings (broken windows, loss of shingles) • Potential injury or loss of life • Potential structure fires • Contributes to spread of wildland fire • City has lost many trees, buildings and structures due to high winds • Straight line winds occur in summer months
Frequency	3	• Hazard occurs multiple times each year as a secondary result from severe weather • Strong winds are common in the city in all weather conditions

		• Blizzard conditions occur frequently in winter months due to climate • Power lines are damaged causing outages annually
Likelihood	3	• Strong winds are common in the city in all weather conditions
Vulnerability	4	• More vulnerable: There are two trailer homes in the city • More vulnerable – loss of trees leads to more ground blizzard conditions • More vulnerable: Power lines providing power to the city are not buried • Less vulnerable: Residents have equipment to clear debris or move snow • More vulnerable: Age of structures and housing stock • More vulnerable: Has not adopted state building codes • Less vulnerable: City has an inert landfill for debris and branches
Capability	1	• Mutual aid agreements for emergency services • Active county commission • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

8.2.3 Mitigation Strategy

Problem Statement

The lack of a storm water system is inadequate as overland flooding occurs on an annual basis in certain areas. The emergency siren is located at the fire hall. It is radio control activated but needs to be upgraded with a siren that could be activated by dispatch. There are no dispatch fire sirens in the area. The siren is radio controlled for remote storm warning. Due to the location of the city, isolation from severe weather, shortage or outage of critical materials or infrastructure such as emergency services, power, and roads is frequent. The number of abandoned buildings, single-family homes, and aging structures increase the impact of and vulnerability to communicable disease, urban fire/structure collapse, wildland fire and windstorm. The increase in economic activity in the area, farmers hauling anhydrous and other materials to and from farm sites through the city, and increased storage of chemicals on farm sites used for agriculture production increases the impact of and vulnerability to a hazardous material release, homeland security incident, or transportation accident.

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.

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.

Each identified resource in the four categories can be used to implement mitigation strategies and access funding for projects. Information on the capabilities of the city was gathered at its jurisdictional meeting, committee meetings, and interviews during the planning process. Tables comparing the mitigation capabilities of the city of Forbes with all other jurisdictions in the county can be found in Chapter 7, County Mitigation Capability Assessment.

Administrative and Technical

The following narrative details the administrative and technical capabilities of the city of Forbes.

The city of Forbes has an active city council. The city does not have a chief building official or inspector. The city has a LEPC through the county. The city does not have a civil engineer on staff but does have the option to contract for engineering services when needed. Emergency management is available through the county. The city can contract with the SCDRC or a private firm for planning, grant writing and grant administration services. The city conducts infrastructure maintenance on an as-needed basis. The city council staff and fire department volunteers have administration capabilities for mitigation. The Dickey County Sheriff and the N.D. State Highway Patrol assist in law enforcement. The city has an emergency siren located on top of the fire hall; it is adequate as it is radio-activated. The city does not have generators. The city fire department does not have a fire index sign. There is no ambulance service in the city of Forbes. The auditor reports hazard data to the emergency manager.

Education and Outreach

The following narrative details the education and outreach capabilities of the city of Forbes.

The city does not have non-profit organizations providing education on hazards but has access to the NDSU/Dickey County Extension Service. The city does not maintain a website with hazard education. The city does not have any entities providing public education on hazards but has access to the NDSU/Dickey County Extension Service, Dickey District Health Unit, and Dickey County Emergency Management for public education on hazards. The city does not conduct events on hazard education. There are no public-private partnerships providing education and outreach on hazards. Dickey County Emergency Management conducts education and outreach on hazards in the city.

Financial

The following narrative details the financial capabilities of the city of Forbes.

The city does not set aside tax revenue for capital improvements. The city does not have storm water utility fees as it lacks a storm water system. The city does not levy special assessments for new development. Forbes meets the low-to-moderate income ratio requirement of the CDBG program. The city does not have any private entities providing funding for mitigation. The rural electric cooperative for the surrounding area, water resource board, and surrounding township and school district are other sources of funding for mitigation.

Planning and Regulatory

The following narrative details the planning and regulatory capabilities of the city of Forbes.

The city does not have a capital improvement, comprehensive, drought management, land use, storm water, strategic, or water conservation plan. The city does not have a flood damage reduction study, flood insurance study, or impact fees. The city has not adopted state building codes. The city is not FEMA flood mapped but is in the process of doing so. Since Dickey County is in the process of being mapped,

(to identify the appropriate areas to ban development), this will require the development of appropriate zoning, permitting and enforcement codes meeting the needs of both the cities and county.

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.

8.3 City of Fullerton

The profile and inventory, risk assessment and hazard scoring notes, mitigation projects, and capabilities for mitigation are shown in sections 8.3.1, 8.3.2, 8.3.3, and 8.3.4. Figure 8.3.1 shows an aerial view of the city of Fullerton.

Figure 8.3.1 – City of Fullerton

8.3.1 Profile and Inventory

The following summarizes the location, total population, vulnerable populations, housing units, services, jurisdictional buildings, emergency response services and utilities of the city of Fullerton. Detailed narratives follow each section heading to profile the city. Additional information on the city of Fullerton and Dickey County can be found in Chapter 4, Profile and Inventory.

Location

The city of Fullerton is located at the intersections of 94th Ave SE and 87th Street SE, approximately 16 miles northeast of Ellendale and about 17 miles west of Oakes in Dickey County.

Population

The population is 60 per the per the U.S. Census Bureau, U.S. Department of Commerce. "ACS Demographic and Housing Estimates." American Community Survey, ACS 5-Year Estimates Data Profiles, Table DP05, 2023.

Vulnerable Populations

Housing Units and Population Age Distribution

Per the 2023 American Community Survey, there were 60 people and 34 housing units in the city. The median age in the city was 58.5 years. 15.1 percent of residents were under the age of 19; 3.3 percent were between the ages of 20 and 24; 13.3 percent were from 25 to 44; 40.0 percent were from 45 to 64; and 28.4 percent were 65 years of age or older. The gender makeup of the city was 58.3 percent male and 41.7 percent female.

Publicly Owned Jurisdictional Buildings

The city of Fullerton has a city hall, community center, park, post office, and the community owned Carroll House.

Services Provided

The city of Fullerton obtains potable water from SE Water Users. The city uses septic systems. The city does not have a sanitary sewer system. The city does not have a storm water system. Waste Management provides garbage sanitation services. The official newspaper is the Dickey County Leader.

Emergency Response Services

Law enforcement is provided by Dickey County. The sheriff's office is located in Ellendale, ND. The city has a voluntary fire department but no EMS available. Ambulance service comes from Oakes.

Utility Providers

Potable water is provided by the city SE Water Users. Electricity is provided by Montana Dakota Utilities. Natural gas is not available in the city of Fullerton. Fuel oil and propane are used as an alternative heating source and is provided by companies chosen by the individual consumer. Cable, internet, and phone service is provided by DRN, AT&T, TMobil and Verizon. Individual homes may choose to subscribe to direct broadcast satellite service providers or use an antenna to receive over the air programming.

8.3.2 Risk Assessment and Hazard Scoring Notes

Table 8.3.2 summarizes the risk assessment scoring of the city of Fullerton. The risk assessment and hazard scoring notes from the jurisdictional meeting for each hazard are shown after Table 8.3.2.

Table 8.3.1 – City of Fullerton Jurisdiction Risk Assessment Scoring Summary

Risk Assessment						
Hazard	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Communicable Disease	4	4	4	3	1	**5**
Drought	4	1	2	3	1	**9**
Flood	4	4	4	3	1	**14**
Hazardous Material Release	4	1	2	2	2	**7**
Homeland Security Incident	3	1	1	1	1	**5**
Severe Summer Weather	3	4	4	4	1	**14**
Severe Winter Weather	3	4	4	4	2	**13**
Shortage or Outage of Critical Materials or Infrastructure	4	4	4	3	1	**14**
Transportation Accident	4	2	3	3	1	**11**
Urban Fire/Structure Collapse	3	2	3	4	2	**10**
Wildland Fire	3	4	4	4	2	**10**
Windstorm	3	4	4	4	1	**14**
Dam Failure – no threat	N/A	N/A	N/A	N/A	N/A	N/A

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

City of Fullerton– Hazard Scoring

Communicable Disease - 14

Impact	4	• Covid Pandemic – 2020-2023 - Global supply chain disruptions. - Economic and family disruption from covid precautions. Churches, couldn't visit family in hospitals - Shortage of hospital beds, staff and medical stress until vaccines were put out. - Isolation - Businesses Shut Down - Cost of living increases - Mental Health Issues - Loss of Life - Initial Covid Vaccine Shortage and PPE Shortage - Strain on emergency services as a whole • U.S. declared an H1N1 was a declared pandemic in 2009 • U.S. experienced a vaccine shortage in 2009 • Potential loss of life • Entire City could be impacted by an outbreak
Frequency	4	• Seasonal flu happens every year

		• Crop and localized livestock loss occur every year to a varying degree
Likelihood	4	• Seasonal flu happens every year • Tuberculosis and rabies are very low numbers for the area
Vulnerability	3	• More vulnerable: 28.4% of the population is over age 65 • More vulnerable: Some abandoned buildings and homes in town • Less vulnerable - Has fire department • More vulnerable: No stockpile of medical supplies • More vulnerable: The city has no medical facilities, public fueling capacity or lodging • More vulnerable: Some lots in town are overgrown with vegetation • More vulnerable: Blighted structures occupied by individuals who hoard or collect • More vulnerable: Dependent on vaccines being developed for any new viruses and picking the right strains of flu for the flu vaccine • Less vulnerable: Residents mow lawns to keep vegetation under control • Less vulnerable: Small gathering spaces such as Ranch House and Carroll House, limiting spread of disease as gathering of large crowds does not occur • Less vulnerable: Increased awareness and education of city residents • Less vulnerable: City mows overgrown lots • Less vulnerable: Internet connections and TV help inform residents • Less vulnerable: Fire Service and First Responders
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish large projects independently

Drought – 9

Impact	4	• Possible economic loss • Range Land Fire Index Used • Burn bans occur annually • Hay shortages during times of drought impact livestock • Loss of farm economy impacts service industries • Water holes that supply livestock are impacted
Frequency	1	• Drought possible every year • Last dry conditions were spring 2013, but last real drought was in 1988 • Dickey County was very dry during the 1980's • 1988 was an especially dry year, along with 2016
Likelihood	2	• Cyclical pattern to rains normally wetter in the east than in the west. In 2016 this pattern was reversed • High possibility of drought in any year due to the soil conditions
Vulnerability	3	• Depending on duration, vulnerability changes • More vulnerable: 28.4% of the population is over 65 • More vulnerable: There are several Ag fires a year (tractors, hay bales, field fires). Fire response is 20 min away coming from Oakes • More vulnerable: The city has no public works personnel or equipment. All maintenance is contracted out as needed • More vulnerable: There is a voluntary fire department, but no EMS or law in Fullerton. All responders come from Oakes with a 20-minute average response

		• More vulnerable: There are no public works personnel or equipment; all maintenance is contracted out as needed. • More vulnerable: Economy relies heavily on farming • More vulnerable: City does not have water reserves, such as a water tower • Less vulnerable: City purchased floating pumps and discharge hoses to use in pumping water for general use • Less vulnerable: Burn bans implemented during dry periods
Capability	1	• The city has fire department that has limited access to water • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • Siren system can be radio actuated by law enforcement or Dickey County Emergency Management

Flood - 14

Impact	4	• Overland flooding is not much of an issue for the town as it is on high ground directly off the major north/south county road DC8 • Areas surrounding the town suffer from damaged roads, bridges and culverts creating emergency access problems as well as the occasional downed power lines • Washed out culverts • Water seepage into basements • Blocked roads limit access for emergency services and daily routines • Increased mosquito population and transmission of diseases due to standing water • Property and crop damage or loss • Potential loss of life • Flooded roads block bus routes transporting kids to school • Wastewater outage • Flat terrane and lakes filled to capacity result in overland flooding due to the lack of rivers
Frequency	4	• Depends largely on weather patterns • City has lost power lines three times in recent years from flooding
Likelihood	4	• Heavy spring melting and heavy rains cause flooding
Vulnerability	3	• More vulnerable: Ambulances, school buses, fire protection having to detour • More vulnerable: Individuals driving on flooded highways • More vulnerable: 28.4% of the population is over age 65 • More vulnerable: City lacks equipment and infrastructure and has no public works personnel or equipment. All maintenance is contracted out as needed. • More vulnerable: septic tanks can become inundated • More vulnerable: Lack of proper storm water system • More vulnerable: Lack of drain tile in the area • More vulnerable: Individuals living on a road must go 10-20 miles instead of 5 to go through dry roads • More vulnerable: Flat area at the base of the hills drain a huge area through town which inundates the town and leaves puddles in low areas and ditches

		which provides an excellent mosquito breeding environment. Overland flooding has dropped the occasional power pole resulting in power outages • More vulnerable: City becomes an island for up to a week or more when the Maple River leaves its banks. Often this occurs with accompanying power failures due to down lines • More vulnerable: Lack of manpower by the city and public • Less vulnerable: No school within city • Less vulnerable: City has installed drain tile on Monroe Street and the likelihood of overland flooding in the city is somewhat diminished
Capability	1	• No flood plan • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Hazardous Material Release - 7

Impact	4	• Potential loss of life • Crop loss • Livestock loss • Economy loss • Fire potential • Blocked roads leading to loss of mobility • Small size of city could lead to large percentage of population affected
Frequency	1	• Minor spills happen yearly • No major occurrences or incidences
Likelihood	2	• Minor spills will happen
Vulnerability	2	• More vulnerable: 28.4% of the population is over age 65 • More vulnerable: Propane is used for heating alternative • More vulnerable: Trucks and farmers transporting larger tanks more frequently on highways through the city limits • Less vulnerable: No Anhydrous tanks driven through and parked in the city. • More vulnerable: The city has no public works personnel, or equipment-all maintenance is contracted out as needed • More vulnerable: No stockpile of medical supplies
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Homeland Security Incident – 5

Impact	3	• Potential loss of life • Loss of economy • Loss of livestock • Potential for large percentage of population loss • Emergency services could be overwhelmed
Frequency	1	• Always a possibility of an event occurring • No incidents have occurred
Likelihood	1	• Always a possibility of an event occurring

Vulnerability	1	• More vulnerable: Limited mental health services or medical facilities • More vulnerable: 28.4 percent of population is over age 65 • More vulnerable: Small town, everyone is impacted, fearful and anxious • More vulnerable: Influx of population from other parts of the U.S. • More vulnerable: No local law enforcement, depends on County Sheriff • Less vulnerable: Sparse population and rural nature of the city • Less vulnerable: City has neighborhood watch program in place • Less vulnerable: No school in city
Capability	1	• Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Severe Summer Weather - 14

Impact	3	• Hail damage to homes and community buildings (broken windows, siding and shingles) • Power outages • Economy loss • Lightning strikes cause fires • Potential injury or loss of life • High winds damage property • Heavy rain produces flash flooding • Fire potential if lightning occurs during drought. • Prolonged response times and limited access for emergency services
Frequency	4	• Multiple storms are experienced annually causing property damage • Extreme summer weather seasons occur every two to three years
Likelihood	4	• Multiple storms are experienced annually causing property damage • More intense weather with rapid, heavy rain events in recent years annually
Vulnerability	4	• More vulnerable: 28.4% of the population is elderly over age 65 • More vulnerable: Lack of manpower at emergency services • More vulnerable: Populations that lack a backup power source • More vulnerable: No local law enforcement, depends on County Sheriff • More vulnerable: No generated public building or storm shelter in town. Area receives 4-5 power outages lasting more than 8 hours and usually at least one which lasts 2-3 days. In 2010, vulnerable people were bused to Ellendale and sheltered in a local restaurant meeting area during the days for warmth and hot food • Less vulnerable: Sparse population and rural nature of the city • Less vulnerable: Siren system can be radio actuated by law enforcement or Dickey County Emergency Management • Less vulnerable: Roads in and out of town are well maintained • Less vulnerable: Residents possess equipment to clean up debris
Capability	1	• Limited tax base • No Building Code enforcement • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • Radio operated storm siren operated by Dickey County Emergency Management.

Severe Winter Weather - 13

Impact	3	• Storms cause travel issues, power outages, and property damage • Potential isolation of community • Severe low temperatures increase utility costs and affect alternative fuel • Potential injury and loss of life • Economy loss • Increased cost for snow removal • Highways and city streets become icy and blocked • Heavy snow results in potential flooding in the spring • City streets build up with compacted snow causing damage to streets • Increased potential for hazardous material release • Temporary outage of emergency services
Frequency	4	• Occurs annually, few years without severe winter weather • Years with multiple winter events are the normal
Likelihood	4	• Will happen in the future due to the climate, occurs annually
Vulnerability	4	• More vulnerable: 28.4% of the population is elderly over age 65 • More vulnerable: Lack of manpower at emergency services • More vulnerable: No city equipment • More vulnerable: No local law enforcement, depends on County Sheriff • More vulnerable: Removal of shelter belts increases ground blizzard • Less vulnerable: Siren system can be radio actuated by law enforcement or Dickey County Emergency Management • Less vulnerable: Small community where neighbors help neighbors
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • There are a few certified, trained and equipped citizens in the community • Siren system can be radio actuated by law enforcement or Dickey County Emergency Management

Shortage or Outage of Critical Materials or Infrastructure – 14

Impact	4	• Long periods of time without power or water could lead to loss of life, due to the winter climate and high population over age 65 • Reduced mobility from blocked roads • Limited drinking water and functionality of sanitary sewer • City could be left without power for heating and cooling • Loss of power can limit accessibility to fuel sources • Loss of food sources as refrigeration units are without power • Loss of economy • Loss of internet affects individuals and businesses • Delayed emergency services • Mail outages for a day or longer in winter of 2016-2017
Frequency	4	• Short-term power outages are experienced annually
Likelihood	4	• No improvements to power infrastructure planned • Power poles and wires of the power grid are outdated/suspended
Vulnerability	3	• More vulnerable: 28.4% of the population is elderly over age 65

		• More vulnerable: No backup generator for city infrastructure may cause sewer backup or outage of drinking water • More vulnerable: 11 electricity dependent vulnerable populations that need electricity to run medical devices to live. Per the publichealthemergency.gov Empower map. • More vulnerable: No public fueling capacity or public lodging • More vulnerable: No EMS or law in town • More vulnerable: Access to rural areas limited during a blizzard • More vulnerable: No generated public building or storm shelter in town • Less vulnerable: Some residents grow local food supply • Less vulnerable: Water is provided by the city • Less vulnerable: Some residents have their own generator • Less vulnerable: Have Volunteer Fire Department
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • Radio operated storm siren operated by Dickey County Emergency Management

Transportation Accident - 11

Impact	4	• Potential injury and loss of life • Economy and property loss • Potential hazardous materials release • Potential fire
Frequency	2	• No major accidents in the area in recent years • Accidents have happened in recent years
Likelihood	3	• No major accidents in the area in recent years
Vulnerability	3	• More vulnerable: 28.4% of the population is over age 65 • More vulnerable: Increased amount of time students spend on buses • More vulnerable: Trucks and farmers transporting larger tanks more frequently on highways and through the city limits • More vulnerable: Anhydrous tanks driven through and parked in the city • More vulnerable: No medical supplies in stock • More vulnerable: Fire Department has no equipment for extraction • More vulnerable: No local law enforcement, depends on County Sheriff • More vulnerable: Railroad within city • Less vulnerable: No airport • Less vulnerable: City lacks early warning system
Capability	1	• First Responder Group in Ellendale and Oakes • City has a radio operated storm siren operated by Emergency Management • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Urban Fire/Structure Collapse - 10

Impact	3	• Potential injury or loss of life • Property, building and economy loss • Loss of community assets • Loss of critical facilities and infrastructure • Potential temporary homeless population due to lack of alternative housing
Frequency	2	• Bans are issued frequently according to the ND Fire Index
Likelihood	3	• City has experienced dryer fires at the elevator • Bans are issued frequently according to the ND Fire Index
Vulnerability	4	• More vulnerable: Older homes with older wiring • More vulnerable: Seasonal homes unoccupied • More vulnerable: Spacing of houses could lead to loss of multiple structures • More vulnerable: No crop break around the city and crops grown in city limits • More vulnerable: Lack of alternative housing for displaced residents • More vulnerable: Distance from neighboring fire departments can lead to more issues and prolonged response times • More vulnerable: Railroad within city limits • Less vulnerable: City has a radio controlled for remote storm warning. • Less vulnerable: Have been able to contain fires to one building • Less vulnerable: City Fire Department • Less vulnerable: Elevator in the city has a 3,000-gallon water tank • Less vulnerable: Fire department has 300, 500, and 2,000-gallon trucks • Less vulnerable: City participates in mutual aid agreements
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • Mutual Aid with Ellendale • City has a radio operated storm siren operated by Emergency Management

Wildland Fire - 13

Impact	3	• Economy loss • Crop, bale, livestock, farm equipment and graze land loss • Potential injury or loss of life • Potential hazardous material release • Health hazard due to poor air quality • Loss of wildlife habitat • Farm equipment, lightning strikes, power line sparks, and controlled burns cause fires
Frequency	4	• Wildland fires occur annually due to climate and economy
Likelihood	4	• With continued controlled burns by farmers there is always a possibility for the hazard in the future • Dry conditions experienced annually for a couple weeks • Farm equipment, lightning strikes, power line sparks, and controlled burns cause fires annually
Vulnerability	4	• More vulnerable: Farmland and open areas • More vulnerable: Mutual aid fire department response times lengthen • More vulnerable: Windy conditions each year

		• More vulnerable: Lack reliable source of water for fire suppression • More vulnerable: Strain on local fire departments and resources • More vulnerable: Spacing of houses could lead to loss of multiple structures • More vulnerable: Lack of fire break around the city • More vulnerable: Age of structures and wiring • More vulnerable: Lack reliable source of water for fire suppression • More vulnerable: Slough with cattails on one side and corn is grown • More vulnerable: Railroad within city • Less vulnerable: City has a volunteer fire department • Less vulnerable: 300, 500- and 2,000-gallon water trucks • Less vulnerable: Elevator in the city also has a 3,000-gallon water holding tank
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • There are few certified trained and equipped citizens in the community • Mutual Aid with Ellendale

Windstorm - 14

Impact	3	• Downed trees • Buildings loss • Downed power poles and lines • Economy loss • Damage to homes/community buildings - broken windows, loss of shingles • Potential loss of life • Potential injury • Potential structure fires • Contributes to spread of wildland fire • City has lost many trees, buildings and structures due to high winds. • Increase in traffic accidents from low visibility during severe weather • Straight line winds occur in summer months
Frequency	4	• Hazard occurs multiple times each year • Strong winds are common in the city in all weather conditions • Blizzard conditions occur frequently in winter months due to climate • Power lines are damaged causing outages annually
Likelihood	4	• Strong winds are common in the city in all weather conditions
Vulnerability	4	• More vulnerable: There are two trailer homes in the city • More vulnerable: Loss of trees leads to more ground blizzard conditions • More vulnerable: Power lines providing power to the city are not buried • Less vulnerable: Residents have equipment to clear debris or move snow • More vulnerable: Age of structures and housing stock • More vulnerable: Has not adopted state building codes • Less vulnerable: City has an inert landfill for debris and branches • Less vulnerable: City has a volunteer fire department
Capability	1	• Capabilities to respond, but nothing can be done to prepare • Mutual aid agreements for emergency services • Lacks technical, administrative and financial resources for mitigation

		• Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • City has a radio operated storm siren operated by Emergency Management

8.3.3 Mitigation Strategy

This update of the Dickey County Multi-Jurisdictional Multi-Hazard Plan includes a mitigation strategy consisting of five goals in Chapter 6.

Problem Statement

The city of Fullerton identified its high senior population and isolated populations in the surrounding countryside as necessary to mitigate impacts from severe summer weather, severe winter weather, windstorm, flood, and shortage or outage of critical materials or infrastructure. The lack of a storm water system is inadequate as overland flooding occurs on an annual basis in certain areas. The radio-controlled emergency siren is located at the fire hall and should be updated. Due to the location of the city, isolation from severe weather and shortage or outage of critical materials or infrastructure such as emergency services, power, and roads is frequent. The number of abandoned buildings, single-family homes, and aging structures increase the impact of and vulnerability to communicable disease, urban fire/structure collapse, wildland fire and windstorm. The increase in economic activity in the area, farmers hauling anhydrous and other materials to and from farm sites through the city and increased storage of chemicals on farm sites used for agriculture production increases the impact of and vulnerability to hazards.

Fullerton is surrounded by the Maple River to the West and South and the Dickey County Drain 1 to the East. During spring runoff or flooding cycles, (causing the river/drain overflow), effectively stops all ingress and egress from the city. The only access/egress is from the north through LaMoure County. This is a major issue for all emergency services to serve the area as well as a burden on the residents. The duration of this type of event has been up to three weeks in bad years. Roads must often be repaired and debris removed before the roads can be used. It is common for the river flooding to wash out power lines feeding the city which exacerbates the problem.

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.

Administrative and Technical: Identification of administrative and technical capabilities, which include: staff, staff 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: There are no jurisdictional plans, policies, codes, and ordinances adopted and in place that prevent and reduce the impacts of hazards.

Each identified resource in the four categories can be used to implement mitigation strategies and access funding for projects. Information on the capabilities of the city was gathered at its jurisdictional meeting, committee meetings, and interviews during the planning process. Tables comparing the mitigation capabilities of the city of Fullerton with all other jurisdictions in the county can be found in Chapter 7, County Mitigation Capability Assessment.

Administrative and Technical

The following narrative details the administrative and technical capabilities of the city of Fullerton.

The city of Fullerton has an active city council. The city does not have a chief building official or inspector. The city has a LEPC through the county. The city does not have a civil engineer on staff but does have the option to contract engineering services when needed. Emergency management is available throughout the county. The city can contract with the SCDRC or a private firm for planning grant writing and grant administration services. The city conducts infrastructure maintenance on an as-needed basis. The city council staff and fire department volunteers have administration capabilities for mitigation. The Dickey County Sheriff and the N.D. State Highway Patrol assist in law enforcement. The city does not have generators. There is no ambulance service in the city of Fullerton. The auditor reports hazard data to the emergency manager. There is a volunteer fire department, but no EMS or law enforcement in Fullerton.

Education and Outreach

The following narrative details the education and outreach capabilities of the city of Fullerton.

The city does not have non-profit organizations providing education on hazards but has access to the NDSU/Dickey County Extension Service; does not maintain a website with hazard education; have any entities providing public education on hazards but has access to the NDSU/Dickey County Extension Service, Dickey District Health Unit, and Dickey County Emergency Management for public education on hazards. The city does not conduct events on hazard education and there are no public-private partnerships providing education or outreach on hazards. Dickey County Emergency Management conducts education and outreach on hazards in the city.

Financial

The following narrative details the financial capabilities of the city of Fullerton.

The city does not set aside tax revenue for capital improvements. The city does not have storm water utility fees as it lacks a storm water system. The city does not levy special assessments for new development. Fullerton does not meet the low-to-moderate income ratio requirement of the CDBG program. Fullerton is at 50%. CDBG requires 51% as a minimum. The city does not have any private entities providing funding for mitigation. The rural electric cooperative for the surrounding area, water resource board, and surrounding township and school district are other sources of funding for mitigation.

Planning and Regulatory

The city does not have a capital improvement, comprehensive, drought management, land use, storm water, strategic, or water conservation plan. The city is FEMA flood mapped and will have a Floodplain Management Plan.

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.

8.4 City of Ludden

The profile and inventory, risk assessment and hazard scoring notes, mitigation projects, and capabilities for mitigation are shown in sections 8.4.1, 8.4.2, 8.4.3, and 8.4.4. Figure 8.4.1 shows an aerial view of the city of Ludden.

Figure 8.4.1 – City of Ludden

8.4.1 Profile and Inventory

The following summarizes the location, total population, vulnerable populations, housing units, services, jurisdictional buildings, emergency response services and utilities of the city of Ludden. Detailed narratives follow each section heading to profile the city. Additional information on the city of Ludden and Dickey County can be found in Chapter 4, Profile and Inventory.

Location

The city of Ludden is located between Hwy ND 11 and County Road 5, approximately 10.5 miles south of Oakes and about 19.8 miles east of Ellendale in Dickey County.

Population

The population is 19 per the U.S. Census Bureau, U.S. Department of Commerce. "ACS Demographic and Housing Estimates." American Community Survey, ACS 5-Year Estimates Data Profiles, Table DP05, 2023.

Vulnerable Populations

Housing Units and Population Age Distribution

Per the 2023 American Community Survey, there were 19 people and 9 housing units in the city. The median age in the city was 67.4 years. 10.5 percent of residents were under the age of 19; 0.0 percent were between the ages of 20 and 24; 5.3 percent were between the ages of 25 to 44; 5.3 percent were between ages 45 to 64; and 79.0 percent were 65 years of age or older. The gender makeup of the city was 47.4 percent male and 52.6 percent female.

Publicly Owned Jurisdictional Buildings

There are no generated public buildings in the city of Ludden and no official Red Cross storm shelter, or armory. The city of Ludden has a community center which is in the process of being built in 2025.

Services Provided

The city of Ludden obtains potable water from SE Water Users. The city has a sanitary sewer system and lagoon. The sanitary sewer system is served by two lift stations. The city does not have a storm water system. The city provides garbage sanitation services. There is an inert landfill. The official newspaper is the Dickey County Leader.

Emergency Response Services

Law enforcement is provided by the Dickey County Sheriff. The sheriff's office is located in Ellendale, ND. The city has no fire department, medical or EMS available. Fire and ambulance service come from Oakes.

Utility Providers

Potable water is provided by the city SE Water Users. Electricity is provided by Dakota Valley Electric. Natural gas is not available in the city of Ludden. Fuel oil and propane are used as an alternative heating source and is provided by companies chosen by the individual consumer. Cable, internet, and phone service is provided by DRN, BEK Communications, AT&T, TMobil, and Verizon. Individual homes may choose to subscribe to direct broadcast satellite service providers or use an antenna to receive over the air programming.

8.4.2 Risk Assessment and Hazard Scoring Notes

Table 8.4.1 summarizes the risk assessment scoring of the city of Ludden. The risk assessment and hazard scoring notes from the jurisdictional meeting for each hazard are shown after Table 8.4.2.

Table 8.4.1 – City of Ludden Jurisdiction Risk Assessment Scoring Summary

Risk Assessment						
Hazard	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Communicable Disease	4	4	4	3	2	**13**
Drought	2	2	2	2	3	**5**
Flood	3	2	2	4	2	**9**
Hazardous Material Release	3	2	2	3	1	**9**
Homeland Security Incident	3	2	1	1	2	**5**
Severe Summer Weather	3	4	4	4	2	**13**
Severe Winter Weather	3	4	4	4	2	**13**
Shortage or Outage of Critical Materials or Infrastructure	3	2	2	1	2	**6**
Transportation Accident	3	2	2	3	2	**8**
Urban Fire/Structure Collapse	3	2	2	3	1	**9**
Wildland Fire	4	2	2	3	1	**10**
Windstorm	3	4	4	4	1	**14**
Dam Failure	1	1	1	1	1	**3**

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

City of Ludden– Hazard Scoring

Communicable Disease – 13

Impact	4	• Covid Pandemic – 2020-2023 - Global supply chain disruptions. - Economic and family disruption from covid precautions. Churches, couldn't visit family in hospitals - Shortage of hospital beds, staff and medical stress until vaccines were put out. - Isolation - Businesses Shut Down - Cost of living increases - Mental Health Issues - Loss of Life - Initial Covid Vaccine Shortage and PPE Shortage - Strain on emergency services as a whole • U.S. declared an H1N1 pandemic in 2009 • U.S. experienced a vaccine shortage in 2009 • Potential loss of life • Entire City could be impacted by an outbreak
Frequency	4	• Seasonal flu happens every year

		• Crop and localized livestock loss occur every year to a varying degree
Likelihood	4	• Seasonal flu happens every year • Tuberculosis and rabies are very low numbers for the area
Vulnerability	3	• More vulnerable: 79 percent of the population is over age 65 • More vulnerable: Some abandoned buildings and homes in town • More vulnerable: No stockpile of medical supplies • More vulnerable: The city has no medical facilities, public fueling capacity or lodging • More vulnerable: Some lots in town are overgrown with vegetation • More vulnerable: Blighted structures and by individuals who hoard or collect • More vulnerable: Dependent on vaccines being developed for any new viruses and picking the right strains of flu for the flu vaccine • More vulnerable: No local ambulance, prolonged response times • Less vulnerable: Residents mow lawns to keep vegetation under control • Less vulnerable: City mows overgrown lots • Less vulnerable: Internet connections and TV help inform residents • Less vulnerable: Fire Service and First Responders
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish large projects independently

Drought - 5

Impact	2	• Range Land Fire Index Used • Hay shortages during times of drought impact livestock • Loss of farm economy impacts service industries • Water holes that supply livestock are impacted
Frequency	2	• High possibility of drought in any year due to the clay soil in the county • Burn bans happen yearly • Dickey County was very dry during the 1980's • 1988 was an especially dry year, along with 2016
Likelihood	2	• Depending on duration, vulnerability changes • More vulnerable: 79% of the population is over 65 • More vulnerable: There are several ag fires a year (tractors, hay bales, field fires) most all are mutual aided to Ellendale when Ludden doesn't answer two pages adding up to 15 minutes before Ellendale Fire is paged • The city has no public works personnel or equipment • More vulnerable: There is no fire, EMS or law. All responders come from Oakes with a 20-minute average response • More vulnerable: There is no public works personnel or equipment-all maintenance is contracted out as needed • More vulnerable: City does not have water reserves, like a water tower • More vulnerable: Economy relies heavily on farming • More vulnerable: New equipment is needed for neighboring fire departments and ambulance services • Less vulnerable: Burn bans implemented during dry periods • Less vulnerable: City located adjacent to James River and surrounding sloughs, which acts as a source of backup water if necessary

		• Less vulnerable: City purchased floating pumps and discharge hoses to use in pumping water for general use
Vulnerability	2	• Depending on duration, vulnerability changes • More vulnerable: 79% of the population is over 65 • More vulnerable: There are several ag fires a year (tractors, hay bales, field fires) most all are mutual aided to Ellendale when Ludden doesn't answer two pages adding up to 15 minutes before Ellendale Fire is paged • The city has no public works personnel or equipment • More vulnerable: There is no fire, EMS or law. All responders come from Oakes with a 20-minute average response • More vulnerable: There is no public works personnel or equipment-all maintenance is contracted out as needed • More vulnerable: City does not have water reserves, like a water tower • More vulnerable: Economy relies heavily on farming • More vulnerable: New equipment is needed for neighboring fire departments and ambulance services • Less vulnerable: Burn bans implemented during dry periods • Less vulnerable: City located adjacent to James River and surrounding sloughs, which acts as a source of backup water if necessary • Less vulnerable: City purchased floating pumps and discharge hoses to use in pumping water for general use
Capability	3	• Active city council • The elevator in town has some manpower, heavy equipment and work with area farmers to be pro-active in protecting the city • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Flood - 9

Impact	3	• Areas surrounding the town suffer from damaged roads, bridges and culverts creating emergency access problems as well as the occasional downed power lines • Washed out culverts • Cemeteries under water • Water seepage into basements because water table is high • Blocked roads limit access for emergency services and daily routines. • Increased mosquito population and transmitting of diseases from standing water. • Property and crop damage or loss • Potential injury or loss of life • Flooded roads block bus routes transporting kids to school • Wastewater outage • Flat terrane and lakes filled does result in overland flooding due to the lack of rivers
Frequency	2	• Depends largely on weather patterns
Likelihood	2	• Heavy spring melting and heavy rains cause flooding
Vulnerability	4	• More vulnerable: Ambulances, school buses, fire protection having to detour • More vulnerable: Individuals driving on flooded highways • More vulnerable: 79 percent of the population is over age 65

		• More vulnerable: City lacks equipment and infrastructure and has no public works personnel or equipment. All maintenance is contracted out as needed • More vulnerable: Lift Station and lagoon would be inundated • More vulnerable: Lack of proper storm water system • More vulnerable: Lack of drain tile in the area • More vulnerable: Individuals living on a road must go 10 miles instead of 5 to go through dry roads • More vulnerable: Overland flooding and yearly snow melt are huge issues in this low-lying town. They have invested in ditches and pumps to remove water. Overland flooding can damage roads and impede access to rural farms as well as the town. This event happens to some level every spring and after significant rain events • More vulnerable: James River flooding is an issue for Ludden • More vulnerable: 2009 and 2010 flooding saw the river within five feet of the houses • More vulnerable: Lack of manpower by the city and public • Less vulnerable: No school within city • Less vulnerable: Elevation of city would protect from flood waters
Capability	2	• Have flood plane • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • Siren system can be radio actuated by law enforcement or Dickey County Emergency Management • The elevator in town has some manpower, heavy equipment and work with area farmers to be pro-active in protecting the city

Hazardous Material Release - 9

Impact	3	• Potential injury or loss of life • Crop and livestock loss • Economy loss • Fire potential • Blocked roads leading to loss of mobility • Small size of city could lead to large percentage of population affected
Frequency	2	• Minor spills happen yearly • No major occurrences or incidences
Likelihood	2	• Minor spills will happen
Vulnerability	3	• More vulnerable: 79 percent of the population is over age 65 • More vulnerable: Propane is used for heating alternative • More vulnerable: Trucks and farmers transporting larger tanks more frequently • More vulnerable: High Risk of Hazardous chemical release or transportation accident as it is on state highway • More vulnerable: The city has no public works personnel or equipment • More vulnerable: There is no public fueling capacity or public lodging • More vulnerable: No stockpile of medical supplies
Capability	1	• Active city council • City has a radio-operated storm siren operated by Emergency Management

		• Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Homeland Security Incident – 5

Impact	3	• Potential injury or loss of life • Loss of economy • Loss of livestock • Potential for large percentage of population loss • Emergency services could be overwhelmed
Frequency	2	• Always a possibility of an event occurring • No incidents have occurred
Likelihood	1	• Always a possibility of an event occurring.
Vulnerability	1	• More vulnerable: Limited mental health services • More vulnerable: 79 percent of population is over age 65 • More vulnerable: Small town, everyone is impacted, fearful and anxious • More vulnerable: Influx of population from other parts of the U.S. • More vulnerable: No local law enforcement, depends on County Sheriff • More vulnerable: Located at the crossroads of two major highways • Less vulnerable: Sparse population and rural nature of the city
Capability	2	• Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Severe Summer Weather - 13

Impact	3	• Hail damage to homes and buildings (broken windows, siding and shingles) • Power outages • Economy loss • Lightning strikes cause fires • Potential injury or loss of life • High winds damage property • Heavy rain produces flash flooding • Fire potential if lightning occurs during drought • Prolonged response times and limited access for emergency services
Frequency	4	• Multiple storms are experienced annually causing property damage • Extreme summer weather seasons occur every two to three years
Likelihood	4	• Multiple storms are experienced annually causing property damage. • More intense weather in recent years • More rapid, heavy rain events occurring each year
Vulnerability	4	• More vulnerable: 79% of the population is elderly over age 65 • More vulnerable: No EMS in the town. All responders come from Oakes with a 20-minute average response on a good weather day • More vulnerable: Populations that lack a backup power source • More vulnerable: No local law enforcement, depends on County Sheriff • More vulnerable: No generated public building or storm shelter in town. Area receives 4-5 power outages lasting more than 8 hours and at least one lasting 2-3 days • More vulnerable: City has no public works personnel or equipment

		• More vulnerable: No medical facilities, public fueling capacity or lodging • More vulnerable: The immediate area surrounding the city is grassland and farmland allowing wind direct access on the community • More vulnerable: The city does not have a shelter • More vulnerable: New equipment is needed for neighboring fire departments and ambulance services • Less vulnerable: Sparse population and rural nature of the city • Less vulnerable: City lacks early warning system and has a radio controlled for remote storm warning • Less vulnerable: Roads in and out of town are well maintained • Less vulnerable: The City purchased discharge hoses to pump excess water out of the city
Capability	2	• Limited tax base • No Building Code enforcement • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • City has a radio operated storm siren operated by Emergency Management

Severe Winter Weather - 13

Impact	3	• Storms cause travel issues, power outages, and property damage • Potential isolation of community • Severe low temperatures increase utility costs and affect alternative fuel • Potential injury or loss of life • Economy loss • Increased cost for snow removal • Highways and city streets become icy and blocked • Heavy snow results in potential flooding in the spring • City streets build up with compacted snow causing damage to streets • Increased potential for hazardous material release • Temporary outage of emergency services
Frequency	4	• Occurs annually, few years without severe winter weather • Years with multiple winter events are the normal
Likelihood	4	• Will happen in the future due to the climate, occurs annually
Vulnerability	4	• More vulnerable: 79% of population is elderly over age 65 • More vulnerable: No fire, medical facilities or EMS. All responders come from Oakes with a 20-minute average response • More vulnerable: No local law enforcement, depends on County Sheriff which takes a minimum of one-half hour to arrive • More vulnerable: Removal of shelter belts increases ground blizzard conditions • More vulnerable: No shelter • More vulnerable: City has no public works personnel or equipment • More vulnerable: No public fueling capacity or public lodging • Less vulnerable: Small community where neighbors help neighbors
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

		• There are a few certified, trained and equipped citizens in the community • City has a radio operated storm siren operated by Emergency Management • The elevator in town has some manpower, heavy equipment and work with area farmers to be pro-active in protecting the city

Shortage or Outage of Critical Materials or Infrastructure – 6

Impact	3	• Long periods of time without power or water could lead to loss of life, due to the winter climate and high population over age 65 • Reduced mobility from blocked roads • Limited drinking water and functionality of sanitary sewer • City could be left without power for heating and cooling • Loss of power can limit accessibility to fuel sources • Loss of food sources as refrigeration units are without power • Loss of economy • Loss of internet affects individuals and businesses • Delayed emergency services • Mail outages for a day or longer in winter of 2016-2017
Frequency	2	• Short-term power outages are experienced annually but are infrequent
Likelihood	2	• No improvements to power infrastructure planned • Power poles and wires of the power grid are outdated/suspended
Vulnerability	1	• More vulnerable: 79 percent of population is elderly over age 65 • More vulnerable: No backup generator for city infrastructure may cause sewer backup or outage of drinking water • More vulnerable: No public fueling capacity or public lodging • More vulnerable: No fire, medical facilities, EMS or law in town • More vulnerable: Access to rural areas limited during a blizzard • More vulnerable: No generated public building or storm shelter in town • Less vulnerable: Some residents grow local food supply • Less vulnerable: Water is provided by the city • Less vulnerable: Some residents have their own generator
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • City has a radio operated storm siren operated by Emergency Management

Transportation Accident - 8

Impact	3	• Potential injury or loss of life • Economy and property loss • Potential hazardous materials release • Potential fire
Frequency	2	• No major accidents in the area in recent years • Many cars to deer accidents in the past several years • Plan crash involving an area farmer
Likelihood	2	• No major accidents in the area in recent years
Vulnerability	3	• More vulnerable: 79 percent of population is over age 65 • More vulnerable: Increased amount of time students spend on buses

		• More vulnerable: Trucks and farmers transporting larger tanks more frequently on highway through the city limits • More vulnerable: Anhydrous tanks driven through and parked in the city. • More vulnerable: High risk of hazardous chemical release or transportation accident as it is located close to highway • More vulnerable: No fire, EMS, medical facility in town • More vulnerable: No local law enforcement, depends on County Sheriff • Less vulnerable: No airport • Less vulnerable: City lacks early warning system and has a radio-controlled remote storm warning
Capability	2	• First Responder Group in Ellendale and Oakes • City has a radio storm siren operated by Emergency Management • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Urban Fire/Structure Collapse - 9

Impact	3	• Potential injury or loss of life • Property, building or economy loss • Loss of community assets • Loss of critical facilities and infrastructure • Potential temporary homeless population due to lack of alternative housing
Frequency	2	• Always possible • Bans are issued frequently according to the ND Fire Index
Likelihood	2	• Always possible • Bans are issued frequently according to the ND Fire Index.
Vulnerability	3	• More vulnerable: Older homes with older wiring • More vulnerable: Seasonal homes unoccupied • More vulnerable: Lack of alternative housing for displaced residents • More vulnerable: Distance from neighboring fire departments can lead to more issues and prolonged response times. • More vulnerable: No Emergency Services • More vulnerable: Abandoned buildings and single-family homes • More vulnerable: Lack of crop break around city • More vulnerable: Lack of fire department • Less vulnerable: Have been able to contain fires to one building
Capability	1	• Active City Council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Wildland Fire - 10

Impact	4	• Economy loss • Crop, bale, farm equipment, livestock and graze land loss • Potential injury or loss of life • Potential hazardous material release • Health hazard due to poor air quality • Loss of wildlife habitat • Farm equipment, lightning strikes, power line sparks, and controlled burns cause fires
Frequency	2	• Wildland/grass fires occur annually due to climate and economy.
Likelihood	2	• With continued controlled burns by farmers there is always a possibility for the hazard • Dry conditions experienced annually for a couple weeks • Farm equipment, lightning strikes, power line sparks, and controlled burns cause fires annually
Vulnerability	3	• More vulnerable: Farmland and open areas • More vulnerable: Windy conditions each year • More vulnerable: Lack reliable source of water for fire suppression • More vulnerable: Strain on surrounding fire departments and resources – No Emergency Services • More vulnerable: Spacing of houses could lead to loss of multiple structures • More vulnerable: Lack of fire break around the city • More vulnerable: Age of structures and wiring • More vulnerable: Lack reliable source of water for fire suppression • Less vulnerable: Decreasing CRP • Less vulnerable: City maintains overgrown lots • Less vulnerable: City has a radio siren operated by Emergency Management • More vulnerable: New equipment is needed for neighboring fire departments and ambulance services
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • There are few certified trained and equipped citizens in the community • Mutual Aid with Ellendale and Oakes

Windstorm - 14

Impact	3	• Downed trees • Buildings loss • Downed power poles and lines • Economy loss • Damage to homes and community buildings such as broken windows, loss of shingles • Potential loss of life • Potential injury • Potential structure fires • Contributes to spread of wildland fire

		• Increase in traffic accidents from low visibility during severe summer and/or winter weather • Straight line winds occur in summer months
Frequency	4	• Hazard occurs multiple times each year and is a secondary result from severe summer weather or severe winter weather • Strong winds are common in the city in all weather conditions • Approximately 50 incidents of windstorms occurred between 1960 and 2016 • Blizzard conditions occur frequently in winter months due to climate • Power lines are damaged causing outages annually
Likelihood	4	• Strong winds are common in the city in all weather conditions
Vulnerability	4	• More vulnerable: Power lines providing power to the city are not buried and outdated • More vulnerable: There is no fire, EMS, medical or law in the town. All responders come from Oakes with a 20-minute average response on a good weather day • Less vulnerable: Residents have equipment to clear debris or move snow • More vulnerable: Age of structures and housing stock • More vulnerable: Has not adopted state building codes • More vulnerable: New equipment is needed for neighboring fire departments and ambulance services • Less vulnerable: City has an inert landfill for debris and branches
Capability	1	• Capabilities to respond, but nothing can be done to prepare. • Mutual aid agreements for emergency services • No emergency services • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • Elevator in town has some manpower, heavy equipment and work with area farmers to be pro-active in protecting the city • City has a radio operated storm siren operated by Dickey County Emergency Management

Dam Failure – 3

Impact	1	• Potential loss of life
Frequency	1	• There is no history of dam failure
Likelihood	1	• Not probable in the future
Vulnerability	1	• More vulnerable: No plan for dam failure since there is no history and no high-risk dams • Less vulnerable: No School within City • Less vulnerable: Elevation of the city prevents inundation of the city
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish large projects independently

8.4.3 Mitigation Strategy

This update of the Dickey County Multi-Jurisdictional Multi-Hazard Plan includes a mitigation strategy consisting of five goals in Chapter 6.

W1`Problem Statement

The city of Ludden identified its high senior population and isolated populations in the surrounding countryside as necessary to mitigate impacts from severe summer weather, severe winter weather, windstorm, flood, and shortage or outage of critical materials or infrastructure. The lack of a storm water system is inadequate as overland flooding occurs on an annual basis in certain areas. The emergency siren is located at the fire hall. It is radio control activated but needs to be upgraded with a siren that could be activated by dispatch. There are no dispatch fire sirens in our area. The siren is rad00io controlled for remote storm warning. Due to the location of the city, isolation from severe weather and shortage or outage of critical materials or infrastructure such as emergency services, power, and roads is frequent. The number of abandoned buildings, single-family homes, and aging structures increase the impact of and vulnerability to communicable disease, urban fire/structure collapse, wildland fire and windstorm. The increase in economic activity in the area, farmers hauling anhydrous and other materials to and from farm sites through the City, and increased storage of chemicals on farm sites used for agriculture production increases the impact of and vulnerability to hazards.

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.

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.

Each identified resource in the four categories can be used to implement mitigation strategies and access funding for projects. Information on the capabilities of the city was gathered at its jurisdictional meeting, committee meetings, and interviews during the planning process.

Administrative and Technical
The following narrative details the administrative and technical capabilities of the city of Ludden.

The city of Ludden has an active city council. The city does not have a chief building official or inspector. The city does not have a civil engineer on staff but does have the option to contract for engineering services when needed. Emergency management is available through the county. The city can contract with the SCDRC or a private firm for planning, grant writing and grant administration services. The city conducts infrastructure maintenance on an as-needed basis. The city council, staff and fire department volunteers have administration capabilities for mitigation. The Dickey County Sheriff and the N.D. State Highway Patrol assist in law enforcement. The city does not have generators. The

mayor reports hazard data to the emergency manager. There is no fire, medical, EMS or law enforcement in Ludden.

Education and Outreach
The following narrative details the education and outreach capabilities of the city of Ludden.

The city does not have non-profit organizations providing education on hazards but has access to the NDSU/Dickey County Extension Service. The city does not maintain a website with hazard education. The city does not have any entities providing public education on hazards but has access to the NDSU/Dickey County Extension Service, Dickey District Health Unit, and Dickey County Emergency Management for public education on hazards. The city does not conduct events on hazard education. There are no public-private partnerships providing education and outreach on hazards. Dickey County Emergency Management conducts education and outreach on hazards in the city.

Financial

The following narrative details the financial capabilities of the city of Ludden.

The city does not set aside tax revenue for capital improvements. The city does not have storm water utility fees as it lacks a storm water system. Ludden does not meet the low-to-moderate income ratio requirement of the CDBG program. The rural electric cooperative for the surrounding area, water resource board, and surrounding township and school district are other sources of funding for mitigation.

Planning and Regulatory
The following narrative details the planning and regulatory capabilities of the city of Ludden.
The city does not have a capital improvement, comprehensive, drought management, land use, storm water, strategic, or water conservation plan. The city is FEMA flood mapped and will have a Floodplain Management Plan.

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.

8.5 City of Monango

The profile and inventory, risk assessment and hazard scoring notes, mitigation projects, and capabilities for mitigation are shown in sections 8.5.1, 8.5.2, 8.5.3, and 8.5.4. Figure 8.5.1 shows an aerial view of the city of Monango.

Figure 8.5.1 – City of Monango

8.5.1 Profile and Inventory

The following summarizes the location, total population, vulnerable populations, housing units, services, jurisdictional buildings, emergency response services and utilities of the city of Monango. Detailed narratives follow each section heading to profile the city.

Location

The city of Monango is located at the intersections of Hwy 281 and 86th Street SE, approximately 12 miles north of Ellendale and about 11 miles southeast of Fullerton in Dickey County.

Population

The population is 14 per the per the U.S. Census Bureau, U.S. Department of Commerce. "ACS Demographic and Housing Estimates." American Community Survey, ACS 5-Year Estimates Data Profiles, Table DP05, 2023.

Housing Units and Population Age Distribution

Per the 2023 American Community Survey, there were 14 people and 15 housing units in the city. The median age in the city was 7.5 years. 71.5 percent of residents were under the age of 20; 0 percent were between the ages of 20 and 24; 28.6 percent were from 25 to 44; 0 percent were from 45 to 64; and 0 percent were 65 years of age or older. The gender makeup of the city was 28.6 percent male and 71.4 percent female.

Publicly Owned Jurisdictional Buildings

There are no public buildings in the city of Monango, nor an official Red Cross storm shelter, or armory.

There is a community owned WPA gym in the center of town.

Services Provided

The city of Monango obtains potable water from SE Water Cooperative. The city has a sanitary sewer system and lagoon. The sanitary sewer system is served by two lift stations. The city does not have a storm water system. Gahner Sanitation provides garbage sanitation services. The city maintains an inert landfill. The official newspaper is the Dickey County Leader.

Emergency Response Services

Law enforcement is provided by the Dickey County Sheriff. The sheriff's office is located in Ellendale, ND. The city has no fire department or EMS available. Fire and ambulance services come from Ellendale.

Utility Providers

Potable water is provided by the city SE Water Cooperative. Electricity is provided by Montana Dakota Utilities. Natural gas is not available in the city of Monango. Fuel oil and propane are used as an alternative heating source and are provided by companies chosen by the individual consumer. Cable, internet, and phone services are provided by BEK Communications, AT&T and Verizon. Individual homes may choose to subscribe to direct broadcast satellite service providers or use an antenna to receive programming.

8.5.1 Risk Assessment and Hazard Scoring Notes

Table 8.5.2 summarizes the risk assessment scoring of the city of Monango. The risk assessment and hazard scoring notes from the jurisdictional meeting for each hazard are shown after Table 8.5.2.

Table 8.5.1 – City of Monango Jurisdiction Risk Assessment Scoring Summary

Risk Assessment						
Hazard	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Communicable Disease	2	4	4	2	2	**10**
Drought	3	3	3	3	1	**11**
Flood	4	2	2	3	1	**10**
Hazardous Material Release	3	3	3	4	1	**12**
Homeland Security Incident	3	1	1	4	1	**8**
Severe Summer Weather	4	3	3	3	1	**12**
Severe Winter Weather	3	4	4	4	1	**14**
Shortage or Outage of Critical Materials or Infrastructure	3	2	2	3	1	**9**
Transportation Accident	3	2	2	2	2	**7**
Urban Fire/Structure Collapse	3	3	3	1	1	**7**
Wildland Fire	4	2	2	1	1	**8**
Windstorm	4	2	2	1	1	**8**
Dam Failure – not a threat	N/A	N/A	N/A	N/A	N/A	N/A

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

City of Monango– Hazard Scoring

Communicable Disease - 10

Impact	2	• Covid Pandemic – 2020-2023 - Global supply chain disruptions. - Economic and family disruption from covid precautions. Churches, couldn't visit family in hospitals - Shortage of hospital beds, staff and medical stress until vaccines were put out. - Isolation - Businesses Shut Down - Cost of living increases - Mental Health Issues - Loss of Life - Initial Covid Vaccine Shortage and PPE Shortage - Strain on emergency services as a whole • U.S. declared an H1N1 pandemic in 2009 • U.S. experienced a vaccine shortage in 2009 • Potential loss of life • Entire City could be impacted by an outbreak
Frequency	4	• Seasonal flu happens every year • Crop and localized livestock loss occur every year to a varying degree
Likelihood	4	• Seasonal flu happens every year • Tuberculosis and rabies are very low numbers for the area
Vulnerability	2	• More vulnerable: Some abandoned buildings and homes in town • More vulnerable: No stockpile of medical supplies • More vulnerable: The city has no medical facilities • More vulnerable: Some lots in town are overgrown with vegetation • More vulnerable: Blighted structures occupied by individuals who hoard or collect • More vulnerable: Dependent on vaccines being developed for any new viruses and picking the right strains of flu for the flu vaccine • More vulnerable: Located on U.S. Highway 281 • Less vulnerable: 0 percent of population is over age 65 • Less vulnerable: Residents mow lawns to keep vegetation under control • Less vulnerable: City mows overgrown lots • Less vulnerable: Internet connections and TV help inform residents • Less vulnerable: Fire Service and First Responders
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish large projects independently

Drought - 11

Impact	3	• Range Land Fire Index Used • Hay shortages during times of drought impact livestock • Loss of farm economy impacts service industries • Water holes that supply livestock are impacted

Frequency	3	• High possibility of drought in any year due to the clay soil in the county. Dickey County was very dry during the 1980's • 1988 was an especially dry year, along with 2016
Likelihood	3	• Cyclical pattern to rains normally wetter in the east than in the west. In 2016 this pattern was reversed • High possibility of drought in any year due to the clay soil
Vulnerability	3	• Depending on duration, vulnerability changes • More vulnerable: There are several Ag fires a year (tractors, hay bales, field fires); fire response is 20 min away coming from Ellendale • The city has no public works personnel or equipment • More vulnerable: There is no fire, EMS or law in Monango. All responders come from Ellendale with a 20-minute average response on a good weather day • More vulnerable: There is no public works personnel or equipment; all maintenance is contracted out as needed • More vulnerable: There is no water storage within the city • More vulnerable: Economy relies heavily on farming • Less vulnerable: 0 percent of population is over age 65 • Less vulnerable: Burn bans implemented during dry periods
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Flood - 10

Impact	4	• There are no rivers. Overland flooding is not much of an issue for the town as it is on high ground directly off of US Hwy 281. Areas surrounding the town suffer from damaged roads, bridges and culverts creating emergency access problems as well as the occasional downed power lines • Washed out culverts • Cemeteries under water • Water seepage into basements • Blocked roads limit access for emergency services and daily routines. • Increased mosquito population and transmission of diseases from standing water • Property and crop damage or loss • Potential loss of life • Flooded roads block bus routes transporting kids to school • Wastewater outage
Frequency	2	• Depends largely on weather patterns
Likelihood	2	• Heavy spring melting and heavy rains cause flooding
Vulnerability	3	• More vulnerable: Ambulances, school buses, fire protection having to detour • More vulnerable: Individuals driving on flooded highways • More vulnerable: City lacks equipment and infrastructure and has no public works personnel or equipment. All maintenance is contracted out as needed • More vulnerable: Septic tanks can become inundated • More vulnerable: Lack of proper storm water system • More vulnerable: Lack of drain tile in the area • More vulnerable: Individuals living on a road must go 10 miles instead of 5 • More vulnerable: Lack of manpower by the city and public

		• Less vulnerable: 0 percent of population is over age 65 • Less vulnerable: No school within city • Less vulnerable: No river or large body of water and therefore is not vulnerable to severe flooding • Less vulnerable: Elevation of city would protect from flood waters
Capability	1	• No flood plan • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Hazardous Material Release - 12

Impact	3	• Potential injury or loss of life • Crop or livestock loss • Economy loss • Fire potential • Blocked roads leading to loss of mobility • Small size of city could lead to large percentage of population affected
Frequency	3	• Minor spills happen yearly • No major occurrences or incidences
Likelihood	3	• Minor spills will happen
Vulnerability	4	• More vulnerable: Propane is used for heating alternative • More vulnerable: Trucks and farmers transporting larger tanks more frequently on highways through the city limits • More vulnerable: The city has no public works personnel or equipment; all maintenance is contracted out as needed • More vulnerable: No stockpile of medical supplies • Less vulnerable: 0 percent of population is over age 65
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Homeland Security Incident – 8

Impact	3	• Potential loss of life • Loss of economy • Loss of livestock • Potential for large percentage of population loss • Emergency services could be overwhelmed
Frequency	1	• Always a possibility of an event occurring • No incidents have occurred
Likelihood	1	• Always a possibility of an event occurring
Vulnerability	4	• More vulnerable: Limited mental health services. • More vulnerable: Small town, everyone is impacted, fearful and anxious • More vulnerable: Influx of population from other parts of the U.S. • More vulnerable: No local law enforcement, depends on County Sheriff • More vulnerable: Located on Hwy 281 • Less vulnerable: 0 percent of population is over age 65

		• Less vulnerable: Sparse population and rural nature of the city
Capability	1	• Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Severe Summer Weather - 12

Impact	4	• Hail damage to homes and community buildings including broken windows, siding and shingles. • Power outages • Economy loss • Lightning strikes cause fires • Potential injury • Potential loss of life • High winds damage property • Heavy rain produces flash flooding • Fire potential if lightning occurs during drought • Prolonged response times and limited access for emergency services
Frequency	3	• Multiple storms are experienced annually causing property damage • Extreme summer weather seasons occur every two to three years • 2011 storm took out half of the city's trees
Likelihood	3	• Multiple storms are experienced annually causing property damage • More intense weather in recent years • More rapid, heavy rain events occurring each year
Vulnerability	3	• More vulnerable: Lack of manpower at emergency services • More vulnerable: Populations that lack a backup power source • More vulnerable: No local law enforcement, depends on County Sheriff • More vulnerable: No generated public building or storm shelter in town. Area receives 4-5 power outages lasting more than 8 hours and usually at least one which lasts 2-3 days • Less vulnerable: 0 percent of population is over age 65 • Less vulnerable: Sparse population and rural nature of the city • Less vulnerable: City lacks early warning system and has a radio controlled for remote storm warning • Less vulnerable: Roads in and out of town are well maintained
Capability	1	• Limited tax base • No Building Code enforcement • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • City has a radio operated storm siren operated by Dickey County Emergency Management

Severe Winter Weather - 14

Impact	3	• Storms cause travel issues, power outages, and property damage • Potential isolation of community • Severe low temperatures increase utility costs and affect alternative fuel • Potential loss of life • Potential injury

		• Economy loss • Increased cost for snow removal • Highways and city streets become icy and blocked • Heavy snow results in potential flooding in the spring • City streets build up with compacted snow causing damage to streets • Increased potential for hazardous material release • Temporary outage of emergency services
Frequency	4	• Occurs annually, few years without severe winter weather • Years with multiple winter events are the normal
Likelihood	4	• Will happen in the future due to the climate, occurs annually
Vulnerability	4	• More vulnerable: Lack of manpower at emergency services • More vulnerable: No local law enforcement, depends on County Sheriff which takes a minimum of one-half hour to arrive. EMS is out of Ellendale again twenty-minute response on a good weather day • More vulnerable: Removal of shelter belts increases ground blizzard • More vulnerable: No gas station • More vulnerable: No city shelter • More vulnerable: No grocery store • Less vulnerable: 0 percent of population is over age 65 • Less vulnerable: City lacks early warning system and has a radio controlled for remote storm warning. • Less vulnerable: Small community where neighbors help neighbors
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • There are a few certified, trained and equipped citizens in the community • City has a radio operated storm siren operated by Emergency Management

Shortage or Outage of Critical Materials or Infrastructure – 9

Impact	3	• Long periods of time without power or water could lead to loss of life, due to the winter climate and high population over age 65 • Reduced mobility from blocked roads • Limited drinking water and functionality of sanitary sewer • City could be left without power for heating and cooling • Loss of power can limit accessibility to fuel sources • Loss of food sources as refrigeration units are without power • Loss of economy • Loss of internet affects individuals and businesses • Delayed emergency services • Mail outages for a day or longer in winter of 2016-2017
Frequency	2	• Short-term power outages are experienced annually
Likelihood	2	• No improvements to power infrastructure planned • Power poles and wires of the power grid are outdated and suspended overhead
Vulnerability	3	• More vulnerable: No backup generator for city infrastructure may cause sewer backup or outage of drinking water

		• More vulnerable: 18 electricity dependent vulnerable populations that need electricity to run medical devices to live. Per the publichealthemergency.gov empower map • More vulnerable: No public fueling capacity • More vulnerable: No fire, EMS or law in town • More vulnerable: Access to rural areas limited during a blizzard • More vulnerable: No generated public building or storm shelter in town • Less vulnerable: 0 percent of population is over age 65 • Less vulnerable: Some residents grow local food supply • Less vulnerable: Water is provided by the city • Less vulnerable: Some residents have their own generator
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • City has a radio operated storm siren operated by Dickey County Emergency Management

Transportation Accident - 7

Impact	3	• Potential loss of life • Potential injury • Economy loss • Property loss • Potential hazardous materials release • Potential fire
Frequency	2	• No major accidents in the area in recent years
Likelihood	2	• No major accidents in the area in recent years
Vulnerability	2	• More vulnerable: Increased amount of time students spend on buses • More vulnerable: Anhydrous tanks driven through and parked in the city • More vulnerable: High risk of hazardous chemical release or transportation accident as it is on US Hwy 281. There is a fertilizer, seed operation in town • More vulnerable: Vehicles speed through town on US Hwy 281 • More vulnerable: No medical supplies in stock • More vulnerable: Fire Department has no equipment for accident extraction • More vulnerable: No local law enforcement, dependent on County Sheriff • Less vulnerable: 0 percent of population is over age 65 • Less vulnerable: No airport
Capability	2	• First Responder Group in Ellendale • City has a radio operated storm siren operated by Dickey County Emergency Management • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Urban Fire/Structure Collapse - 7

Impact	3	• Potential injury or loss of life • Property, building and economy loss

		• Loss of community assets • Loss of critical facilities and infrastructure • Potential temporary homeless population due to lack of alternative housing
Frequency	3	• Bans are issued frequently according to the ND Fire Index
Likelihood	3	• Bans are issued frequently according to the ND Fire Index
Vulnerability	1	• More vulnerable: Older homes with older wiring • More vulnerable: Seasonal homes unoccupied • More vulnerable: Spacing of houses could lead to loss of multiple structures • More vulnerable: Lack of alternative housing for displaced residents • More vulnerable: Distance from neighboring fire departments can lead to more issues and prolonged response times • More vulnerable: Abandoned buildings and single-family homes • Less vulnerable: City has a radio controlled for remote storm warning.
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Wildland Fire - 8

Impact	4	• Economy loss • Crop, bale, graze land, farm equipment and livestock loss • Potential injury or loss of life • Potential hazardous material release • Health hazard due to poor air quality • Loss of wildlife habitat • Farm equipment, lightning strikes, power line sparks, and controlled burns cause fires
Frequency	2	• Wildland fires occur annually due to climate and economy
Likelihood	2	• With continued controlled burns by farmers there is always a possibility for the hazard in the future • Dry conditions experienced annually for a couple weeks • Farm equipment, lightning strikes, power line sparks, and controlled burns cause fires annually
Vulnerability	1	• More vulnerable: Farmland and open areas • More vulnerable: Mutual aid fire department response times lengthen. No fire, EMS or law in the city. All responders come from Ellendale with a 20-minute average response on a good weather day • More vulnerable: Windy conditions each year • More vulnerable: Lack reliable source of water for fire suppression • More vulnerable: Strain on local fire departments and resources • More vulnerable: Spacing of houses could lead to loss of multiple structures • More vulnerable: Lack of fire break around the city • More vulnerable: State building codes not adopted or enforced • More vulnerable: Age of structures and wiring • More vulnerable: Lack reliable sources of water for fire suppression
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance

		• Lacks resources to accomplish projects independently • There are few certified trained and equipped citizens in the community • Mutual Aid with Ellendale

Windstorm - 8

Impact	4	• Downed trees, power poles and power lines • Economy loss • Damage to homes and buildings (broken windows, loss of shingles) • Potential injury or loss of life • Potential structure fires • Contributes to spread of wildland fire • City has lost many trees, buildings and structures due to high winds • Straight line winds occur in summer months
Frequency	2	• Hazard occurs multiple times each year and is a secondary result from severe summer weather or severe winter weather • Strong winds are common in the city in all weather conditions • Blizzard conditions occur frequently in winter months due to climate • Power lines are damaged causing outages annually
Likelihood	2	• Strong winds are common in the city in all weather conditions
Vulnerability	1	• More vulnerable: There are two mobile homes in the city • More vulnerable: Loss of trees leads to more ground blizzard conditions • More vulnerable: Power lines providing power to the city are not buried • Less vulnerable: Residents have equipment to clear debris or move snow • More vulnerable: Age of structures and housing stock • More vulnerable: Has not adopted state building codes • Less vulnerable: City has landfill for debris and branches • Less vulnerable: Fire Hall has truck for fire suppression and assistance
Capability	1	• Capabilities to respond, but nothing can be done to prepare • LEPC – Local Emergency Planning Committee • Mutual aid agreements for emergency services • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

8.5.3 Mitigation Strategy

This update of the Dickey County Multi-Jurisdictional Multi-Hazard Plan includes a mitigation strategy consisting of five goals in Chapter 6.

Problem Statement

The lack of a storm water system is inadequate as overland flooding occurs on an annual basis in certain areas. The emergency siren is located at the fire hall. It is radio control activated but needs to be upgraded with a siren that could be activated by dispatch. The siren is radio controlled for remote storm warning. Due to the location of the city, isolation from severe weather and shortage or outage of critical materials or infrastructure such as emergency services, power, and roads is frequent. The number of abandoned buildings, single-family homes, and aging structures increase the impact of and vulnerability to communicable disease, urban fire/structure collapse, wildland fire and windstorm. The increase in economic activity in the area, farmers hauling anhydrous and other materials to and from farm sites

through the City, and increased storage of chemicals on farm sites used for agriculture production increases the impact of and vulnerability to hazardous material release, homeland security incident, and transportation accident.

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.

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.

Each identified resource in the four categories can be used to implement mitigation strategies and access funding for projects. Information on the capabilities of the city was gathered at its jurisdictional meeting, committee meetings, and interviews during the planning process. Tables comparing the mitigation capabilities of the city of Monango with all other jurisdictions in the county can be found in Chapter 7, County Mitigation Capability Assessment.

Administrative and Technical

The following narrative details the administrative and technical capabilities of the city of Monango.

The city of Monango has an active city council. The city does not have a chief building official or inspector. The city has a LEPC through the county. The city does not have a civil engineer on staff but does have the option to contract for engineering services when needed. Emergency management is available through the County. The city can contract with SCDRC or a private firm for planning, grant writing and grant administration services. The city conducts infrastructure maintenance on an as-needed basis. The city council staff and fire department volunteers have administration capabilities for mitigation. The Dickey County Sheriff and the N.D. State Highway Patrol assist in law enforcement. The city does not have generators. There is no ambulance service in the city of Monango. The auditor reports hazard data to the emergency manager. There is no fire, EMS or law enforcement in Monango.

Education and Outreach

The following narrative details the education and outreach capabilities of the city of Monango.

The city does not have non-profit organizations providing education on hazards but has access to the NDSU/Dickey County Extension Service. The city does not maintain a website with hazard education. The city does not have any entities providing public education on hazards but has access to the NDSU/Dickey County Extension Service, Dickey District Health Unit, and Dickey County Emergency Management for public education on hazards. The city does not conduct events on hazard education. There are no public-private partnerships providing education and outreach on hazards. Dickey County Emergency Management conducts education and outreach on hazards in the city.

Financial

The following narrative details the financial capabilities of the city of Monango.

The city does not set aside tax revenue for capital improvements. The city does not have storm water utility fees as it lacks a storm water system. The city does not levy special assessments for new development. Monango does not meet the low-to-moderate income ratio requirement of the CDBG program. The city does not have any private entities providing funding for mitigation. The rural electric cooperative for the surrounding area, water resource board, and surrounding township and school district are other sources of funding for mitigation.

Planning and Regulatory

The following narrative details the planning and regulatory capabilities of the city of Monango.

The city does not have a capital improvement, comprehensive, drought management, land use, storm water, strategic, or water conservation plan. The city does not have a flood damage reduction study, flood insurance study, or impact fees. The city has not adopted state building codes. The city is FEMA flood mapped.

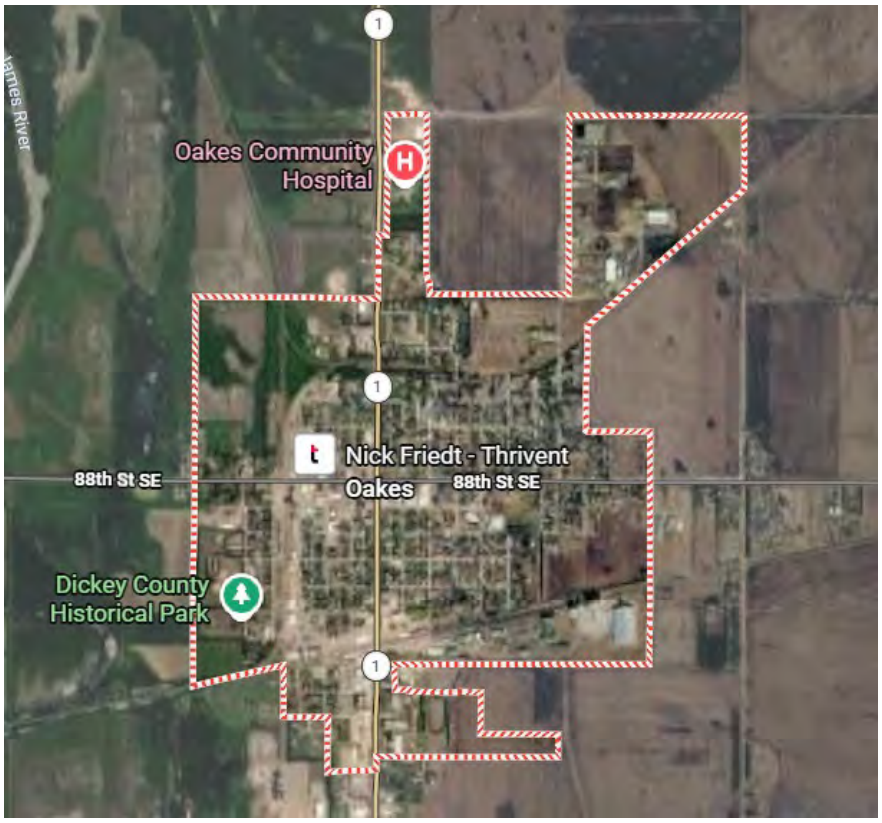
Plan Maintenance

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 located in Chapter 10 of this plan.

8.6 City of Oakes

Profile and inventory, risk assessment and hazard scoring notes, mitigation projects, and capabilities for mitigation are shown in sections 8.6.1, 8.6.2, 8.6.3, and 8.6.4. Figure 8.6.1 shows an aerial view of the city of Oakes.

Figure 8.6.1 – City of Oakes



8.6.1 Profile and Inventory

The following summarizes the location, total population, vulnerable populations, housing units, services, jurisdictional buildings, emergency response services and utilities of the city of Oakes. Detailed narratives follow each section heading to profile the city. Additional information on the city of Oakes and Dickey County can be found in Chapter 4, Profile and Inventory.

Location

The city of Oakes is located in southeastern North Dakota. Oakes is located 30.4 miles northeast of Ellendale, ND in Dickey County.

Population

The population is 2,046 per the per the U.S. Census Bureau, U.S. Department of Commerce. "ACS Demographic and Housing Estimates." American Community Survey, ACS 5-Year Estimates Data Profiles, Table DP05, 2023.

Vulnerable Populations

Housing Units, Household Size and Population Age Distribution

Per the Decennial Census of 2020, there were 771 households. The average household size was 2.33. Per the 2023 American Community Survey, the median age in the city was 38.9 years. 30.1% of residents were under the age of 20; 4.3% were between the ages of 20 and 24; 21.7% were from 25 to 44; 26.2% were from 45 to 64; and 17.6% were 65 years of age or older. The gender makeup of the city was 52.1% male and 47.9% female.

Publicly Owned Jurisdictional Buildings

The city of Oakes has a post office, fire department, ambulance, city hall, city shop, community center, Dickey County Courthouse, Dickey County Shop, Library (In the School), public park, golf course, public school, swimming pool, U.S. Post Office and a municipal police force.

Services Provided

The city of Oakes has its own modern water plant that includes two water towers and three wells and sewer infrastructure including a 3-cell lagoon as well as a well-equipped city public works crew. The sanitary sewer system is served by two lift stations. Portions of the City include a storm water system, but no storm water utility fees. The city provides garbage sanitation and maintains an inert landfill. The official newspaper is The Oakes Times.

Emergency Response Services

Law enforcement is provided by the municipal police force. The sheriff's office is located in Ellendale, ND. The city has a fire department, medical, ambulance and EMS available.

Utility Providers

Potable water is provided by the City. Electricity is provided by Ottertail Power. Natural gas is not available in the city of Oakes. Fuel oil and propane are used as an alternative heating source and is provided by companies chosen by the individual consumer. Cable, internet, and phone services are provided by Dickey Rural Network (DRN), BEK Communications, AT&T, Verizon and T-Mobile. Individual homes may choose to subscribe to direct broadcast satellite service providers or use an antenna to receive over the air programming.

8.6.2 Risk Assessment and Hazard Scoring Notes

Table 8.6.1 summarizes the risk assessment scoring of the city of Oakes. The risk assessment and hazard scoring notes from the jurisdictional meeting for each hazard are shown after Table 8.6.1.

Table 8.6.1 – City of Oakes Jurisdiction Risk Assessment Scoring Summary

Risk Assessment						
Hazard	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Communicable Disease	4	4	4	3	2	**13**
Drought	3	3	3	3	1	**11**
Flood	3	4	2	2	3	**8**
Hazardous Material Release	4	4	4	3	2	**13**
Homeland Security Incident	3	1	1	4	1	**8**
Severe Summer Weather	3	4	4	3	1	**13**
Severe Winter Weather	3	4	4	4	1	**14**
Shortage or Outage of Critical Materials or Infrastructure	4	2	2	3	1	**10**
Transportation Accident	4	4	4	3	2	**13**
Urban Fire/Structure Collapse	3	3	3	2	3	**8**
Wildland Fire	3	4	4	3	2	**12**
Windstorm	3	4	4	4	1	**14**
Dam Failure	1	1	1	1	1	**3**

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

City of Oakes– Hazard Scoring

Communicable Disease - 13

Impact	4	• Covid Pandemic – 2020-2023 - Global supply chain disruptions. - Economic and family disruption from covid precautions. Churches, couldn't visit family in hospitals - Shortage of hospital beds, staff and medical stress until vaccines were put out. - Isolation - Businesses Shut Down - Cost of living increases - Mental Health Issues - Loss of Life - Initial Covid Vaccine Shortage and PPE Shortage - Strain on emergency services as a whole • U.S. declared an H1N1 was a declared pandemic in 2009. • U.S. experienced a vaccine shortage in 2009. • Potential loss of life • Entire City could be impacted by an outbreak • Bird Flu – in dairy cattle and people – goats - could impact these things • Chronic Wasting – deer could impact • Wild game illnesses can become an issue for local domestic animals • Bio Security – From game illnesses.

Frequency	4	• Seasonal flu happens every year. • West Nile Disease occurs frequently • Crop and localized livestock loss occur every year to a varying degree
Likelihood	4	• Seasonal flu happens every year • West Nile has happened in the past few years • Tuberculosis and rabies are very low numbers for the area
Vulnerability	3	• More vulnerable: 17.6% of the population is over 65 • More vulnerable: Some abandoned buildings and homes in town • More vulnerable: No stockpile of medical supplies, vaccines (Little better because of covid issues) • More vulnerable: Some lots in town are overgrown with vegetation • More vulnerable: Blighted structures occupied by individuals who hoard or collect • More vulnerable: Dependent on vaccines being developed for any new viruses and picking the right strains of flu for the flu vaccine. • Less vulnerable: City mows overgrown lots • Less vulnerable: Internet connections and TV help inform residents • Less vulnerable: Volunteer Fire Service and First Responders • More Vulnerable - Influx of non-English speaking individuals • More Vulnerable – Influx of people brings in more communicable diseases that we were isolated from previously or not immune to. • Less people vaccinating in general
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish large projects independently

Drought - 11

Impact	3	• Hay shortages during times of drought impact livestock. • Loss of farm economy impacts service industries. • Water holes that supply livestock are impacted. • Increased risk of fires – wildland • Increased large fires
Frequency	3	• High possibility of drought in any year due to type of soil in the county. • Dickey County was very dry during the 1980's. • 1988 was an especially dry year, along with 2016.
Likelihood	3	• Cyclical pattern to weather patterns makes it possible
Vulnerability	3	• Depending on duration, vulnerability changes. • More vulnerable: 17.6% of the population is over 65 • More vulnerable: There are several ag fires a year (tractors, hay bales, field fires) • More vulnerable: Economy relies heavily on farming • Less vulnerable: Burn bans implemented during dry periods • More vulnerable: New fire equipment needed
Capability	1	• The city has fire protection, however, is dependent on access to water. • Active city council • The elevator in town has some manpower and equipment • Lacks technical, administrative and financial resources for mitigation

		• Relies on county, regional, state and other agencies for assistance • New fire equipment needed • Have many volunteers but getting them there when they are needed can be an issue due to working jobs.

Flood - 8

Impact	3	• Areas surrounding the town suffer from damaged roads, bridges and culverts creating emergency access problems • Downed power lines • Washed out culverts • Cemeteries under water • Water seepage into basements • Blocked roads limit access for emergency services and daily routines. • Increased mosquito population and transmitting diseases from standing water. • Property and crop damage or loss • Potential loss of life • Flooded roads block bus routes transporting kids to school • Waste water outage
Frequency	4	• Depends largely on weather patterns • Always possible as culverts and drainage have become blocked from flash flooding due to heavy precipitation and low-lying areas filling with water that lack proper drainage.
Likelihood	2	• Heavy spring melting and heavy rains cause flooding
Vulnerability	2	• More vulnerable: Ambulances, school buses, fire protection having to detour around flooding. • More vulnerable: Individuals driving on flooded highways • More vulnerable: 24.1% of population is over 65 • More vulnerable: Lift Station and lagoon would be inundated • More vulnerable: Lack of proper storm water system • More vulnerable: Lack of drain tile in the area • More vulnerable: When James River floods it cuts the county in half requiring the redistricting of all emergency services causing a huge strain in the system and citizens. • More vulnerable: Overland flooding and yearly snow melt are huge issues in this low-lying town. They have invested in ditches and pumps to remove water. Overland flooding can damage roads and impede access to rural farms as well as the town. This event happens to some level every spring and after significant rain events • More vulnerable: James River flooding is also a major issue for Oakes. • More vulnerable: 2009 and 2010 flooding saw the river within five feet of the houses • More vulnerable: Lack of manpower by the city and public • Less vulnerable: Elevation of city would protect from flood waters • Less vulnerable: City has their own water modern plant, city water and sewer infrastructure

Capability	3	• The City also participates in the NFIP, which requires communities to adopt and enforce ordinances that meet or exceed the requirements of FEMA. • Active city council and well-equipped City Public works crew • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Hazardous Material Release - 13

Impact	4	• Potential loss of life • Crop loss • Livestock loss • Economy loss • Fire potential • Blocked roads leading to loss of mobility • Small size of city could lead to large percentage of population affected
Frequency	4	• Minor spills happen yearly • No major occurrences or incidences
Likelihood	4	• Minor spills will happen
Vulnerability	3	• More vulnerable: 17.6% of the population is over 65 • More vulnerable: Propane is used for heating alternative • More vulnerable: Trucks and farmers transporting larger tanks more frequently on highways through the city limits. • More vulnerable: High Risk of Hazardous chemical release or transportation accident as it is on ND Hwy 1 and there is a fertilizer, seed, two railroad tracks and elevator operation in town • More vulnerable: City has a bulk propane plant, bulk fuels plant and storage facility. • More vulnerable: City does not have hazardous material route • Less vulnerable: There is public lodging and three public fueling facilities. • More vulnerable: No stockpile of medical supplies • More vulnerable: No stockpile of Hazmat capability and PPE • More vulnerable: 4 hours from hazmat capabilities • More vulnerable: Electric Cars – Fires in electric vehicles powered by high-voltage lithium-ion batteries pose a risk of electric shock to emergency responders from exposure to the high-voltage components of the damaged battery.
Capability	2	• Active city council • City has a radio-operated storm siren operated by Dickey County Emergency Management • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Homeland Security Incident - 8

Impact	3	• Potential loss of life • Loss of economy • Loss of livestock • Potential for large percentage of population loss • Emergency services could be overwhelmed
Frequency	1	• Always a possibility of an event occurring. • No incidents have occurred
Likelihood	1	• Always a possibility of an event occurring.
Vulnerability	4	• More vulnerable: Limited mental health services. • More vulnerable: 17.6% of the population is over 65 • More vulnerable: Small town, everyone is impacted, fearful and anxious • More vulnerable: Influx of population from other parts of the U.S. • More vulnerable: City has assisted living and rest home services. The rest home is not generated. • More vulnerable: The K-12 School and vocational tech are not generated • Less vulnerable: City has a hospital and two clinics. • Less vulnerable: Sparse population and rural nature of the city
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Severe Summer Weather - 13

Impact	3	• Hail damage to homes and community buildings including broken windows, siding and shingles. • Power outages • Economy loss • Lightning strikes cause fires • Potential injury • Potential loss of life • High winds damage property • Heavy rain produces flash flooding • Fire potential if lightning occurs during drought.
Frequency	4	• Multiple storms are experienced annually causing property damage. • Extreme summer weather seasons occur every two to three years.
Likelihood	4	• Multiple storms are experienced annually causing property damage. • More intense weather in recent years • More rapid, heavy rain events occurring each year
Vulnerability	3	• More vulnerable: 17.6% of the population is elderly over 65 • More vulnerable: Populations that lack a backup power source. • More vulnerable: Rest home, K-12 school and vocational tech are not generated • More vulnerable: City contains fuel and propane tanks within city limits adjacent to infrastructure and critical facilities • Less vulnerable: Sparse population and rural nature of the city • Less vulnerable: City has a shelter

		• Less vulnerable: Building codes and ordinances in place to assure safety in construction of buildings • Less vulnerable: City has clinic • Less vulnerable: Siren system can be radio actuated by law enforcement or Dickey County Emergency Management. • Less vulnerable: Roads in and out of town are well maintained
Capability	1	• Limited tax base • No Building Code enforcement • The elevator in town has some manpower, heavy equipment and work with area farmers to be pro-active in protecting the city. • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • The siren can be radio actuated by law enforcement or Dickey County Emergency Management.

Severe Winter Weather - 14

Impact	3	• Ice storms, heavy and blowing snow cause travel issues, power outages, and property damage • Potential isolation of community • Severe low temperatures increase utility costs and affect alternative fuel sources • Potential loss of life • Potential injury • Economy loss • Increased cost for snow removal • Highways and city streets become icy and blocked • Heavy snow results in potential flooding in the spring • City streets build up with compacted snow causing damage to streets • Increased potential for hazardous material release • Temporary outage of emergency services
Frequency	4	• Occurs annually, few years without severe winter weather • Years with multiple winter events are the normal
Likelihood	4	• Will happen in the future due to the climate, occurs annually
Vulnerability	4	• More vulnerable: 17.6% of the population is elderly over 65 • More vulnerable: Removal of shelter belts increases ground blizzard • More vulnerable: City Hall, K-12 and Vocational tech are not generated • Less vulnerable: The rest home, fire department, and hospitals have generators • Less vulnerable: City possesses street cleaning equipment • Less vulnerable: City shelter • Less vulnerable: City maintains a capital improvements plan • Less vulnerable: City has adopted building codes and ordinances • Less vulnerable: Only hospital in Dickey County • Less vulnerable: Small community where neighbors help neighbors • More vulnerable: City equipment is worn out – need new equipment
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation

		• Relies on county, regional, state and other agencies for assistance • There are a few certified, trained and equipped citizens in the community • City siren can be radio actuated by law enforcement or by Dickey County Emergency Management • The elevator in town has some manpower, heavy equipment and work with area farmers to be pro-active in protecting the city

Shortage or Outage of Critical Materials or Infrastructure - 10

Impact	4	• Long periods of time without power or water could lead to loss of life, due to the winter climate and high population over 65. • Reduced mobility from blocked roads • Limited drinking water and functionality of sanitary sewer • City could be left without power for heating and cooling • Loss of power can limit accessibility to fuel sources • Loss of food sources as refrigeration units are without power • Loss of economy • Loss of internet affects individuals and businesses • Delayed emergency services • Mail outages for a day or longer in winter of 2016-2017 • Ice storms took out power for almost a month in some areas. Oakes did not go out, but the rural communities did
Frequency	2	• Oakes hospital has experienced a shortage of medical supplies in the past • Roads have been blocked • Short-term power outages are experienced annually
Likelihood	2	• No improvements to power infrastructure planned • Power poles and wires of the power grid are outdated and suspended overhead
Vulnerability	3	• More vulnerable: 17.6% of the population is elderly over 65 • More vulnerable: No backup generator for city infrastructure may cause sewer backup or outage of drinking water – mobile unit on a trailer as needed. • More vulnerable: 23 electricity dependent vulnerable populations that need electricity to run medical devices to live. Per the publichealthemergency.gov Empower map. • More vulnerable: Access to rural areas limited during a blizzard or ice storm. • More vulnerable: The K-12 school, Vocational Tech and the rest home is not generated • Less vulnerable: The rest home, fire department, and hospitals have generators • Less vulnerable: Some residents grow local food supply • Less vulnerable: Water is provided by the city • Less vulnerable: Some residents have their own generators • More vulnerable: fuel becomes an issue in an outage. Have to travel to obtain fuel for generators.
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance

		• Lacks resources to accomplish projects independently • City siren system can be radio actuated by law enforcement or by Dickey County Emergency Management

Transportation Accident - 13

Impact	4	• Potential loss of life • Potential injury • Economy loss • Property loss • Potential hazardous materials release • Potential fire • Loss of Access • Mass Casualty Incident
Frequency	4	• Accidents happen in the area each year
Likelihood	4	• Accidents happen in the area each year
Vulnerability	3	• More vulnerable: 17.6% of the population is over 65 • More vulnerable: Increased amount of time students spend on buses • More vulnerable: Trucks and farmers transporting larger tanks more frequently on highway through the city limits. • More vulnerable: Anhydrous tanks driven through and parked in the city. Not parking in the city and less frequently coming through town. • More vulnerable: N.D. Highway 1 runs through the city • More vulnerable: High risk of hazardous chemical release or transportation accident as it is located close to highway • More vulnerable: City has an airport • Less vulnerable: City has a hospital and two clinics • Less vulnerable: City siren system can be radio activated by law enforcement or by Dickey County Emergency Management. • More vulnerable: Electric Cars – Fires in electric vehicles powered by high-voltage lithium-ion batteries pose a risk of electric shock to emergency responders from exposure to the high-voltage components of the damaged battery.
Capability	2	• First Responder Group in Oakes and public works crew • Siren system can be radio actuated by Law enforcement or by Dickey County Emergency Management • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently

Urban Fire/Structure Collapse - 8

Impact	3	• Potential loss of life • Property loss • Building loss • Economy loss • Loss of community assets • Loss of critical facilities and infrastructure

		• Potential temporary homeless population due to lack of alternative housing
Frequency	3	• House fires have occurred in the past five years. • Bans are issued frequently according to the ND Fire Index
Likelihood	3	• Bans are issued frequently according to the ND Fire Index.
Vulnerability	2	• More vulnerable: Older homes with older wiring • More vulnerable: Seasonal homes unoccupied • More vulnerable: City has a well trained and equipped fire department often over stretched by mutual aid requests • More vulnerable: Lack of alternative housing for displaced residents • Less vulnerable: Enforces building codes and zoning ordinances • Less vulnerable: Newer structures are being built with better technology and safe design • Less vulnerable: Less CRP near the city • Less vulnerable: The rest home, fire department, and hospitals have generators
Capability	3	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Mutual Aid with surrounding communities • Siren system can be radio actuated by law enforcement or Dickey County Emergency Management

Wildland Fire - 12

Impact	3	• Economy loss • Crop and Bale loss • Graze land loss • Farm equipment loss • Livestock loss • Potential loss of life • Potential injury • Potential hazardous material release • Health hazard due to poor air quality • Loss of wildlife habitat • Farm equipment, lightning strikes, power line sparks, and controlled burns cause fires • Cigarettes
Frequency	4	• Wildland fires occur annually due to climate and economy.
Likelihood	4	• With continued controlled burns by farmers there is always a possibility for the hazard in the future • Dry conditions experienced annually for a couple weeks • Farm equipment, lightning strikes, power line sparks, and controlled burns cause fires annually.
Vulnerability	3	• More vulnerable: Farmland and open areas • More vulnerable: Mutual aid fire department response times lengthen • More vulnerable: Windy conditions each year • More vulnerable: Lack reliable source of water for fire suppression • More vulnerable: Strain on surrounding fire departments and resources

		• More vulnerable: Spacing of houses could lead to loss of multiple structures • More vulnerable: Lack of fire break around the city • More vulnerable: Age of structures and wiring • More vulnerable: Lack reliable source of water for fire suppression • Less vulnerable: Decreasing CRP • Less vulnerable: City maintains overgrown lots • Less vulnerable: City has a radio operated storm siren operated by law enforcement or Dickey County Emergency Management • Burn bans • Drought
Capability	2	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish projects independently • Mutual Aid with surrounding communities • **New fire equipment needed**

Windstorm - 14

Impact	3	• Downed trees • Buildings loss • Downed power poles and lines • Economy loss • Damage to homes and community buildings such as broken windows, loss of shingles • Potential loss of life • Potential injury • Potential structure fires • Contributes to spread of wildland fire • The city has lost many trees, buildings and structures due to high winds. • Increase in traffic accidents from low visibility during severe summer and/or winter weather • Straight line winds occur in summer months
Frequency	4	• Hazard occurs multiple times each year and is a secondary result from severe summer weather or severe winter weather. • Strong winds are common in the city in all weather conditions • Blizzard conditions occur frequently in winter months due to climate • Power lines are damaged causing outages annually
Likelihood	4	• Strong winds are common in the city in all weather conditions
Vulnerability	4	• More vulnerable – loss of trees leads to more ground blizzard conditions • More vulnerable: Power lines providing power to the city are not buried and outdated • More vulnerable: Fire and EMS are over stretched by mutual aid requests with surrounding cities • Less vulnerable: Residents have equipment to clear debris or move snow

		• More vulnerable: Age of structures and housing stock • More vulnerable: Has not adopted state building codes – in process • Less vulnerable: City has an inert landfill for debris and branches
Capability	1	• Capabilities to respond, but nothing can be done to prepare. • LEPC – Local Emergency Planning Committee • Mutual aid agreements for emergency services with surrounding communities • Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Has a well-equipped city public works crew • Aged city equipment • Siren system can be radio actuated by law enforcement or Dickey County Emergency Management

Dam Failure - 3

Impact	1	• Potential loss of life
Frequency	1	• There is no history of dam failure
Likelihood	1	• Not probable in the future
Vulnerability	1	• More vulnerable: No plan for dam failure since there is no history and no high-risk dams • Less vulnerable: Elevation of the city prevents inundation of the city.
Capability	1	• Active city council • Lacks technical, administrative and financial resources for mitigation • Relies on county, regional, state and other agencies for assistance • Lacks resources to accomplish large projects independently

8.6.3 Mitigation Strategy

This update of the Dickey County Multi-Jurisdictional Multi-Hazard Plan includes a mitigation strategy consisting of five goals in Chapter 6.

Problem Statement

The city of Oakes identified its high senior population and isolated populations in the surrounding countryside as necessary to mitigate impacts from severe summer weather, severe winter weather, windstorm, flood, and shortage or outage of critical materials or infrastructure. The lack of a storm water system throughout the entire city is inadequate as overland flooding occurs on an annual basis in certain areas. The emergency siren is located at the fire hall and is radio actuated by law enforcement or Dickey County Emergency Management. Due to the location of the city, isolation from severe weather and shortage or outage of critical materials or infrastructure such as emergency services, power, and roads is frequent. The number of abandoned buildings, single-family homes, and aging structures increase the impact of and vulnerability to communicable disease, urban fire/structure collapse, wildland fire and windstorm. The City does not allow anhydrous to be stored within the City or driven through the City so this has decreased the possibility of a transportation incident, homeland security incident or hazardous materials spill.

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.

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.

Each identified resource in the four categories can be used to implement mitigation strategies and access funding for projects. Information on the capabilities of the city was gathered at its jurisdictional meeting, committee meetings, and interviews during the planning process. Tables comparing the mitigation capabilities of the city of Oakes with all other jurisdictions in the county can be found in Chapter 7, County Mitigation Capability Assessment.

Administrative and Technical

The following narrative details the administrative and technical capabilities of the city of Oakes.

The city of Oakes has an active city council. The city does not have a chief building official or inspector. The city has an LEPC through the county. The city does not have a civil engineer on staff but does have the option to contract for engineering services when needed. Emergency management is available through the county. The city can contract with the SCDRC or a private firm for planning, grant writing and grant administration services. The city conducts infrastructure maintenance on an as-needed basis. The city council staff and fire department and ambulance volunteers have administration capabilities for mitigation. The Dickey County Sheriff and the N.D. State Highway Patrol assist in law enforcement. The city has an emergency siren located on top of the fire hall. The city does not have generators. The auditor reports hazard data to the emergency manager.

Education and Outreach

The following narrative details the education and outreach capabilities of the city of Oakes.

The city does not have non-profit organizations providing education on hazards but has access to the NDSU/Dickey County Extension Service. The city does not maintain a website with hazard education. The city does not have any entities providing public education on hazards but has access to the NDSU/Dickey County Extension Service, Dickey District Health Unit, and Dickey County Emergency Management for public education on hazards. The city does not conduct events on hazard education. There are no public-private partnerships providing education and outreach on hazards. Dickey County Emergency Management conducts education and outreach on hazards in the city.

Financial

The following narrative details the financial capabilities of the city of Oakes.

The city does set aside tax revenue for capital improvements. The city does levy special assessments for new development. The city has incurred debt through USDA and Bank of ND for maintenance and emergency repairs to the City's infrastructure. The city does not have any private entities providing funding for mitigation. The rural electric cooperative for the surrounding area, water resource board, and surrounding township and school district are other sources of funding for mitigation.

Planning and Regulatory

The following narrative details the planning and regulatory capabilities of the city of Oakes.

The city does not have a capital improvement, comprehensive, drought management, land use, storm water, strategic, or water conservation plan. The city is FEMA flood mapped and will have a Floodplain Management Plan. Oakes is working on their new City Ordinances.

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 located in Chapter 10 of this plan.

9. Maps

Maps provide visual illustrations of the geography in the Dickey County and assist in mitigation by providing details of the inventory of the county, where critical facilities and infrastructure are located, geographic coverage of emergency services, and each incorporated jurisdiction. Maps are drawings, depictions, and illustrations and are commonly referred to as figures in planning documents.

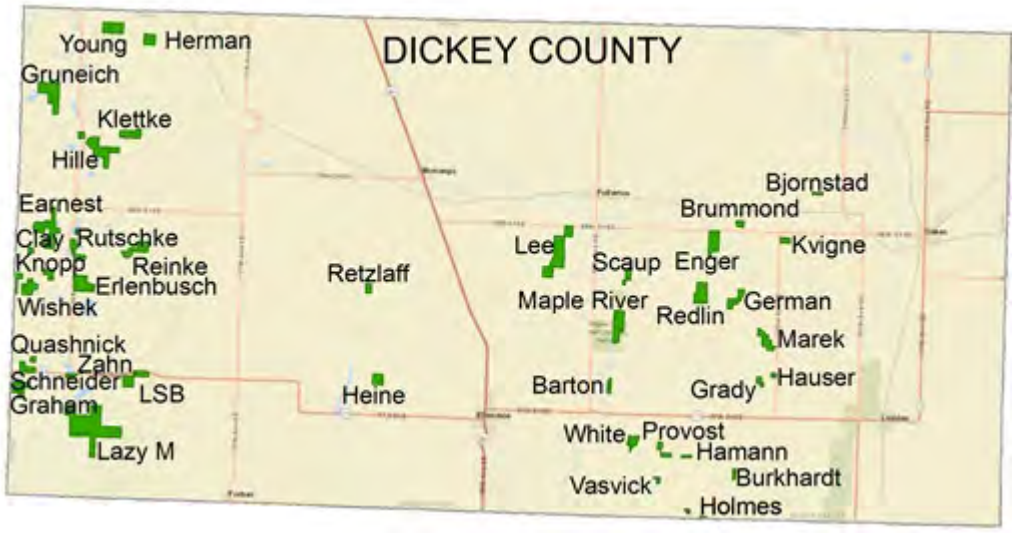
Figure 9.1 is of Dickey County and illustrates where each jurisdiction is in reference to one another; the national, state and county highways; railroads; and bodies of water and rivers. Information on the transportation system, including freight railroad, bridges and airports, is important for understanding the transportation system and potential risk involved with transportation accidents, among other hazards.

Figure 9.1 – Dickey County, North Dakota

Source: Google Maps

Figure 9.2 is a map of the waterfowl production areas (WPAs) in Dickey County under the management of the Kulm Wetland Management District. These unique areas are key assets to the development, growth and sustainability of the tourism industry. They also limit some industrial development projects that could damage these areas and their missions. It is important to understand the extent and location of WPAs for mitigating hazards such as hazardous material release by restricting agriculture and industrial development in environmentally sensitive areas.

Figure 9.2 –Dickey County Waterfowl Production and National Wildlife Refuges



Sources: U.S. Fish & Wildlife Service, South Central Dakota Regional Council Comprehensive Economic Development Strategy

Figure 9.3 shows the location of wind turbines in and around the county. These wind turbines could entail rescue and communication with the company, urban fire/structure collapse and wildland fires.

Figure 9.3 – Dickey County Wind Turbine Map

Source: North Dakota GIS

Figures 9.4 and 9.5 are the two municipal airports in Dickey County, located in the cities of Ellendale and Oakes. Aerial Maps of the airports in Dickey County are shown and were obtained from the North Dakota Aeronautics Commission (NDAC). The NDAC was established in 1947 by the state legislature, assigning responsibility for state aviation functions and serves the public by providing economic and technical assistance for the aviation community.

Figure 9.4 - Ellendale Municipal Airport

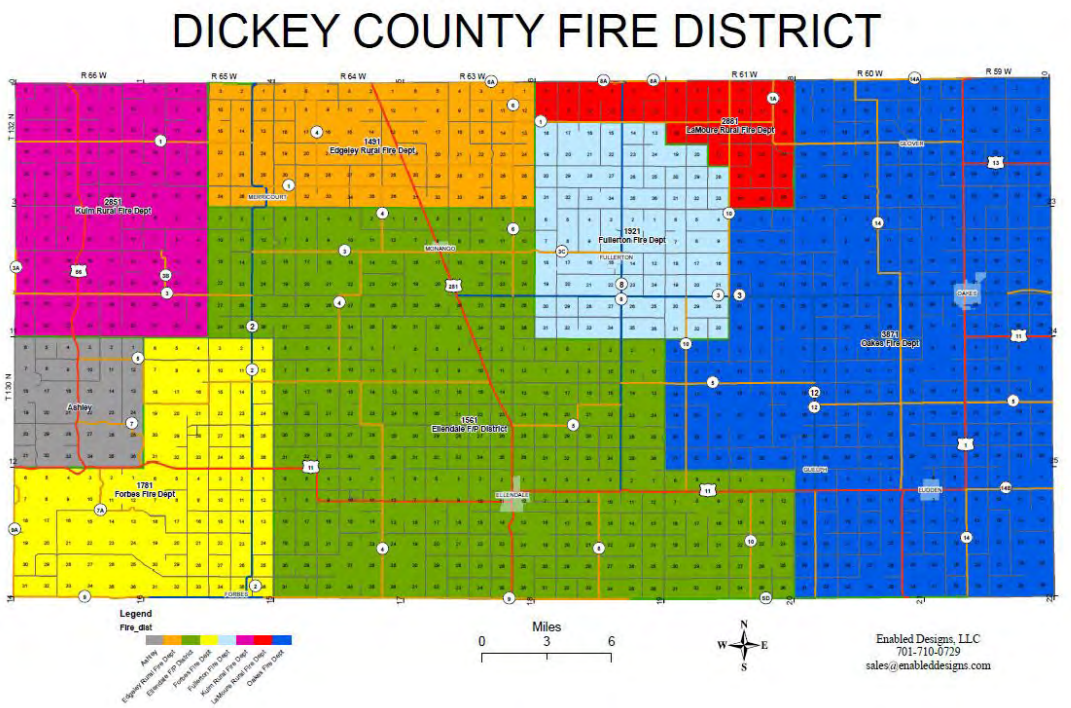
Source: North Dakota Aeronautics Commission

Figure 9.5 - Oakes Municipal Airport

Source: North Dakota Aeronautics Commission

Figures 9.6 and 9.7 - Dickey County Fire District

A figure of the geographic extent of the fire districts and departments in Dickey County is important to illustrate which areas are the responsibility of each district or department. The figure is also important for mitigation purposes show which departments would be responsible for mitigation projects in specific areas of the county.

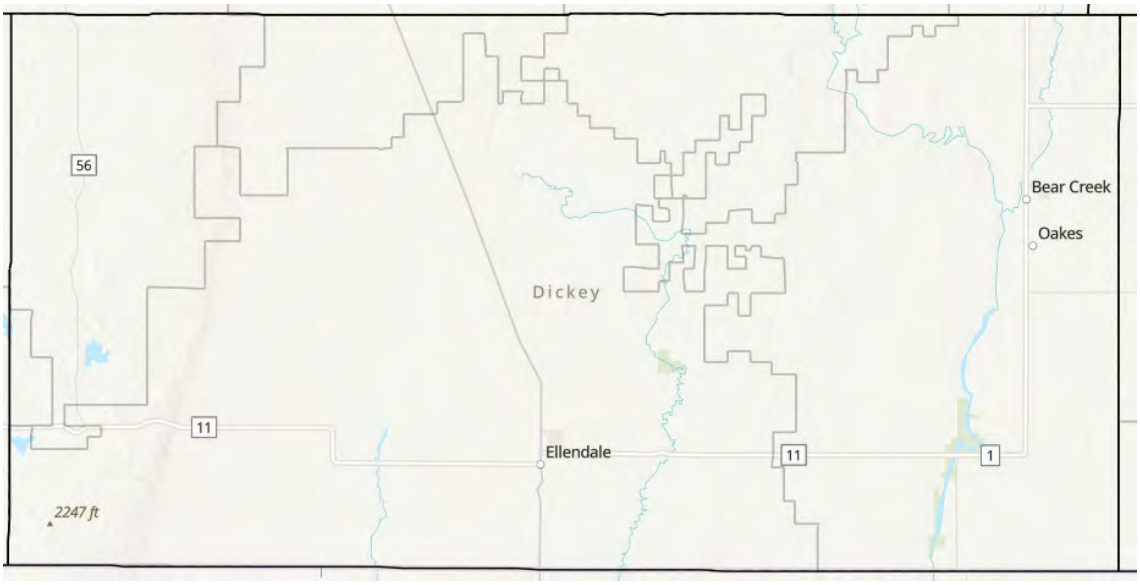


Source: Dickey County Emergency Management

Source: North Dakota GIS

Figure 9.8 shows the geographic extent of school districts covering Dickey County. Understanding the boundaries of school districts is important for mitigation to help identify where vulnerable populations are located that would need evacuation assistance in the event of a hazard.

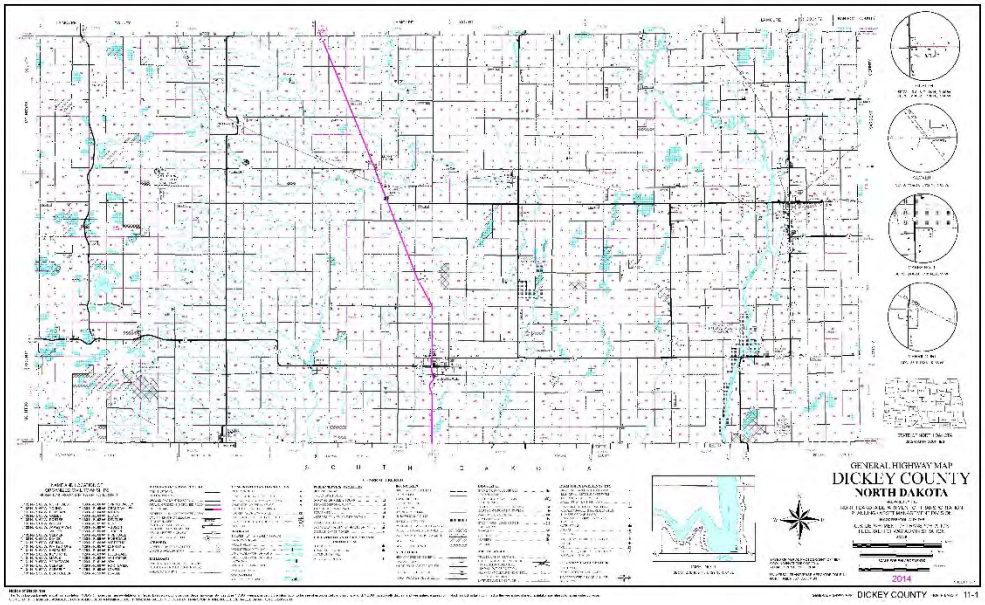
Figure 9.8 – Dickey County School Districts



Source: North Dakota Geographic Information Systems

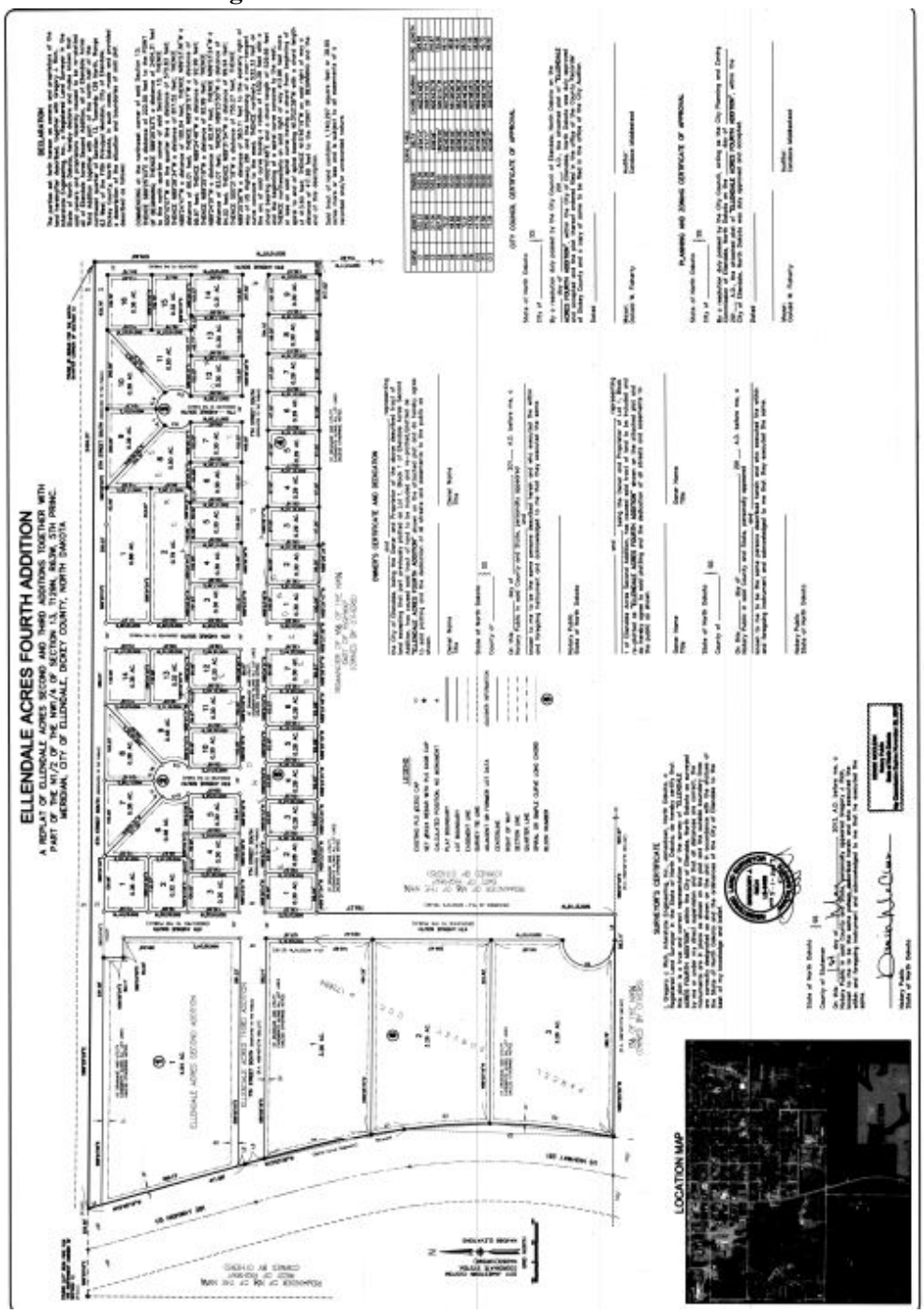
Figure 9.9 illustrates Griggs County Townships in relation to national, state and county highways; railroads; and bodies of water and rivers.

Figure 9.9 – Dickey County Township Map



The Ellendale Acres-4th Addition is a single-family and commercial subdivision located on the south side of the city and consisting of 24 residential lots and four commercial lots of fronting Highway 281. A figure showing the relation of the subdivision to the rest of the city is important to understand the impact the development will have on emergency services.

Figure 9.10 – Ellendale Acres – 4th Addition



Source: Ellendale City Auditor

10. Plan Maintenance

The Dickey County multi-hazard mitigation planning is continuous and on-going. An important aspect of any useable plan is the maintenance and upkeep of the document. At any given time planning, risk analysis, situation assessment updates, research, coordination, disaster response and/or other activity is occurring. This activity ensures the plan will remain useful in the county for many years into the future.

Plan Monitoring

The Dickey County 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 added as needed to the plan.

The plan will be updated and submitted to ND Department of Emergency Services and FEMA within five years to assure the county maintains a FEMA-approved mitigation plan.

Plan Evaluation

On an annual basis at its February meeting each city and emergency response entity will review actions taken on mitigation projects and losses due to hazards in the past year. Sample forms for reporting are included in Chapter 10.1. The annual reports are due back to the Emergency Manager by March 15.

Comments about the plan, project implementation, and information will be shared through each jurisdiction's minutes, and these minutes will be sent to the county emergency management office. The emergency manager will share this information with the Dickey County Commission. The fire departments, law enforcement departments, county health department, and emergency medical services will be encouraged to constantly inform the emergency management office of incidents as they occur so that the data can be considered immediately to better understand the risks in the county and enable accurate updating of hazard related information.

Public Involvement

The public will be informed of the opportunity to comment on plan updates through the advertising of the jurisdictional meetings. The plan will be available to the public at the Dickey County Courthouse and at the city halls in each of the jurisdictions. The public is encouraged to share input on the plan.

10.1. Annual Review of Hazard Impacts, Mitigation Projects and Report to Emergency Manager

Return to: Charles Russell
PO Box 215
Ellendale, ND 58436

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:

Additional pages may be added if necessary.

Appendix 1
Resolutions of Plan Adoption

Appendix 2
Attendance

Appendix 3
Invitation Documentation

Appendix 4
Media Coverage

Appendix 5
Meeting Notes

Appendix 6
Definitions

Appendix 7
Hazard History

Appendix 8
Hazard History

1. Adoption Documentation

Authority

Federal: Public Law 93-288 as amended, established the basis for federal mitigation activity in 1974. A section of this Act requires the identification, evaluation, and mitigation of hazards as a prerequisite for state receipt of future disaster assistance outlays. Since 1974, many additional programs, regulations, and laws have expanded on the original Stafford Act, several additional provisions were also added that provided for the availability of significant mitigation measures in the aftermath or presidentially declared disasters. Civil preparedness Guide 1-3, Chapter 6-Hazard Mitigation Assistance Programs places emphasis on hazard mitigation planning directed towards hazards with a high impact and threat potential.

Legislative: The North Dakota Century Code, Chapter 37-17.1 requires North Dakota Division of Emergency Management to coordinate the development of a Hazard Mitigation Plan. Other state laws require various state agencies to mitigate the effects or impacts of hazards regarding public safety, environment, etc. The North Dakota State Water Commission is responsible for assisting in the flood insurance program and is the leading agency in flood hazard mitigation actions.

Executive: The Governor has the leadership role in the issuance of guidance to all state agencies to minimize the effects of hazards on the citizens of North Dakota. In state and federal recovery agreements following a presidentially declared disaster, the Governor initiates updating of the state and local mitigation plans based on federal requirements or state and presidentially declared disaster (see State Administrative Recovery Handbook for Mitigation Assistance).

Local: Local governments play an essential role in implementing effective mitigation, both before and after disaster events. Each local government will review all damages, losses, and related impacts to determine the need or requirement for mitigation action and planning whenever seriously affected by a disaster, or when applying for state or federal recovery assistance. In McIntosh County, the local governing body responsibility for carrying out plans and policies is the County Commission. The McIntosh County Commission and each incorporated city in the county – Ashley, Lehr, Venturia, Wishek and Zeeland – are responsible for reviewing and updating ordinances. The County Commission represents all townships and unincorporated communities in the county for planning purposes. Budgets are limited and do not allow the county and jurisdictions the ability to complete as many projects as desired. All incorporated city jurisdictions are included in the 2017 update.

Promulgation Statement

Government at all levels has the responsibility for the protection of life, property, and the environment from hazards and threats which are known to impact jurisdictions. The jurisdictions of McIntosh County, by resolution, hereby adopt the concepts and conditions set forth by the McIntosh County Multi-Hazard Mitigation Plan (MHMP).

County of Dickey, ND

Dickey County Commission

Ellendale, ND 58433

Resolution No._____

A RESOLUTION OF THE COUNTY OF DICKEY ADOPTING THE DICKEY COUNTY, NORTH DAKOTA, MULTI-JURISDICTIONAL MULTI-HAZARD MITIGATION PLAN, 2026

Whereas, the County Commission recognizes the threat that natural hazards pose to people and property within Dickey County; and

Whereas, the County of Dickey has prepared a multi-hazard mitigation plan, hereby known as Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026 in accordance with the Disaster Mitigation Act 2000; and

Whereas, Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026 identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Dickey County from the impacts of future hazards and disasters; and

Whereas, adoption by the County Commission demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026.

NOW THEREFORE, BE IT RESOLVED BY THE COUNTY OF DICKEY, NORTH DAKOTA, THAT:

Section 1. In accordance with County Ordinances, the County of Dickey adopts the Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026.

ADOPTED by a vote of____in favor and____against, and____abstaining, this____day of____, 2026.

By_____

Kacey Holm, Dickey County Commission Chair

Attest:

By: Wanda Sheppard

Wanda Sheppard, Auditor

City of Ellendale, ND
Ellendale City Council
Ellendale, ND 58436

Resolution No._____

A RESOLUTION OF THE COUNTY OF DICKEY ADOPTING THE DICKEY COUNTY, NORTH DAKOTA, MULTI-JURISDICTIONAL MULTI-HAZARD MITIGATION PLAN, 2026

Whereas, the City Council recognizes the threat that natural hazards pose to people and property within Dickey County; and

Whereas, the County of Dickey has prepared a multi-hazard mitigation plan, hereby known as Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026 in accordance with the Disaster Mitigation Act 2000; and

Whereas, Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026 identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Dickey County from the impacts of future hazards and disasters; and

Whereas, adoption by the County Commission demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026.

NOW THEREFORE, BE IT RESOLVED BY THE CITY OF ELLENDALE, NORTH DAKOTA, THAT:

Section 1. In accordance with County Ordinances, the City of Ellendale adopts the Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026.

ADOPTED by a ~~vote~~ of 6 in favor and Ø against, and Ø abstaining, this 13th day of April 2026.

By:_____

Donald Flaherty, Mayor

Attest:

By:_____

Nicole Gunn, Auditor

City of Forbes, ND

Forbes City Council

Forbes, ND 58439

Resolution No._____

A RESOLUTION OF THE CITY OF FORBES ADOPTING THE DICKEY COUNTY, NORTH DAKOTA, MULTI-JURISDICTIONAL MULTI-HAZARD MITIGATION PLAN, 2026

Whereas, the City Council recognizes the threat that natural hazards pose to people and property within Forbes; and

Whereas, the City of Forbes has prepared a multi-hazard mitigation plan, hereby known as Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026 in accordance with the Disaster Mitigation Act 2000; and

Whereas, Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026 identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Forbes from the impacts of future hazards and disasters; and

Whereas, adoption by the City Council demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026.

NOW THEREFORE, BE IT RESOLVED BY THE CITY OF FORBES, NORTH DAKOTA, THAT:

Section 1. In accordance with City Ordinances, the City of Forbes adopts the Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026.

ADOPTED by a vote of____in favor and____against, and____abstaining, this____day of____, 2026.

By:_____

Carl Kronberg, Mayor

Attest:

By: _____

Darci Wolff, Auditor

City of Fullerton, ND

Fullerton City Council

Fullerton, ND 58441

Resolution No._____

A RESOLUTION OF THE CITY OF FULLERTON ADOPTING THE DICKEY COUNTY, NORTH DAKOTA, MULTI-JURISDICTIONAL MULTI-HAZARD MITIGATION PLAN, 2026

Whereas, the City Council recognizes the threat that natural hazards pose to people and property within Fullerton; and

Whereas, the City of Fullerton has prepared a multi-hazard mitigation plan, hereby known as Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026 in accordance with the Disaster Mitigation Act 2000; and

Whereas, Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026 identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Fullerton from the impacts of future hazards and disasters; and

Whereas, adoption by the City Council demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026.

NOW THEREFORE, BE IT RESOLVED BY THE CITY OF FULLERTON, NORTH DAKOTA, THAT:

Section 1. In accordance with City Ordinances, the City of Fullerton adopts the Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026.

ADOPTED by a vote of 5 in favor and 0 against, and 0 abstaining, this 6 day of Jan, 2026.

By:_____

Blake Peterson, Mayor

Attest:

By: _____

Jessica Carlson, Auditor

City of Ludden, ND

Ludden City Council

Ludden, ND 58474

Resolution No._____

A RESOLUTION OF THE CITY OF LUDDEN ADOPTING THE DICKEY COUNTY, NORTH DAKOTA, MULTI-JURISDICTIONAL MULTI-HAZARD MITIGATION PLAN, 2026

Whereas, the City Council recognizes the threat that natural hazards pose to people and property within Ludden; and

Whereas, the City of Ludden has prepared a multi-hazard mitigation plan, hereby known as Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026 in accordance with the Disaster Mitigation Act 2000; and

Whereas, Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026 identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Ludden from the impacts of future hazards and disasters; and

Whereas, adoption by the City Council demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026.

NOW THEREFORE, BE IT RESOLVED BY THE CITY OF LUDDEN, NORTH DAKOTA, THAT:

Section 1. In accordance with City Ordinances, the City of Ludden adopts the Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026.

ADOPTED by a vote of____in favor and____against, and____abstaining, this____day of____, 2026.

By:_____

Matt German, Mayor

Attest:

By: _____

Erica German, Auditor

City of Monango, ND
Monango City Council
Monango, ND 58436

Resolution No._____

A RESOLUTION OF THE CITY OF MONANGO ADOPTING THE DICKEY COUNTY, NORTH DAKOTA, MULTI-JURISDICTIONAL MULTI-HAZARD MITIGATION PLAN, 2026

Whereas, the City Council recognizes the threat that natural hazards pose to people and property within Monango; and

Whereas, the City of Monango has prepared a multi-hazard mitigation plan, hereby known as Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026 in accordance with the Disaster Mitigation Act 2000; and

Whereas, Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026 identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Monango from the impacts of future hazards and disasters; and

Whereas, adoption by the City Council demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026.

NOW THEREFORE, BE IT RESOLVED BY THE CITY OF MONANGO, NORTH DAKOTA, THAT:

Section 1. In accordance with City Ordinances, the City of Monango adopts the Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026.

ADOPTED by a vote of____in favor and____against, and____abstaining, this____day of____, 2026.

By:_____

Austin Smith, Mayor

Attest:

By: _____

Sue Kinzler, Auditor

City of Oakes, ND

Oakes City Council

Oakes, ND 58474

Resolution No. 2601

A RESOLUTION OF THE CITY OF OAKES ADOPTING THE DICKEY COUNTY, NORTH DAKOTA, MULTI-JURISDICTIONAL MULTI-HAZARD MITIGATION PLAN, 2026

Whereas, the City Council recognizes the threat that natural hazards pose to people and property within Oakes; and

Whereas, the City of Oakes has prepared a multi-hazard mitigation plan, hereby known as Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026 in accordance with the Disaster Mitigation Act 2000; and

Whereas, Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026 identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Oakes from the impacts of future hazards and disasters; and

Whereas, adoption by the City Council demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026.

NOW THEREFORE, BE IT RESOLVED BY THE CITY OF OAKES, NORTH DAKOTA, THAT:

Section 1. In accordance with City Ordinances, the City of Oakes adopts the Dickey County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2026.

ADOPTED by a vote of 6 in favor and 0 against, and 0 abstaining, this 14th day of April, 2026.

By: _____

Douglas Sitzler, Mayor

Attest:

By: _____

Zasha Johnson, Auditor

Appendix 2 Attendance

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Attendance Record
February 6, 2025 – Planning Meeting
February 20, 2025 – Planning Meeting
March 27, 2025 – Planning Meeting
June 18, 2026 – Dickey County Commission Meeting Approval

Appendix 2

OFFICE OF EMERGENCY MANAGEMENT
DICKEY COUNTY NORTH DAKOTA

2024 Haz-mit planning meeting: Date: 2-6-2024 Location: Oakes Armory

Please Print

Name: Charlie Russell	Representing: DCEM	Email @Russell@ND.gov
Name: Traci Redlin	Representing: SCDRC	Email tredlin@scdrc.org
Name: Jennifer Schultes	Representing: SCDRC	Email director@scdrc.org
Name: Tim Adair	Representing: self	Email TPA-hydrogeologist
Name: Cheryl Anderson	Representing: Oakes Hospital	Email cheryl.anderson@commonspirit.org @yahoo.com
Name: Erica German	Representing: Ludden	Email cityofludden@gmail.com
Name: Matt German	Representing: Ludden	Email mjgerman@drtel.net
Name: Jerry Hollingsworth	Representing: Oakes Fire	Email ofd@drtel.net
Name: Matt O'Brien	Representing: Oakes PD	Email mobrien@nd.gov
Name: Linda Visto	Representing: Riverdale Township	Email gvisto@drtel.net
Name: Alan Gramlow	Representing: Maple Township	Email gramlow@drtel.net
Name: Ruby Gramlow	Representing: Maple Township	Email gramlow@drtel.net
Name: Travis J Thompson	Representing: Divide Township	Email +1to4@hotmail.com
Name: Shay Nelson	Representing: Divide Township	Email shaynelson1mm@gmail.com
Name: CHARNELL HAHN	Representing: RIVERDALE	Email charnell@drtel.net
Name:	Representing:	Email
Name:	Representing:	Email
Name:	Representing:	Email
Name:	Representing:	Email
Name:	Representing:	Email
Name:	Representing:	Email
Name:	Representing:	Email

OFFICE OF EMERGENCY MANAGEMENT
DICKEY COUNTY NORTH DAKOTA

2024 Haz-mit planning meeting: Date: 02-20 2025 Location: Ellendale / Forbes Montana

Please Print

Name: Charles Russell	Representing: DC Eag	Email cfussell@nd.gov	
Name: Jennifer Schultes	Representing: SCDRC	Email director@scdrc.org	
Name: Keith Breckheimer	Representing: Applied Digital	Email Keith.Breckheimer@saltlake.com	
Name: Chris Estes	Representing: DC Sheriff Dept	Email chestes@nd.gov	
Name: MARK Bolke	Representing: Albion	Email	
Name: Don Flaherty	Representing: Ellendale City	Email Flahertyd@dntel.net	
Name: Kracey Holm	Representing: Commission	Email holmkracey@nd.gov	
Name: Matt Herman	Representing: Spring Valley	Email	
Name: Nicole Kempf	Representing: City of Ellendale	Email cityauditor@dntel.net	
Name: Brandon Gumm	Representing: Applied Digital	Email brandon.gumm@saltlake.com	
Name: Allan Miller	Representing: Albion	Email	
Name: Joel Hauer	Representing: Ellendale Twp	Email hauerfarm@gmail.com	
Name: James Tiegs	Representing: Van Meter Resident	Email tiegsjed@dntel.net	
Name:	Representing:	Email	
Name:	Representing:	Email	
Name:	Representing:	Email	
Name:	Representing:	Email	
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Name:	Representing:	Email	

OFFICE OF EMERGENCY MANAGEMENT
DICKEY COUNTY NORTH DAKOTA

2024 Haz-mit planning meeting: Date: 3-27-2025 Location: Ellendale

Please Print

Name: Charlie Russell	Representing: DCEM	Email: @Russell@ND.gov	
Name: Chris Estes	Representing: Dickey County S.O.	Email: chestes@nd.gov	
Name: Zach Sahli	Representing: Dickey Co S.O	Email: zrsahli@nd.gov	
Name: Kyle Johnson	Representing: Dickey Co S.O	Email: Kyl Johnson@nd.gov	
Name: Traci Redlin	Representing: SCDRC	Email: tredlin@scdrc.org	
Name: Jennifer Schultes	Representing: SCDRC	Email: director@scdrc.org	
Name: Kary Huber	Representing: Dickey County	Email:	
Name: Wes Maley	Representing: NDDOT	Email: Wrmaley@nd.gov	
Name: MARIA EFFERTZ	Representing: Commerce	Email: MEffertz@ND.gov	
Name: Wanda Sheppard	Representing: Dickey Co	Email: wsheppard@nd.gov	
Name: Teresa Blondo	Representing: Housing	Email: tblondo2k@gmail.com	
Name: Debbie LaCombe	Representing: NDDES	Email: dlacombe@nd.gov	
Name: Frank Balak	Representing: CVHD	Email: Fbalak@ND.Gov	
Name: Betty Martin	Representing: Ellendale Library Board	Email:	
Name: Evelyn Freelon	Representing: Dickey County Resident	Email:	
Name: Cari Haase	Representing: Ellendale Resident	Email:	
Name: Mike Thorp	Representing: Ellendale Fire	Email:	
Name: Charise Adams	Representing: SCS	Email: cadams@sunflower	
Name: Sharon Brady	Representing: Ellendale Resident	Email: SKbrady@dtel.net	
Name: John Hekmann	Representing: Dickey County	Email:	
Name: Bryan Niewind	Representing: ND HP	Email: bniewind@nd.gov	
Name: Wes Barth	Representing: DMA	Email:	

OFFICE OF EMERGENCY MANAGEMENT
DICKEY COUNTY NORTH DAKOTA

2024 Haz-mit planning meeting: Date: 3-27-2025 Location: Ellendale

Please Print

Name: Michael Facchetti	Representing: Invenergy	Email: miacchetti@invenergy.com
Name: Jason Hildenbrand	Representing: SOST	Email: jason.hildenbrand@nd.gov
Name: Jeff Hagen	Representing: Dickey County	Email: jhagen@nd.gov
Name: Michelle Masset	Representing: South Central Human Service Zone	Email: mmasset@nd.gov
Name: Kerry Waldo	Representing: DC Health District	Email: kewaldo@nd.gov
Name: Tammy Belgarde	Representing: Ellendale City Council	Email:
Name: Bev Radermacher	Representing: Monango Resident	Email:
Name: Matt O'Brien	Representing: Oakes PD	Email: mobrien@nd.gov
Name: DOUG SITZLER	Representing: OAKES	Email:
Name: Justin Meidinger	Representing: Ellendale City Council	Email: jmmeid@hotmail.com
Name: Lee Weisbeck	Representing: Starion Bank	Email: leew@starionbank.com
Name: Katie Rongen	Representing: RMKIOLS	Email: katierongen23@yahoo.com
Name: Naomi Gmeneich	Representing: BLC Ellendale	Email: naomi.gmeneich@bevelaw.com
Name: Kevin Hauck	Representing: Water Board	Email: Khauck@dtol.net
Name: BRAD SAND	Representing: Ellendale	Email: bradsand@ndsu.edu
Name: Greg Stanek	Representing: Invenergy	Email: stanekgregory7@gmail.com
Name: Nick Phillips	Representing: Applied Digital	Email: nick@applieddigital.com
Name: Mike Kelly	Representing: City of Oakes	Email: michaelkelly25@hotmail.com
Name: Julie Haase	Representing: Ellendale	Email:
Name: Joel Dalheim	Representing: Ellendale	Email: joeldalheim@gmail.com
Name: Ron Smith	Representing: Ellendale / DCL	Email: dcleader@dtol.net
Name: Allison Radermacher	Representing: Ellendale Public School	Email: aradermacher@ellendale.k12.nd.us

OFFICE OF EMERGENCY MANAGEMENT
DICKEY COUNTY NORTH DAKOTA

2024 Haz-mit planning meeting: Date: 3-27-2025 Location: Ellendale

Name: Eric Larson	Representing: James Valley Grain	Email	eric.larson@jamesvalleygrain.com
Name: Matt Heman	Representing: Dickey County Zoning Board	Email	
Name: George A Schaffer	Representing: Dickey County Resident	Email	
Name: Peggy Brandenburger	Representing: Dickey County Resident	Email	
Name: Tony Brandenburger	Representing: Dickey County Resident	Email	
Name: Andrea M	Representing: Applied Digital	Email	amineliss@applieddigital.com
Name: Tyler Svazo	Representing: Invenergy	Email	TSvazowinds@Gmail.com
Name: Martin Vega	Representing: Applied Digital	Email	Mjvega@applieddigital.com
Name: DANIEL ALBRECHT	Representing: MDU	Email	daniel.albrecht@mdu.com
Name: Anya Houdek	Representing: ND Commerce	Email	ahoudek@ndgov.com
Name: Cory Gulke	Representing: ECA	Email	csgulke@Hotmail.com
Name: Troy Bommersbach	Representing: SouthEast Water Users	Email	troyb8834@gmail.com
Name: Don Barton	Representing: Vanmeter	Email	
Name: Richard Long	Representing:	Email	
Name: Adam Batiste	Representing: EDF Renewables	Email	adam.batiste@edf-re.com
Name: Don Flaherty	Representing: Ellendale	Email	Flahertyd@drtel.net
Name:	Representing:	Email	
Name:	Representing:	Email	
Name:	Representing:	Email	
Name:	Representing:	Email	
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Name:	Representing:	Email	

OFFICE OF EMERGENCY MANAGEMENT
DICKEY COUNTY NORTH DAKOTA

2024 Haz-mit planning meeting: Date: _____ Location: _____

Please Print

Name: Mark Thielges	Representing: Dickey County Resident	Email	
Name: Jody Wedel	Representing: Ellendale JDA	Email	
Name: Tim Lippert	Representing: Dickey County Resident	Email	
Name: Sara Throndson	Representing: EDF	Email	Sara.Throndson @edf-re.com
Name: Scott Wertz	Representing: MDU.	Email	
Name: Jerry Reh	Representing: MC	Email	
Name: Val Wagner	Representing: Abstract Office - County Fair Board	Email	
Name:	Representing:	Email	
Name:	Representing:	Email	
Name:	Representing:	Email	
Name:	Representing:	Email	
Name:	Representing:	Email	
Name:	Representing:	Email	
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OFFICE OF EMERGENCY MANAGEMENT
DICKEY COUNTY NORTH DAKOTA

2024 Haz-mit planning meeting: Date: 3-27-2025 Location: ELLENDALE

Please Print

Name:	Neil Doty	Representing:	Crossroads Advisors	Email	neildoty@gmail.com
Name:	Jeff Thompson	Representing:	NDDES	Email	jgthompson@nd.gov
Name:	Dan Meidinger	Representing:	JeIR	Email	
Name:	Nolan Hamer	Representing:	Cjjc lb_jc Dgpc Bcn_prk clr	Email	
Name:	Joel Hamel	Representing:	Cjjc lb_jc Rmu lqfgn	Email	
Name:	Tully Just	Representing:	OTP	Email	
Name:	Brad Knutson	Representing:	EPD	Email	
Name:	Kristi Gilbert	Representing:	Redish House	Email	Redhouse@drtel.net
Name:	Jerry Walsh	Representing:	Dickey County	Email	
Name:	Kari Koch	Representing:	Otter Tail Power	Email	KKOch@OTPCO.com
Name:	Carl Kronberg	Representing:	Forbes	Email	
Name:	Brandon Carlson	Representing:	Dickey County	Email	
Name:	Sabrina Hildebrand	Representing:	self	Email	jasohild@drtelnet
Name:	Chase Durnelm	Representing:	self	Email	chasedurnelm@gmail
Name:	Michelle Mueller	Representing:	self	Email	scdmueller@att.net
Name:	Doug Linder	Representing:		Email	
Name:	Barb Ritter	Representing:	South Country	Email	britter@nd.gov
Name:	Dale Radermacher	Representing:	Self+SE	Email	
Name:	Jeremy Sitter	Representing:	Oakes Fire Dept	Email	jsitter@nd.gov
Name:	Nicole Kempf	Representing:	City of Ellendale	Email	cityauditor@drtel.net
Name:	Aaron Tschosik	Representing:		Email	
Name:		Representing:		Email	

Appendix 3 Invitation Documentation

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From: Russell, Charles J.

To: City Auditor; "City of Oakes"; Jennifer Schultes; amcmedic02@gmail.com; "dalosure@yahoo.com"; dnation48@gmail.com; Flaherty, Don; gman8567@gmail.com; Heupel, Erick (criticalmedic@yahoo.com); Mike (mike@oakesambulance.com); Dean Simek; ellendalefire@gmail.com; Fullerton Fire (spetey@drtel.net); junkman00@yahoo.com; Oakes Fire (ofd@drtel.net); tytbertsch@hotmail. com (tytbertsch@hotmail.com); Wedel, Paul (pweeds@hotmail.com); OAKESpd (OAKESpd@drtel.net); bk_nuts@hotmail.com; DICKEY COUNTY SHERIFF; Ellendale Police Department; Estes, Chris J.; O"Brien, Matt; Waldo, Kerry; Gibbs, Abby; Moch, Allyssa; Miller, Amber; Rall, Angela L.; Schimke, Andi I.; Ritter, Barbara J.; Kiser, Breana S.; Carlson, Brandon; Cindy R; Miller, Cresta; Dinger, Danielle; DC FEMA; Dickey County Highway Dept.; Tank, Deborah A.; Deb K; debbiemae2@yahoo.com; Dathe, Gary; Helland, Harleigh; Hokana, Holly F.; j hokanna; Arispe, Jennifer; Hagen, Jeff; Haase, Julie A.; Morrissey, Jessica L.; Bruns, Jodi; Joel Hamar (hamarfrm@drtel.net); jtg@drtrl.net; kaceyholm@gmail.com; Kschimke@drtel.com; lskjfte@nd.gov; Wald, Lori; Kempf, Nicole; Peterson, Scott; rekow, rickey; Holm, Roxanne M.; Schmidt, Kelly K.; scott wertz; Sheppard, Wanda; Bertsch, Stormy; tunatim@drtel.net; Wagner, Shirlene; Lematta, Wonada; ajgoehring@yahoo.com; akmiller@drtel.net; Alana Lacina; athorpe45@hotmail.com; carlsonc37@gmail.com; casey_peterse83@hotmail.com; charnell@drtel.net; debmerkel@hotmail.com; Divide TWP; dlwagner@drtel.net; drew.courtney87@gmail.com; dylan@drtel.net; GERMAN TWP; gramlow@drtel.net; gvisto@drtel.net; jasohild@drtel.net; jbtrucking8@yahoo.com; jgemar@drtel.net; jimnlisa@drtel.net; Justin Gemar; Justina Zundel; kjhauck@dterl.net; larson71@drtel.net; lazybfarms@drtel.net; ljand@drtel.net; lrall@drtel.net; MATT HERMAN; mcstein@drtel.net; ndbeethe@gmail.com; Net, Mvisto@Drtel. (mvisto@drtel.net); nitro.43@icloud.com; prfarm@drtel.net; rasell@drtel.net; rcroll@drtel.net; reinkebruce@gmail.com; rtsgary@drtel.net; Scott Moore (moorbeef@drtel.net); shaynelson7mm@gmail. com (shaynelson7mm@gmail.com); Spring Valley

Subject: Planning Meetings

Date: Monday, January 6, 2025 3:05:53 PM

With the beginning of the new year we are required to redo our FEMA/DHS Hazard Mitigation plan. There has been a lot of change in our County since 2023.
We plan on organizing in the same way we did for our last Multi-Hazard Mitigation Plan. Ellendale and Forbes will be one meeting and Fullerton, Ludden and Oakes will be the other meeting. There will be an online option available for most meetings We feel this will help us get a more diverse audience. There will also be focused meetings for the County as a whole.

Please Follow the Dickey County Emergency Management page for meeting times and locations
These meetings (once scheduled) will be public, so I encourage everyone to help get the word out before each meeting. We will go over the hazards we have previously established and add some new concerns as necessary to ensure our threats are identified and our planning is up to date.
This planning process is critical to identify what threats (fire-storm-floods-tornados-terroristic etc.) we are worried about, and what we have, or need to acquire, to prepares our cities and county.

Without identifying these hazards and assigning threat levels, today's competitive federal/state grant dollars may remain out of reach.
South Central Dakota Regional Council will again be spearheading this planning process with Jennifer Schultes and Traci Redlin at the helm.

Charlie Russell
Emergency Manager
9-1-1 Coordinator
DICKEY COUNTY
po box 302 Ellendale ND, 58436
PH: 701-320-6299
FAX: 701-349-3960

DICKEY COUNTY HAZARD MITIGATION PLAN REVISION: MEETINGS TBA

From Charlie Russell, Dickey County Emergency Management

With the beginning of the new year we are required to redo our FEMA/DHS Hazard Mitigation plan. There has been a lot of change in our County since 2023.

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South Central Dakota Regional Council will again be spearheading this planning process with Jennifer Schultes and Traci Redlin at the helm.

Jennifer Schultes
Project Director
701-368-0708 (Cell)
701-952-8050 (Office)
director@scdrc.org

Traci Redlin
Director
612-709-2357 (Cell)
701-952-8050 (Office)
tardily@scdrc.org

Dickey County Emergency Management · Follow
January 6 ·

Dickey County Emergency Management · Follow
January 6 ·

With the beginning of the new year we are required to redo our FEMA/DHS Hazard Mitigation plan. There has been a lot of change in our County since 2023.

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Jennifer Schultes
Project Director
701-368-0708 (Cell)
701-952-8050 (Office)
director@scdrc.org

Traci Redlin
Director
612-709-2357 (Cell)
701-952-8050 (Office)
tredlin@scdrc.org

Dickey County Emergency Management · Follow
January 7 ·

Dickey County Emergency Management · Follow
January 6 ·

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701-952-8050 (Office)
director@scdrc.org

Traci Redlin
Director
612-709-2357 (Cell)
701-952-8050 (Office)
tredlin@scdrc.org

From: Russell, Charles J.
To: City Auditor; chucks@drtel.net; city of Forbes; city of Monango; "City of Oakes"; Jennifer Schultes; amcmedic02@gmail.com; "dalosure@yahoo.com"; dnation48@gmail.com; Flaherty, Don; gman8567@gmail.com; Heupel, Erick (criticalmedic@yahoo.com); Mike (mike@oakesambulance.com); Dean Simek; ellendalefire@gmail.com; Fullerton Fire (spetey@drtel.net); junkman00@yahoo.com; Oakes Fire (ofd@drtel.net); tytbertsch@hotmail. com (tytbertsch@hotmail.com); Wedel, Paul (pweeds@hotmail.com); 0AKESpd (OAKESpd@drtel.net); bk_nuts@hotmail.com; DICKEY COUNTY SHERIFF; Ellendale Police Department; Estes, Chris J.; O"Brien, Matt; ajgoehring@yahoo.com; akmiller@drtel.net; Alana Lacina; athorpe45@hotmail.com; carlsonc37@gmail.com; casey_peterse83@hotmail.com; charnell@drtel.net; debmerkel@hotmail.com; Divide TWP; dlwagner@drtel.net; drew.courtney87@gmail.com; dylan@drtel.net; Dathe, Gary; GERMAN TWP; gramlow@drtel.net; gvisto@drtel.net; jasohild@drtel.net; jbtrucking8@yahoo.com; jgemar@drtel.net; Hagen, Jeff; jimnlisa@drtel.net; Joel Hamar (hamarfrm@drtel.net); Justin Gemar; Justina Zundel; kjhauck@dterl.net; larson71@drtel.net; lazybfarms@drtel.net; ljand@drtel.net; lrall@drtel.net; MATT HERMAN; mcstein@drtel.net; ndbeethe@gmail.com; Net, Mvisto@Drtel. (mvisto@drtel.net); nitro.43@icloud.com; prfarm@drtel.net; rasell@drtel.net; rcroll@drtel.net; reinkebruce@gmail.com; rtsgary@drtel.net; Scott Moore (moorbeef@drtel.net); shaynelson7mm@gmail. com (shaynelson7mm@gmail.com); Spring Valley; alicia.glynn@bhshealth.org; Moch, Allyssa; Miller, Amber; Schwartz, Beth M.; cheryl.anderson@commonspirit.org; Balak, Frank; kimberly.vosseteig@redcross.org; Marie Hennessy; melinda.nation@bhshealth.org; naomi.grueneich@bhshealth.org; pam.kosel@bhshealth.org; pbergh@good-sam.com; pwitt@good-sam.com; rebecca.thompson2@commonspirit.org; Holm, Roxanne M.; Waldo, Kerry; Gibbs, Abby; Rall, Angela L.; Schimke, Andi I.; Ritter, Barbara J.; Kiser, Breana S.; Carlson, Brandon; Cindy R; Miller, Cresta; Dinger, Danielle; DC FEMA; Dickey County Highway Dept.; Tank, Deborah A.; Deb K; debbiemae2@yahoo.com; Helland, Harleigh; Hokana, Holly F.; j hokanna; Arispe, Jennifer; Haase, Julie A.; Morrissey, Jessica L.; Bruns, Jodi; jtg@drtrl.net; kaceyholm@gmail.com; Kschimke@drtel.com; Skjefte, Lisa; Wald, Lori; Kempf, Nicole; Peterson, Scott; rekow, rickey; Schmidt, Kelly K.; scott wertz; Sheppard, Wanda; Bertsch, Stormy; tunatim@drtel.net; Wagner, Shirlene; Lematta, Wonada; anna.sell@k12.nd.us; chawker@trinitybiblecollege.edu; chip.sundberg@ellendale.k12.nd.us; Ian O"Brien; lana.norton@ellendale.k12.nd.us; mfergal@trinitybiblecollege.edu; scott townsend; Shannon Jepson; vjorden@trinitybiblecollege.edu
Subject: FW: Dickey County MHMP - Survey
Date: Friday, January 24, 2025 9:26:59 AM

Good morning, below is a survey for the DC Hazard-mitigation planning we are doing.
It is a short survey and will be of great use in focusing the upcoming main meetings.

REMINDER: the East county meeting Oakes, Fullerton and Ludden will be at the armory in Oakes Feb. 6th at 7 pm

The West county meeting Ellendale, Monango, and Forbes will be at the Opera house in Ellendale FEB.20th also at 7pm

Stay Warm out there….<CR>

From: Jennifer Schultes <director@scdrc.org>
Sent: Wednesday, January 22, 2025 2:23 PM
To: Russell, Charles J. <crussell@nd.gov>; Traci Redlin <tredlin@scdrc.org>
Subject: Dickey County MHMP - Survey

***** **CAUTION:** This email originated from an outside source. Do not click links or open attachments unless you know they are safe. *****

Good afternoon!

We have put together a survey for you to send out to your list.

We will also bring this survey to the meetings.

https://www.surveymonkey.com/r/QXBK39V

Thanks!

Jennifer Schultes
Project Director
South Central Dakota Regional Council
Phone: (701)952-8050
Cell: (701)368-0708
Email: director@scdrc.org
P O Box 903
Jamestown, ND 58402-0903
www.scdrc.org

Dickey County Emergency Management · Follow
January 24 ·

Charlie Russell
January 24 ·

Good morning, below is a survey for the DC Hazard-mitigation planning we are doing. It is a short survey and will be of great use in focusing the upcoming main meetings.
https://www.surveymonkey.com/r/QXBK39V

REMINDER: the East County meeting Oakes, Fullerton and Ludden will be at the armory in Oakes Feb. 6th at 7 pm

The West County meeting Ellendale, Monango, and Forbes will be at the Opera house in Ellendale FEB.20th also at 7pm

Dickey County Emergency Management · Follow
January 27 ·

Good morning, below is a survey for the DC Hazard-mitigation planning we are doing. It is a short survey and will be of great use in focusing the upcoming main meetings... See more

Jennifer Schultes

From: Russell, Charles J. <crussell@nd.gov>
Sent: Tuesday, January 21, 2025 10:32 AM
To: chucks@drtel.net; Fullerton City Auditor; Willprecht, Wendy; Robbins, Kimberly; Jennifer Schultes; City Auditor; city of Forbes; city of Monango; Dean Simek; ellendalefire@gmail.com; Fullerton Fire (spetey@drtel.net); junkman00@yahoo.com; Oakes Fire (ofd@drtel.net); tytbertsch@hotmail. com (tytbertsch@hotmail.com); Wedel, Paul (pweeds@hotmail.com); amcmedic02@gmail.com; 'dalosure@yahoo.com'; dnation48@gmail.com; Flaherty, Don; gman8567@gmail.com; Heupel, Erick (criticalmedic@yahoo.com); Mike (mike@oakesambulance.com); 0AKESpd (OAKESpd@drtel.net); bk_nuts@hotmail.com; DICKEY COUNTY SHERIFF; Ellendale Police Department; Estes, Chris J.; O'Brien, Matt; Waldo, Kerry; Gibbs, Abby; Moch, Allyssa; Miller, Amber; Rall, Angela L.; Schimke, Andi I.; Ritter, Barbara J.; Kiser, Breana S.; Carlson, Brandon; Cindy R; Miller, Cresta; Dinger, Danielle; DC FEMA; Dickey County Highway Dept.; Tank, Deborah A.; Deb K; debbiemae2@yahoo.com; Dathe, Gary; Helland, Harleigh; Hokana, Holly F.; j hokanna; Arispe, Jennifer; Hagen, Jeff; Haase, Julie A.; Morrissey, Jessica L.; Bruns, Jodi; Joel Hamar (hamarfrm@drtel.net); jtg@drtrl.net; kaceyholm@gmail.com; Kschimke@drtel.com; Skjefte, Lisa; Wald, Lori; Kempf, Nicole; Peterson, Scott; rekow, rickey; Holm, Roxanne M.; Schmidt, Kelly K.; scott wertz; Sheppard, Wanda; Bertsch, Stormy; tunatim@drtel.net; Wagner, Shirlene; Lematta, Wonada; alicia.glynn@bhshealth.org; Schwartz, Beth M.; cheryl.anderson@commonspirit.org; Balak, Frank; kimberly.vosseteig@redcross.org; Marie Hennessy; melinda.nation@bhshealth.org; naomi.grueneich@bhshealth.org; pam.kosel@bhshealth.org; pbergh@good-sam.com; pwitt@good-sam.com; rebecca.thompson2 @commonspirit.org; ajgoehring@yahoo.com; akmiller@drtel.net; Alana Lacina; athorpe45 @hotmail.com; carlsonc37@gmail.com; casey_peterse83@hotmail.com; charnell@drtel.net; debmerkel@hotmail.com; Divide TWP; dlwagner@drtel.net; drew.courtney87@gmail.com; dylan@drtel.net; GERMAN TWP; gramlow@drtel.net; gvisto@drtel.net; jasohild@drtel.net; jbtrucking8@yahoo.com; jgemar@drtel.net; jimnlisa@drtel.net; Justin Gemar; Justina Zundel; kjhauck@dterl.net; larson71@drtel.net; lazybfarms@drtel.net; ljand@drtel.net; lrall@drtel.net; MATT HERMAN; mcstein@drtel.net; ndbeethe@gmail.com; Net, Mvisto@Drtel. (mvisto@drtel.net); nitro.43 @icloud.com; prfarm@drtel.net; rasell@drtel.net; rcroll@drtel.net; reinkebruce@gmail.com; rtsgary@drtel.net; Scott Moore (moorbeef@drtel.net); shaynelson7mm@gmail. com (shaynelson7mm@gmail.com); Spring Valley
Subject: East County Haz-mit meeting

Early heads up- the Hazardous Mitigation meeting for east county to include the Cities of Ludden and Fullerton, is scheduled for Thursday Feb 6th – 7PM at the Oakes Armory. Mark your calendars. The purpose of these meetings is to identify our threats, needs and problems and the data is critical to get future state/federal granting.
A digital option will be available if possible. Link will be available when we get closer to the date.

The west meeting to include Monango and Forbes, will be Thurs FEB 28th at 7pm (location yet to be decided). All are welcome at either/or both meetings<CR>

Charlie Russell
Emergency Manager
9-1-1 Coordinator
DICKEY COUNTY
po box 302 Ellendale ND, 58436

Jennifer Schultes

From: Russell, Charles J. <crussell@nd.gov>
Sent: Monday, February 3, 2025 9:15 AM
To: chucks@drtel.net; city of Monango; 'City of Oakes'; Jennifer Schultes; alicia.glynn@bhshealth.org; Moch, Allyssa; Miller, Amber; Schwartz, Beth M.; cheryl.anderson@commonspirit.org; christopher.schenk2@redcross.org; Balak, Frank; kimberly.vosseteig@redcross.org; Marie Hennessy; melinda.nation@bhshealth.org; naomi.grueneich@bhshealth.org; pam.kosel@bhshealth.org; pbergh@good-sam.com; pwitt@good-sam.com; rebecca.thompson2@commonspirit.org; Holm, Roxanne M.; ajgoehring@yahoo.com; akmiller@drtel.net; Alana Lacina; athorpe45@hotmail.com; carlsonc37@gmail.com; casey_peterse83@hotmail.com; charnell@drtel.net; debmerkel@hotmail.com; Divide TWP; dlwagner@drtel.net; drew.courtney87@gmail.com; dylan@drtel.net; Dathe, Gary; GERMAN TWP; gramlow@drtel.net; gvisto@drtel.net; jasohild@drtel.net; jbtrucking8@yahoo.com; jgemar@drtel.net; Hagen, Jeff; jimnlisa@drtel.net; Joel Hamar (hamarfrm@drtel.net); Justin Gemar; Justina Zundel; kjhauck@dterl.net; larson71@drtel.net; lazybfarms@drtel.net; ljand@drtel.net; lrall@drtel.net; MATT HERMAN; mcstein@drtel.net; ndbeethe@gmail.com; Net, Mvisto@Drtel. (mvisto@drtel.net); nitro.43@icloud.com; prfarm@drtel.net; rasell@drtel.net; rcroll@drtel.net; reinkebruce@gmail.com; rtsgary@drtel.net; Scott Moore (moorbeef@drtel.net); shaynelson7mm@gmail. com (shaynelson7mm@gmail.com); Spring Valley; anna.sell@k12.nd.us; chawker@trinitybiblecollege.edu; chip.sundberg@ellendale.k12.nd.us; Ian O'Brien; lana.norton@ellendale.k12.nd.us; mfergal@trinitybiblecollege.edu; scott townsend; Shannon Jepson; vjorden@trinitybiblecollege.edu; amcmedic02@gmail.com; 'dalosure@yahoo.com'; dnation48@gmail.com; Flaherty, Don; gman8567@gmail.com; Heupel, Erick (criticalmedic@yahoo.com); Mike (mike@oakesambulance.com); Dean Simek; ellendalefire@gmail.com; Fullerton Fire (spetey@drtel.net); junkman00@yahoo.com; Oakes Fire (ofd@drtel.net); tytbertsch@hotmail. com (tytbertsch@hotmail.com); Wedel, Paul (pweeds@hotmail.com); 0AKESpd (OAKESpd@drtel.net); bk_nuts@hotmail.com; DICKEY COUNTY SHERIFF; Ellendale Police Department; Estes, Chris J.; O'Brien, Matt; Waldo, Kerry; Gibbs, Abby; Rall, Angela L.; Schimke, Andi I.; Ritter, Barbara J.; Kiser, Breana S.; Carlson, Brandon; Cindy R; Miller, Cresta; Dinger, Danielle; DC FEMA; Dickey County Highway Dept.; Tank, Deborah A.; Deb K; debbiemae2@yahoo.com; Helland, Harleigh; Hokana, Holly F.; j hokanna; Arispe, Jennifer; Haase, Julie A.; Morrissey, Jessica L.; Bruns, Jodi; jtg@drtrl.net; kaceyholm@gmail.com; Kschimke@drtel.com; Skjefte, Lisa; Wald, Lori; Kempf, Nicole; Peterson, Scott; rekow, rickey; Schmidt, Kelly K.; scott wertz; Sheppard, Wanda; Bertsch, Stormy; tunatim@drtel.net; Wagner, Shirlene; Lematta, Wonada
Subject: Oakes Area Hazard mitigation

Importance: High

Reminder of the Oakes area (Oakes, Fullerton and Ludden) Hazardous Mitigation planning meeting at the Oakes Armory 7 pm this Wednesday. All are welcome and encouraged to attend and discuss our local hazards and develop needs to meet them. Federal and State granting requires we have identified the need/issue before we can apply for grants… <CR>

Charlie Russell
Emergency Manager
9-1-1 Coordinator
DICKEY COUNTY
po box 302 Ellendale ND, 58436
PH: 701-320-6299

Dickey County Emergency Management · Follow
February 3 ·

Charlie Russell
February 3 ·

Reminder of the Oakes area (Oakes, Fullerton and Ludden) Hazardous Mitigation planning meeting at the Oakes Armory 7 pm this Thursday. All are welcome and encouraged to attend and discuss our local hazards and develop needs to meet them. Federal and State granting requires we have identified the need/issue before we can apply for grants...

Jennifer Schultes

From: Russell, Charles J. <crussell@nd.gov>
Sent: Wednesday, January 22, 2025 6:55 AM
To: chucks@drtel.net; Fullerton City Auditor; Willprecht, Wendy; Robbins, Kimberly; Jennifer Schultes; City Auditor; city of Forbes; city of Monango; Dean Simek; ellendalefire@gmail.com; Fullerton Fire (spetey@drtel.net); junkman00@yahoo.com; Oakes Fire (ofd@drtel.net); tytbertsch@hotmail. com (tytbertsch@hotmail.com); Wedel, Paul (pweeds@hotmail.com); amcmedic02@gmail.com; 'dalosure@yahoo.com'; dnation48@gmail.com; Flaherty, Don; gman8567@gmail.com; Heupel, Erick (criticalmedic@yahoo.com); Mike (mike@oakesambulance.com); 0AKESpd (OAKESpd@drtel.net); bk_nuts@hotmail.com; DICKEY COUNTY SHERIFF; Ellendale Police Department; Estes, Chris J.; O'Brien, Matt; Waldo, Kerry; Gibbs, Abby; Moch, Allyssa; Miller, Amber; Rall, Angela L.; Schimke, Andi I.; Ritter, Barbara J.; Kiser, Breana S.; Carlson, Brandon; Cindy R; Miller, Cresta; Dinger, Danielle; DC FEMA; Dickey County Highway Dept.; Tank, Deborah A.; Deb K; debbiemae2@yahoo.com; Dathe, Gary; Helland, Harleigh; Hokana, Holly F.; j hokanna; Arispe, Jennifer; Hagen, Jeff; Haase, Julie A.; Morrissey, Jessica L.; Bruns, Jodi; Joel Hamar (hamarfrm@drtel.net); jtg@drtrl.net; kaceyholm@gmail.com; Kschimke@drtel.com; Skjefte, Lisa; Wald, Lori; Kempf, Nicole; Peterson, Scott; rekow, rickey; Holm, Roxanne M.; Schmidt, Kelly K.; scott wertz; Sheppard, Wanda; Bertsch, Stormy; tunatim@drtel.net; Wagner, Shirlene; Lematta, Wonada; alicia.glynn@bhshealth.org; Schwartz, Beth M.; cheryl.anderson@commonspirit.org; Balak, Frank; kimberly.vosseteig@redcross.org; Marie Hennessy; melinda.nation@bhshealth.org; naomi.grueneich@bhshealth.org; pam.kosel@bhshealth.org; pbergh@good-sam.com; pwitt@good-sam.com; rebecca.thompson2 @commonspirit.org; ajgoehring@yahoo.com; akmiller@drtel.net; Alana Lacina; athorpe45 @hotmail.com; carlsonc37@gmail.com; casey_peterse83@hotmail.com; charnell@drtel.net; debmerkel@hotmail.com; Divide TWP; dlwagner@drtel.net; drew.courtney87@gmail.com; dylan@drtel.net; GERMAN TWP; gramlow@drtel.net; gvisto@drtel.net; jasohild@drtel.net; jbtrucking8@yahoo.com; jgemar@drtel.net; jimnlisa@drtel.net; Justin Gemar; Justina Zundel; kjhauck@dterl.net; larson71@drtel.net; lazybfarms@drtel.net; ljand@drtel.net; lrall@drtel.net; MATT HERMAN; mcstein@drtel.net; ndbeethe@gmail.com; Net, Mvisto@Drtel. (mvisto@drtel.net); nitro.43 @icloud.com; prfarm@drtel.net; rasell@drtel.net; rcroll@drtel.net; reinkebruce@gmail.com; rtsgary@drtel.net; Scott Moore (moorbeef@drtel.net); shaynelson7mm@gmail. com (shaynelson7mm@gmail.com); Spring Valley
Subject: RE: East County Haz-mit meeting

UPDATE- The west county meeting will be **FEB 20** at 7 pm and the venue is the Opera House in Ellendale….<CR>

From: Russell, Charles J.
Sent: Tuesday, January 21, 2025 10:32 AM
To: chucks@drtel.net; Fullerton City Auditor <fullertonnd@drtel.net>; Willprecht, Wendy <wwillprecht@nd.gov>; Robbins, Kimberly <krobbins@nd.gov>; scdrc director <director@scdrc.org>; City Auditor <cityauditor@drtel.net>; city of Forbes <rstoppleworth@drtel.net>; city of Monango <traci@drtel.net>; Dean Simek <simekref@hotmail.com>; ellendalefire@gmail.com; Fullerton Fire (spetey@drtel.net) <spetey@drtel.net>; junkman00@yahoo.com; Oakes Fire (ofd@drtel.net) <ofd@drtel.net>; tytbertsch@hotmail. com (tytbertsch@hotmail.com) <tytbertsch@hotmail.com>; Wedel, Paul (pweeds@hotmail.com) <pweeds@hotmail.com>; amcmedic02@gmail.com; 'dalosure@yahoo.com' <dalosure@yahoo.com>; dnation48@gmail.com; DON FLAHERTY (dflaherty@nd.gov) <dflaherty@nd.gov>; gman8567@gmail.com; Heupel, Erick (criticalmedic@yahoo.com) <criticalmedic@yahoo.com>; Mike (mike@oakesambulance.com) <mike@oakesambulance.com>; 0AKESpd (OAKESpd@drtel.net) <OAKESpd@drtel.net>; bk_nuts@hotmail.com; dcso@nd.gov (dcso@nd.gov) <dcso@nd.gov>; Ellendale Police Department

<ellendalepolice@drtel.net>; Estes, Chris J. <chestes@nd.gov>; mobrien@nd.gov; kewaldo@nd.gov <kewaldo@nd.gov>; abby. gibbs@nd. gov (abby.gibbs@nd.gov) <abby.gibbs@nd.gov>; Allyssa.moch@nd.gov; amber.miller@nd.gov; arall <arall@nd.gov>; aschimke@ndcourts.gov; Barb <britter@nd.gov>; breana.s.kiser.3@ndsu.edu <breana.s.kiser.3@ndsu.edu>; carlsonbrandon@nd.gov; Cindy R <nashcind22@gmail.com>; cmiller@ndcourts.gov; danielle.dinger@ndsu.edu <danielle.dinger@ndsu.edu>; DC FEMA <dcfema@nd.gov>; dchighway@nd.gov; Deb <dtank@nd.gov>; Deb K <dkosch55@drtel.net>; debbiemae2@yahoo.com; gdathe@nd.gov; hamiller@nd.gov; hhokana@nd.gov; j hokanna <dakotabeef@yahoo.com>; jarispe@nd. gov (jarispe@nd.gov) <jarispe@nd.gov>; jhagen@nd.gov; jhahne@nd.gov; jmorrissey@nd.gov; Jodi Bruns <jodi.bruns@ndsu.edu>; Joel Hamar (hamarfrm@drtel.net) <hamarfrm@drtel.net>; jtg@drtrl.net <jtg@drtel.net>; kaceyholm@gmail.com; Kschimke@drtel.com; lskjefte@nd.gov; lwald@nd.gov; nkempf@nd. gov (nkempf@nd.gov) <nkempf@nd.gov>; petersonscott@nd.gov; rekow, rickey <therekows@gmail.com>; rholm@nd.gov; Schmidt, Kelly K. <kkschmidt@nd.gov>; scott wertz <Sawzlabs@Drtel.Net>; Sheppard, Wanda <wsheppard@nd.gov>; stobertsch@nd.gov; tunatim@drtel.net; Wagner, Shirlene <shirlene.wagner@ndsu.edu>; wlematta@nd.gov; alicia.glynn@bhshealth.org; bschwartz@nd. gov (bschwartz@nd.gov) <bschwartz@nd.gov>; cheryl.anderson@commonspirit.org; Frank Balak (fbalak@nd.gov) <fbalak@nd.gov>; kimberly.vosseteig@redcross.org; Marie Hennessy <mhennessy@trinitybiblecollege.edu>; melinda.nation@bhshealth.org; naomi.grueneich@bhshealth.org; pam.kosel@bhshealth.org; pbergh@good-sam.com; pwitt@good-sam.com; rebecca.thompson2@commonspirit.org; ajgoehring@yahoo.com; akmiller@drtel.net; Alana Lacina <alana@drtel.net>; athorpe45@hotmail.com; carlsonc37@gmail.com; casey_peterse83@hotmail.com; charnell@drtel.net; debmerkel@hotmail.com; Divide TWP <pegnelson@drtel.net>; dlwagner@drtel.net; drew.courtney87@gmail.com; dylan@drtel.net; GERMAN TWP <rmbrosz@drtel.net>; gramlow@drtel.net; gvisto@drtel.net; jasohild@drtel.net; jbtrucking8@yahoo.com; jgemar@drtel.net; jimnlisa@drtel.net; Justin Gemar <justingemar@gmail.com>; Justina Zundel <justina.zundel@gmail.com>; kjhauck@dterl.net <kjhauck@drtel.net>; larson71@drtel.net; lazybfarms@drtel.net; ljand@drtel.net; lrall@drtel.net; MATT HERMAN <MATTH866@GMAIL.COM>; mcstein@drtel.net; ndbeethe@gmail.com; Net, Mvisto@Drtel. (mvisto@drtel.net) <mvisto@drtel.net>; nitro.43@icloud.com; prfarm@drtel.net; rasell@drtel.net; rcroll@drtel.net; reinkebruce@gmail.com; rtsgary@drtel.net; Scott Moore (moorbeef@drtel.net) <moorbeef@drtel.net>; shaynelson7mm@gmail. com (shaynelson7mm@gmail.com) <shaynelson7mm@gmail.com>; Spring Valley <sheldaflaten@drtel.net>
Subject: East County Haz-mit meeting

Early heads up- the Hazardous Mitigation meeting for east county to include the Cities of Ludden and Fullerton, is scheduled for Thursday Feb 6th – 7PM at the Oakes Armory. Mark your calendars. The purpose of these meetings is to identify our threats, needs and problems and the data is critical to get future state/federal granting.
A digital option will be available if possible. Link will be available when we get closer to the date.

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Charlie Russell
Emergency Manager
9-1-1 Coordinator
DICKEY COUNTY
po box 302 Ellendale ND, 58436
PH: 701-320-6299
FAX: 701-349-3960
KC5ZCH

CAR-RT LOT**E 003
436 11-05-25 0001A79 168 6T
DICKEY COUNTY SOCIAL SERVICE **0003
PO BOX 279
ELLENDALE ND 58436-0279

DICKEY CO
LEAD
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Vol. 142, Issue 8 • Ellendale, ND 58436

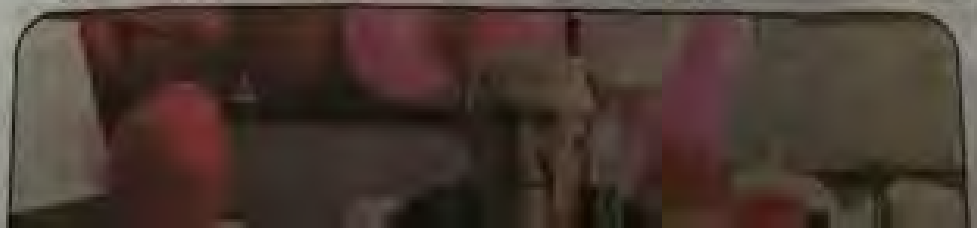
Community Blood Drive Feb. 25

Once again, Vitalant will be conducting a blood drive at the Church of the Nazarene. It will take place between 12:30 and 5:30. To schedule an appointment, please call 349-4348, or scan the QR code at right for online access. We are informed by Vitalant representatives that demand for blood is presently high, and more donors are needed/

Emergency management meeting tonight

A note from Charlie Russell:

The west Dickey County Hazardous Mitigation planning meeting, including the cities of Monango, Forbes and Ellendale, will be today (Thursday Feb 20) at, 7:00 pm at the Opera House in Ellendale. All are welcome and highly encouraged to attend. We will be discussing our local hazards and develop plans to meet them. Federal and State granting requires we have pre-identified the needs and issues before we can apply for grants.



Lando industrializ

Story & Photos by Ken Smith

"Man, there's a lot of people here I haven't been to this big a meeting Edgeley in a long time. The last tim I saw [a meeting this big] was whe they sold the sale barn in the 1960

As this gentleman observed, the was a big crowd at the large hall o Bottoms Up Bar & Grill in Edgele on the evening of February 12. Morever, the majority of those wh attended were highly engaged. Th were there to hear speakers discu their views on industrial develop ment in south central North Dake that they believe have the potent permanently disrupt and damage way of life.

The meeting was moderated b Richard Long and Tim Leppert, landowners who for some time been concerned about the grow industrial-scale wind and solar power lines, data centers and C pipelines.

"This all kind of started with transmission line that's suppos Ellendale substation with Jam Long told the crowd. "Some started putting pieces of this The more we heard, the mor

Jennifer Schultes

From: Russell, Charles J. <crussell@nd.gov>
Sent: Friday, February 14, 2025 11:07 AM
To: DC LEADER (DCLEADER@DRTEL.NET); City Auditor; city of Forbes; city of Monango; Jennifer Schultes; Traci Redlin; Rasmussen, Brittany C.; Dean Simek; ellendalefire@gmail.com; Fullerton Fire (spetey@drtel.net); junkman00@yahoo.com; Oakes Fire (ofd@drtel.net); tytbertsch@hotmail. com (tytbertsch@hotmail.com); Wedel, Paul (pweeds@hotmail.com); amcmedic02@gmail.com; 'dalosure@yahoo.com'; dnation48@gmail.com; Flaherty, Don; gman8567@gmail.com; Heupel, Erick (criticalmedic@yahoo.com); Mike (mike@oakesambulance.com); 0AKESpd (OAKESpd@drtel.net); bk_nuts@hotmail.com; DICKEY COUNTY SHERIFF; Ellendale Police Department; Estes, Chris J.; O'Brien, Matt; Waldo, Kerry; Gibbs, Abby; Moch, Allyssa; Miller, Amber; Rall, Angela L.; Schimke, Andi I.; Ritter, Barbara J.; Kiser, Breana S.; Carlson, Brandon; Cindy R; Miller, Cresta; Dinger, Danielle; DC FEMA; Dickey County Highway Dept.; Tank, Deborah A.; Deb K; debbiemae2@yahoo.com; Dathe, Gary; Helland, Harleigh; Hokana, Holly F.; j hokanna; Arispe, Jennifer; Hagen, Jeff; Haase, Julie A.; Morrissey, Jessica L.; Bruns, Jodi; Joel Hamar (hamarfrm@drtel.net); jtg@drtrl.net; kaceyholm@gmail.com; Kschimke@drtel.com; Skjefte, Lisa; Wald, Lori; Kempf, Nicole; Peterson, Scott; rekow, rickey; Holm, Roxanne M.; Schmidt, Kelly K.; scott wertz; Sheppard, Wanda; Bertsch, Stormy; tunatim@drtel.net; Wagner, Shirlene; Lematta, Wonada; ajgoehring@yahoo.com; akmiller@drtel.net; Alana Lacina; athorpe45@hotmail.com; carlsonc37@gmail.com; casey_peterse83@hotmail.com; charnell@drtel.net; debmerkel@hotmail.com; Divide TWP; dlwagner@drtel.net; drew.courtney87 @gmail.com; dylan@drtel.net; GERMAN TWP; gramlow@drtel.net; gvisto@drtel.net; jasohild@drtel.net; jbtrucking8@yahoo.com; jgemar@drtel.net; jimnlisa@drtel.net; Justin Gemar; Justina Zundel; kjhauck@dterl.net; larson71@drtel.net; lazybfarms@drtel.net; ljand@drtel.net; lrall@drtel.net; MATT HERMAN; mcstein@drtel.net; ndbeethe@gmail.com; Net, Mvisto@Drtel. (mvisto@drtel.net); nitro.43@icloud.com; prfarm@drtel.net; rasell@drtel.net; rcroll@drtel.net; reinkebruce@gmail.com; rtsgary@drtel.net; Scott Moore (moorbeef@drtel.net); shaynelson7mm@gmail. com (shaynelson7mm@gmail.com); Spring Valley; alicia.glynn@bhshealth.org; Schwartz, Beth M.; cheryl.anderson@commonspirit.org; christopher.schenk2@redcross.org; Balak, Frank; kimberly.vosseteig@redcross.org; kristopher.smith@commonspirit.org; Marie Hennessy; melinda.nation@bhshealth.org; naomi.grueneich@bhshealth.org; pam.kosel@bhshealth.org; pbergh@good-sam.com; pwitt@good-sam.com; rebecca.thompson2@commonspirit.org; anna.sell@k12.nd.us; chawker@trinitybiblecollege.edu; chip.sundberg@ellendale.k12.nd.us; Ian O'Brien; lana.norton@ellendale.k12.nd.us; mfergal@trinitybiblecollege.edu; scott townsend; Shannon Jepson; vjorden@trinitybiblecollege.edu
Subject: West side meeting

REMINDER: The west Dickey County Hazardous Mitigation planning meeting, including the cities of Monango, Forbes and Ellendale, will be next Thursday FEB> 20th 7pm at the Opera House in Ellendale. All are welcome and highly encouraged to attend. We will be discussing our local hazards and develop plans to meet them. Federal and State granting requires we have pre-identified the needs/issues before we can apply for grants. We will try to have a team meeting (digital option) available. Please email me for an invite should you need that option.…<CR>

Charlie Russell
Emergency Manager
9-1-1 Coordinator
DICKEY COUNTY
po box 302 Ellendale ND, 58436

Dickey County Emergency Management · Follow
February 14 ·

REMINDER: The west Dickey County Hazardous Mitigation planning meeting, including the cities of Monango, Forbes and Ellendale, will be next Thursday FEB> 20th 7pm at the Opera House in Ellendale. All are welcome and highly encouraged to attend.

We will be discussing our local hazards and develop plans to meet them. Federal and State granting requires we have pre-identified the needs/issues before we can apply for grants.

Dickey County Emergency Management · Follow
February 18 ·

REMINDER- The West Dickey County Hazardous Mitigation planning meeting, including the cities of Monango, Forbes and Ellendale, will be this Thursday -FEB 20th- 7pm at the opera house in Ellendale. Everyone is welcome and encouraged to attend!

Jennifer Schultes

From: Russell, Charles J. <crussell@nd.gov>
Sent: Tuesday, February 18, 2025 5:48 AM
To: DC LEADER (DCLEADER@DRTEL.NET); City Auditor; city of Forbes; city of Monango; Traci Redlin; Jennifer Schultes; ajgoehring@yahoo.com; akmiller@drtel.net; Alana Lacina; athorpe45 @hotmail.com; carlsonc37@gmail.com; casey_peterse83@hotmail.com; charnell@drtel.net; debmerkel@hotmail.com; Divide TWP; dlwagner@drtel.net; drew.courtney87@gmail.com; dylan@drtel.net; Dathe, Gary; GERMAN TWP; gramlow@drtel.net; gvisto@drtel.net; jasohild@drtel.net; jbtrucking8@yahoo.com; jgemar@drtel.net; Hagen, Jeff; jimnlisa@drtel.net; Joel Hamar (hamarfrm@drtel.net); Justin Gemar; Justina Zundel; kjhauck@dterl.net; larson71@drtel.net; lazybfarms@drtel.net; ljand@drtel.net; lrall@drtel.net; MATT HERMAN; mcstein@drtel.net; ndbeethe@gmail.com; Net, Mvisto@Drtel. (mvisto@drtel.net); nitro.43@icloud.com; prfarm@drtel.net; rasell@drtel.net; rcroll@drtel.net; reinkebruce@gmail.com; rtsgary@drtel.net; Scott Moore (moorbeef@drtel.net); shaynelson7mm@gmail. com (shaynelson7mm@gmail.com); Spring Valley; 0AKESpd (OAKESpd@drtel.net); bk_nuts@hotmail.com; DICKEY COUNTY SHERIFF; Ellendale Police Department; Estes, Chris J.; O'Brien, Matt; amcmedic02@gmail.com; 'dalosure@yahoo.com'; dnation48@gmail.com; Flaherty, Don; gman8567@gmail.com; Heupel, Erick (criticalmedic@yahoo.com); Mike (mike@oakesambulance.com); Dean Simek; ellendalefire@gmail.com; Fullerton Fire (spetey@drtel.net); junkman00@yahoo.com; Oakes Fire (ofd@drtel.net); tytbertsch@hotmail. com (tytbertsch@hotmail.com); Wedel, Paul (pweeds@hotmail.com); Waldo, Kerry; Gibbs, Abby; Moch, Allyssa; Miller, Amber; Rall, Angela L.; Schimke, Andi I.; Ritter, Barbara J.; Kiser, Breana S.; Carlson, Brandon; Cindy R; Miller, Cresta; Dinger, Danielle; DC FEMA; Dickey County Highway Dept.; Tank, Deborah A.; Deb K; debbiemae2 @yahoo.com; Helland, Harleigh; Hokana, Holly F.; j hokanna; Arispe, Jennifer; Haase, Julie A.; Morrissey, Jessica L.; Bruns, Jodi; jtg@drtrl.net; kaceyholm@gmail.com; Kschimke@drtel.com; Skjefte, Lisa; Wald, Lori; Kempf, Nicole; Peterson, Scott; rekow, rickey; Holm, Roxanne M.; Schmidt, Kelly K.; scott wertz; Sheppard, Wanda; Bertsch, Stormy; tunatim@drtel.net; Wagner, Shirlene; Lematta, Wonada; alicia.glynn@bhshealth.org; Schwartz, Beth M.; cheryl.anderson@commonspirit.org; christopher.schenk2@redcross.org; Balak, Frank; kimberly.vosseteig@redcross.org; kristopher.smith@commonspirit.org; Marie Hennessy; melinda.nation@bhshealth.org; naomi.grueneich@bhshealth.org; pam.kosel@bhshealth.org; pbergh@good-sam.com; pwitt@good-sam.com; rebecca.thompson2@commonspirit.org
Subject: West county Hazardous Mit meeting

Reminder- West- Dickey County Hazardous Mitigation meeting, including the cities of Monango, Ellendale and Forbes, will be this Thursday FEB 20th 7pm at the Opera House in Ellendale. I will release an teams invite (for those who cant attend in person) when I get it…<CR>

Charlie Russell
Emergency Manager
9-1-1 Coordinator
DICKEY COUNTY
po box 302 Ellendale ND, 58436
PH: 701-320-6299
FAX: 701-349-3960
KC5ZCH

Dickey County Emergency Management · Follow
February 18 ·

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REMINDER- The West Dickey County Hazardous Mitigation planning meeting, including the cities of Monango, Forbes and Ellendale, will be this Thursday -FEB 20th- 7pm at the opera house in Ellendale. Everyone is welcome and encouraged to attend!

From:	Russell, Charles J.
To:	Hanson, Darin T.; Ellendale Police Department; Estes, Chris J.; "City of Oakes"; City Auditor; Flaherty, Don; Jennifer Schultes; Traci Redlin; DC LEADER (DCLEADER@DRTEL.NET); Flaherty, Don; Grueneich, Jim; Mike Brandenburg; richard erbele; Carlson, Brandon; Walsh, Jerry; Hokana, John; kaceyholm@gmail.com; Roberts, Marke; Sheppard, Wanda; alicia.glynn@bhshealth.org; Moch, Allyssa; Miller, Amber; Schwartz, Beth M.; cheryl.anderson@commonspirit.org; christopher.schenk2@redcross.org; Balak, Frank; kimberly.vosseteig@redcross.org; kristopher.smith@commonspirit.org; Marie Hennessy; melinda.nation@bhshealth.org; naomi.grueneich@bhshealth.org; pam.kosel@bhshealth.org; pbergh@good-sam.com; pwitt@good-sam.com; rebecca.thompson2@commonspirit.org; Holm, Roxanne M.; cadams@summitcarbon.com; eric.larson@jamesvalleygrain.com; fuo@ellendalefuoil.com; hanscoteaugrain@gmail.com; Martin J Vega; nick@applieddigital. com (nick@applieddigital.com); rdillon@summitcarbon.com; ryan@fullertonelevator.net; sewu@rrt.net; stanekgregory7@gmail.com; steve.foley@mcgough.com
Subject:	Special Meeting
Date:	Tuesday, March 4, 2025 2:04:13 PM
Importance:	High

Please mark your calendars for a Special Meeting of The Dickey County commission with County, State, City leaders, county medical services and Dickey County Industry leaders to analyze what is currently happening in our county and how best to address where we are heading in the future. Issues to be addressed include housing, transportation safety, critical infrastructure deficits, public services, NO available labor pool, and other rapid growth pains (with no increased budgets).

The DC Commission hopes that bringing all the major players to the table at the same time, exchanging ideas, plans and schedules we can better understand and mitigate the issues we are having integrating agriculture, industry, (and its inherent population growth) with the legacy services in the county.

March 27 - 1 PM At the Dickey County Fair Grounds (archery Building)…<CR>

Charlie Russell
Emergency Manager
9-1-1 Coordinator
DICKEY COUNTY
po box 302 Ellendale ND, 58436
PH: 701-320-6299
FAX: 701-349-3960
KC5ZCH

From:	Russell, Charles J.
To:	DC LEADER (DCLEADER@DRTEL.NET); Jennifer Schultes; Traci Redlin; Hagen, Jeff; City Auditor; "City of Oakes"; Hanson, Darin T.; mmalonee@invenergy.com; Dean Simek; ellendalefire@gmail.com; Fullerton Fire (spetey@drtel.net); junkman00@yahoo.com; Oakes Fire (ofd@drtel.net); tytbertsch@hotmail. com (tytbertsch@hotmail.com); Wedel, Paul (pweeds@hotmail.com); amcmedic02@gmail.com; "dalosure@yahoo.com"; dnation48@gmail.com; Flaherty, Don; gman8567@gmail.com; Heupel, Erick (criticalmedic@yahoo.com); Mike (mike@oakesambulance.com); 0AKESpd (OAKESpd@drtel.net); bk_nuts@hotmail.com; DICKEY COUNTY SHERIFF; Ellendale Police Department; Estes, Chris J.; O"Brien, Matt; Carlson, Brandon; Walsh, Jerry; Hokana, John; kaceyholm@gmail.com; Roberts, Marke; Sheppard, Wanda; alicia.glynn@bhshealth.org; Moch, Allyssa; Miller, Amber; Schwartz, Beth M.; cheryl.anderson@commonspirit.org; christopher.schenk2@redcross.org; Balak, Frank; kimberly.vosseteig@redcross.org; kristopher.smith@commonspirit.org; Marie Hennessy; melinda.nation@bhshealth.org; naomi.grueneich@bhshealth.org; pam.kosel@bhshealth.org; pbergh@good-sam.com; pwitt@good-sam.com; rebecca.thompson2@commonspirit.org; Holm, Roxanne M.; cadams@summitcarbon.com; eric.larson@jamesvalleygrain.com; fuo@ellendalefuoil.com; hanscoteaugrain@gmail.com; Martin J Vega; nick@applieddigital. com (nick@applieddigital.com); rdillon@summitcarbon.com; ryan@fullertonelevator.net; sewu@rrt.net; stanekgregory7@gmail.com; steve.foley@mcgough.com; anna.sell@k12.nd.us; chawker@trinitybiblecollege.edu; chip.sundberg@ellendale.k12.nd.us; Ian O"Brien; lana.norton@ellendale.k12.nd.us; mfergal@trinitybiblecollege.edu; scott townsend; Shannon Jepson; vjorden@trinitybiblecollege.edu; Grueneich, Jim; Mike Brandenburg; richard erbele
Subject:	Thurs meeting reminder
Date:	Monday, March 24, 2025 5:57:27 AM
Importance:	High

REMINDER: Special meeting identifying and brainstorming solutions to all the issues of overwhelming and overnight growth in our county. We are asking our NEW, as well as legacy agricultural and industrial partners, State and local governmental officials to the table, to understand **their goals, needs and future impacts** on Dickey County.

Both Federal and State granting are dependent on pre-identifying the issues and the identification of mitigation stratigies if possible.

This meeting will be at 1pm- at the archery building- Dickey County Fair Grounds- in Ellendale, ND

Charlie Russell
Emergency Manager
9-1-1 Coordinator
DICKEY COUNTY
po box 302 Ellendale ND, 58436
PH: 701-320-6299
FAX: 701-349-3960
KC5ZCH

Appendix 4 Media Coverage

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Rain, wind floods roads, damage signs

Rain and wind from a storm Tuesday evening and early Wednesday morning flooded roads and damaged signs in Dickey County, according to Charlie Russell, emergency manager and 911 coordinator for the county.

Written By: Masaki Ova / Jamestown Sun | Aug 11th 2016 - 2pm.

Rain from a storm Tuesday evening and early Wednesday morning flooded Dickey County Road 2, also known as the Forbes-Merricourt Road. Submitted photo

Rain and wind from a storm Tuesday evening and early Wednesday morning flooded roads and damaged signs in Dickey County, according to Charlie Russell, emergency manager and 911 coordinator for the county.

Russell said Dickey County Road 2 is closed from N.D. Highway 11 north to the county line because the water is too deep. He said many of the township roads that feed into Dickey County Road 2, which is known as the Forbes-Merricourt Road, are trashed.

“People are going to have a hard time figuring out how to get home,” he said. “By midnight tonight, Forbes will be a lake.”

Russell said Highway 11 also had water over it in three places. The North Dakota Department of Transportation said in an email Wednesday that there is water on Highway 11 about 14 miles west of Ellendale. Signs are in place, and flaggers will temporarily direct traffic through the area until the water recedes.

He said the Dickey County area received 1.5-inch-diameter hail, and there were signs of wind and rain damage on N.D. Highway 56 with road signs blown over or off of their poles.

Janine Vining, meteorologist with the National Weather Service office in Bismarck, said Dickey County got anywhere between 2 to 6 inches of rain in a widespread area.

“The unfortunate thing is there is more thunderstorm activity starting up now,” she said, referring to Dickey County getting more rain Wednesday afternoon.

Vining said the first round of thunderstorms, which occurred late Tuesday evening and early Wednesday morning, contained hail, rain and winds. The second round of thunderstorms, which occurred late Wednesday morning into the early afternoon, produced mainly heavy rain that created more problems in Dickey County.

“Those two systems probably produced a large area of 2 to 6 inches of rain,” she said.

Vining said more thunderstorms were developing Wednesday afternoon in Dickey County.

“We are more afraid of the heavy rain south of Jamestown because we know about the flooding,” she said.

Vining said the Hazelton and Strasburg areas reported 60 to 70 mph winds, and McIntosh County northeast of Ashley reported 60 mph winds.

The Jamestown area received 2.24 inches of rain from a storm late Tuesday evening and early Wednesday morning, according to Janine Vining, meteorologist with the National Weather Service in Bismarck.

More thunderstorms were expected to move into the Jamestown area Wednesday evening, she said. After Wednesday, there shouldn’t be any precipitation in the forecast until early next week.

For today, Vining said to expect temperatures to be in the low 80s with mostly cloudy skies in the morning and partly cloudy skies in the afternoon.

For Friday, the NWS predicts a high near 76 with skies being mostly sunny and a low temperature around 56.

On Saturday, the NWS predicts mostly sunny skies with a high near 76 and a low around 56 in the evening.

On Sunday expect highs near 80 with mostly clear skies and lows around 60 in the evening.

Power outages continue in southern North Dakota

Two days after the Christmas Day ice storm, power company officials were still gauging the damage Tuesday, according to Craig Rysavy, operations manager for Dakota Valley Electric Cooperative.

Written By: Keith Norman | Dec 28th 2016 - 7am.

The weekend ice storm left trees looking like branches made of glass as seen in Jamestown. The heavy weight of the ice caused damage to many trees. John M. Steiner / The Sun

Two days after the Christmas Day ice storm, power company officials were still gauging the damage Tuesday, according to Craig Rysavy, operations manager for Dakota Valley Electric Cooperative.

Dakota Valley Electric Cooperative serves the southern third of Stutsman County and all of LaMoure and Dickey counties. The cooperative's service area extends east to the Wahpeton area and west to include small parts of Logan and McIntosh counties. Rysavy said the worst of the power outages were in Dickey and LaMoure counties.

"We're still in discovery mode," he said. "We've been at this a couple of days and my gut feeling is we'll work on this all week."

Rysavy said the number of reported outages climbed Tuesday morning to about 900 accounts, although there were no new outages.

"We know from experience not everyone could call in their outage yesterday," he said.

Other power companies were faring better. Otter Tail Power Co. issued a press release Tuesday saying it had restored power to all Jamestown customers at about 10:45 Monday night. Northern Plains Electric Cooperative listed 47 homes without power Tuesday morning, down from a peak of about 580 homes on Sunday evening.

Northern Plains provides electrical service for the rest of Stutsman County and north to the Canadian border.

Brad Fowler of Sky Farmer Ag Services, located in Manns Township in southeast Stutsman County, said his home had been without electricity since 4 p.m. Christmas Day. He is served by Dakota Valley Electric.

"We've got a wood burner keeping the house liveable," he said. "Old habits are hard to break. You still reach for the light switch when you walk into a room even if there hasn't been electricity for two days."

Fowler said his biggest concern was keeping the pipes from freezing in an office area in his aircraft hangar that did not have a wood burning stove.

"I've got fish house heaters going there," he said.

In Jamestown, the rain and ice came in three separate shots of precipitation from 11 a.m. to 5:20 p.m. Sunday, according to Rick Krolak, observations program leader for the National Weather Service in Bismarck. The reporting station at the Jamestown Regional Airport reported 0.69 inch of rain and freezing rain before the system turned to snow Sunday evening.

"I would anticipate more (rain and freezing rain) the further south you went," Krolak said.

That held true in Dickey County, according to Charlie Russell, county emergency manager.

"We have 2 inches of ice over everything. It looks like a set from the movie 'Frozen,'" he said, referring to the animated Disney movie.

Russell said along with the challenges Dakota Valley co-op was facing, other utilities were also struggling to maintain or restore service.

Montana-Dakota Utilities was hoping to restore electric service to Monango and Fullerton Tuesday afternoon, and Southeast Water Users was having water pressure problems in the hills of western Dickey County because pumping stations were without electricity.

Five miles of a high-voltage powerline from the Tatanka Wind Farm near Forbes north to a substation was also down, Russell said.

"Picture an artillery duel," he said. "That's what the downed poles and lines look like."

Officials closed the road along that powerline forcing some farmers in the Forbes area to use field roads or cross pastures if they needed to leave their homes, Russell said.

Rysavy said as other cooperatives finished repairs in their own territory, they would make crews available to help Dakota Valley.

He anticipated about 45 linemen working on Tuesday including aid from Northern Plains and Legacy Power Line, a powerline construction company from Wadena, Minn.

Crews will be restringing line onto poles and in some cases, replacing poles that broke under the load of ice and snow Sunday.

"We have about 400 poles in inventory," Rysavy said. "I don't know if that is enough."

Fowler said he anticipated the power may be out a few more days.

"They are doing the best they can," he said. "We've got a lot of trees down in our yard. They must have so many lines and substations down."

UPDATE: 4 inches reported overnight

Jamestown added 4 inches of new snow in the last 24 hours bringing the total for the season to 41 inches, according to measurements taken at the North Dakota State Hospital.

Written By: Sun Staff | Jan 10th 2017 - 11am.

Jamestown added 4 inches of new snow in the last 24 hours bringing the total for the season to 41 inches, according to measurements taken at the North Dakota State Hospital.

Sgt. Bob Schlenvogt of the Jamestown Police Department, said only one minor traffic accident was reported between 7 a.m. and 8 a.m.

“Snow emergency routes are getting plowed,” he said. “The rest of the streets are snow covered but passable.”

The City Engineer’s Office announced that Jamestown crews will begin snow removal efforts in residential areas at 11 a.m. today and move to the downtown area at 11 p.m. today. The snow removal schedule may change depending on weather conditions.

More wind was reported to the south of the Jamestown area.

Dickey County reported 4 inches of snow with wind since midnight. Ellendale Public School is beginning classes 2 hours late while the Dickey County Courthouse is opening 1 hour late, according to Charlie Russell, Dickey County, emergency manager.

The National Weather Service forecast for Jamestown calls for little or no snow accumulation today but does warn of northwest winds gusting up to 32 mph this afternoon.

The weather service is also warning of cold air moving into the area with temperatures Thursday night dropping to 26 degrees below zero.

Road closures in Dickey County

Travelers in rural Dickey County could encounter water over the roads, according to Charlie Russell, emergency manager and 911 coordinator for the county. Russell said road crews were placing warning flags and closing some roads. He asked people ...

Written By: Sun Staff | Apr 18th 2018 - 8am.

Travelers in rural Dickey County could encounter water over the roads, according to Charlie Russell, emergency manager and 911 coordinator for the county.

Russell said road crews were placing warning flags and closing some roads. He asked people who encounter unmarked road damage to contact the Dickey County Highway Department at 349-3326.

Mickey Nenow, Stutsman County road superintendent, said no major problems had been reported in the Jamestown area.

“There are some soft spots but it’s not nearly as bad in previous years,” he said.

Deluge in Ellendale

Depending on who you ask, anywhere from 6 to 8 inches of rain fell on Ellendale on July 19. Damage to 24 homes along with churches and businesses has slipped through the cracks and needs to be addressed, said Charlie Russell, Dickey County emerge...

Written By: Thomas J. LaVenture | Aug 11th 2018 - 7am.

Depending on who you ask, anywhere from 6 to 8 inches of rain fell on Ellendale on July 19.

Damage to 24 homes along with churches and businesses has slipped through the cracks and needs to be addressed, said Charlie Russell, Dickey County emergency manager. Some homes are uninhabitable until repaired but the scenario is considered an "uninsurable damage incident," by disaster agencies and insurers, he said.

"This type of damage falls under no agency's umbrella to help," Russell said.

Ellendale received 7.5 inches of rain within 6 hours late July 19 and another 0.5 inches early July 20, according to Russell's measurements. The storm drains and sanitary systems were overwhelmed and sent water and raw sewage into dwellings along with some structural damages to mostly lower-income homeowners, he said.

Russell said he is in contact with the National Association of Voluntary Association, a network of foundations and corporate that help identify grants and assistance for unmet disaster response.

After 3 hours of rain there was 8 inches of water in the lower level of Heather Molan's home. The tub and toilet continued to back up for 18 hours, she said.

"We had a pretty big mess in our downstairs," Molan said. "By morning the water was above the third step on the staircase."

She and her four sons stood by with shop vacuums and additional sump pumps for 6 hours trying to get the water level to drop. All carpeting and drywall were removed from the lower level along with beds, furniture and storage items, she said.

The insurance company caps a sewer backup damage claim at $2,500, she said. The insurer didn't even want any more information, she said.

"I have no idea of what the total cost will be to fix and replace everything but it would obviously be a lot more that $2,500," Molan said. "It would probably be $10,000 or more easily."

Molan is in contact with the North Dakota Insurance Department and said someone is looking into her claim. She is also waiting for contractor estimates.

Molan said she plans to attend the next regular meeting of the Ellendale City Council at 6:30 p.m. Monday and said other residents plan to attend.

Ellendale Mayor Matt Thorpe said no one was injured from the flooding and city services did not fail. Crews responded and backup pumps worked with the main pumps, he said.

"We never lost any pumps," Thorpe said. "It was just that the pumps couldn't get water through the lines fast enough."

The city of Ellendale is waiting on legal advice in relation to the damage, Thorpe said. The North Dakota Insurance Reserve Fund is also looking at the situation, he said.

"We can't afford to predict everything," he said. "This just doesn't happen very often."

A rain observer in Ellendale reported an overnight storm total of 6.02 inches, said Allen Schlag, a hydrologist with the National Weather Service in Bismarck. This includes 5.55 inches on the night of July 19 and another 0.47 inches the early morning of July 20, he said.

These systems are normal and there are unusually large rainfall events at least once a summer, he said. It's just that they don't always fall on a city or where someone is measuring, he said.

The North Dakota Community Foundation has established the Ellendale Flood Relief Fund to assist individuals affected by the flooding. Make a tax-deductible donation at https://ndcf.netand search for Ellendale on the donate tab, or mail a check to North Dakota Community Foundation, P.O. Box 387, Bismarck, ND 58502 with "Ellendale Flood Relief Fund" in the memo line of the check. For more information, call (701) 222-8349.

LSS to assess Ellendale flood damage

An assessment of recent flood damage is underway through Saturday for Ellendale, N.D., said Charlie Russell, Dickey County emergency manager. "We've heard the stories but until we know the needs we really can't do anything," Russell said. Cari Lo...

Written By: Tom LaVenture / Jamestown Sun | Aug 16th 2018 - 10am.

An assessment of recent flood damage is underway through Saturday for Ellendale, N.D., said Charlie Russell, Dickey County emergency manager.

“We’ve heard the stories but until we know the needs we really can’t do anything,” Russell said.

Cari Logan, a humanitarian special projects team lead for Lutheran Social Services of North Dakota Disaster Response, will interview residents from 5 to 8 p.m. Thursday, from 9 a.m. to noon and by appointment in the afternoon Friday, and by appointment from 9 a.m. to noon Saturday. The interviews will be in the Dickey County Emergency Operations Center at 205 15th St. N.

“I will be in the community to talk to people directly and collecting as much information as people have available,” Logan said. “It will just be a general assessment of needs so that we can call upon our North Dakota partners to assist with those needs.”

LSS North Dakota Disaster Response is a partner with Voluntary Organization Active in Disasters, Russell said. The assessments and disaster relief applications will help LSS and its VOAD partners try to find possible foundation or corporate assistance to replace appliances, repair or renovate damage homes and other specific needs.

“Part of this assessment is to see what the real needs are,” Russell said.

Up to 8 inches of rain fell on Ellendale on July 19-20, Russell said. The storm drains and sanitary systems were overwhelmed with water and raw sewage, damaging 24 homes along with churches and businesses, he said.

To interview about flood related damage, contact Russell at 320-6299 or call Logan at 701-271-3243.

The North Dakota Community Foundation established the Ellendale Flood Relief Fund to assist individuals affected by the flooding. Tax-deductible donations can be made online at https://ndcf.net, search for Ellendale on the donate tab, or mail a check to North Dakota Community Foundation, P.O. Box 387, Bismarck, ND 58502 with "Ellendale Flood Relief Fund" in the memo line of the check. For more information, call 701-222-8349.

Update: Travel advisory for Jamestown and region as snow continues

The North Dakota Department of Transportation and the North Dakota Highway Patrol issued a no travel advisory for portions of eastern North Dakota. Snow and ice covered roads and reduced visibility are creating hazardous driving conditions, the p...

Written By: Tom LaVenture / Jamestown Sun | Oct 10th 2018 - 5pm.

Emergency crews were busy Wednesday as snow-covered roads and poor visibility made for unpleasant traveling conditions in and around the Jamestown area. John M. Steiner / The Sun

The North Dakota Department of Transportation and the North Dakota Highway Patrol issued a no travel advisory for portions of eastern North Dakota.

Snow and ice covered roads and reduced visibility are creating hazardous driving conditions, the patrol said. Cities included in the no travel advisory are Jamestown, Valley City, Edgeley, Ellendale, Oakes, Cooperstown, Michigan, Larimore and surrounding areas.

A No Travel Advisory means conditions are such that motorists should not travel in these areas.

There were cars going in the ditch along Third Street Southeast in the morning in Jamestown but other than that the city has had an uneventful day as far as snow-related accidents or problems, said Lt. Robert Opp, day shift supervisor for the Jamestown Police Department.

“We usually have more accidents on the first snow and that hasn’t been the case today,” Opp said.

Stutsman County Sheriff Chad Kaiser said there were several cars that went into the ditch throughout the day on county roads. The accidents have not resulted in damage or injury, he said.

“So far it has just been people driving probably too fast for the slushy conditions which is typical for a first snow,” Kaiser said. “That is what we usually see until people get used to driving in winter conditions again.”

Due to continued snowy conditions Dickey County employees and the Dickey County Courthouse in Ellendale are were released at 3:30 p.m., according to Charlie Russell, Dickey County emergency manager and 911 coordinator.

NDDOT is not keeping up with plowing on N.D. Highway 11, he said. The National Weather service is predicting from 6 to 9 inches of snowfall for Dickey and LaMoure counties by evening with winds of up to 35 mph creating whiteout conditions, he said.

Road surfaces in the Ellendale area are rutted in heavy slush and snow, Russell said. The National Weather Service anticipates the snow will continue to fall until tapering off in the evening and stop by 1 a.m., he said.

If residents must travel full-sized vehicles are recommended at speeds of less than 20 mph, he said. Visibility is under half a mile, he said.

A power outage Wednesday in downtown Jamestown lasted about an hour, according to Rebecca Michael, public relations specialist for Otter Tail Power Co.

The power went out in parts of downtown Jamestown at around 11:15 a.m. and was down for approximately one hour, she said. It is not known how many customers were affected, she said.

The source of the outage is not known but is attributed to the heavy wet snow, Michael said. There were similar outages in other areas where snow was falling, she said.

“There are no major outages that affected large groups all at once,” Michael said. “They are mostly small and localized.”

Jamestown is in the radius of the storm-related outages, she said. Technicians are working as fast as they can and still be safe to repair the localized outages, she said.

Heavy wet branches can fall on power lines, she said. If people have an outage they should call 800-257-4044 or 218-739-8877 so that Otter Tail Power Co. technicians can respond, she said.

Early snow

With more than 6 to 8 inches of snow expected to fall in the region on Wednesday, law enforcement said accidents were relatively light for the first winter storm of the season. There were cars going in the ditch along Third Street Southeast in th...

Written By: Thomas J. LaVenture | Oct 11th 2018 - 7am.

A North Dakota Highway Patrol trooper approaches a semi-tractor that ended up in the median Wednesday north of Jamestown on U.S. Highway 52/281 as southbound traffic moves on. John M. Steiner / The Sun

With more than 6 to 8 inches of snow expected to fall in the region on Wednesday, law enforcement said accidents were relatively light for the first winter storm of the season.

There were cars going in the ditch along Third Street Southeast in the morning but other than that the city had an uneventful day as far as snow-related accidents or problems went, said Lt. Robert Opp, day shift supervisor for the Jamestown Police Department.

"We usually have more accidents on the first snow and that hasn't been the case today," Opp said.

Stutsman County Sheriff Chad Kaiser said there were several cars that went into the ditch throughout the day on county roads. The accidents have not resulted in damage or injury, he said.

"So far it has just been people driving probably too fast for the slushy conditions which is typical for a first snow," Kaiser said. "That is what we usually see until people get used to driving in winter conditions again."

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Snowy conditions led Dickey County to close offices at 3:30 p.m. to coincide with the school day, said Charlie Russell, Dickey County emergency manager and 911 coordinator. Roads in Dickey and LaMoure counties were snow covered with whiteout conditions from 35 mph gusts, according to the National Weather Service.

The road surfaces in the Ellendale area were rutted in heavy slush and snow, Russell said.

The North Dakota Department of Transportation and the North Dakota Highway Patrol issued a no travel advisory for portions of eastern North Dakota due to snow and ice covered roads and reduced visibility creating hazardous driving conditions. Cities included in the no travel advisory are Jamestown, Valley City, Edgeley, Ellendale, Oakes, Cooperstown, Michigan, Larimore and surrounding areas.

A No Travel Advisory means conditions are such that motorists should not travel in these areas.

Ellendale flood relief work continues

Funds are now available to assist homeowners who incurred severe damage as a result of a July flood in Ellendale. Approximately 6 to 8 inches of rain fell on Ellendale in a 24-hour period on July 19, said Charlie Russell, Dickey County emergency ...

Written By: Thomas J. LaVenture | Oct 16th 2018 - 7am.

Funds are now available to assist homeowners who incurred severe damage as a result of a July flood in Ellendale.

Approximately 6 to 8 inches of rain fell on Ellendale in a 24-hour period on July 19, said Charlie Russell, Dickey County emergency manager. The deluge of runoff caused damage to homes that went above and beyond the typical home insurance claim allowed for such damage, he said.

"With winter coming on we need to raise enough money to at least guarantee heat in these homes," Russell said. "The priorities obviously will be heat and trying to take care of furnaces first."

Around 28 homes were damaged in the flood and around one-third of them are requesting assistance of some kind, said Cari Logan, humanitarian and special projects team lead with Lutheran Disaster Response in Fargo. Not everybody who was impacted has requested additional assistance and there are some who have had to find other living arrangements, she said.

"Some people received insurance money that was since paid out and some have made decisions not to do complete repairs and some have made different decisions around that," she said. "We are still working on exact numbers as far as what people's plans are and what they would hope for as far as build and repair and what is going to be possible."

Around $100,000 of documented damage has been established and so far around $34,000 in cash has been raised through the National Voluntary Organizations Active in Disaster, a network of foundations and corporations that help identify grants and assistance for unmet disaster response, she said.

The regular response partners include Catholic Charities, United Church of Christ and Lutheran Disaster Response, Logan said. The three organizations work with a local Ellendale leadership

team that determined eligibility based largely on income level, damage, need and vulnerability, she said.

"We will be allocating the initial amount," Logan said. "There will be an ongoing effort to revisit additional cases as money comes in and as we find more resources."

Some residents have moved from a damaged home, she said. Funds will be distributed with a recommendation but the decision on how to use the assistance is ultimately with the homeowner, she said.

Ellendale Mayor Matt Thorpe said the city did not incur any infrastructure damage from the flood. The city's insurance company did not identify any liability with the residential damage but the process is ongoing, he said.

"We are still working on it," Thorpe said. "It takes time."

A dinner to support the Ellendale Flood Relief Fund will be at the Ellendale School from 11 a.m. to 1 p.m. Saturday, Oct. 28, Russell said. The dinner is to raise additional funds to help reach the $100,000 goal to cover all damage that isn't raised through the VOAD, he said.

There is currently around $2,100 in the Ellendale Flood Relief Fund, Russell said. Many people lost appliances such as hot water heaters, washers, dryers and furnaces to the flood and the funds will go to offset the costs of replacing items as well as repairing structures, he said.

Tax deductible donations to the Ellendale Flood Relief Fund can also be made to the North Dakota Community Foundation at ndcf.net/give/urgent-needs.html or mail to P.O. Box 387 Bismarck, ND 585

Overland flooding possible south of Jamestown

The bigger streams of the region aren't expected to have flooding problems this spring, although deeply frozen ground could cause problems in other areas, according to Allen Schlag, hydrologist with the National Weather Service in Bismarck.

Written By: Keith Norman | Feb 22nd 2019 - 6am.

Snow from the streets of Jamestown keeps piling up near Pepper's Dog Park where crews haul and unload it. John M. Steiner / The Sun

The bigger streams of the region aren't expected to have flooding problems this spring, although deeply frozen ground could cause problems in other areas, according to Allen Schlag, hydrologist with the National Weather Service in Bismarck.

"All the little streams will be full," he said. "The result in all likelihood is at least minor overland flooding."

Schlag released a hydrologic outlook for the James River and Missouri River basins Thursday. It called the flooding outlook for the region "a mixed bag of results."

"In the James River Basin, there really is nothing in the offing north of Jamestown," he said. "There is plenty of room in the reservoirs."

Current lake levels are at or below the conservation pool, the goal for water levels over the winter and going into spring melt at Pipestem Dam and Jamestown Dam, according to websites maintained by the Army Corps of Engineers.

Problems could occur south of Jamestown.

"The soil is as bad as you've had it in years," Schlag said, referring to the amount of frost in the soil. "If we get a quick runoff, very little would go into the ground."

There is also more snow on the ground south of Jamestown, according to Charlie Russell, emergency manager and 911 coordinator for Dickey County.

"Lot's of areas with 4- and 5-foot drifts for half a mile," he said. "... no doubt we'll overland flood to some level."

Russell has began compiling a list of contractors and equipment to call upon in event of flooding.

"There's too much (snow) not to be planning for at least overland flooding," he said.

Jerry Bergquist, Stutsman County emergency manager, said there are still a lot of variables in play when it comes to possible flooding.

"It all depends on how fast it melts," he said. "It depends on the culvert system. They really shouldn't be frozen because the snow we've gotten has been so dry."

Schlag said the Climate Prediction Center is forecasting a higher chance of colder than normal temperatures through March, although thawing could still occur.

"By the end of March, it can still be colder than normal and above freezing," he said.

The Climate Prediction Center forecast for precipitation in the region is neutral for March, meaning there are equal chances of above normal, normal or below normal precipitation for the month.

A mild spring has saved the area from flooding problems as recent as 2011, according to Bob Martin, former manager at Pipestem Dam who has been assisting with snow measurements this spring.

"There was much more water in the basin then," he said. "The difference was in the spring. We had quite a long stretch of thawing in the day and freezing at night."

Schlag said a cycle of freezing and thawing weather would be the most advantageous to avoid flooding conditions.

"If it starts to melt and then we get an inch of rain on top of it," he said, "then things would come unglued quickly."

Additional snow could also change the flood outlook.

"We're not done with winter yet," Bergquist said. "The outlook could change."

The next flood outlook from the National Weather Service will be issued March 7.

Blizzard expected

In a winter with numerous storms and a long stretch of cold weather, the storm forecast for today and Thursday is unique, according to Jeff Schild, a meteorologist with the National Weather Service in Bismarck. Written By: Keith Norman | Mar 13th 2019 - 10pm.

In a winter with numerous storms and a long stretch of cold weather, the storm forecast for today and Thursday is unique, according to Jeff Schild, a meteorologist with the National Weather Service in Bismarck.

"We haven't had one similar to this all winter," he said. "Not with this heavy a snow, a lot of moisture content and strong winds."

The NWS issued a blizzard warning Tuesday afternoon forecasting 10 to 15 inches of snow for much of south central North Dakota. Temperatures during the snowstorm are forecast to be near 30 degrees resulting in heavy, wet snow. The greatest accumulations of snow are likely from the Jamestown area south to the Ellendale area and then down into central South Dakota, Schild said.

"The kicker is the winds," he said. "Increasing winds as the storm moves through with gusts to 60 mph. The gusty winds continue into Thursday and diminish late Thursday afternoon into the night."

Jerry Bergquist, Stutsman County emergency manager, said the good news concerning the weather came with the higher temperatures Tuesday.

"We put a substantial glaze on the snow we have," he said. "Most of the current snow is locked down."

The bad news is that the new snow will blow with the strong winds in the forecast. Wind gusts of up to 65 mph are possible, the Weather Service said.

This storm comes on the heels of a winter storm that brought heavy snow to the region last week with Jamestown reporting 6 inches of new snow Saturday.

Charlie Russell, Dickey County emergency manager, said he measured nearly 11 inches of snow at Ellendale but as much as 19 inches of snow was reported in the Fullerton area. The heavy snow in that area caused the collapse of some pole-barn roofs.

This storm may be worse, he said.

"It's suppose to be a humdinger," Russell said. "The Weather Service is telling us we'll be seeing snow and mild winds by noon Wednesday."

Schild said the storm is moving into the area from the south. For Jamestown, the snow will gradually develop Wednesday afternoon, continue through the night and taper off through the day Thursday. The gusty winds diminish late Thursday afternoon into the evening.

The NWS advised no travel as part of the blizzard warning.

Snow already on the ground has created high banks along the edges of the roads making it impossible to open some roads with a conventional snowplow, Russell said. Dickey County has contracted with

Caterpillar operators to push snow back away from the road edges to make room to push new snow off the roads.

"In a lot of places, we have no place to push the snow," Russell said. "It has been a nightmare and extremely expensive winter here."

Those same conditions would make travel impossible in heavy snow and high winds.

"We need to get everybody where they're going to be by Wednesday evening," Russell said. "Those 'no travel advisories' are poor terms. What it means is it is unsafe to be out there on the roads."

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Major storm cripples LaMoure County

After dealing with the aftermath of several inches of snow over the weekend of March 9-10, LaMoure County residents heeded the warnings that a major storm would have serious impacts beginning Wednesday afternoon, March 13, 2019. Schools dismissed early, and many church activities were canceled.

Snow and high winds ensued late in the day, and the blizzard caused white-out conditions through Thursday. Nearly the entire eastern half of the state had no travel advisories, with the I-94 closed from Fargo to Bismarck, and I-29 closed from Fargo to the Canadian border. Even the plows were getting stuck and stranded motorists had to stay in their vehicles because emergency personnel were unable to get to them.

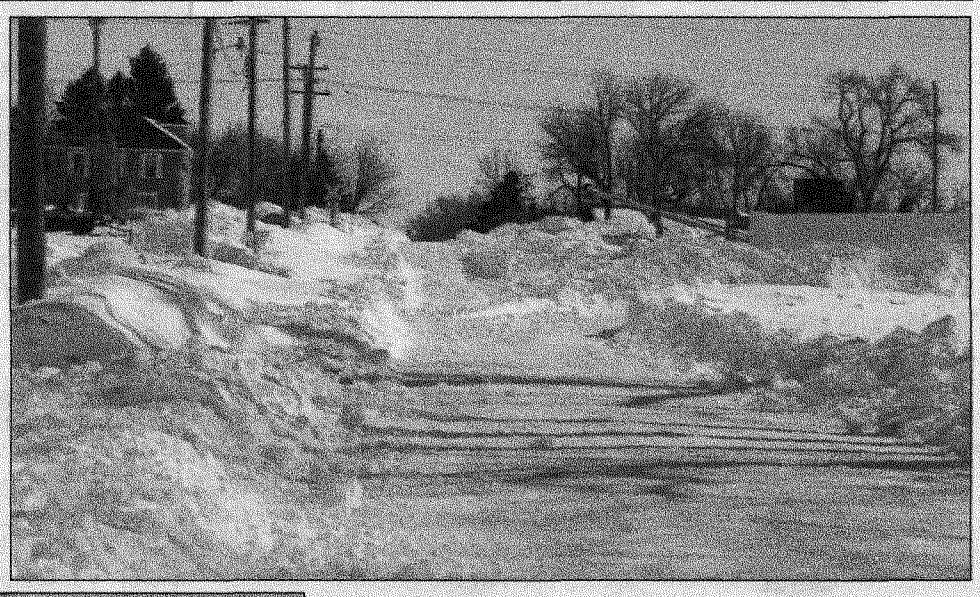
Most businesses in Edgeley were closed on Thursday. The streets were virtually impassable due to the drifts. Officially, the snowfall was recorded at 14 inches, with area wind gusts of over 50 mph.

On Friday morning, road crews slowly began reopening highways. However, some businesses were forced to remain closed because their employees were still snowed in. Jane and Jon Coleman prevailed and made their 6-mile trip to their jobs in town despite the closed roads. They traveled by snowmobile over the drifts, but the rough ride made it feel like they were going over frozen white caps.

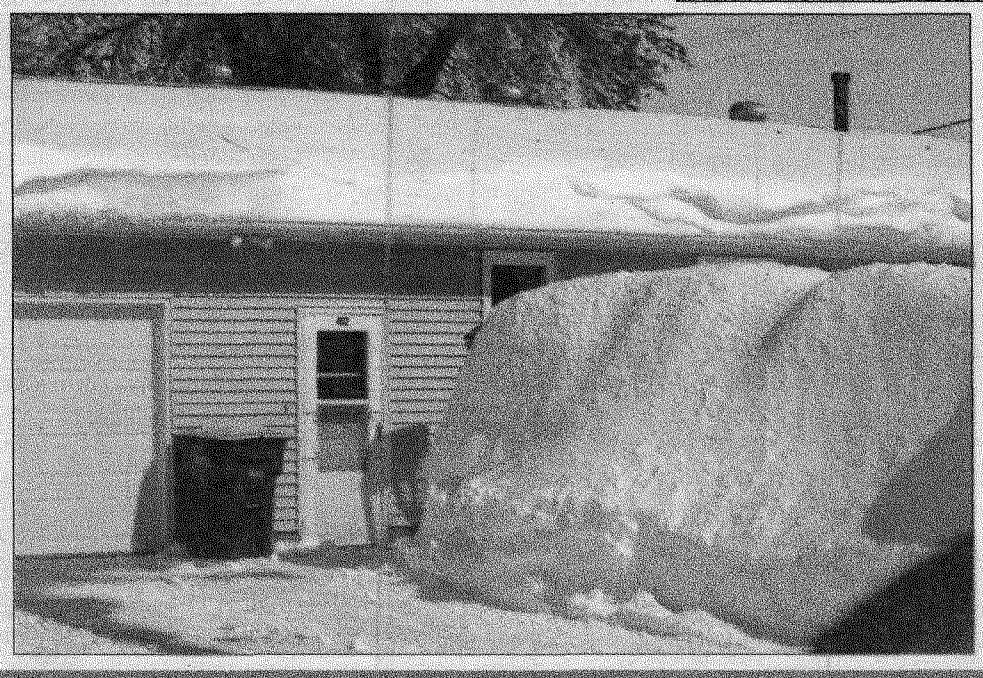
The Edgeley school district had scheduled a day off into the calendar for Friday, March 15. It allowed the road crews time to clear bus routes. By Monday morning, some buses were able to reach all stops on their routes. Others had to modify them.

Farmers with livestock dealt with numerous challenges. Several were on their own because their hired help or other family members couldn't travel to help with chores or snow removal. While the temperatures were mild enough that livestock weren't in jeopardy from severe cold, calves were susceptible to the wet conditions and had to be moved to shelter to avoid becoming chilled. Some producers noticed their cows calved quickly, a phenomenon that can occur when barometric pressure is low. However, the biggest challenge was probably moving snow and keeping the paths to the gates, barn doors, and feed troughs open.

By Friday, road crews had at least one lane open on most city streets and rural roads. By Tuesday, many of them were open enough to allow two-way traffic. However, personnel continued to work on pushing back snow from blind intersections. The city of Edgeley also worked on clearing the drainage channel through town in an effort to avoid flood damage.



Above: a county plow fights its way through an extended drift. Photo by Bridget Syversen-Right: Streets were one lane for most of Friday as crews worked to clear snow. Photo by Christine Henderson



Left: A drift obscures a home in Edgeley. Below: Following the storm, nearly every street corner was a blind intersection. Photos by Christine Henderson

Slow melt

The amount of snow on the ground will slow the process of melting the snow on the ground, according to Allen Schlag, hydrologist with the National Weather Service in Bismarck.

Written By: Keith Norman | Mar 22nd 2019 - 7am.

Snow melt in areas of Jamestown create large pools of water as seen Thursday in northeast Jamestown. John M. Steiner / The Sun

The amount of snow on the ground will slow the process of melting the snow on the ground, according to Allen Schlag, hydrologist with the National Weather Service in Bismarck.

"You have a pure white coat on everything," he said. "That reflects a lot of energy and keeps it cool."

Schlag said currently, the amount of water running into streams in the James River basin is low compared to farther west in North Dakota.

"Partially due to lower temperatures than those of points farther west and partially due to a heavier snowpack, the melt season is not yet in full swing for the James River basin of North

Dakota," he said.

That will change with temperatures forecast to reach the mid-40s by the middle of next week.

"Temperatures Sunday and Monday are forecast to be near freezing so that will reset the clock a bit," Schlag said. "Warmer temperatures later in the week could get us into the full swing of snowmelt."

Schlag said the most "robust" snowmelt occurs when temperatures are high enough to raise the temperature of the entire snowpack above the freezing mark.

As the spring melt progresses, it brings a high risk of small stream and overland flooding in the James River basin south of Jamestown, he said.

Charlie Russell, Dickey County emergency manager, said some melting has started but anticipates more.

"No open water in the fields yet," he said. "You can't tell if there is water flowing in the ditches because they are still full of snow."

Schlag said the greatest concern is for the area south of Jamestown. That area has more snow on the ground than areas north of Jamestown.

Russell said snowfall figures for this winter in Dickey County are between 98 and 100 inches of snow. He anticipates the melt to increase next week.

"We've got lots of slough space for water," he said. "The fly in the buttermilk is how it gets there. If it flows through the ditches its fine, if it flows across roads, we'll have washouts."

Dickey County has empty sandbags available for residents at the county shop. Russell said the county has also imposed load restrictions on most roads and is advising no unnecessary travel on gravel roads.

"Even pickups are rooting up the roads," Russell said. "Can you imagine the damage a big truck would do."

For Jamestown, the outlook is less dire.

The U.S. Army Corps of Engineers forecast combined releases from Pipestem and Jamestown dams at 750 cfs this spring. That is considered a manageable amount and would not require any flood preparation efforts in Jamestown, according to emergency management officials in Stutsman County.

There is another risk factor in the flood forecast, according to Schlag.

"We're still not seeing a big rain event in the forecast," he said, referring to the forecast through the end of March. "Rain would compound all problems. The risk factor for a spring rain increases as we get into April."

Deep snow: Dickey County bracing for overland flooding

DICKEY COUNTY, N.D.--The good news is the snow is not as deep in Dickey County as it was a week ago, according to Charlie Russell, Dickey County emergency manager. "I'm standing by a 10-foot drift," he said Wednesday during a phone interview, "an...

Written By: Keith Norman | Mar 28th 2019 - 7am.

Water from this mountain of melting snow is pooling in a ditch on the edge of Fullerton. John M. Steiner / The Sun

DICKEY COUNTY, N.D.-The good news is the snow is not as deep in Dickey County as it was a week ago, according to Charlie Russell, Dickey County emergency manager.

"I'm standing by a 10-foot drift," he said Wednesday during a phone interview, "and it's been settling for a week."

The bad news is the snow has not been melting but settling, leaving the same amount of water in the region to melt and run off as spring progresses. The potential for that runoff to begin soon prompted the National Weather Service to issue a flood alert for a six-county area Wednesday including Burleigh, Kidder, Stutsman, Emmons, Logan, LaMoure, McIntosh and Dickey. The alert is in effect through Saturday afternoon.

Maps from the National Operational Hydrologic Remote Sensing Center showed all of Dickey County covered with an average of 16 to 30 inches of snow with the equivalent of 4 to 8 inches of water on March 20. As of March 27, the amount of water in the snow remained between 4 and 8 inches but the snow depth had dropped to 12 to 16 inches of snow in most areas with isolated spots showing less than 8 inches of snow.

NOHRS uses satellite imagery and sensing to measure snow depth and the amount of water in the snow. Allen Schlag, hydrologist with the National Weather Service in Bismarck, said the measurements tend to be a little higher than actual ground measurements would still provide good information for flood forecasts. The reported data averages out the snow depths and water content across areas, taking into account some areas that may be nearly bare of snow and shelterbelts that might hold high snowbanks.

Schlag said weather in the central part of North Dakota hasn't melted much snow yet.

"You are kind of in suspended animation out there," Schlag said. "The countryside is pretty much still 100 percent snow covered."

Russell said that is in the process of changing as temperatures increase and the water that has melted works its way through the snow on the ground. When all that happens, Russell anticipates more overland flooding activity than in previous years.

"The difference between this year and other years is the sheer volume of the snow," he said. "This year is also different because of the numbers of drifts in the fields."

Russell said some county roads in western Dickey County, just below the edge of the Coteau Hills, are already covered by water. Some township roads weren't plowed after the later winter storms if there were no residences in the area that used the roads for access.

"People need to use caution," he said, referring to the dangers of driving through standing water.

Jerry Rekow, member of the Ellendale Fire Department, said it has been a tough winter on all fronts.

"Fortunately, we haven't had any calls during the blizzards," he said. "If we'd had one, we'd have had to have a plow lead the way."

Other problems are developing including soft roads as water accumulates in the road ditches, Rekow said. He also expects to see overland and small stream flooding to begin to cause real problems in the near future.

"That's their history down there," Schlag said, referring to the Dickey County area. "I don't see any reason this year will be any different."

It appears snow attempted to devour this vacant hog barn near Monango in Dickey County as seen Tuesday. John M. Steiner / The Sun

Flood warning

Stutsman County has been on the calm end of the James River basin in North Dakota so far this spring season, according to Jerry Bergquist, Stutsman County emergency manager.

Written By: Keith Norman | Apr 2nd 2019 - 6am.

Stutsman County has been on the calm end of the James River basin in North Dakota so far this spring season, according to Jerry Bergquist, Stutsman County emergency manager.

It is still included in a flood warning issued by the National Weather Service for the counties of LaMoure, Dickey, Kidder, Logan, McIntosh, Emmons and Stutsman. The flood warning remains in effect until 12:30 p.m. Friday.

"Dispatch (Stutsman County Communications Center) had zero calls about roads under water in Stutsman County this weekend," Bergquist said. "The (James River) gauge in Jamestown is going down because there are no releases from the dams and we're running out of local water."

Local ice jams are causing streams to rise in some areas, Bergquist said.

You don't have to go very far south to hear more severe flooding reports.

"The (James River) gauge at Adrian is showing approximately a 2011 level flow," said Kimberly Robbins, LaMoure County emergency manager. "The indications show the river has not crested."

The gauge at Adrian is indicating a river height of about 31 feet. The record for the gauge is about 37 feet in 2009. The current reading ties the third highest ever recorded at the Adrian gauge since it was installed in 2009.

Robbins said the James River level in LaMoure is just over the minor flood stage level at 14.08 feet. The National Weather Service is forecasting a crest Tuesday at 14.3 feet.

LaMoure County officials are also dealing with flooded township roads that are extending south to Dickey County.

"Right now, everything around Fullerton is under water except for access from the north," said Charlie Russell, Dickey County emergency manager.

Many other areas in Dickey County also have flooded roads, he said.

Russell said in some areas, roads can flooded for a time and then have the water recede only to rise again as culverts open and water flows from new areas toward the roads.

"We're encouraging people to stay off the backroads unless they have a reason to be there," he said.

Russell said hay bales in the James River flood plain are also a concern. If the bales breakup and the hay is washed downstream, it could plug culverts in the Sand Lake National Wildlife Refuge in South Dakota. Russell said culverts are used there to control lake levels for waterfowl habitat. If the culverts become plugged, the water could backup into North Dakota.

Flooding in Dickey and LaMoure counties is all being caused by local snowmelt as releases from the Jamestown and Pipestem dams are minimal, according to James Dixon, manager of the Pipestem Dam for the U.S. Army Corps of Engineers.

Water levels behind the Pipestem Dam have risen by about 6 feet in the last four days, Dixon said.

"We adjusted the gates Friday to maintain 6 cfs of releases," he said. "That's where it has been all winter."

Once the ice breaks up on Pipestem Dam, the releases will be shut down completely and the level of the lake allowed to rise.

Levels behind the Jamestown Dam are up about 2 feet in the last four days. Currently, there are no releases from the Jamestown Dam.

Officials don't usually make major releases from the two dams until the ice is off the James River and the river has crested at LaMoure. Earlier this spring, the Corps of Engineers estimated the peak combined releases from the two dams at about 750 cfs. That level does not require any flood control efforts in Jamestown, Bergquist said.

The increased levels at Jamestown and Pipestem dams are far below the flood storage capacity of the structures. The 6-foot increase in the level at Pipestem Dam still leaves it about 40 feet below the record lake level in the 2009 flood, Bergquist said.

"We have a long way to go before we see any problems here," he said.

More winter

Officials are prepared for another round of snow and wind across the southeast section of North Dakota. "Lord knows we have had lots of practice," said Charlie Russell, Dickey County emergency manager. The storm has been in the forecast since ear...Written By: Keith Norman | Apr 11th 2019 - 6am.

Officials are prepared for another round of snow and wind across the southeast section of North Dakota.

"Lord knows we have had lots of practice," said Charlie Russell, Dickey County emergency manager.

The storm has been in the forecast since early in the week but has gained in intensity and is moving north of what had originally been forecast.

"It's a big, powerful storm," said Adam Jones, meteorologist with the National Weather Service in Bismarck. "The path is slightly more north than we had originally predicted."

NWS forecasts as of Wednesday afternoon called for 3 to 5 inches of snow Thursday in the Jamestown area with as much as much as 8 to 12 inches of snow in the Ellendale and Fargo areas. Wind gusts of up to 40 mph are possible with the storm.

Jones said storm conditions will vary greatly along the edge of the system.

"Bismarck may see nothing out of this storm," he said. "Jamestown and south could see some nasty conditions but even northern Stutsman County may see significantly less snow."

The nasty conditions include wind, snow, reduced visibility and, in some areas, roads already damaged by spring flooding, Russell said.

"Up to about 60% of the road infrastructure in Dickey County has severe damage," he said. "Winds of 40 mph could blow over flags and signs and leave people with no warning of where they will run into a culvert that is out or a washed out road."

Russell is advising people in Dickey County to shelter in place during the storm.

"Road closed, means road closed," he said. "What makes this dangerous is there won't be any markers out there."

Jones said the snow that does fall will be wet and heavy. The water equivalent of the 3 to 5 inches of snow forecast in Jamestown could be a quarter- to a half-inch. The 8 to 12 inches of snow in the Ellendale area could be the equivalent of 1 inch of rain, compounding overland flooding in Dickey County, Russell said.

There is less concern in Stutsman County, according to Mickey Nenow, Stutsman County road superintendent. The county road department still has the plows on its trucks and road graders."We should be OK," Nenow said, "and we know it won't last long."

A call to Harold Sad, Jamestown street department foreman, was not returned Wednesday. Jones declined to say if this might be the last gasp of winter in North Dakota. "There is still stuff out there," he said, referring to another weather system moving across the United States next week. "It is too early to say this is it."

Late winter storm brings snow, wind

A distance of 60 miles made a lot of difference in weather conditions Thursday. "Blowing snow started about 10 a.m.," said Charlie Russell, emergency manager for Dickey County, describing the conditions at Ellendale on Thursday. "We pretty much w...

Written By: Keith Norman | Apr 12th 2019 - 6am.

A distance of 60 miles made a lot of difference in weather conditions Thursday.

"Blowing snow started about 10 a.m.," said Charlie Russell, emergency manager for Dickey County, describing the conditions at Ellendale on Thursday. "We pretty much went from nothing to 'oh my God' in no time."

Russell said schools, government offices and businesses in Dickey County were closed Thursday. People were urged to shelter in place rather than risk travel on snow-covered roads that could also have damage from previous flooding.

The Jamestown area was reporting snow flurries even in the middle of the afternoon, according to Todd Hamilton, meteorologist with the National Weather Service in Bismarck.

"It is moving slower than anticipated," he said, referring to the weather system bringing the snow and wind to the region. "Not much else has changed. The southern James River valley (in North Dakota) and east into southeast North Dakota is still looking at 12 to 16 inches of snow from the system."

The NWS issued a winter storm warning for Stutsman County and a blizzard warning for Barnes, LaMoure and Dickey counties Thursday extending into Friday.

The North Dakota Department of Transportation issued a no-travel advisory for southeast North Dakota at 1:30 p.m. Thursday. By that time, Interstate 29 from Fargo to the South Dakota border had been closed along with Highway 13 from I-29 to Wahpeton. Interstate 94 from Jamestown to Fargo was closed at 3:30 p.m.

Hamilton said the snow was caused by a slow-moving surface low-pressure system moving north across the Central Plains. The system was forecast to turn toward the east sometime Friday and be over the Great Lakes by Friday afternoon.

Hamilton said Stutsman County was on the edge of the storm system and would likely see a variety of snow amounts by the time the system clears the area.

Places like Woodworth in northwestern Stutsman County could receive 3 to 5 inches of snow while Montpelier in southeast Stutsman could get as much as 10 inches of snow, he said.

"In Jamestown, probably in that 6 to 7 inches of snow range," Hamilton said.

The city of Jamestown plans to begin its snow removal program at 5 a.m. Friday by plowing emergency routes. Crews will move to the residential areas at 11 a.m. and to the downtown areas at 11 p.m. The snow removal plans are contingent on weather conditions and actual snow accumulation amounts.

Red flag warning prompts burn ban

A red flag warning issued by the National Weather Service for today is activating the Stutsman County burn ban ordinance for the first time this year, according to Jerry Bergquist, Stutsman County emergency manager. The ordinance prohibits outdoo...

Written By: Sun Staff | Apr 25th 2019 - 10am.

A red flag warning issued by the National Weather Service for today is activating the Stutsman County burn ban ordinance for the first time this year, according to Jerry Bergquist, Stutsman County emergency manager.

The ordinance prohibits outdoor fires when the fire danger index in very high, extreme or a red flag warning has been issued.

“The National Weather Service has put the entire state of North Dakota in a red flag warning,” Bergquist said. “It includes parts of Montana, South Dakota and Minnesota, so it is really region wide.”

Charlie Russell, Dickey County emergency manager, urged caution with fires in that county noting that many roads are still washed out and it would be difficult for fire trucks to respond to fires in some areas.

The warning was issued due to low relative humidities and high winds across the region.

Violations of the Stutsman County burn ban are a Class B misdemeanor punishable by a $1,500 fine.

The red flag warning is set to expire at 8 p.m. The forecast for Friday through the weekend includes moisture and cooler weather.

“The fire concerns may be short lived,” Bergquist said. “We’re headed for colder, wetter weather that even has snow in the forecast.”

Mock Mass Casualty Event executed seamlessly

Submitted by Cary Wertz, South East Career and Technology EMT and Advanced EMT Patient Care Technician – Students are extremely grateful and thankful to the Oakes Ambulance Service, Oakes Fire and Police Department and the Oakes Community Hospital, for allowing them the awesome opportunity to participate in a Mock Mass Casualty Event May 8. This event simulated a gas-line explosion that occurred on scene, injuring 34 people. There were four persons that sustained critical injuries, including amputations, severe burns, fractured limbs and even a pregnant patient in active labor. These scenarios, allowed the students to implement triage interventions. Students were to demonstrate what a Mass Casualty Event would appear like. Students were provided the opportunity to simulate proper emergency care and interventions, utilizing various equipment and realizing the importance of communication and team work between the emergency response entities that are necessary for the best possible patient outcome. Students were transported to Oakes Community Hospital to simulate further treatment categorized as critical (immediate), delayed or walking wounded. All Hospital Staff were instrumental in simulating advanced life support care, depicting life flight, emergency surgery and the urgency for immediate interventions for critically injured patients. Once again THANK YOU!! From all the staff and students at SRCTC. Your tireless efforts of service to your community are greatly appreciated. What a tremendous blessing it is to have such caring individuals that unselfishly give of their time and talents to educate, motivate and inspire the youth in our community.

TRAFFIC AND CONSTRUCTION

ND Highway 1 closed at state line

Written By: Keith Norman | Nov 5th 2019 - 3pm.

Ice and water have blocked North Dakota Highway 1 at the border of North and South Dakota in Dickey County. Charlie Russell / Special to The Sun

North Dakota Highway 1 has been closed to traffic at the border between North and South Dakota by the North Dakota Department of Transportation. The road continues as South Dakota Highway 37 which has been closed by the South Dakota Department of Transportation.

The road crosses the state line about 10 miles south of Ludden, North Dakota. Ice buildup at the curves at the state line have made travel dangerous, according to Charley Russell, emergency manager and 911 coordinator for Dickey County. The closure is expected to stay in place for up to three weeks or until levels of the James River begin to decline, Russell said.

USDA clears path to aid for farmers in 47 flood-stricken N.D. counties

Gov. Doug Burgum declared a statewide flood emergency last month after a wet summer and early blizzard.

Written By: Forum News Service | Nov 8th 2019 - 10am.

Ducks fly from a water-covered cornfield Monday, Oct. 21, 2019, south of Mandan, N.D. Tom Stromme / Bismarck Tribune

BISMARCK — The U.S. Department of Agriculture approved Friday, Nov. 8, disaster designations for 47 North Dakota counties dealing with severe flooding and major crop losses. The approval clears the path for farmers in hard-hit areas to apply for federal relief.

Gov. Doug Burgum initially submitted the request for the designation to Secretary of Agriculture Sonny Perdue at the beginning of the month.

The designations make farmers in the declared counties and those adjacent eligible to receive federal loans under the Farm Services Agency's Emergency Farm Loan Program and and the

Small Business Administration's Economic Injury Loan Program for farm-related business, according to a news release. Producers are also eligible to apply for relief via the federal Wildfires and Hurricanes Indemnity Program.

"We deeply appreciate Secretary Perdue's quick response to our request because help can't come soon enough for our farmers and ranchers facing one of the most difficult and stressful seasons on record," Burgum said in a news release.

To qualify for the designation, a county must have experienced a minimum 30% production loss of at least one crop due to flooding. Of the 47 counties included in the designation, 45 met the threshold. The other two — Morton and Billings — were still eligible for the designation "because of the inability to secure commercial financing to cover losses," according to the release.

The six counties in the state that did not receive the designation — Barnes, Burleigh, Dickey, Logan, McLean and Richland — requested a deferral to determine the severity of the crop losses.

Burgum signed an order declaring a statewide flood emergency Monday, Oct. 21. A total of 22 counties and six cities, including West Fargo, Jamestown and Grand Forks, independently declared flooding emergencies, Burgum spokesman Mike Nowatzki said last week.

Farmers and ranchers seeking assistance can find more information at https://www.ndresponse.gov/.

--Columbia Grain commented road being closed has had an economic impact on the economy in the Oakes area

--Farmland Co-op extra mile have had to drive to service customers is very costly

--The Ranch House, Fullerton drop in customers not wanting to make the extra 50 plus mile drive to get there

--School buses adding more miles to routes and more time to get students to school at a greater cost to district

October 20, 2011 Oakes Times County Home Destroyed by Water County Road 3 wets of Oakes, where the road has been under water since early last spring stands the former Kasprick home the farm and out buildings are destroyed

December 1, 2011 Oakes Times Pickup in water on flooded road Yorktown Township Road

May 24, 2012 Dickey County Leader Insurance Claim Denied

ND Insurance Reserve Fund denied Fireside Restaurant claim for damage from a sewer backup-Council reiterated the need for the city to clean the sewer main adjacent to the Fireside Restaurant at least once a calendar year.

June 24, 2010 Jamestown Sun No place to go

Sloughs in area are bloated with water as heavy rains have left the ground saturated on top of precipitation from last winter. With nowhere else to go, the water has flowed onto roads.

--The road to the Scott Muggli farm covered by 4 ½ foot waters that stretch for miles/Spent 30,000 of own money to fix roads leading to property/kept from planting 40% of 5,000 acre crop/ the 4 ½ foot deep slough stretches 3 miles and covers 700 acres by his home owned by US Fish and Wildlife Service not allowed to divert water onto

--Kevin and Teresa Kasprick home is an island on roughly 2 ½ acres with a flooded-out basement/no place for water to go except into home/septic failed once if four more inched of water would fail again/ two sloughs connected into one and kept gaining size/Teresa lost business that ran out of her basement/can't keep up with water coming into house/nothing covered by insurance because pipes didn't break

Charlie Russell—in the southern parts of county, the water can be diverted in the James or Maple Rivers, the central part bigger risk because no close location for the water to go

April 14, 2011 Dickey County Leader Charlie's pictures Flood Waters a big problem for Dickey County

Dickey County being affected by flood waters/urge motorist to be aware and drive careful ND Department of Transportation "Don't go out and sight-see because the additional traffic only causes more problems for County and State officials"

Ellendale Public Schools buses are putting on more miles on their routes/routes in morning may not be available by afternoon

April 14, 2011 Oakes Times watch for water on area roads

Law enforcement asking everyone to be careful-never know when water covering the road is also covering a wash out 1flag take care 2 flags its closed

July 7, 2011 Oakes Times Dickey County Highway 3 West of Oakes remains closed

Continue to be closed/appears water surrounding the road and the residence nearby has increased in size and depth/buildings water home major damage no one living there/other county township roads have water on them and damage from water

September15, 2011 Oakes Times Work has begun on Dickey County Road 3

County Roads 3 has been closed since the snow started to melt in March.

County 3 is one on the well-traveled roads in DC. –Fullerton residents come to Oakes to work and do business –farmers haul millions of bushels of grain to the Oakes Elevator –Fuel and propane is delivered –school bus routes are altered –emergency vehicles ambulance, fire department, and law enforcement are affected by road closure and need to find alternative routes

Economic Effects

Post Thanksgiving Winter Storm - 11/29/2019 and 11/30/2019

Bismarck, ND
Weather Forecast Office

Overview

A powerful mid latitude cyclone made landfall over the western United States and eventually made its way into the central and northern Plains over the Thanksgiving Holiday weekend. Freezing drizzle and some light snow began to fall across parts of western and central North Dakota on Thanksgiving evening, continuing through much of the day on Friday. As the brunt of the storm continued to slowly push north and east, snowfall rates increased across the south on Friday evening, with heavy snow developing across most of the southern half of the state late Friday night and through much of the day on Saturday. Further north and west, the atmosphere was slower to saturate and a prolonged period of light freezing rain and freezing drizzle continued through much of the event. When all was said and done, much of the south saw 6 to 15 inches of snowfall accumulation while portions of the west and north saw ice accumulations of over a quarter inch.

Analyzed Snowfall Totals

The Jamestown Sun

NEWS LOCAL

Wind, snow impact travel in Jamestown area

The North Dakota Highway Patrol issued a news release early Monday afternoon urging motorists to stay off secondary roads and to be patient for the reopening of I-94 and Interstate 29.

Snow covers multiple vehicles outside a residence in northeast Jamestown on Monday. John M. Steiner / The Jamestown Sun

By Masaki Ova and Keith Norman

December 28, 2021 at 5:00 AM

Wind and 18 inches of snow kept much of Interstate 94 closed from Bismarck to Fargo and no-travel advisories in effect through most of Monday afternoon, Dec. 27, in the Jamestown area.

Westbound lanes of I-94 from Jamestown to Bismarck were opened at 3 p.m. Monday. The eastbound lanes from Bismarck to Fargo and the westbound lanes from Fargo to Jamestown were opened at 4 p.m.

No-travel advisories were kept in place through most of Monday afternoon on U.S. Highway 281 down to South Dakota, U.S. Highway 52/281 north to Pingree and on U.S. Highway 20 north to Glenfield due to blowing snow and reduced visibility. No-travel advisories were lifted at about 4 p.m. for Barnes, Dickey, Kidder, LaMoure, Logan, McIntosh, Ransom and Stutsman counties.

A no-travel advisory means that motorists should not travel due to hazardous conditions that may make it unsafe to travel.

The North Dakota Highway Patrol said several motorists had driven on secondary roads because the interstates were closed, resulting in resources being used to rescue them.

Conditions in rural areas Monday included restricted visibility and roads filled in with drifts of new snow, according to Deputy Jason Falk with the Stutsman County Sheriff's Office.

“You can only see feet at times in the open areas,” he said Monday morning. “There is a lot of snow out there and it is really blowing around in the wind.”

Snow plugs a driveway in northeast Jamestown on Monday. Snow and wind are creating problems in the area, and no travel is advised by Jamestown and Stutsman County law enforcement. John M. Steiner / The Jamestown Sun

Weather on Monday

The National Weather Service issued a blizzard warning Monday morning for Stutsman, Dickey, Foster, Kidder, LaMoure, Logan, McIntosh and Dickey counties until 6 p.m. Monday.

The weather service said Jamestown had 18 inches of snow from Saturday through Monday, Dec. 25-27.

The snowfall diminished early in the afternoon, but blowing and drifting snow still caused travel difficulties, said Zack Hargrove, a meteorologist with the National Weather Service in Bismarck.

“That’s what is causing most of the road issues right now because a lot of roads are just drifted over,” he said Monday morning.

to the Jamestown area. The North Dakota State Hospital reported 12 inches of snow at 8 a.m. Monday.

Hargrove said wind gusts Monday were as high as 45 to 50 mph. He said Jamestown could see wind chills approaching minus 40 Tuesday evening into Wednesday morning and minus 30 Wednesday evening into Thursday morning.

“It’s pretty much a broken record,” he said. “We are going to be almost nightly 30 to 40 to 45 (wind chills) below depending on the given day. It looks like the coldest time frame is going to be New Year’s Eve into New Year’s Day. That’s when we could see some 45 below wind chills.”

Officials recommend winter survival kits if traveling

If people are traveling, Hargrove and Jamestown Fire Chief Jim Reuther recommended having a winter survival kit and supplies to last two days. Reuther said motorists should have warm clothing and blankets, a candle, shovel, water and nonperishable food items for a few days as well as a phone charger.

“The other thing is sometimes if you are getting close to running out of gas you are going to run your vehicle for a little bit then turn it off and then start it again,” he said.

Severe Weather During The Early Morning Of June 14th, 2022

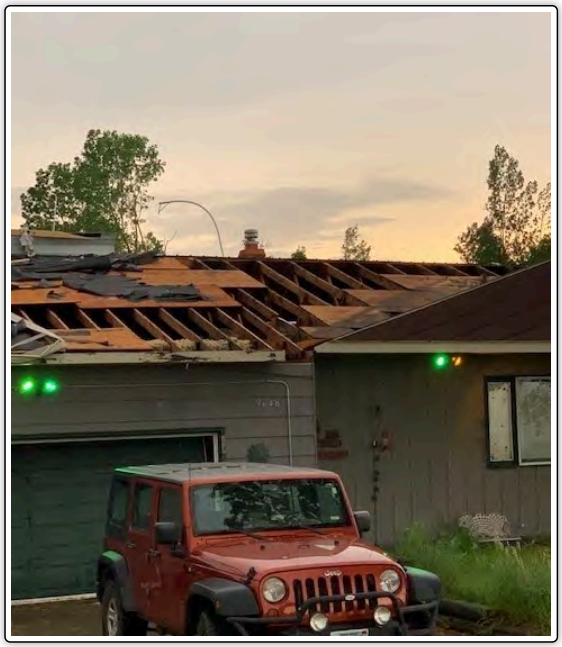
Bismarck, ND
Weather Forecast Office

Overview

A swath of significant-severe convective winds occurred from southwest and central South Dakota into parts of the James River Valley early in the morning on Tuesday, June 16th, 2022. This included a high-end severe thunderstorm that moved through the Dickey County area around 5:00 AM CDT. Extensive damage was reported throughout the city of Ellendale and the surrounding areas. In Ellendale, many hardwood trees were snapped and others uprooted, with some falling onto homes. A home had almost all of the shingles and much of the sheathing torn off the roof, and the garage door was collapsed inward (see photos). Power poles were broken in the town of Ellendale and south of the town to the South Dakota state line. At the Ellendale Cemetery, multiple hardwood and softwood trees were snapped and others were uprooted.

Based on the extensive damage, wind speeds are estimated to be around **100 mph** in the city of Ellendale, and **110 mph** to the east and south of Ellendale. There was a measured wind gust of **120 mph** near Roscoe, SD, which is not far from the North Dakota / South Dakota state line in Edmunds County. Hail up to 3 inches in diameter was reported in Forbes, with quarter sized hail reported in Ellendale along with the damaging winds.

All photos are courtesy of Charlie Russell, Emergency Manager of Dickey County.



Damage in Ellendale, North Dakota

Ice Storm in Southwest, South Central, and Eastern North Dakota December 25-27, 2023

Overview

A significant ice storm started late on Christmas Day 2023, continuing into the early morning of the 27th, producing ice accumulations of up to 1 inch in the James River Valley.

A storm system well to our south created blizzard conditions across South Dakota and Nebraska. Warm air aloft got wrapped around the center of the storm system and spread across North Dakota. This layer of warm air helped snow higher up in the atmosphere melt into rain before it reaches the surface. However, since surface temperatures were below freezing, precipitation became freezing rain and led to significant ice accumulations across south central North Dakota and the James River Valley. Precipitation moved into the James River Valley the afternoon of Christmas Day, before expanding west through the night and through most of the day Tuesday, December 26th. Reports from Verona and Edgeley were the highest, with 1 inch of ice accumulation, while Jamestown, Ashley, and Marion all received 3/4 of an inch of ice accumulation. Additionally, there were strong winds across southern North Dakota, with the highest gust of 67 mph reported at Oakes late on Christmas Day.

A portion of Interstate 94 between Jamestown and Dawson was closed on the 26th, and no travel was advised by the North Dakota Department of Transportation for the most of this event, as roads were ice-covered and made travel very hazardous. Widespread power outages were reported across the James River Valley, with utility companies reporting hundreds of broken power poles. Downed trees and tree branches were common as well from the combination of heavy ice accumulations and strong winds.

Ice storms, especially of this magnitude, are a rare occurrence in North Dakota. The last time NWS Bismarck issued an Ice Storm Warning was back in 2016.

Ice accumulation on a road sign, 10 miles east of Ashley, ND. Photo from Steven Gussey via Facebook.

North Dakota Monitor

NEWS BRIEFS

Gov. Burgum declares emergency after ice storm damages infrastructure

BY: **NORTH DAKOTA MONITOR STAFF** - DECEMBER 29, 2023 12:14 PM

A snapped power pole in Dickey County. (Provided, Dickey County Emergency Manager)

Gov. Doug Burgum on Friday declared an emergency following a Christmas ice storm that caused extensive damage to roads, buildings and farmland across the state and left thousands of residents without power.

The weather brought an unusual amount of rain for December; some communities in the southeast corner of the state received up to 3 inches of precipitation. It was the first time the National Weather Service has issued an ice storm warning for North Dakota since 2016, according to an announcement from Burgum's office.

The ice and wind downed more than a thousand utility poles, the announcement says, which led 20,000 North Dakota residents to lose electricity.

Burgum's declaration also notes that the storm is particularly worrisome for the state's agriculture industry, which is already beleaguered by drought.

The governor plans to ask President Joe Biden's administration for a federal disaster declaration, which would allow the state to apply for additional relief to help North Dakota recover from the storm.

Icicles on the Jamestown travel camera. (Provided, North Dakota Department of Transportation)

The order, which designates Monday, Tuesday and Wednesday as a disaster event, also authorizes state agencies to deploy their own assistance to affected areas of the state.

A handful of counties and municipalities in eastern North Dakota have already issued emergency declarations of their own, including Barnes, LaMoure, Logan and Steele counties and the cities of Litchville and Valley City, the declaration notes.

"We're deeply grateful for the tireless efforts of local linemen and crews from across the state helping to restore power, as well as for the first responders, emergency management teams, road crews, health care workers and all others working to keep citizens safe during this extraordinary event," Burgum said in a statement. "Our state agencies continue to support local response efforts as we prepare to seek a federal disaster declaration and assistance."

The Jamestown Sun

NEWS

5 inches of snow reported Tuesday in Jamestown

A no-travel advisory is in effect for Stutsman and other counties.

A man pushes a bicycle across a snow-covered parking lot in downtown Jamestown on Tuesday, Feb. 27, 2024, after a storm blew in 5 inches of snow. John M. Steiner / The Jamestown Sun

By Kathy Steiner

February 27, 2024 at 10:19 AM

JAMESTOWN — A winter storm prompted no-travel advisories on Tuesday, Feb. 27, by the North Dakota Department of Transportation in Stutsman County and other counties in eastern and south central North Dakota.

The North Dakota State Hospital reported 5 inches of snow in Jamestown with a moisture content of 0.15 inch as of 7:30 a.m. Tuesday.

Stutsman County and area counties were under a winter weather advisory, according to the National Weather Service in Bismarck. The winter weather advisory issued until 6 p.m. said there would be snow and blowing snow, with additional snow accumulations of 1 to 2 inches and winds gusting as high as 40 mph.

In addition to Stutsman, the advisory included Pierce, Wells, Foster, Kidder, SIoux, Emmons, Logan, LaMoure, McIntosh and Dickey counties, the weather service said. The weather service said blowing snow will significantly reduce visibility, with occasional near-blizzard conditions being possible. Conditions would impact the morning and evening commutes, the weather service said.

Jamestown Public Schools along with some businesses and government agencies closed due to weather conditions.

A Jamestown resident clears snow in front of a garage door on Tuesday, Feb 27, in Jamestown. Kathy Steiner / The Jamestown Sun

Maj. Justin Blinsky, assistant chief of police for the Jamestown Police Department, said only one accident had been reported.

“Since daylight, visibility’s a little bit better,” he said of conditions in the city. “The wind is still blowing but it’s not as bad. I don’t think visibility’s too big of an issue. … Within the city, it’s driveable, just got to drive for the conditions.

“There is quite a bit of snow out there so, we’ve had a few people get stuck on inclines,” he added.

He recommended people drive for the conditions.

“It is very icy once … you get underneath the snow, it is icy, and so just have to drive for the conditions and give yourself extra time to stop and be visible," Blinsky said.

He said when people are passing on streets with multiple lanes such as Mill Hill, Hospital Hill and 10th Street, “It does create quite

Vehicles are covered in snow Monday, Dec. 27, in northeast Jamestown. Masaki Ova / The Jamestown Sun

If a vehicle gets stuck and remains running, make sure that the exhaust pipe is cleared out around the vehicle to prevent carbon monoxide poisoning, Reuther said.

“One of the big things is with the carbon monoxide everyone should know there is no taste or smell to it,” he said. “That’s what they call the silent killer.”

Carbon monoxide prevention

Reuther said to make sure all vents around your home are cleaned out to prevent carbon monoxide. Outside the home make sure the snow is cleared away from the gas meter, he said.

“Make sure your vents are all cleaned out. Make sure that your furnace is running properly,” he said. “Any heating appliances that use gas of any type make sure that they are working properly. The

If a power outage occurs, Hargrove said people should not run a generator inside their home because that can also create carbon monoxide problems.

Vehicles parked along 3rd Avenue Northeast in Jamestown are covered with snow Monday, Dec. 27, as the street is covered in snow drifts. Masaki Ova / The Jamestown Sun

Numerous closures, flights delayed

Jamestown Mayor Dwaine Heinrich said city snowplows were working Monday morning.

"It will take days to dig out even after the storm ends," he said. "With the storm persisting, our schedules have been moved back."

Heinrich said the storm was the most intense since March 2019. That storm disrupted the first NAIA Women's Wrestling Tournament slated for Jamestown.

“They have been moving snow pretty much all night just to be able to get out of the main station,” he said.

Jamestown Regional Airport canceled the afternoon and evening flights Sunday as well as the Monday morning flight prior to the airport closing Sunday, said Katie Hemmer, airport director. Monday afternoon’s flight also was canceled.

“They (passengers) get rebooked. They can rebook on the next flight out of Jamestown,” she said. “Maybe some of them chose they could rebook out of a different city. Most North Dakota airports were severely affected by this, so it wasn’t like you could just potentially just drive to another location. The agents at the airports work with each passenger to accommodate the best rebooking option for them.”

She said the evening flight on Monday was scheduled to be on time.

Hemmer said a snowblower got to be used for the first time to clear the snow off the runways.

“We had it for one season prior to this,” she said. “We didn’t have a snowfall that we utilized it for last year. When we have this much snow, we really need the ability to push that snow as well as throw it far away from the runway, both to prevent it from drifting back on but also to meet our safety standards for heights of snow along the runway.”

Services such as city garbage and recycling collections were postponed Monday and will be picked up Tuesday. All routes in Jamestown will be delayed by one day through the end of the week.

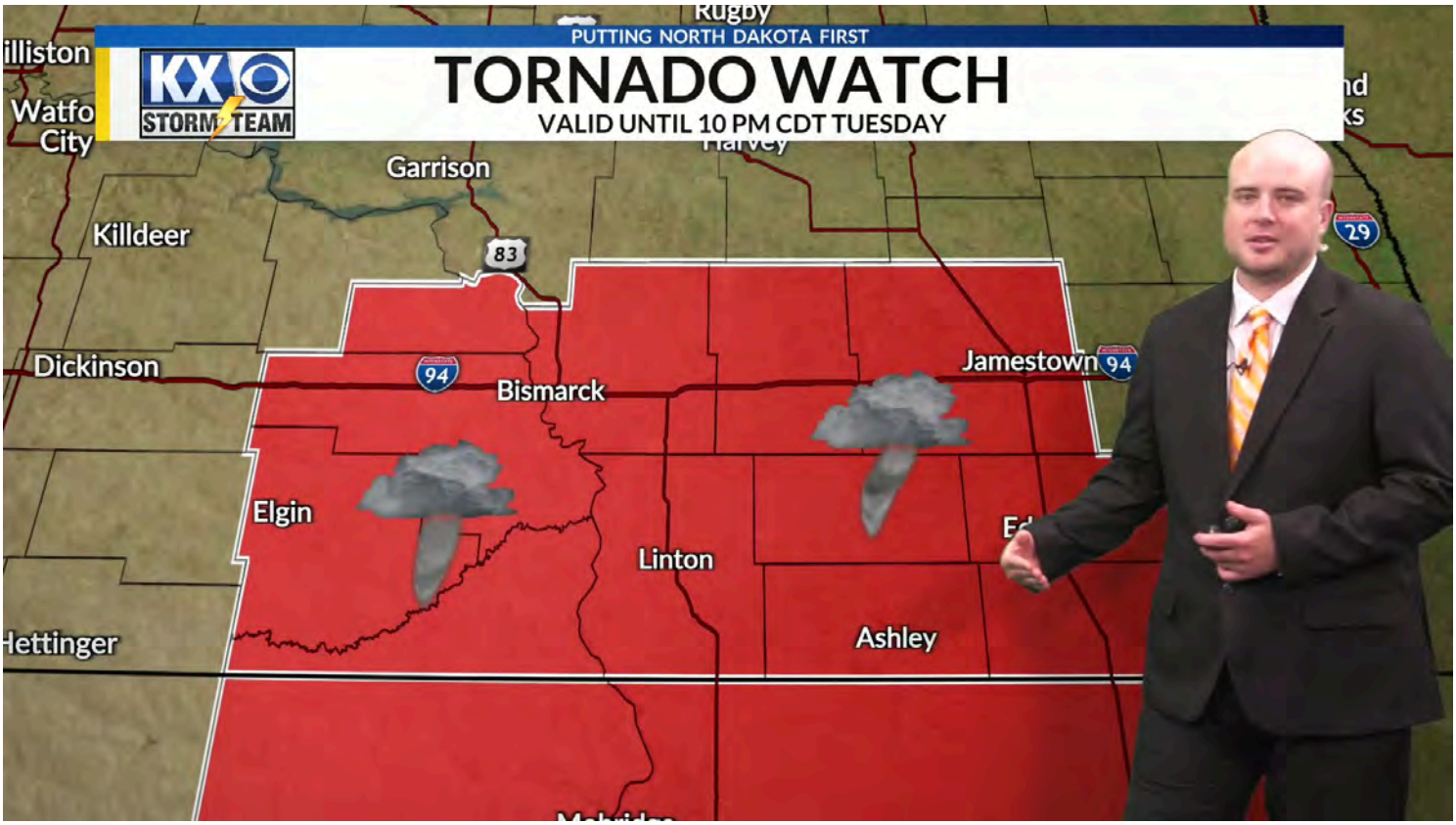
Garbage and recycling containers are buried in snow Monday, Dec. 27, along 3rd Avenue Northeast in Jamestown. Masaki Ova / The Jamestown Sun

All Jamestown Parks and Recreation offices and facilities, including Two Rivers Activity Center, were closed Monday. City of Jamestown offices and Stutsman County offices were closed Monday.

The North Dakota Department of Human Services offices in Jamestown were closed due to hazardous weather and road conditions.

Some services at Jamestown Regional Medical Center were closed Monday, but the emergency department remained open. JRMC is expected to connect with patients to reschedule.

Essentia Health clinics in Jamestown, Valley City and Lisbon were closed. Sanford Health was also closed, according to its website.



WEATHER

Tornado watch lifted in western North Dakota

by: **Edward Segal**, **Vanessa Symonick**, **Kenny Miller**
Posted: Aug 5, 2025 / 04:57 PM CDT
Updated: Aug 5, 2025 / 09:25 PM CDT

SHARE

UPDATE 8:30 P.M.

The tornado watch has been lifted in the western part of North Dakota. A flash flood warning has been issued for McIntosh and Dickey counties, to be in effect until at least 12:15 a.m.

UPDATE 7 P.M.

The tornado watch issued in 12 counties across North Dakota was upgraded to a warning in the southeast part of the state. This included cities east of Wishek and Ashley, and was in effect until 6:30 p.m. The system has since moved east and northeast from there.

North Dakota Monitor

NEWS BRIEFS

Avian flu found in North Dakota, South Dakota turkeys

BY: **JEFF BEACH** - SEPTEMBER 3, 2025 2:52 PM

Avian flu has recently been confirmed at commercial turkey farms in North Dakota and South Dakota. (Scott Bauer/Agriculture Research Service, USDA)

Avian flu has hit turkey farms in North Dakota and South Dakota, the first cases in commercial flocks in the United States since early July.

The U.S. Department of Agriculture's Animal and Plant Health Inspection Service on Aug. 28 confirmed an outbreak of highly pathogenic avian influenza in Faulk County in northeast South Dakota. The outbreak meant 55,400 birds were killed to prevent the spread of the disease.

It is the first case in a U.S. commercial flock since July 2, when the avian flu was confirmed at a game bird facility in Lancaster County, Pennsylvania.

The North Dakota Department of Agriculture said Wednesday that bird flu had been confirmed Saturday at a turkey farm in Dickey County, near the South Dakota state line.

"After a quiet summer, it's not unexpected that we have another case of HPAI as birds are gathering to begin the fall migration," North Dakota Agriculture Commissioner Doug Goehring said in a news release.

Dr. Ethan Andress, state veterinarian in North Dakota, said 60,000 birds had to be destroyed in Dickey County.

Andress said that because large flocks of waterfowl, such as snow geese, are not yet migrating south over the Dakotas, it may be an indication that the virus was spread from local waterfowl.

Avian influenza exists in many wild birds and can be transmitted by contact with infected birds or through infected food and water.

The federal Centers for Disease Control and Prevention says the public health risk is low but notes that avian flu also has spread to dairy cattle and humans with one human death.

In August, the avian flu also was confirmed at a live-bird market in Los Angeles County, California, and in backyard birds in St. Lawrence County, New York, according to the USDA.

The poultry industry has been combating different strains of avian influenza since 2020, according to the CDC.

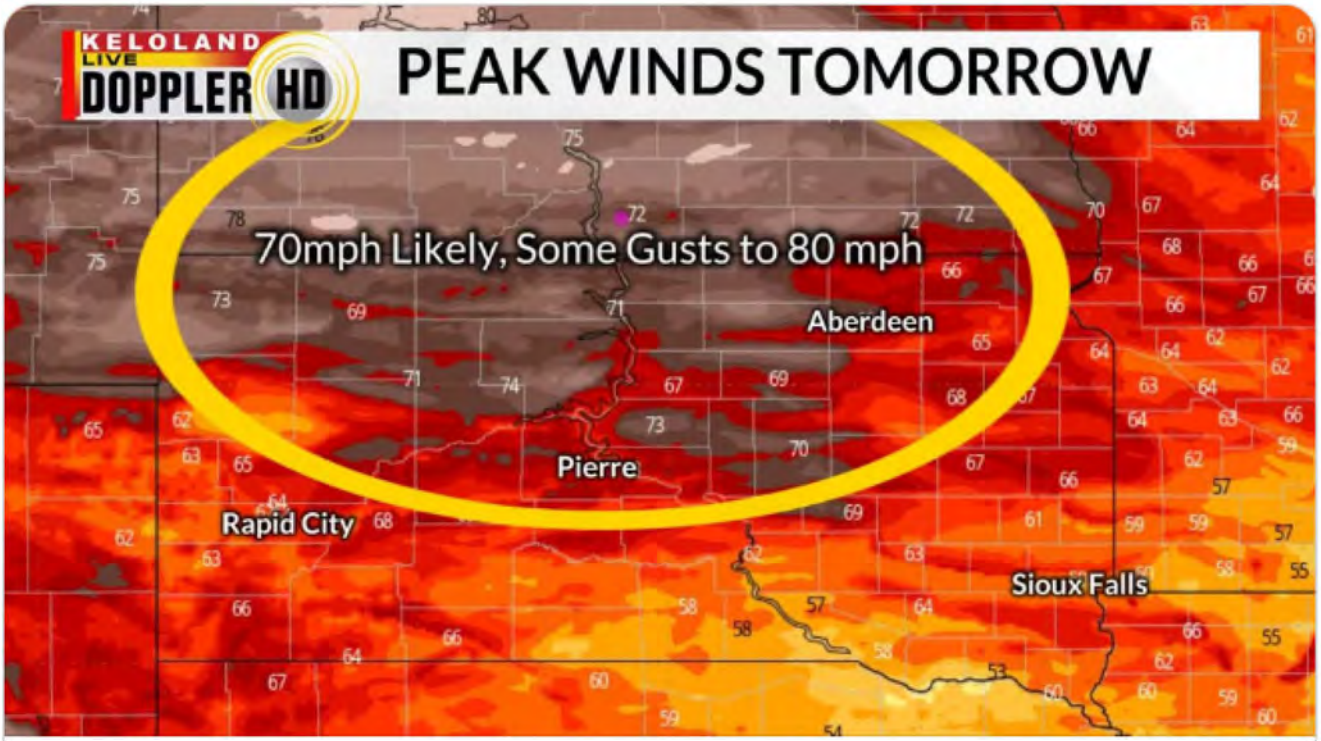
North Dakota Monitor Deputy Editor Jeff Beach can be reached at jbeach@northdakotamonitor.com.

Dickey County Emergency Management
February 18 ·

Dickey County Emergency Management
February 18 ·

Reports of Ice- Heavy winds and ZERO visibility in the Ellendale area and west- Travel is treacherous- stay home if possible!

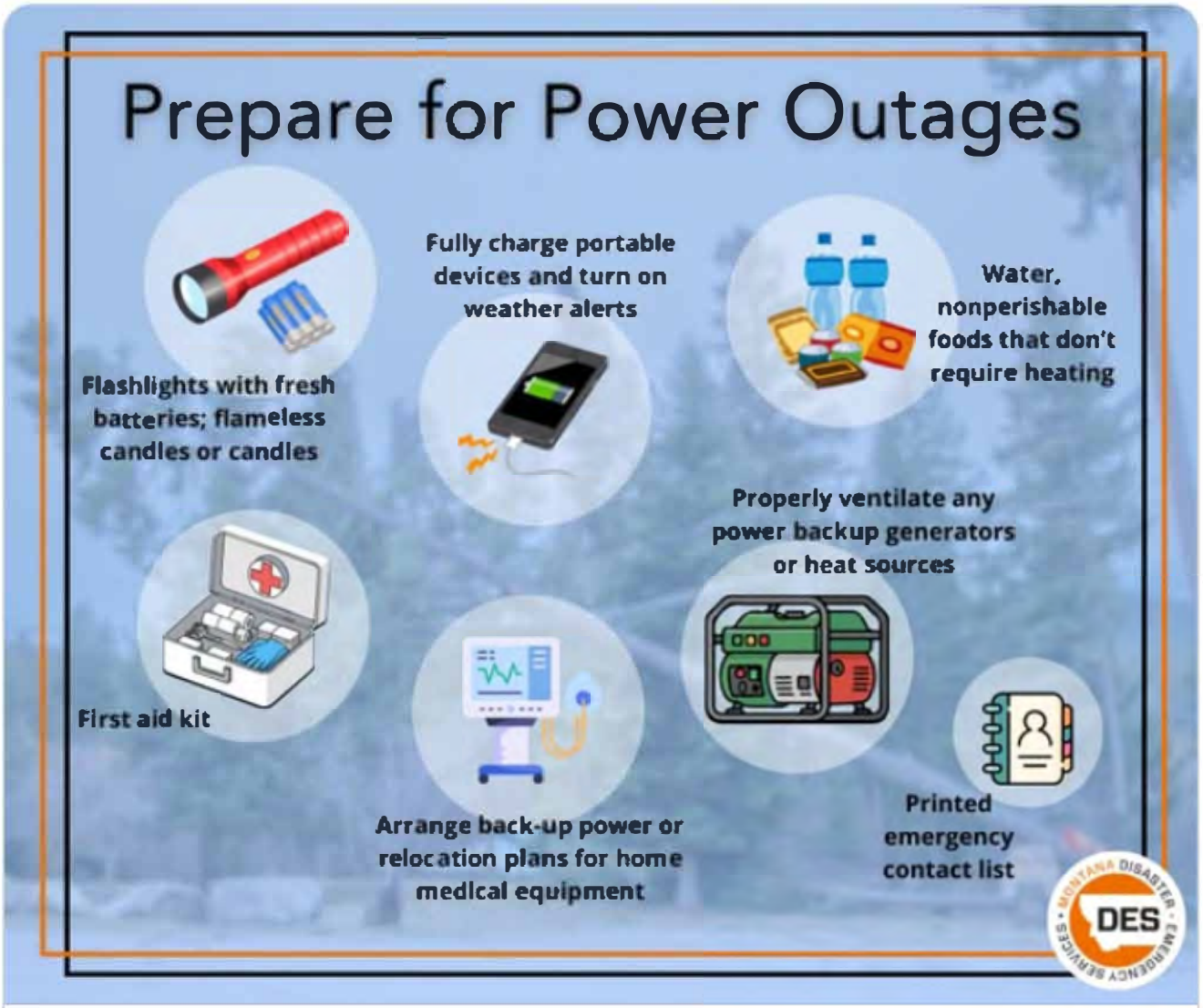
Dickey County Emergency Management
March 12 at 5:43 AM ·



KELO Brian Karstens
March 11 at 5:49 AM ·

The wind forecast tomorrow and tomorrow night is concerning. Our calculations are shifting toward 70-80 mph wind gusts coming into northern KELOLAND. Sioux Falls will also ramp up over 60mph late in the day. We'll monitor this closely. https://www.keloland.com/weather?utm_medium=social... #kelowx

Dickey County Emergency Management
March 13 at 5:45 AM ·



Montana Disaster and Emergency Services
March 11 at 5:00 PM ·

Extreme weather forecast for Wed night - Sat with highest risks to areas above 5,000ft expecting feet of snow, blizzard conditions, & 50+mph winds (falling trees likely). Valleys may experience periods of rain/snow & strong winds. Make preparations for power outages now - and be grateful later if you don't need them!

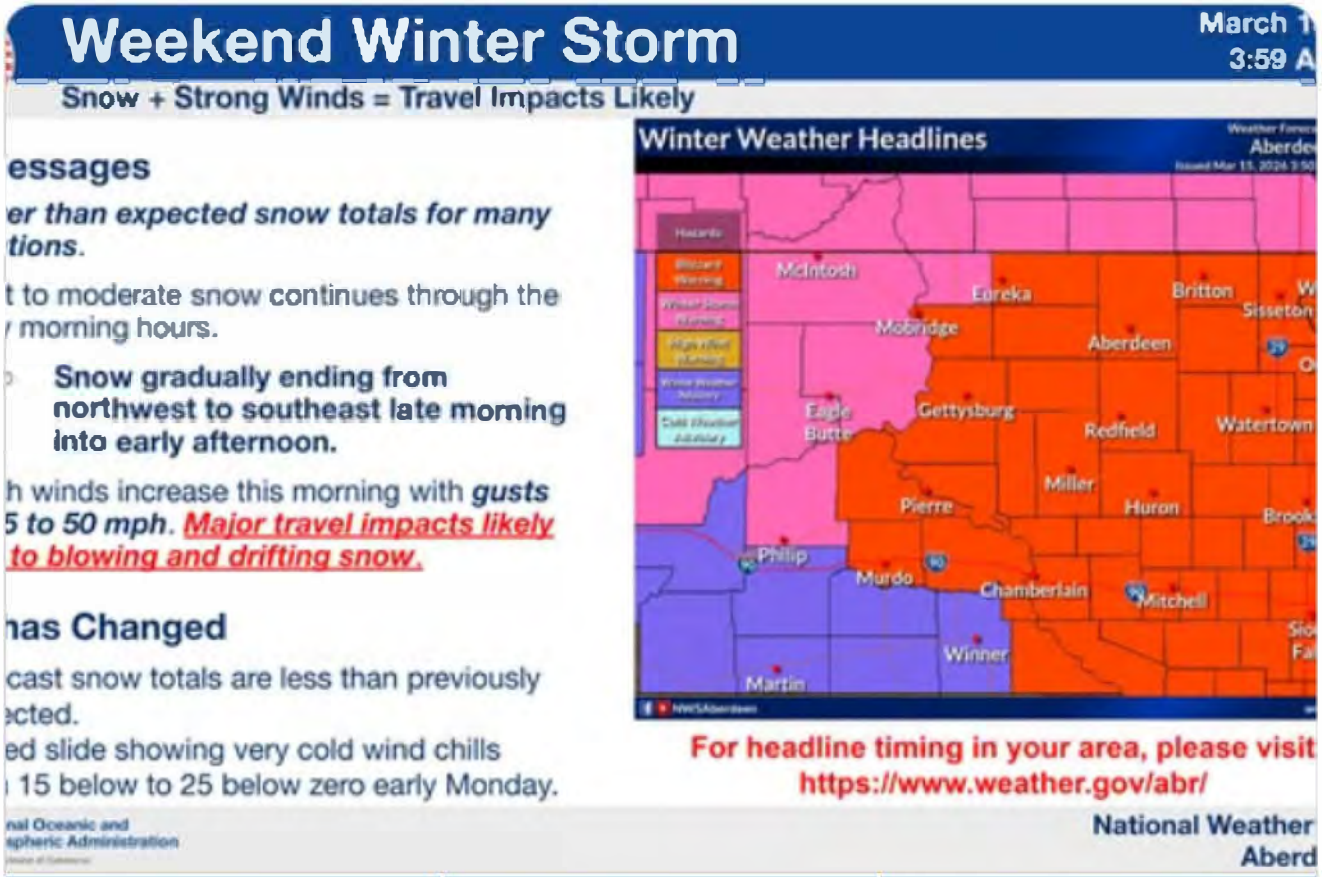
Dickey County Emergency Management
March 15 at 12:22 PM ·

Wausau Fire Department
March 15 at 8:29 AM ·

After heavy snowfall, snow and ice can block exterior exhaust vents and chimneys. When that happens, carbon monoxide, the invisible killer, can back up into the home. It's colorless, odorless, and dangerous, and it's something many homeowners don't think to check after a heavy snow.

Make sure you check and keep them clear. Stay safe out there!

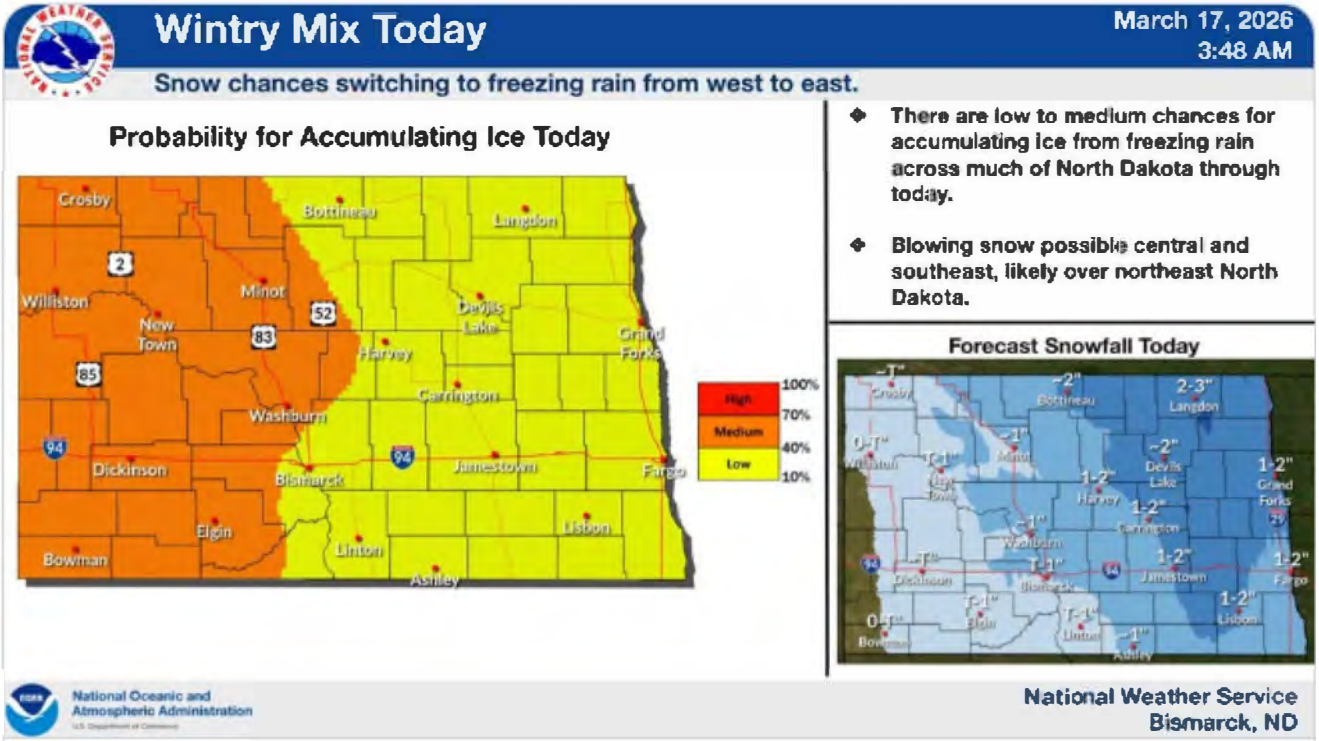
Dickey County Emergency Management
March 15 at 5:34 AM ·



US National Weather Service Aberdeen South Dakota
March 15 at 5:15 AM ·

Here is the latest forecast information concerning the winter storm impacting the area.

Dickey County Emergency Management
March 17 at 6:24 AM ·



US National Weather Service Bismarck North Dakota
March 17 at 3:56 AM ·

Areas of snow will switch over to possible freezing rain then possible rain from west to east today over western and central North Dakota. Greatest chances for freezing rain will be over western North Dakota, with greatest snow amounts will be over eastern into parts of central North Dakota.

Dickey County Emergency Management
March 18 at 6:57 PM ·

Charlie Russell
March 18 at 4:09 PM ·

Its that time of year again! Major damage is done to roads at this time of year. Don't drive through running water as the road may not still be there. Lets let nature get the runoff down to SD and the roads dry up!

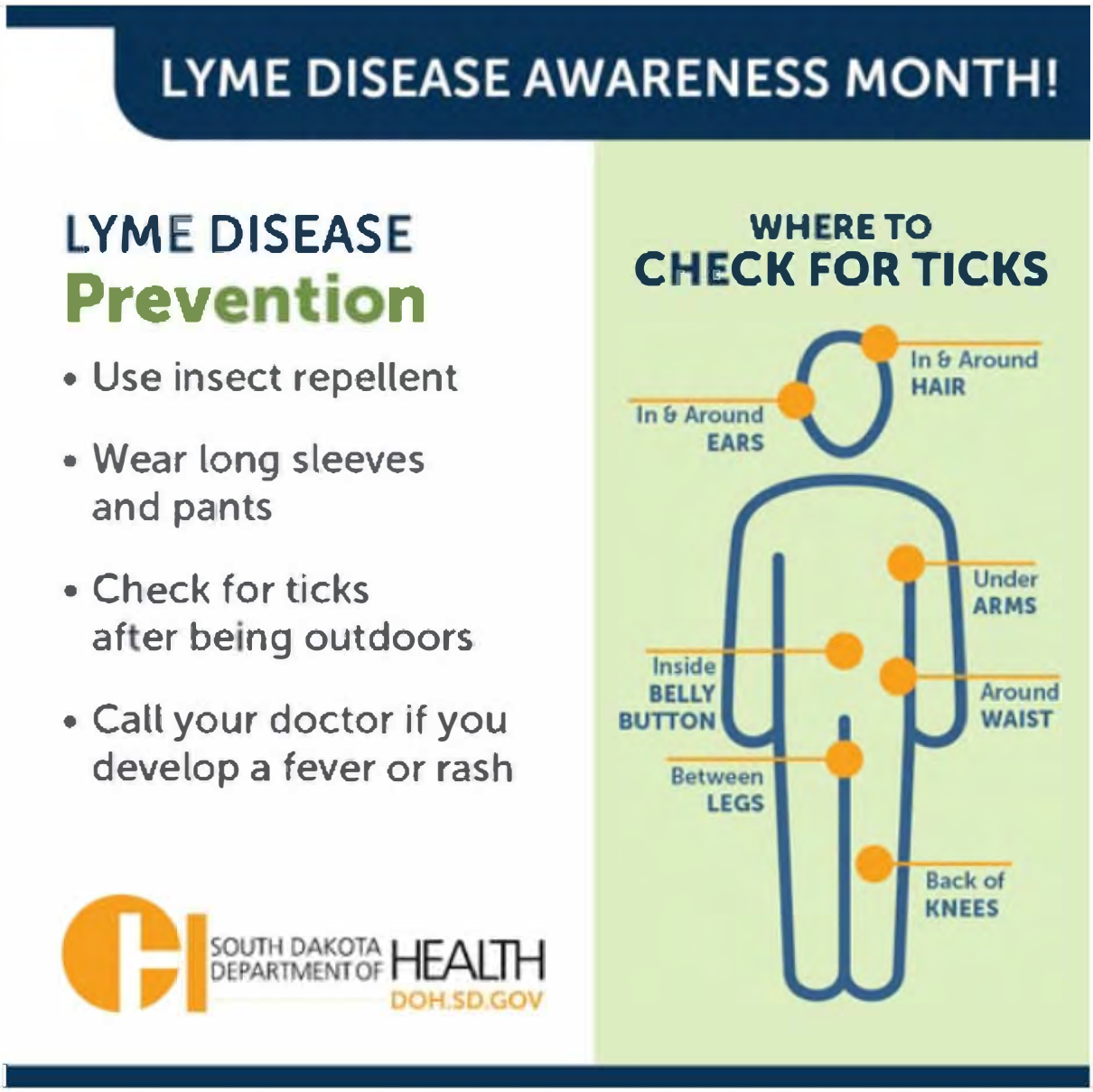
Dickey County Emergency Management
March 19 at 5:34 AM ·

US National Weather Service Aberdeen South Dakota
March 19 at 4:51 AM ·

Parts of northeast South Dakota and west central Minnesota are dealing with patchy dense fog this morning. It will likely persist until about mid morning before burning off. Motorists are asked to exercise caution when driving.

Dickey County Emergency Management
March 20 at 5:41AM ·

Sublimmmmminal message #24



2

2 shares

Like Comment Share

Dickey County Emergency Management
43m ·

Charlie Russell
43m ·

All of the Maple River crossings are reported under flowing water. Please stay out of the area s until the river flows through. Do NOT attempt to cross these with water flowing.

Appendix 5 Meeting Notes

Table of Contents

Item	Page Number
February 6, 2026 – Planning Meeting	5.1
February 20, 2026 – Planning Meeting	5.2
March 27, 2026 – Planning Meeting	5.3

Attendance: Dickey County Emergency Manager Charlie Russell; Dickey County resident Tim Adair; Oakes Hospital nurse Cheryl Andersen; Ludden Auditor Erica German; Ludden Mayor Matt German; Oakes Fire Department Jerry Hollingsworth; Oakes Police Chief, Matt O'Brien; Riverdale Township residents Linda Visto and Charnell Haak; Maple Township residents Alan and Ruby Gramlow; Divide Township residents Travis Thompson and Shay Nelson; South Central Dakota Regional Council (SCDRC) Plan Facilitators Jennifer Schultes and Traci Redlin.

The first meeting of the Dickey County Planning Committee was held from 7:00 p.m. to 9:00 p.m., Thursday, February 6, 2025, at the Oakes Armory, Oakes, ND. An invitational e-mail was sent out to the members of the community, including the mayor and auditor of each of the 3 jurisdictions in that side of the County - Oakes, Ludden and Fullerton and the local Chambers, Fire Halls, Police Station, Sheriff's Office, water board, schools and more.

The meeting was called to order at 7:00 p.m. by Dickey County Emergency Manager Charlie Russell. Charlie introduced South Central Dakota Regional Council (SCDRC) Facilitators, Jennifer Schultes and Traci Redlin. Schultes explained the Council's role in helping to facilitate the update to the Multi-Hazard Mitigation Plan (MHMP) for Dickey County. Schultes gave an overview of the process to update the MHMP for Dickey County and what the responsibilities will be of each planning team member. Each participant introduced themselves and whom they represented.

Schultes reviewed the agenda, which included the purpose of mitigation and the plan update, what mitigation is, why a mitigation plan is needed, and how the current mitigation plan is used. Schultes reviewed who needs to be involved in the planning process and how to get public involvement, when to schedule meetings, a review of the county's and state's hazards and vulnerabilities and identified the steps to be taken in the planning process.

The official plan update committee will be the Dickey County LEPC and members from each jurisdiction in Dickey County. The group decided that each member present would be eligible to vote. Decisions will be made by a simple majority vote.

The location of the next meeting will be at the Oakes Community Center, Oakes, ND. Reminder e-mails will be sent out before each meeting.

The committee completed the first review of hazards impacting the Jurisdictions of Oakes, Fullerton, Ludden and DickeyCounty.. The committee voted to make changes to hazards and eliminate other hazards where necessary.

The committee completed scoring and ranking of the hazards "Communicable Disease, Drought, Flood, Hazardous Material Release, Severe Summer Weather, Severe Winter Weather, Shortage or Outage of Critical Materials,Transportation Accident, Urban Fire, Wildland Fire, Windstorm and Damn Failure" and their impact on Oakes, Fullerton, Ludden and Dickey County.

Next committee meeting is set for 7:00 p.m., February 20, 2026, at the Ellendale Opera House.

The meeting was adjourned at 9:00 pm.

Attendance: Dickey County Emergency Manager Charlie Russell; Applied Digital Employees Brandon Luun and Keith Breckhemer; Dickey County Sheriff, Chris Estes; Albion Township residents Mark Bobbe Allan Miller; Ellendale Township resident Joel Hamar; Van M; City of Ellendale Mayor Don Flaherty; Dickey County Commissioner Kacey Holm; Spring Valley Township resident Matt Herman; City of Ellendale Auditor Nicole Kempf; South Central Dakota Regional Council (SCDRC) Plan Facilitator Jennifer Schultes.

The second meeting of the Dickey County Planning Committee was held from 7:00 to 9:00 p.m., Thursday, February 20th, 2025, at the Ellendale Opera House, Ellendale, ND. An invitational e-mail was sent out to the members of the community, including the mayor and auditor of each of the 3 jurisdictions on that side of the County - Oakes, Ludden and Fullerton and the local Chambers, Fire Halls, Police Station, Sheriff's Office, water board, schools and more.

The meeting was called to order at 7:00 p.m. by Dickey County Emergency Manager Charlie Russell. Charlie introduced South Central Dakota Regional Council (SCDRC) Facilitator, Jennifer Schultes. Schultes explained the Council's role in helping to facilitate the update to the Multi-Hazard Mitigation Plan (MHMP) for Dickey County. Schultes gave an overview of the process to update the MHMP for Dickey County and what the responsibilities will be of each planning team member. Each participant introduced themselves and whom they represented.

Schultes reviewed the agenda, which included the purpose of mitigation and the plan update, what mitigation is, why a mitigation plan is needed, and how the current mitigation plan is used. Schultes reviewed who needs to be involved in the planning process and how to get public involvement, when to schedule meetings, a review of the county's and state's hazards and vulnerabilities and identified the steps to be taken in the planning process.

The location of the next meeting will be at the Oakes Community Center, Oakes, ND. Reminder e-mails will be sent out before each meeting.

The committee completed the second review of hazards impacting the Jurisdictions of Ellendale, Monango, Forbes and Dickey County.

The committee completed scoring and ranking of the hazards "Communicable Disease, Drought, Flood, Hazardous Material Release, Severe Summer Weather, Severe Winter Weather, Shortage or Outage of Critical Materials, Transportation Accident, Urban Fire, Wildland Fire, Windstorm and Damn Failure" and their impact on Oakes, Fullerton, Ludden and Dickey County.

Next committee meeting is set for 7:00 p.m., February 20, 2026, at the Ellendale Opera House.

The meeting was adjourned at 9:00 pm.

3. Attendance: Dickey County Emergency Manager Charlie Russell; Dickey County Sheriff's Department Chris Estes, Zach Sahli and Kyle Johnson; Dickey County Commissioners Kacey Holm, John Hokana, Brandon Carlson and Jerry Walsh; North Dakota Highway Patrol, Wes Maley and Bryan Niewind; Dickey County Auditor Wanda Sheppard; North Dakota Department of Commerce representatives Maria Effertz and Anya Hondel; Housing representative Teresa Blondo; North Dakota Department of Emergency Services Debbie LaCombe, Sabrina Hildenbrand, Chase Durheim, Michelle Mueller, Doug Linder and Jeff Thompson; Central Valley Health Frank Balak; Ellendale Library Board Betty Martin; Dickey County Residents Mark Thoelgag, Tim Leppert, George Schaefer, Peggy Brandenburger, Tony Brandenburger, Evelyn Fuller, Don Meidinger, Dale Radermacher and Shannon Brody; Ellendale Residents Brad Sand, Julie Haase, Joel Dasbeam, Ken Smith and Cari Haase; Summit Carbon Solutions Charlie Adams; Invenergy Greg Stanek, Tyler Svazo and Michael Iacapetti; Valley Township Resident Jason Hildenbrand; Dickey County Highway Superintendent Jeff Hagen; South Central Human Service Zone Michelle Masset; Dickey County Health District Kerry Waldo; Ellendale City Council Members Justin Meidinger and Tammy Belgarde; Monango Resident Bev Radermacher; Oakes Police Department Matt O'Brien; Oakes Residents Mike Kelly and Dave Sitzler; Starion Bank Aaron Tschosik and Lee Weisbeck; OLS Tubs Katie Rongen; Benedictine Living Community Naomi Gmeneich; Dicke County Water Board Keith Hauck; Applied Digital Nick Phillips, Martin Vega and Andrea Monelus; Ellendale Public School Allison Radermacher; James Valley Grain Eric Larson; Dickey County Zoning Board Matt Herman; MDU Scott Wertz and Daniel Albrecht; Ellendale Ambulance and Fire Department Corey Gulke and Nolan Hamar; Southeast Water Users Troy Bomme; EDF Renewables Adam Batiste and Sara Throndson; Ellendale Mayor Donald Flaherty; Ellendale Auditor Nicole Kempf; Ellendale Farmers Union Jerry Rekow; Dickey County Abstract Office and Fair Board Val Wagner; Crossroads Advisors Neil Doty; Ellendale Township resident Joel Hamar; Ellendale Police Department Brad Knutson; Kedish House Kristi Gilbert; Ottertail Power Company Kris Koch; Forbes resident Carl Kromberg; Dickey County Systems of Care Barb Ritter; Oakes Fire Department Jeremy Sitzer; South Central Dakota Regional Council (SCDRC) Plan Facilitators Jennifer Schultes and Traci Redlin.

The Dickey County Planning Committee was held from 1:00 to 3:00 p.m., Thursday, March 27th, 2025, at the Archery Building in Ellendale, ND.

The meeting was called to order by the Dickey County Commissioner Brandon Carlson.

Discussion on Energy companies that are planning to come into the community and those that are already here and the emergencies that could come from them.

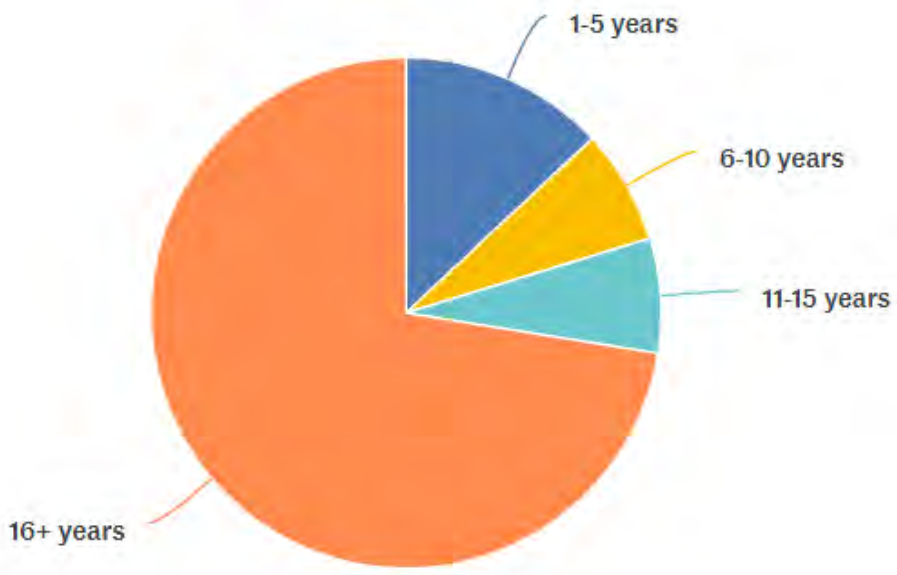
The meeting was adjourned at 3:00 pm.

7. Survey

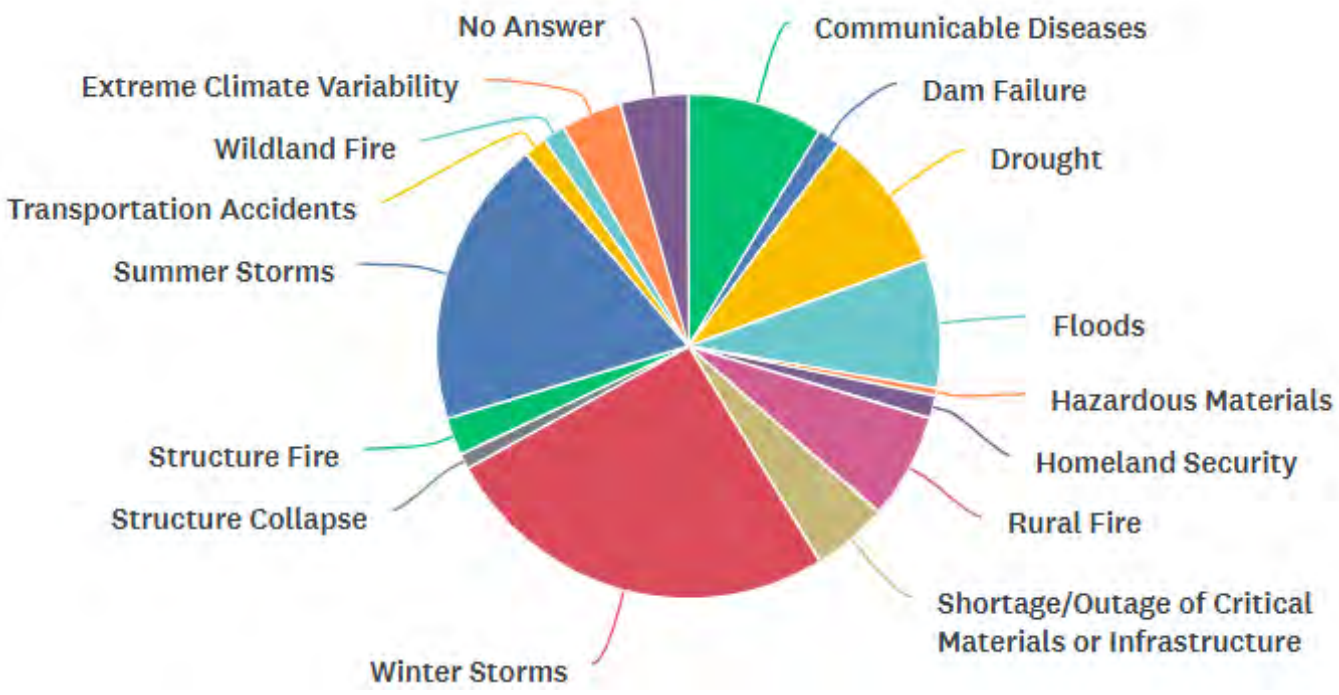
Information from the Dickey County Multi-Hazard Mitigation Plan Survey was incorporated into the mitigation strategies for education. It will also be used for future surveys to gather data from the public in the updating process of the county's mitigation plan. Some questions involved multiple answers from respondents. Therefore, the percent of responses for some questions may exceed 100 percent.

A total of 72 completed surveys were received.

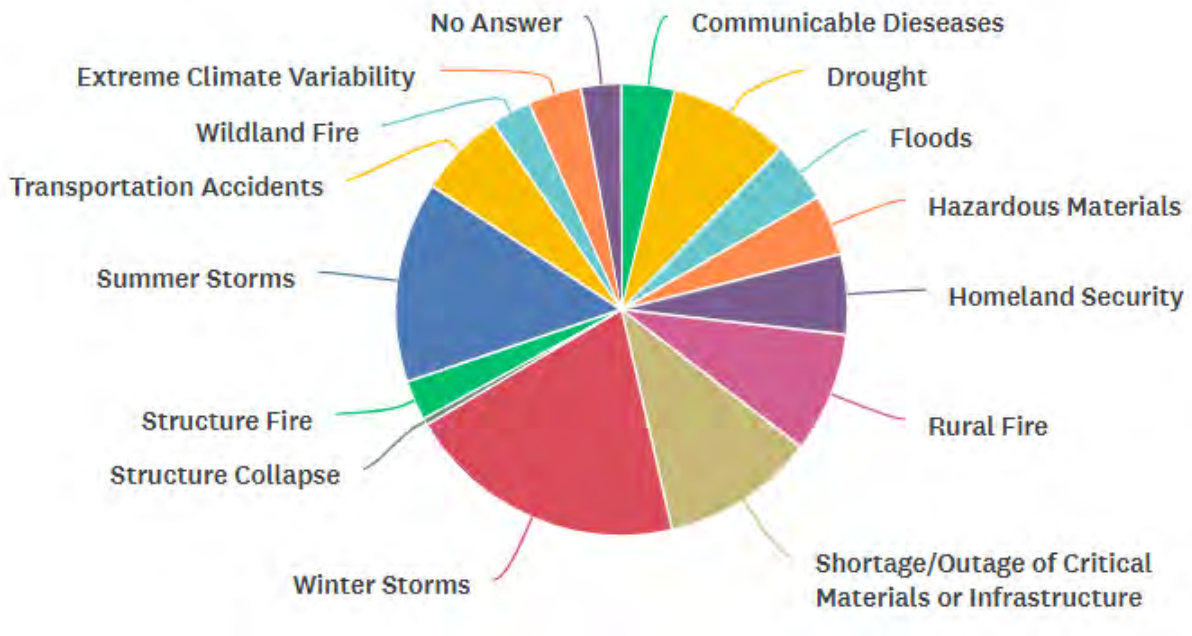
How long have you resided in your current community?		
Less than 1 year	0	0.0%
1-5 years	9	13.04%
6-10 years	5	7.25%
11-15 years	5	7.25%
16+ years	50	72.46%
	69	**100%**



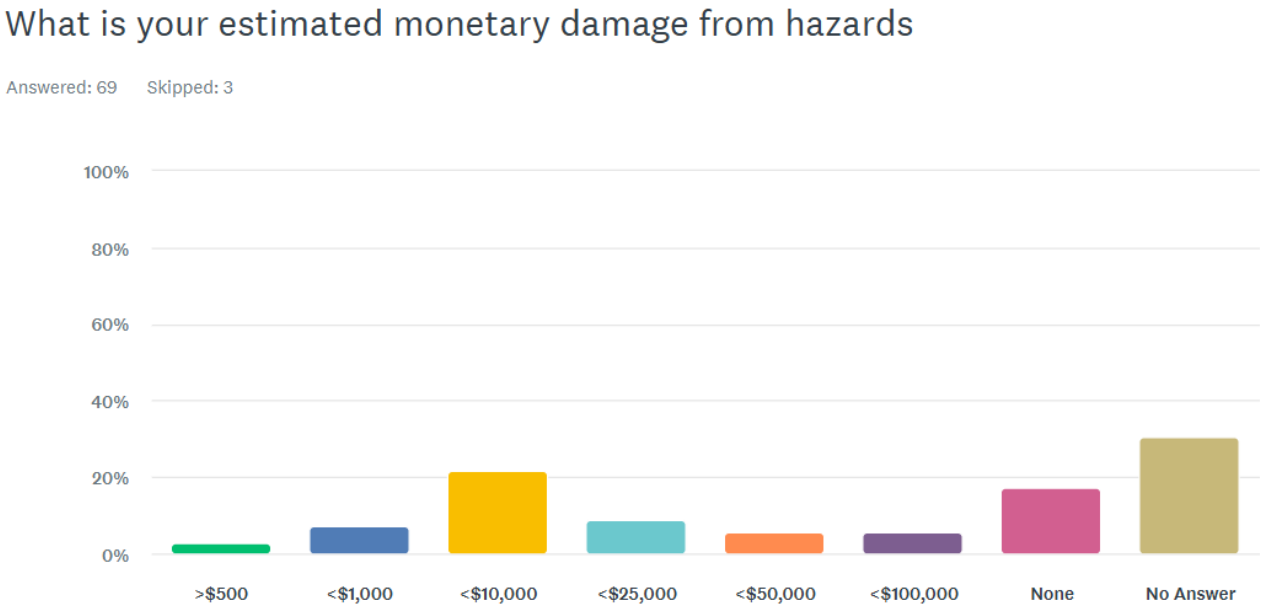
Which Hazards Have Affected Anyone in Your Household?		
Communicable Disease	18	8.74%
Dam Failure	3	1.46%
Drought	19	9.22%
Floods	17	8.25%
Hazardous Materials	4	.49%
Homeland Security	3	1.46%
Rural Fire	14	6.80%
Shortage or Outage of Critical Materials or Infrastructure	10	4.85%
Winter Storms	53	25.73%
Structure Collapse	2	.97%
Structure Fire	5	2.43%
Summer Storms	38	18.45%
Transportation Accidents	3	1.46%
Wildland Fire	3	1.46%
Extreme Climate Variability	8	3.88%
No Answer	9	4.37%
	206	**100%**



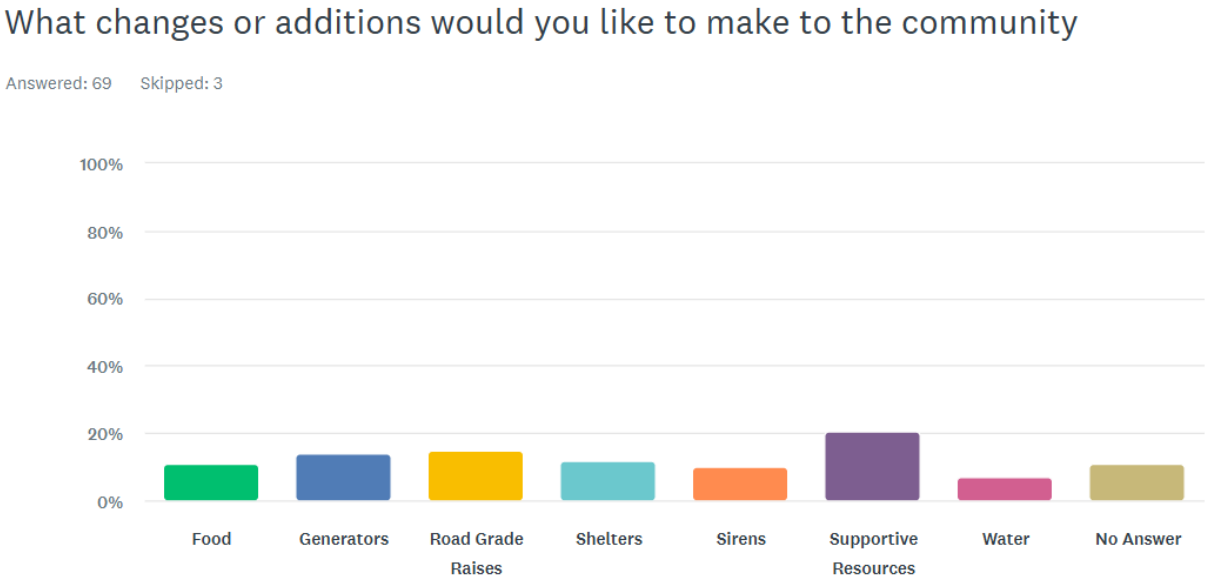
What are your Top 3 Major Concerns?		
Communicable Disease	8	3.83%
Dam Failure	0	0%
Drought	18	8.61%
Floods	9	4.31%
Hazardous Materials	9	4.31%
Homeland Security	12	5.74%
Rural Fire	18	8.61%
Shortage or Outage of Critical Materials or Infrastructure	23	11.00%
Winter Storms	42	20.10%
Structure Collapse	1	.48%
Structure Fire	6	2.87%
Summer Storms	30	14.35%
Transportation Accidents	13	6.22%
Wildland Fire	6	2.87%
Extreme Climate Variability	8	3.83%
No Answer	6	2.87%
	209	**100%**



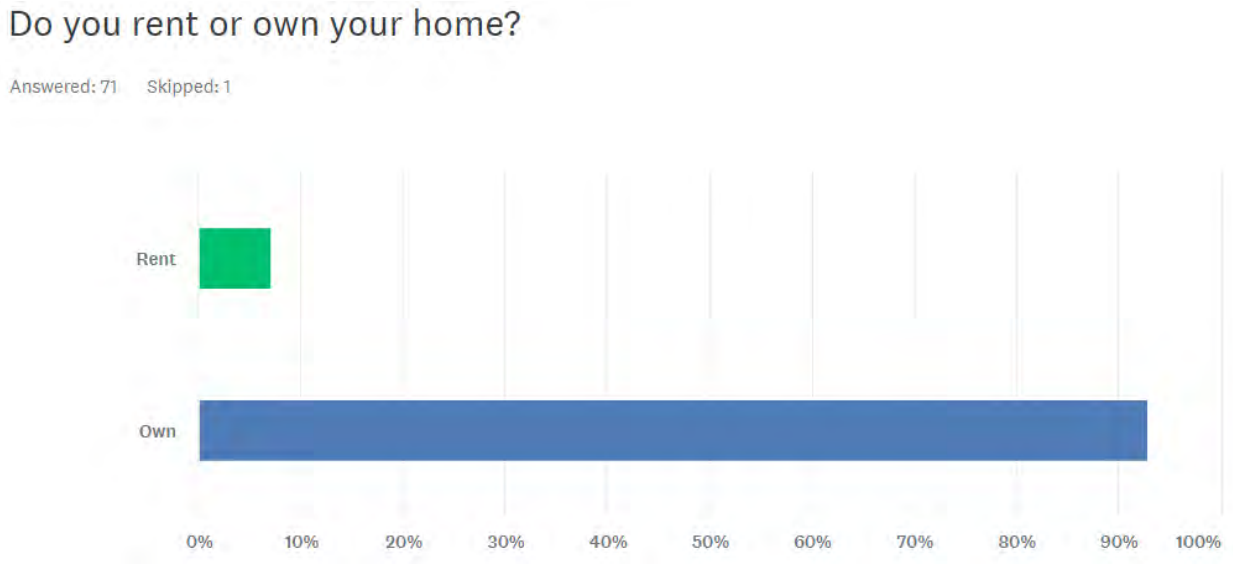
What is Your Estimated Monetary Damage From Hazards?		
<$500	2	2.90%
<$1,000	5	7.25%
<$10,000	15	21.74%
<$25,000	6	8.70%
<$50,000	4	5.80%
$100,000	4	5.80%
None	12	17.39%
No Answer	21	30.43%
	69	**100%**



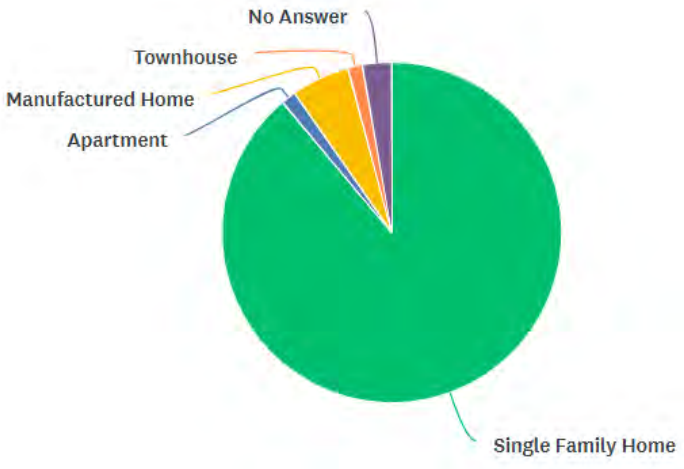
What Changes or Additions Would You Like to Make to the Community?		
Food	14	10.94%
Generators	18	14.06%
Road Grade Raises	19	14.84%
Shelters	15	11.72%
Sirens	13	10.16%
Supportive Resources	26	20.31%
Water	9	7.03%
No Answer	14	10.94%
	128	**100%**



Do You Rent or Own Your Home?		
Rent	5	7.04%
Own	66	92.96%
	71	**100%**

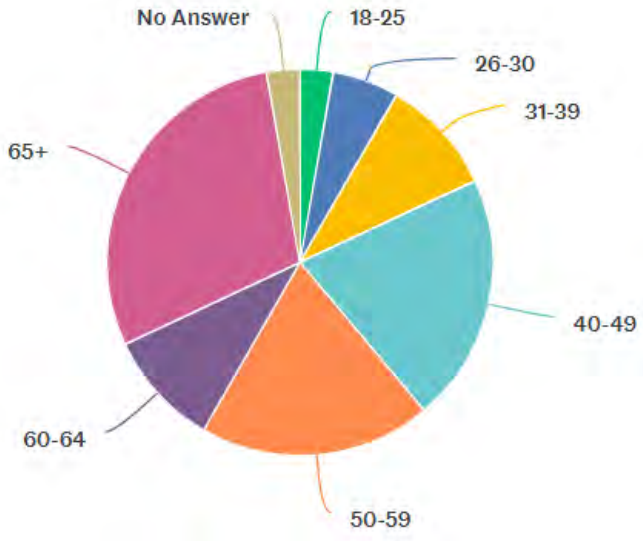


What Type of Housing do You Live In?		
Single Family Home	64	88.89%
Apartment	1	1.39%
Manufactured Home	4	5.56%
Multi-Family Home	0	0%
Townhouse	1	1.39%
No Answer	2	2.78%
	72	**100%**

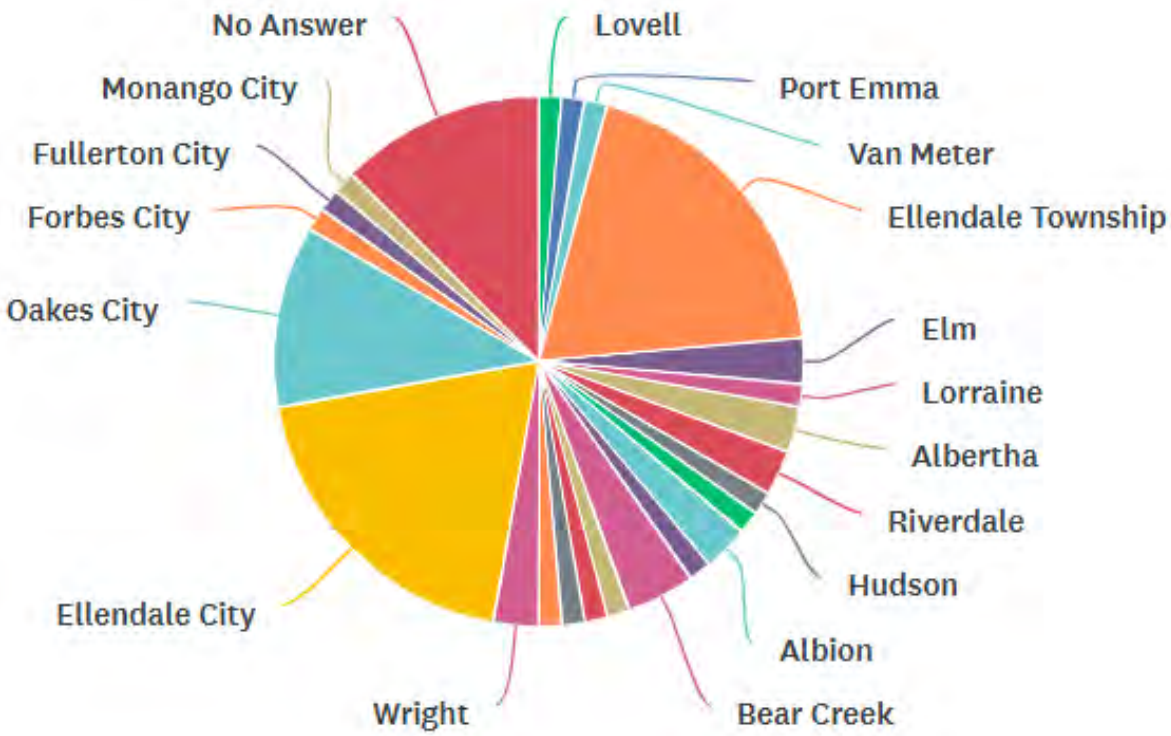


Gender		
Male	29	40.28%
Female	39	54.17%
No Answer	4	5.56%
	72	**100%**

What is Your Age		
18-25	2	2.78%
26-30	4	5.56%
31-39	7	9.72%
40-49	15	20.83%
50-59	14	19.44%
60-64	7	9.72%
65+	21	29.17%
No Answer	2	2.78%
	72	**100%**



Which City or Township do You Reside?		
Lovell	1	1.39%
Port Emma	1	1.39%
Van Meter	1	1.39%
Ellendale Township	14	19.44%
Elm	2	2.78%
Lorraine	1	1.39%
Albertha	2	2.78%
Riverdale	2	2.78%
Hudson	1	1.39%
Kent	1	1.39%
Albion	2	2.78%
Spring Valley	1	1.39%
Bear Creek	3	4.17%
Clement	1	1.39%
Yorktown	1	1.39%
Maple	1	1.39%
Divide	1	1.39%
Wright	2	2.78%
Ellendale City	14	19.44%
Oakes City	8	11.11%
Forbes City	1	1.39%
Fullerton City	1	1.39%
Monango City	1	1.39%
No Answer	9	12.50%
Ada, Keystone, Kentner, Elden, Grand Valley, Hamburg, Whitestone, German, James River Valley, Porter, Valley, Potsdam, Young, Northwest, Ludden City	0	0%
	72	**100%**


No Answer
Lovell
Monango City
Port Emma
Fullerton City
Van Meter
Forbes City
Ellendale Township
Oakes City
Elm
Lorraine
Albertha
Riverdale
Hudson
Ellendale City
Albion
Wright
Bear Creek

Flood

March 1, 1995
Record high temperatures led to a rapid snow melt. This in addition to saturated soil, and above normal precipitation led to flooding in much of eastern and central North Dakota. Several homes were evacuated and many homes and businesses experienced water seepage. Many city streets and county, state, and US Highways were closed because of water over the roadway and washouts. Some residents had to use boats to get to and from their homes. Water flooded thousands of acres of cropland, pasture and residential property. Drinking water and sewer lift stations were damaged. This event resulted in a Presidential Disaster Declaration, DR-1001, and accounted for approximately $49,000,000 worth of damage statewide.

March 21, 1997
Warm weather lead to rapid snow melt and flooding across south central North Dakota. This event resulted in a Presidential Disaster Declaration, DR-1174, damages statewide amounted to $537,000,000 (Public Entity Risk Institute, 2009).

May 6, 1997
Received 2.5 to 3.5 inches of rain throughout the county.

April 23, 1997
A Disaster Declaration was issued due to excessive water that has been accumulating for the past six years and made worst by excessive runoff.

May 11, 1999
Venturia's water supply was in jeopardy due to the transformer almost being underwater.

May 12, 1999
Received .6 inches of rain in 15-20 minutes resulting in flash flooding.

March 6, 2009
Significant overland flooding damaged county and township roads. One home was flooded. Flooding continued into April. This devastating flooding continued into April, and in some cases worsened. Record snowfall $94,000 in damages were reported in Wishek.

April 1, 2009
A second round of overland flooding due to snowmelt resulted additional damages to several county and local roads. $33,000 worth of damages were reported in Wishek. This event resulted in a Presidential Disaster Declaration, DR-1829. McIntosh County Commissioned declared a Flood Emergency. Damage was primarily limited to roadways throughout the county. Approximately 25-30 homes sustained some type of damage, ranging from water in basements to one home that sustained major damage.

May 29, 2010
Heavy rainfall near two inches in less than one hour resulted in flash flood conditions in the city of Ashley. Many homes had water in their basements, resulting in severe carpet damage and other moisture related damages. Damage estimates at $225,000.

July 8-9, 2019
Heavy rainfall moved across Dickey County as a slow-moving low-pressure system moved through the area. Heavy rain was mainly the result of thunderstorms with very high rain rates, and training over the same areas for several hours.

Hazardous Material Release

12/30/1981 – 48 barrels of gasoline and 42 barrels of diesel fuel spilled during a semi accident 1.5 miles east of Ashley.

1993 – Two anhydrous ammonia releases from spray co-ops.

3/29/1995 – 50 gallons of gasoline and five gallons of diesel fuel, near Green Lake. A **t**ruck overturned and spilled fuel in a slough. Burned slough, game and fish investigated.

1995 – Ten-gallon fuel oil and 50-gallon gasoline spill at Jake's Fuel Oil in Wishek.

1996 – Propane spill from a tanker 15 miles east of Ashley. Traffic had to be rerouted.

1997 – 50-100-gallon diesel fuel spill from Co-op Oil.

2/19/1999 – A water tower leak at Lehr was reported to the NDDEM React Officer

12/10/2005 – A semi-hauling propane overturned nine miles north of Ashley on County Hwy 23 due to icy conditions on the road. 40-50 gallons of diesel was spilled according to the Fire Chief, Jim Delzer. No injuries or deaths were reported. The spill site was cleaned by Cenex (Owner of the Semi).

5/4/2007 – An Anhydrous spill occurred seven miles west of Ashley on Hwy 11. A farm tractor pulling four anhydrous tanks hooked onto two trailers overcorrected and caused the anhydrous tanks to overturn. One tank was leaking but quickly dissipated as a result of the wind and rain. No injuries/deaths, no damages reported.

5/12/2007 – 1000-gallon spill of anhydrous ammonia 14 miles south of Wishek on Hwy 3. Strong winds caused tow vehicle to lose control and cause the trailer to roll, breaking the valve on the tank. Most of the product vented to atmosphere, but some drained to road ditch. Roadside vegetation browned in area 10'x10'.

6/21/2012 – 25 gallons of Monsanto RT3 leaked from a company owned chemical tote. 302 West Main, Ashley, ND.

11/12/2012 – 15-gallon diesel fuel spill at 313 1st ST SW, Ashley, ND. A hose from fuel transport came unhooked while pumping. Transport driver was off loading semi-trailer into bulk plant when the hose detached from the bulkhead releasing about 15 gallons of diesel fuel onto the loading pad.

5/2/2014 – Diesel and used motor oil spill. Diesel had been leaking from a tank, and five gallon pails of used oil had been tipped over. Possible oil changing area for heavy equipment used to repair/raise township road. Approximately 9 miles east and ½ mile north of Ashley, ND.

9/21/16 – 20 gallons of road master diesel spilled because of overflow by CHS Transportation, driver misread gauge or it did not work and the tank overfilled at Rocky's Bulk Fuel in Wishek.

10/24/2018 - Truck backed into transformer, causing a leak on the secondary bushing. The location is 130N-59W SE Section 32 south of Oakes, ND.

11/10/2022 - A transformer pole went down in the storm causing a 10 gallon oil/gas spill. The location is 130N-59W section 32 south of Oakes, ND.

8/8/2023 – Regulator spill during an electrical fault causing a 15 gallon transformer mineral oil spill. The location is 10952 92nd St. SE, Oakes, ND 58474.

12/26/2023 – A transformer was damaged in an ice storm causing a 5 gallon transformer mineral oil spill. The location is 130N-65W SE ¼.

3/3/2026 – While offloading diesel delivery spill was detected by operator (about 200 gallons). 9633 87th ave se, Ellendale, ND 58436

Severe Summer Weather

Date	Description
June 9, 1958; August 5, 1964; August 4, 1969; June 3, 1974; June 11, 1976; July 4, 1977; June 15, 1978; July 10, 1981; July 12, 1981; June 16, 1987; June 20, 1991: August 19, 1991;	A thunderstorm with wind was reported in McIntosh County. No damages reported.
September 2, 1962; August 28, 1993; June 21, 1999; July 10, 2002	2.5 inches of hail fell on McIntosh County.
June 3, 1974; August 5, 1987; May 26, 1988; June 20, 1988; July 6, 1991; May 16, 1996 (x2); June 21, 1999; July 22, 1999; June 9, 2001; August 28, 2002; July 3, 2003(x2); May 29, 2004; July 18, 2004; June 7, 2005; August 16, 2006	.75 inches of hail fell in McIntosh County
September 18, 2002; May 29, 2004 (x2); August 20, 2006; May 3, 2012; July 26, 2016;	.88 inches of hail fell in Ashley.
April 30, 2010; July 16, 2015	.88 inches of hail fell in Wishek.
July 24, 1960; June 16, 1973; June 15, 1978; July 5, 1978; August 13, 1986; August 24, 1991; July 18, 2001; September 18, 2002; May 8, 2005; May 29, 2006; June 14, 2006; April 12, 2010; April 30, 2010; March 29, 2012; May 2, 2012; July 22, 2012; June 21, 2014; August 7, 2015	1 inch of hail fell on McIntosh County.
June 8, 2005; April 12, 2010; July 15, 2015; August 3, 2016	1.5 inches of hail fell on McIntosh County.
June 25, 2010	1.5 inches of hail fell in Zeeland.

Date	Description
July 6, 1976; July 4, 1978; August 3, 1985; July 5, 1988; June 13, 1991; June 13, 1991; August 28, 1993; June 24, 1998 (x2); July 18, 2001; July 18, 2001; July 301, 2001; July 9, 2002; July 18, 2004; June 7, 2005; May 29, 2006; June 20, 2016	1.75 inches of hail fell on McIntosh County.
July 6, 1962; August 17, 1964; July 21, 1967; May 27, 1980; July 20, 1987; July 14, 1992; May 22, 2012; July 9, 2013	2 inches of hail fell on McIntosh County.
July 6, 1962	An F2 Tornado struck McIntosh County causing $25,000 in damages. NCDC
May 5, 1964	A tornado struck briefly, entered McIntosh County and went onward to Emmons County. There was damage near the County line. Damages reported in McIntosh County included the following: Duane Ketterling, Ron Ketterling, farmsteads were destroyed. Christoph Just farm totaled. The Edwin Meidinger family farm, gone. This one was on 55,- 5.5 South of hwy 13 and 1 W. According to JP Martin, with NWS, this is recorded in Emmons County, property damage at 250K, so this was quite a sizeable storm.
July 31, 1966	An F3 tornado struck McIntosh County, causing @$25,000 in damages. It was 33 yards wide and 1 mile long.
June 9, 1971	An F0 tornado, approximately 10 yards wide caused $2,500 in damages.
April 19, 1973	An F0 tornado caused approximately $25,000 in damages in McIntosh County
May 27, 1980	An F1 tornado, approximately 33 yards wide and 1 mile long struck McIntosh County causing @$25,000 in damages
June 3, 1986	2.75 inches of hail fell in McIntosh County
June 6, 1986	A 10-yard-wide F0 tornado was reported in McIntosh County.
August 1, 1987	An F0 tornado, 13 yards wide, struck McIntosh County causing @$25,000 in damages.
June 20, 1991	A 10-yard-wide F1 tornado struck McIntosh County causing $250,000 in property damage.
June 12, 1993	A F1 (73-112 mph) tornado touched down in McIntosh County. The width of the path was 70 yards. Property damage as a result of this tornado is estimated at $50,000.
August 29, 1993	A thunderstorm with wind was reported 1 mile N of Ashley in McIntosh County. $5,000 worth of damages were reported.
November 22, 1993	A Large Part of North Dakota a slow moving and enormous storm over North America brought record single-storm snowfall to much of North Dakota. Over two feet of snow fell over a large part of central and southeast North Dakota, and most of North Dakota had over a foot of snow from this storm. Out in the rural areas, some farm buildings collapsed in the heavy snow.
April 25, 1994	$500,000 in damages was reported when a late season winter storm came a few days after temperatures of 80 degrees. Parts of southern North Dakota received almost a foot of heavy wet snow. Some thunder occurred with the snowfall. Winds of 25 to 45 mph caused blizzard conditions at times, and snow drifts three feet high. This late storm brought record seasonal snowfall to many parts of the state. Snowfall for the winter season topped 100 inches in some places. The storm closed schools and businesses, and shut down travel.

Date	Description
April 25, 1994	$500,000 in damages was reported when a late season winter storm came a few days after temperatures of 80 degrees. Parts of southern North Dakota received almost a foot of heavy wet snow. Some thunder occurred with the snowfall. Winds of 25 to 45 mph caused blizzard conditions at times, and snow drifts three feet high. This late storm brought record seasonal snowfall to many parts of the state. Snowfall for the winter season topped 100 inches in some places. The storm closed schools and businesses, and shut down travel.
July 3, 1994	Most of Eastern North Dakota and parts of Central and western North Dakota, including McIntosh County. Due to heavy rains on top of already saturated soil, 25 counties in North Dakota have been declared Presidential disaster areas. Many of these counties had July rainfall of four to nearly ten inches, which was on top of June's four to seven inches. July's average precipitation is from two to three inches. Damage occurred to basements, roads, bridges, and septic systems.
August 6, 1994	An F0 tornado that was 2 miles long and 50 yards wide caused @$25,000 in damages near Wishek.
March 28, 1995	Several hours of light rain and drizzle preceded the snow. Six to eight inches of wet snow was common.
April 12, 1995	7 counties, including McIntosh County, were affected when heavy snow fell in parts of south-central and southeastern North Dakota. Six to eight inches were common in those areas with a maximum of 16 inches in Wishek
May 21, 1995	A thunderstorm with wind was reported 10 miles SW of Wishek. Strong thunderstorm winds tore the doors off a barn and blew a 1000-gallon water tank one and one-half miles away.
July 12, 1995	A thunderstorm with wind was reported in Wishek and Ashley. No damages reported.
August 24, 1995	A thunderstorm with wind was reported in Wishek. The strong thunderstorm winds tipped over a grain truck estimated to weigh about 8,000 lbs.
March 23, 1996	Approximately 39 counties were affected, including McIntosh County, when an early spring snowstorm moved up out of the 4-corners region of the country to bring another round of severe winter weather to the northern plains.
November 5, 1996	Fourteen counties were affected, including McIntosh County, when a storm system that developed over northcentral Nebraska moved northeast into northwestern Minnesota. Although at first the storm appeared to be warm enough to only produce rain, once snow began to fall on the morning of the 5th, dynamic cooling lead to an all snow event across southcentral and east central North Dakota. Luckily, no wind accompanied the storm system and there were no major interruptions in day to day activities.
November 19, 1996	25 counties were affected, including McIntosh County, when another winter storm hit North Dakota bringing more unwanted snow to the state. Although there wasn't enough wind associated with the storm system to qualify the storm as a blizzard, the 10 to 20 mph winds were enough to create some blowing and drifting snow in open areas. Many school districts cancelled their rural bus routes after busses got stuck or slid into the ditch.
November 23, 1996	31 counties were affected, including McIntosh County, when for the 2nd time is less than 1 week, more snow fell on parts of western and central North Dakota. Again, the lack of wind made the storm more bearable than what it could have been. Bitter cold air also accompanied the storm system.
March 13, 1997	23 counties were affected, including McIntosh County, when winter storm that moved out of Montana brought yet more snow to a winter weary state. The snow was mainly confined in a band from the northwest part of the state to the southcentral.
July 19, 1997	An F0 tornado @ 3miles long and 20 yards wide struck 4 miles northeast of Zeeland.
June 24, 1998	A F0 (40-72 mph) tornado touched down 5 miles northwest of Ashley. The width of the path was 33 yards. The tornado was nearly stationary and there were numerous reports from all directions.

Date	Description
June 25, 1998	Funnel clouds were reported west of Ashley between 6:30 PM and 10:00 PM. Several funnel clouds touched down causing very little damage. These funnel clouds were accompanied by pea to marble sized hail.
August 25, 1998	The County received 2 to 4 inches of heavy rain in a short period of time
September 15, 1998	Strong winds and heavy rain.
February 2, 1996	Every county in North Dakota was impacted when dangerously cold weather once again hit the state. Many places reported lows from 35 to 45 below. Northwest winds up to 30 mph created wind chills to 100 below. Electric companies reported peak loads, while natural gas companies had trouble keeping gas flowing through pipelines. Numerous schools closed and many water main breaks occurred. There were also shortages of #1 diesel fuel.
August 2, 1996	$5,000 worth of damages was reported when a thunderstorm with high winds was reported @5 miles W of Wishek. Thunderstorm winds blew roof off a pole barn.
December 25, 1996	The blizzard of the 16th-18th left in its wake very cold air. Lows across the state that morning varied from 20 to 30 below with highs from 10 to 20 below.
June 24, 1998	A F0 (40-72 mph) tornado touched down 5 miles northwest of Ashley. The width of the path was 33 yards. The tornado was nearly stationary and there were numerous reports from all directions.
June 25, 1998	Funnel clouds were reported west of Ashley between 6:30 PM and 10:00 PM. Several funnel clouds touched down causing very little damage. These funnel clouds were accompanied by pea to marble sized hail.
July 24, 1998	An F0 tornado, approximately 33 yards wide, struck 5 miles NW of Ashley. The tornado was nearly stationary, numerous reports from all directions.
June 26, 1998	$1,500,000 in crop damages was reported in Zeeland from hail damage that accompanied a thunderstorm with high winds. Hail covered the ground with total crop loss. Wind damage to trees, wind speed unknown.
June 26, 1998	In Zeeland, hail covered the ground with total crop loss. Crop losses estimated at $1,500,000. Wind damage to trees, wind speed unknown.
April 5, 2000	0A low-pressure system over Alberta Canada moved southeast and intensified along the Canadian/North Dakota border. A very tight pressure gradient resulted in very high winds causing injuries and property damages throughout western and central North Dakota. Wind gust of 55 to 70mph were common.
June 9, 2001	Another 2.75 inches of hail fell in Ashley. $100,000 in damages were reported throughout the city. Widespread car and roof damages reported.
June 9, 2001	A thunderstorm with high winds blew the roof off a farm shed and town trees and powerlines in Wishek.
June 10, 2001	Golf ball to baseball size hail in Ashley
June 10, 2001	Severe rainstorm lasting about 10 minutes blew through the county around 8:45 PM with baseball to golf ball sized hail. Short time later another blew through with heavy rain and small pea size hail. This storm caused extensive damage to trees, roofs and vehicles. Rain total about 1.70 inches.
July 14, 2001	A thunderstorm with wind was reported in Ashley. Thunderstorm dropped around 4.0 inches of rain.
July 18, 2001	An F0 tornado struck 7 miles S of Ventura destroying 137 bales of hay.
July 18, 2001	An F0 tornado was spotted 9 miles SE of Ashley, ND.
July 21, 2001	Thunderstorm uprooted trees in Wishek.
July 28, 2001	Severe rainstorm damaging crops, blowing roofs of buildings and uprooting trees. Some pea sized hail. Rain average from 2.5 to 3.0 inches throughout the county.
July 31, 2001	A thunderstorm with wind was reported in Wishek. NCDC data indicates that there was roof damage to commercial building, semi-truck blown over, and playground equipment scattered.

Date	Description
August 8, 2001	A thunderstorm with high winds was reported 7 miles NE of Ashley. An observer reported that doors were ripped off barn, heavy equipment rolled over, and numerous branches down
August 9, 2001	Severe thunderstorm with wind speeds in excess of 70 mph and rain knocked down lots of trees, telephone lines and some power lines. Rain averaged from 1 to 1.5 inches.
February 11, 2002	22 counties, including McIntosh County, were impacted when a strong low-pressure system moving across southern Canada produced a tight surface pressure gradient over North Dakota. Wind speeds averaged 50 to 70 miles an hour beginning early in the day and ending late in the evening.
July 9, 2002	An F0 tornado touches down 7 miles NE of Ashley. It was approximately 50 yards wide and 1 mile long and destroyed crops on 3 separate farms.
July 10, 2002	Funnel cloud was spotted approx. 10 East and 5 North of Ashley. Reports of damage to farm buildings, crops and farm animals. The following day a farmer in that area reported severe injuries to his horses and cattle, and a 500 ft. stretch of fencing was torn out.
September 18, 2002; May 29, 2004,	.88 inches of hail fell in Ashley.
June 19, 2002	A thunderstorm with strong winds was reported 10 miles E of Ashley.
July 8, 2002	Severe thunderstorm raged across an erratic path west of Ashley damaging buildings and machinery on six farms.
July 9, 2002	A thunderstorm with strong winds was reported 6 miles NE of Ashley.
July 10, 2002	Thunderstorm Northeast of Ashley along with hail and rain. Funnel cloud was seen by a spotter NE of Ashley.
July 24, 2002	A thunderstorm with strong winds was reported in Wishek.
August 1, 2002	During a thunderstorm, lightning struck a stack of 60 large bales and burned at the Steve & Art Spitzer farm. A bale was burned at the Robert Meidinger farm also due to lightning strike.
August 8, 2002	A thunderstorm with strong winds downed large tree branches in Wishek and Ashley.
June 21, 2003	A strong thunderstorm with high winds was reported in Ashley. No injuries, deaths, or dollar estimate on the damages was provided by NCDC. 11 N. of Ashley they reported 3 inches of rain, and small hail. Eastern part of the county reported some wind and branches down.
July 3, 2003	Thunderstorm in the Ashley area with heavy rains in short period of time in early evening. Rainfall amounts up to 2 inches. Some downed trees, branches scattered about. Some pea sized. In the city of Wishek, fire destroyed a home. It is thought it was attributed to a possible power strip on the computer hook-up. (Approximate value of the house $70,000.00) Some crop damage in the area as well.
May 29, 2004	An F0 tornado touched down 4 miles SW of Ashley. Estimated width 20 yards. Nickel size hail was also reported – (wind speed 60 mph, estimated.)
May 29, 2004	Tornado approximately 3 to 4 miles South of Ashley between 5 & 6:30 PM. Damage consisted of uprooted trees, farm buildings, broken windows. Some fences were ripped due to excessive wind and dime to quarter sized hail. This was a separate and distinct tornado. Time- 5:14 PM CDT to 5:29 PM CDT – Path length 3 miles and 60 yards (estimated wind speed 75 mph)
July 18, 2004	Tornado warning and sightings in the Wishek area, along with rain and hail. No additional information is available.
July 20, 2004	Strong winds and hail in Wishek area. Damage to crops and farm buildings, roofs blown off.
July 10, 2004	32 counties, including McIntosh County, were impacted when a fast-moving cold front brought strong to high winds to western and central North Dakota in the late morning hours and continued through the early evening hours. Sustained winds of 40 mph with gust to 60 mph were common over western and central North Dakota. The winds subsided late in the evening of the 10th.
July 20, 2004	$25,000 in property damages was reportedly caused by strong thunderstorms 6 miles W of Wishek. Wind accompanied by 1 inch hail. Hail and wind damage to crops. A roof was torn off a farm building and grain bins were blown over.

Date	Description
July 20, 2004	Pea sized and later to quarter sized hail in Wishek and surrounding areas with strong shifting winds in all directions. Severe damage to crops West of Wishek areas. Damage to farm buildings.
July 27, 2005	In the NW Corner of McIntosh County, they have received 8 inches of rain in the last week, fields are saturated.
June 8, 2005	Heavy rain was reported throughout the County. **Ashley area** – Heavy rains – up to 2 inches, some small hail, damage to crops due to washing from heavy downpour. **Wishek area**- Heavy rains- hail damage to gardens and crops, 2 -3 inches of rain. **Venturia area**- Reports from 2 – 3 inches of rain, strong winds **Lehr area** – 1 – 3 inches of rain, crop damage due to hail, strong winds **Zeeland area** – 3 inches of rain- heavy rain at times, thunderstorms. Commissioner Meidinger stated that his farmland next to Beaver Creek is saturated, and the creek is up 5 -6 feet right now.
July 19, 2005	A thunderstorm accompanied by high winds stuck 13 miles E of Ashley. A sturdy wooden machine shed was destroyed. A 4500-pound Bobcat skid-steer loader flipped over. A mixer mill, fishing boat and motor tossed in a pile of rubble. Marble size hail accompanied the wind. There was wind damage to farm buildings in various parts of the county that same evening.
June 12, 2006	A fast-moving storm ripped through the Ashley, Venturia and Lehr area on Monday, May 29th, around 2 AM. Hail ranging from nickel to golf ball size with raging winds. At the Art Spitzer farm, 12 N. of Ashley McIntosh County Multi-Hazard Mitigation Plan June 2009 they reported hail in clumps the next day at 5 PM. Farmers in the Lehr area had windows broken, and campers at Hoskins Lake had their tents shredded. Reports of .20 of rain was reported in the Ashley area. Power was interrupted from 12:45 AM to 9:15 AM in the Venturia area affecting KEM customers.
June 30, 2006	A thunderstorm with high winds struck 10 miles N of Ashley. $25,000 in damages were reported when door and roof damage was sustained by a Quonset. No other information was recorded by NCDC. The same storm hit 17 miles E. NE of Ashley blowing over a large tree and breaking windows. Approximately $2,000 in damages were reported.
August 4, 2006	A thunderstorm accompanied by high winds hit 4 miles NE of Ventura.
August 4, 2006	An F0 tornado about 40 yards wide touched down 4 miles S. of Ashley. A report by McIntosh County Sheriff deputy reported that it was just north of the North Dakota and South Dakota border. No structures impacted and no damage.
August 9, 2006	Severe Thunderstorms swept through our county, reports of hail damage to crops, some Being 100%, one party reported hail the size of golf balls, W. of Ashley in the Venturia area. North of Ashley there was also extensive damage to crops as well. Rainfall totals averaged anywhere from .20 to 3 inches in the county. Dangerous lightning starting approximately at 2:45 and lasting throughout the night, coming at several different intervals, with rain.
August 9, 2006	1.75 inches of hail fell about 15 miles east southeast of Ashley. Broken windows plus shingle and siding damage were reported on three farms. In one case, broken glass was imbedded in a wall 25 feet away. Hail was 5 inches deep and was described by one farmer as a sea of white as far as the eye could see. Hail was accompanied by 60+ mph winds and heavy rain
August 10, 2006	1.75 inches of hail fell in Wishek resulting in approximately $30,000 in damages—primarily broken windows.
August 22, 2006	Description: 1 inch of hail fell in Ashley. Approximately $35,000 occurred when hail swath 1/2-mile-long and 1/4-mile-wide went through Ashley. Wind gust to 65 mph estimated. Windows broken in town.
August 22, 2006	1.25 inches of hail fell in Wishek; 1 .75 inches of hail fell in Ashley; 1 inch of hail fell in Ashley.
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August 22, 2006	1.25 inches of hail fell in Wishek; 1 .75 inches of hail fell in Ashley; 1 inch of hail fell in Ashley.
August 24, 2006	A thunderstorm accompanied by high winds struck Ashley.
June 6, 2007	.75 inches of hail fell in Ashley. Hail fell from 430 AM CDT to 455 AM CDT and covered the ground. The largest stone was penny size. An isolated severe thunderstorm produced large hail in McIntosh County.
June 16, 2007	1 inch of hail fell in Danzig. Numerous severe thunderstorm warnings and three tornado warnings were issued. Reports included large hail, tornadoes, and a flash flood.
June 17, 2007	Severe Thunderstorms in McIntosh County, some areas of the county reported as much as 5 inches of rain in a very short period of time. This caused flash flooding across the road out by Lake Hoskins. Sheriff Laurie Spitzer stated that traffic had to be rerouted for several hours, starting at 10 PM Sunday evening. Basement flooding was reported in the Lake Hoskins area. High winds were reported in the Wishek area. Trees and branches were scattered all over in the city of Ashley, rainfall in the city was 1 inch.
August 13, 2007	Around daybreak on Monday, August 13th, scattered thunderstorms developed across north central North Dakota in response to low level warm air advection and large scale ascent from an incoming upper level short wave trough. Severe Thunderstorm Watch 591 was issued by mid-morning in anticipation of continued severe thunderstorm development through the morning hours over the eastern parts of the Bismarck CWA (County Warning Area). .75 inches of hail fell in/near Ashley. No dollar losses/damages reported.
September 22, 2007	Strong winds and hail, some sunflower fields were flattened, these sunflowers were expected to yield 3000 lbs. per acre. Early evening rain and wind raged through an area W and N of Ashley Sunday Evening. Several farmers in the area sustained considerable damage. 6 miles S of Lehr at the Kranzler farm, wind leveled a well house, the roof was taken off a pole barn, roof was taken off the aeration bins and splinters of wood were found in hay bales. Sheriff Spitzer stated she had to stop on the highway because of poor visibility and torrential rain and hail. While she was sitting on the highway, a gust of wind grabbed her vehicle and spun it around a half turn. Clyde Wetzel, 8 miles N. of Ashley reported the loss of a roof on his farm. Various people in the Venturia area stated they had damage to grain bins, one grain bin cleared a shelterbelt, traveled an eighth of a mile and landed in the cornfield 2 ½ miles SE of his farm. Windows were blown out of one farmer's barn, also in the Venturia area. Prior to the storm survey the highest wind speed for this event had been estimated at 70 mph. Because of the survey the National Weather Service in Bismarck had increased that to 85mph. The largest hail stone was 0.75-inch diameter – penny size. Also, a funnel cloud was reported about 4 S. of Lehr.

Date	Description
September 23, 2007 (Event reported locally on September 22, 2007)	A thunderstorm, starting near Zeeland and traveling into Wishek caused non-tornadic thunderstorm winds estimated up to 85 mph caused significant damage along a 27-mile path in McIntosh County. Damage was sustained to crops and farm outbuildings, and large trees were uprooted. Specifically, 4 miles east of Zeeland the roof was torn from a farm outbuilding, large trees were uprooted, a camper trailer was moved, and damage was done to sunflower crops. 5 miles east of Zeeland a farm outbuilding roof was torn off. 7 miles east of Zeeland to 4 west Venturia, tree limbs were down, Quonsets damaged, and a large outbuilding was nearly collapsed. Along Danzig Road tree limbs were broken, trees uprooted, large barn wall pushed 2 inches off foundation, and large outbuilding roofs torn off and walls collapsed. Finally, 3 miles south of Lehr, a cattle barn was completely destroyed, tree limbs were broken, and wooden and metal fences were blown over. Several severe thunderstorm warnings were issued. Large hail and severe thunderstorm wind gust reports were received during the early and mid-evening hours over McIntosh and Logan Counties. McIntosh County was hit hard by this event with a 27-mile-long stretch of damage from southwest to northeast across the county. $300,000 in property damage and $400,000 in crop damage was reported.
September 23, 2007	.75 inches of hail fell in Ashley. Large hail and severe thunderstorm wind gust reports with a 27-mile-long stretch of damage from southwest to northeast across the county.
June 11, 2008	Thunderstorms and high winds struck 5 miles NE of Ashley causing $10,000 in property damage. Estimated wind speed gusts up to 70 miles per hour resulted in trees being blown down and shingles blown off. Several reports of large hail and severe thunderstorm wind gusts were received during the morning and early afternoon hours of Wednesday, June 11th.
July 7, 2008	Severe Thunderstorm in our county – High winds, believed to be up to 60 MPH, downed power lines, some businesses and residents were without power from 8:30 PM to 2:00 AM. This occurred around 5:30 PM power was restored temporarily. Wishek received 1.10 in. of rain in about 20 minutes, damage to trees, according to Larry, President of the City Council, Wishek.
July 10, 2008	An inch of hail fell near Wishek. Scattered thunderstorms moving across south central North Dakota prompted several severe thunderstorm warnings during the late evening of Wednesday, July 9th, through the early morning hours of Thursday, July 10th. One report of large hail was received from McIntosh County early Thursday morning. Losses unknown.
July 19, 2008	.88 inches of hail fell in Zeeland. Numerous severe thunderstorm warnings were issued, along with two tornado warnings. Numerous reports of large hail, and one report each of severe winds and a tornado were received during the afternoon and evening. Another inch of hail was reported 11 miles north of Zeeland. No damages were reported. $50,000 in crop damage was reported in Ventura when 1.25 inches of hail fell in the city. Numerous severe thunderstorm warnings were issued, along with two tornado warnings. Numerous reports of large hail, and one report each of severe winds and a tornado were received during the afternoon and evening.
July 19, 2008	Severe thunderstorm - Zeeland - several farmers involved, 700 acres of cropland lost to hail.
July 26, 2008	Hail damage to crops and a farmer's pickup at the Ralph Neu Farm. 12 E. 2 N. of Ashley.
July 27, 2008	Thunderstorms and high winds struck 9 miles W of Ashley. In the late evening hours of Saturday, July 26th.
July 28, 2008	A thunderstorm with high winds struck 16 miles E of the Ashley Airport causing approximately $5,000 in damages. Several reports of tree damage and minor structural damage due to severe thunderstorm wind gusts were reported. An incoming upper level trough and its associated surface cold front continued the development of additional severe thunderstorms for several hours Monday evening. Numerous severe thunderstorm warnings and several tornado warnings were issued. Numerous reports of severe weather, including funnel clouds and a tornado, were received. Damages in McIntosh County included: Excessive wind out at Gary Elaine Hoffman farm, eastern part of county, 15E. of Ashley. Small hail along with wind. Large cottonwood tree blown down. Damage to a corn field in their area belonging to a neighbor, field was totally stripped. Art Spitzer farm reported golf ball size hail for a very short time. Damage to buildings, crops is minimal. In Ashley, we had approximately one inch of rain, not much wind, no hail, lots of lightning and thunder.

Date	Description
July 28, 2008	1.25 inches of hail was reported 1 mile southeast of Wishek Municipal Airport. No reports of damage were received. An incoming upper level trough and its associated surface cold front continued the development of additional severe thunderstorms for several hours Monday evening. Numerous severe thunderstorm warnings and several tornado warnings were issued. Numerous reports of severe weather, including funnel clouds and a tornado, were received. No damages/dollar losses reported. 1.75 inches of hail fell 7 miles northeast of Danzig. 1.75 inches of hail fell in Ashley. Hail up to golf ball size fell in Ashley for around fifteen minutes. 1.75 inches of hail fell in Danzig. No reports of damage were received.
July 30, 2008	Commissioner, Neil Meidinger reported there was wind damage to crops in the Zeeland area. Severe thunderstorm, high winds, rainfall totals 1.20. Tree branches down all over town, no damage to houses in the vicinity. A report from 4 miles S. of Ashley a steel grain bin was lifted off its foundation and carried out to a pasture where it slammed into a KEM electric power pole. The pole needed to be replaced.
July 31, 2008	A thunderstorm with high winds struck 8 miles NE of Danzig, causing @$1,000 in damages. Thunderstorm wind gusts broke three inches in diameter tree branches. Numerous reports of large hail and severe thunderstorm wind gusts were received, along with one flash flood.
October 26, 2008	11 counties, including McIntosh County were struck by a thunderstorm with high winds. Sustained winds of 40 to 45 mph and wind gusts as high as 65 mph. The high winds occurred during the morning and afternoon hours of Sunday, October 26th. Scattered reports of property damage from the high winds were received over south central portions of North Dakota.
January 31, 2009	High winds were reported in Logan and McIntosh Counties. Winds were sustained over 40 mph across the north and central. The highest wind gust was measured at 60 mph in Ward County.
April 30, 2010	.75 inch of hail fell in Ashely.
May 24, 2010	Numerous severe thunderstorms and tornado warnings were issued from late in the afternoon till later in the evening. Several reports of large hail, multiple reports of severe thunderstorm winds, and several reports of funnel clouds and tornadoes were received during this event. Strong straight line winds associated with a severe thunderstorm resulted in damage to farm outbuildings.
July 8, 2011	Strong thunderstorm winds resulted in several large trees and numerous branches blown down in Wishek.
July 10, 2011	A tornado touched down in a field near Ashley. No damage was reported with this tornado. Strong thunderstorm winds blew shingles off of a roof.
July 16-19, 2011	Daytime temperatures in the 90s combined with the high humidity to produce heat index values well over 100 degrees for many locations for several days. Heat index values topped out between 110 and 120 degrees, which is not a common thing in North Dakota.
July 22, 2011	large hail, high winds, tornadoes, and flash floods. Strong thunderstorm winds occurred north of Zeeland. A Quonset and pole barn were destroyed, shingle and siding damage was sustained to a home, and two trees were blown down. Strong thunderstorm winds resulted in damage to buildings on a farmstead, and damage to hay bales.
June 18, 2014	Severe thunderstorm winds resulted in a swath of damage around Ashley. Five miles northeast of Ashley on a ranch, the roof of a cattle barn was torn off, and several cottonwood trees were snapped. Seven miles north of Ashley, several outbuildings were damaged on a ranch, including shingles torn off of a home and a trailer tipped over by the winds. Along the entire path of the damage, many tree branches were broken along with tree trunks snapped. There was also crop damage in the area north and east of Ashley. Tornado touched down briefly in open country just off of North Dakota Highway 3 south of Ashley. There was no damage, so this tornado was rated EF0.
August 31, 2016	Thunderstorms developed during the early morning and continued into the mid-morning over south central North Dakota, with some becoming severe.
July 9, 2019	Considerable flooding was reported due to impressive rainfall.
June 2, 2020	1.5 inch hail reported.
June 6, 2020	Tornadoes were recorded with gusts up to 90mph.

June 7, 2020	A tornado touched down in a field in northwest Dickey County. Multiple trees and at least one power pole blew down in the City of Ellendale.
June 20, 2020	1 inch hail reported. Multiple funnel clouds reported.
July 4, 2020	High wind gusts and snapped trees reported west of Forbes.
July 10, 2020	Significant heat in July caused 2020 to be one of the hottest years on record.
August 9, 2020	1-inch hail was reported.
June 10, 2021	Damaging winds were reported from several storms.
June 11, 2021	Several large tree branches around Oakes were snapped.
Summer 2021	Significant heat and drought throughout the summer of 2021.
June 14, 2022	Extensive damage occurred throughout the city of Ellendale and surrounding areas. Trees were snapped and uprooted. One home had almost all of the singles torn off. Ping pong ball size hail was reported.
June 20, 2022	60 mph thunderstorm wind gusts were reported. 2 inch hail was reported.
June 24, 2022	A Severe storm featured wind gusts up to 88 mph and caused significant damage.

Severe Winter Weather

Date	Description
November 9, 1998	23 counties were affected, when a band of heavy wet snow extended from the SW through much of central North Dakota ending early in the afternoon on the 10th.
November 18, 1998	23 counties were affected, including McIntosh County when strong surface low pressure system over Wyoming moved into the northern plains on the 18th and intensified over South Dakota.
January 1, 1999	34 counties were affected, including McIntosh County, when a trough of low pressure extended from the northern plains into an area of intense low-pressure system over the central plains. A strong upper level short wave accompanied the surface trough as it moved through the northern plains on New Year's Day. Heavy snow fell along and east of the surface trough with 6 to 8 inches of snowfall during the day. Northwest winds to 40 mph brought bitter cold wind chills to 65 below zero and low visibilities in blowing snow west of the surface trough.
January 26, 1999	24 counties were affected, including McIntosh County, when low pressure over the four corners of southwestern U.S. moved into the central plains and intensified. A small band of heavy snow fell over parts of east central North Dakota.
April 3, 1999	23 counties were affected, including McIntosh County, when strong low pressure over the central Rockies moved into the northern plains on the morning of the 3rd. The storm brought an area of heavy snow over western and central North Dakota. Snowfall ranged from 4 to 8 inches.
February 25, 2000	32 counties, including McIntosh County, were impacted by a severe winter storm.
February 26, 2000	32 counties, including McIntosh County, were impacted when low pressure intensified before moving into the northern plains during the early morning hours of the 25th. The storm moved quickly northeast to southern Manitoba Canada by the early morning hours on the 27th of February. The storm system maintained an abundant amount of moisture which began as rain. As colder air spilled on the back side of the storm system the rain turned to wet snow. A wide band of heavy wet snow fell from south central North Dakota through portions of extreme north central North Dakota. Winds with this storm generally ranged between 30 to 45 mph which caused some blowing and drifting snow.
March 8, 2000	An abundant amount of moisture accompanied this storm system which brought rain and scattered thunderstorms across southern North Dakota before turning to wet snow. Snow amounts ranged between 3 to 6 inches with the heaviest falling over south central North Dakota. Winds during the storm ranged between 40 to 50 mph which created dangerous winter conditions. Residents in the city of Ashley were out of power for 30 hours during the height of the storm. Winds and ice downed numerous power lines. The county was without power for an additional 5 hours when repairs were made to the poles at the end of the month.
November 7, 2000	Abundant amount of moisture was drawn northward with this system and wrapped around much colder air to the west and north of the low-pressure center. Heavy snow fell across western and central North Dakota with accumulations of 6 to 18 inches reported. The snow was accompanied by gusty northwest winds up to 40 mph causing widespread reduced visibilities less than a half mile and wind chills to 30 below zero.
April 23, 2001	The storm system produced a swath of heavy wet snow from west central South Dakota through parts of south central and much of southeastern North Dakota. Up to a foot of wet snow fell. across this area. In south central North Dakota, 6 to 8 inches fell across southern Emmons, LaMoure, Dickey and McIntosh counties.
December 17, 2002	A band of heavy snow fell across north central and parts of east central North Dakota on the 18th and 19th of December. In addition to the snow, winds of 25 to 40 mph caused considerable blowing and drifting of the snow. Areas of freezing rain preceded the snowfall. The heaviest snowfall occurred over north central North Dakota where 12 to 19 inches accumulated and drifts over 6 feet reported in some areas. Over east central North Dakota 6 to 8 inches of snow fell and in the far west and far south central North Dakota 3 to 5-inch snowfall was common. After a relatively mild autumn, it was the first major arrival of winter weather to affect the region.

Date	Description
January 4, 2004	Extremely cold temperatures and gusty winds. Temperatures reached 20 to 30 below zero Sunday night and remained through Monday. West winds of 10 to 25 mph combined with subzero temperatures created wind chills of 45 to 58 below and low visibilities from blowing snow. The frigid temperatures lead to power outages and water line breaks.
January 24, 2004	A major winter storm impacted North Dakota on the weekend of January 24th and 25th. A persistent snow event produced 6 to 12 inches of snow over most of western and central North Dakota. The heaviest band of snow fell from the northwest through central North Dakota where snowfall amounts ranged from 9 to 12 inches. The storm began as freezing rain and sleet over north central North Dakota before turning over to all snow. Gusty winds of 15 to 25 mph accompanied the storm resulting in considerable blowing and drifting snow and wind chills to 30 below zero. Travel throughout the region was impacted due to reduced visibilities and blocked roads.
January 27, 2004	Ambient temperatures ranging 20 to 35 below zero combined with northwest winds to 30 mph resulted in widespread wind chill factors of 40 to 65 below zero.
April 10, 2004	strong northwest winds and snow over western and central North Dakota. Wind gust to 50 mph were reported over various locations of the region. Conditions deteriorated rapidly in the early afternoon hours on the 10th when visibilities lowered to less than a quarter mile producing "white out" conditions
January 13, 2005	The air temperatures overnight dropped between 20 to 35 below zero with daytime temperatures ranging 10 to 20 below zero. The subzero temperatures lasted through the morning of the 15th. Northwest winds up to 20 mph accompanied the cold air producing extreme wind chills of 40 to 60 below zero across the region. Many schools and outdoor activities were cancelled due to the bitter cold.
November 28, 2005	Three counties, including McIntosh County, were impacted when light freezing rain iced area roads before changing to snow during the day as colder air rushed in. The wind gusted to 35 mph in Ashley. This caused reduced visibility in blowing snow.
December 30, 2005	Freezing rain began falling over most of the area by early afternoon on the 29th with rain along the South Dakota border. Most areas had a coating of ice before it changed to heavy wet snow.
December 30, 2006	Eight to 10 inches of snow fell in the western part of the county. Snowplows were pulled off the highways across the state due to low visibility. A unique meteorological condition led to very significant heavy snow.
February 28, 2007	Eight inches of snow fell from late Tuesday night February 27th into Wednesday night February 28th. Accumulating snow, along with freezing drizzle and blowing and drifting snow, continued into Thursday morning of March 1st.
March 1, 2007	Six inches of total snow accumulation.
January 16, 2009	Significant travel problems developed due to blowing and drifting snow as a result of 15 to 30 mph gusts through the entire weekend of Friday, January 16th.
February 27, 2009	Dickey and McIntosh County were impacted when a low-pressure system developing over the high plains of Montana and Wyoming, pushed southeast into the central plains during the evening hours of the 25th and into the morning hours of the 26th. As this occurred, strong frontogenetical forcing resulted in a band of moderate to heavy snow developing along the North Dakota and South Dakota border area, with snowfall rates upwards of three inches per hour.
March 10, 2009	McIntosh County was impacted when a storm total snowfall of nine inches was reported at Ashley. The moderate to heavy snow combined with gusty northerly winds resulted in road closures and the issuance of no travel advisories by local officials.
March 22, 2009	Calls started coming in at 7AM on Sunday morning March 22nd. Yards flooded in the western part of Ashley, this involved about 5 or 6 homes in that area. This was due to rapid snowmelt from fields directly behind these homes that brought in flood waters very quickly. The culvert in front of these homes were blocked. These homes are located on hwy. 11 – 2 miles west of Ashley. The culvert was opened by the state highway supervisor, he dug a trench along the ditch so water could flow freely.

Date	Description
March 23, 2009	McIntosh County Commission declared a Snow Emergency.
March 24, 2009	A mixture of rain, freezing rain, sleet, and snow greatly affected travel across the county. A storm total snow amount of six inches was reported. Winter storm and blizzard watches and warnings were posted well in advance of the storm. Precipitation started in the form of rain and thunderstorms Sunday into Monday morning, before changing over to all snow west to east Monday afternoon through Tuesday morning. Additionally, strong northwest winds of 20 to 45 mph accompanying the snow produced widespread blizzard conditions west during the day on Monday. Storm total snow amounts ranged from 12 to 22.5 inches.
March 25, 2009	Ashley experienced a power outage last evening for a few hours (3-24-09) Lehr, Wishek and numerous farmers have been out of power since (3-24-09).
March 31, 2009	Excessive snowfall started on March 31 and continued to Tuesday, March 31. Snow fall in Ashley was 14 inches, Wishek was 19, Zeeland and Venturia stated around 20 to 25 inches. Schools have been closed all week due to buses unable to travel and blocked roads. No mail on Monday or Tuesday.
February 16, 2006	Temperatures were in the 15 to 25 degrees below zero range with wind speeds of 15 to 25 mph resulting in wind chills mainly in the 40s below.
January 30, 2008	wind chills of 40 to 55 below zero with wind speeds of 30 to 50 mph persisted for over 30 hours. Cold arctic air with temperatures of 10 to 25 below zero, and winds of 30 to 40 mph with gusts up to 55 mph, resulted in wind chills of 40 to 60 below zero.
February 9, 2008	Wind chills of 40 to 50 below zero with wind speeds of 15 to 35 mph
February 14, 2008	Wind chill temperatures of 40 below to near 55 below zero. After a significant winter storm that brought a blizzard to western and central North Dakota moved out of the Northern Plains, wind chill continued to be a problem. Strong cold air advection combined with gusty northwest winds and resulted in wind chill temperatures of 40 to 55 below zero from Sunday night the 14th, through Monday morning the 15th.
December 20-21, 2008	Cold Arctic air combined with winds of 15 to 25 mph to create wind chill of 40 below to near 50 below zero. Wind chill temperatures of 40 below to near 50 below zero from Saturday the 20th, through Sunday morning the 21st.
January 12, 2009	Strong northwest winds of 25 to 35 mph, with gusts up to 45 mph, combined with falling snow and existing loose snow cover to create widespread and prolonged blizzard conditions across the county. Storm total snowfall accumulations by Monday morning ranged from one to three inches.
January 16-18, 2009	Significant travel problems developed due to blowing and drifting snow through the entire weekend of Friday, January 16th, through Sunday, January 18th. North to northwest winds of 15 to 30 mph with a few higher gusts were common Friday, Saturday, and Sunday. Due to these winds and daytime temperatures near freezing, blowing and drifting snow developed resulting in low visibilities and snow sticking to roadways.
January 31, 2009	Winds were sustained over 40 mph across the north and central.
February 27, 2009	Snowfall rates upwards of three inches per hour. Storm total snow amounts ranged from six to 18 inches by the morning of the 26th. The heavy snow resulted in several highways being closed and county officials issuing numerous no travel advisories across SW and SC ND
March 10, 2009	A band of moderate to heavy snow developed and persisted until slowly abating. Heavy snow combined with gusty northerly winds resulted in road closures and the issuance of no travel advisories by local officials. A total snowfall of nine inches was reported at Ashley.
March 24, 2009	A mixture of rain, freezing rain, sleet, and snow greatly impacted travel across the county. A storm total snow amount of six inches was reported. Power outages were reported in rural areas of the county during the storm.
March 29 – 31, 2009	snow amounts of 13.7 inches in Ashley and 19 inches at Wishek. The heavy snow combined with strong northwest winds resulting in widespread blizzard conditions.
March 31, 2009	strong northwest winds of 20 to 45 mph accompanied snow and produced widespread blizzard conditions mainly south of Interstate 94 closer to the North Dakota and South Dakota border. Storm total snow amounts of 13.7 inches in Ashley and 19 inches at Wishek.

Date	Description
December 23 – 25, 2009	A significant and prolonged winter storm impacted all of west and central North Dakota beginning Wednesday, December 23rd, lasting into Saturday, December 26th. Ten to twenty inches of wet snow, coupled with winds of 20 to 30 mph, caused major transportation problems leading up to Christmas Day. Storm total snow seven miles northeast of Ashley was 24 inches.
January 5-7, 2010	Four to seven inches of snow fell across McIntosh County. Strong northwest winds of 20 to 40 mph created areas of significant blowing and drifting snow, resulting in blizzard conditions.
January 21 - 23, 2010	A prolonged period of freezing fog along with periods of freezing drizzle resulted in moderate to heavy ice accumulations on power lines. This caused several overhead power lines and power poles to snap, resulting in scattered power outages across the county. A wintry mix of freezing rain, sleet, and snow spread north across the local area. Precipitation eventually changed over to all snow, with up to three inches of accumulations reported by Saturday morning. Hazardous travel conditions and continued power outages resulted.
May 6-7, 2010	A spring storm system brought several inches of wet snow to portions of McIntosh County. Accumulations remained under warning criteria amounts.
October 26, 2010	Sustained winds of more than 40 mph, and wind gusts up to 62 mph, were reported for several hours. Snow then combined with the high winds Wednesday, October 27th to create blizzard conditions. Storm total snowfall amounts ranged from one to three inches.
December 30, 2010 – January 1, 2011	A storm total snowfall of 6.9 inches was reported in Ashley. Strong northerly winds up to 45 mph combined with the snow to produce a prolonged period of blizzard conditions. The blizzard conditions continued January 1st, 2011.
February 1-2, 8, 2011	The combination of winds and cold Arctic air resulted in wind chill temperatures of 40 below to near 50 below zero.
February 20, 2011	Blizzard conditions developed as strong northerly winds with gusts up to 50 mph combined with falling snow and the fresh snow cover on the ground.
March 11-12, 2011	Widespread and severe blizzard conditions developed as strong northwesterly winds up to 65 mph combined with falling snow and fresh snow cover on the ground. Travel was significantly impacted due to near zero visibilities, strong winds, and ice-covered road surfaces.
March 22-23, 2011	An estimated storm total snowfall of six to eight inches fell across McIntosh County.
April 14-15, 2011	Cooperative observers across McIntosh County reported storm total snowfall amounts from 7.2 inches at Ashley to 13 inches at Wishek.
January 18-19, 2012	air temperatures and wind chill temperatures to fall to 30 below zero and colder
February 28-29, 2012	Seven inches of snow was reported at Wishek.
December 8-9, 2012	Strong winds gusting to over 40 miles per hour combined with several inches of snow to result in widespread blizzard conditions across McIntosh County.
January 20-21, 2013	Wind chill temperatures of around forty below zero were observed.
January 30-31, 2013	Wind Chill temperatures around fifty below zero were recorded.
February 10-11, 2013	Up to five inches of new snowfall combined with frequent wind gusts to near forty miles per hour to result in prolonged blizzard conditions across McIntosh County. County officials advised no travel due to near zero visibilities.
April 14-15, 2013	McIntosh County received up to seventeen inches of snow. Very heavy snow combined with winds gusting to 40 miles per hour to create a blizzard for much of the day on the 14th.
December 3-4, 2013	An estimated snowfall of six inches occurred.
December 6-7, 2013	Subzero temperatures combined with winds up to 15 miles per hour to produce wind chill temperatures as low as fifty below zero during the evening of the 6th and the morning of the 7th.
December 28-29, 2013	Subzero temperatures combined with winds to around 15 miles per hour to produce wind chill temperatures as low as 40 below zero during the evening of the 28th and the morning of the 29th.
January 4-6, 2014	Subzero temperatures as cold as 25 below zero combined with winds gusting to around 30 miles per hour to produce life threatening wind chill temperatures colder than 40 below zero for a period of three days. Lowest wind chills observed were as cold as 62 below zero.

Date	Description
January 15-16, 2014	Peak wind gusts as high as 75 miles per hour were recorded, with many locations gusting in excess of 60 miles per hour.
January 22-23, 2014	Wind speeds of 10 to 20 miles per hour combined with subzero temperatures to produce wind chill temperatures as low as 45 below zero during the evening of the 22nd and early morning of the 23rd.
January 26, 2014	Winds gusting to around 55 miles per hour combined with fresh snow on the ground and falling snow to produce a blizzard.
January 26-28, 2014	Subzero temperatures as low as 15 below zero combined with winds up to 20 miles per hour to produce life threatening wind chill temperatures as low as 45 below zero over a three-day period.
March 1-2, 2014	wind chill temperatures as cold as 45 below zero February 28th - March 2nd.
March 31, 2014	Anywhere from 5 inches up to a foot of snow was observed. strong northerly winds developed across the region, with peak gusts recorded around 55 miles per hour at some locations. Combined with the fresh loose snow and continued falling snow, blizzard conditions were observed.
December 15-16, 2015	Locations near Ashley and Zeeland received eight inches of snow.
November 27-29, 2016	Rain preceded the snow over many locations, with a gradual transition to snow during the late evening of November 27 into the early morning of November 28. Snow then continued through November 28 into November 29. The snowfall was very heavy and wet due to a relatively warm atmosphere which led to low snow-to-liquid ratios. Western McIntosh County received an estimated ten inches of snow.
December 5-6, 2016	Snow began to fall on the morning of December 5, with several inches of accumulation noted by midday. As the cold front swept through, winds greatly increased from northwest to southeast with visibility rapidly deteriorating as wind gusts increased to around 50 mph. Many roads were closed or blocked. Falling snow stared to taper off very gradually from west to east on December 6, though strong winds continued to bring widespread blowing snow and blizzard conditions.
December 25-26, 2016	Freezing rain developed in the warmer air over the southern James River Valley. Cold air wrapped into the system through the day which lead to strong winds and a widespread blizzard. Most roads were closed or blocked throughout the state of North Dakota by the morning of December 26. Power outages occurred throughout the county. The power cooperative that serves mainly rural portions of McIntosh County reported 15-three phased poles near Lehr were snapped, along with multiple other poles and lines. 1,050 meter-services in rural areas experienced outages which are served by nine substations. The investor owned utility which serves many of the communities reported multiple primary and secondary feeds down, with some communities going without power until December 29.
January 1-3, 2017	McIntosh County received seven inches of snow.
January 27, 2020	Snow developed and strong winds which combined with the snow to create a blizzard.
February 21, 2022	High winds and low visibility reported.
January 13, 2021	Damaging winds developed in the wake of a cold front as cold air pushed in. Multiple occurrences of damage from the strong winds were reported. Many places had 80mph wind gusts.
April 12-14, 2022	Heavy snowfall was reported with drifts exceeding 8 feet.

Windstorm

June 18, 2010 - Sustained winds of 40 mph and gusts to around 60 miles per hour were common.

February 13, 2011 - A peak sustained wind of 40 mph was recorded by the North Dakota Department of Transportation sensor at Wishek.

April 29 – May 1, 2011 - A powerful late spring storm system swept across the Northern Plains region April 29th into May 1st. Far south central and eastern North Dakota received very little snowfall but still experienced the high winds.

May 31, 2011 - Strong winds across all of west and central North Dakota May 31st. Sustained winds of 40 mph and peak gusts up to 60 mph were reported during the morning and afternoon.
September 20, 2011 - prolonged period of strong winds

October 7, 2011 - Peak wind gusts reached 61 miles per hour.
May 2, 2012 - The strong thunderstorm winds blew over a basketball pole cemented in the ground.

July 6, 2012 - An area of showers and scattered thunderstorms over south central North Dakota produced several reports of severe downburst winds over McIntosh, LaMoure, and Dickey Counties early in the morning, before sunrise. The strong winds blew down several trees and blew the roof off a large building.

July 22, 2012 - strong to severe thunderstorms in the late afternoon and early evening hours. The strong winds blew down a few tree branches in Zeeland. Prolonged period of strong northwest winds across western and central North Dakota. Peak gusts were measured over sixty miles per hour. Sustained winds at or above forty miles per hour.

July 9, 2013 - The severe thunderstorm winds blew two empty grain bins into a house causing damage and destroyed a small wooden building.

September 9, 2013 - Several farm outbuildings were damaged or destroyed. A barn was blown off its foundation, wind breaks were destroyed, and a grain bin and pig barn were destroyed. Many tree branches were blown down.

July 16, 2014 - Severe thunderstorm wind gusts to 70 mph in McIntosh County.

October 11-12, 2015 - Wishek NDDOT site reported a wind gust of 60 mph.

November 18, 2015 - Wishek NDDOT site reported a wind gust of 63 mph.

August 10, 2016 - Storms developed very strong wind gusts. The greatest amount of damage occurred in the city of Strasburg, where multiple structures were damaged. Tree branches around four inches in diameter were snapped.

January 27, 2020 – Snow developed and strong winds which combined with the snow to create a blizzard.

January 13, 2021 - Damaging winds developed in the wake of a cold front as cold air pushed in. Multiple occurrences of damage from the strong winds were reported. Many places had 80mph wind gusts.